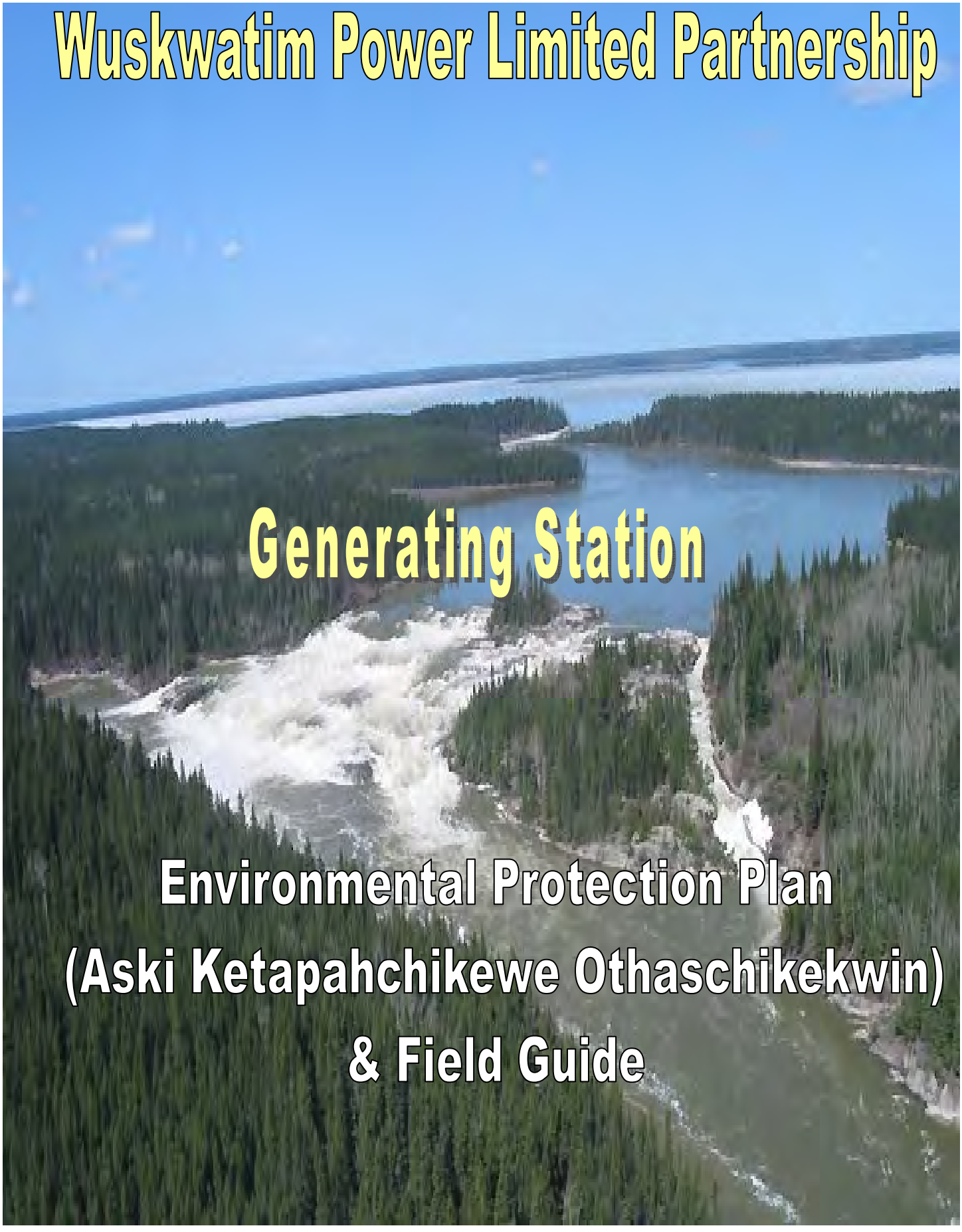
Wuskwatim Power Limited Partnership



Generating Station

Environmental Protection Plan
(Aski Ketapahchikewe Othaschikekwin)
& Field Guide

Wuskwatim Power Limited Project

Wuskwatim Generation Project

Generating Station

Environmental Protection Plan
(Aski Ketapahchikewe Othaschikekwin)
& Field Guide

February 2007

Note to Readers

The following EnvPPs have been designed for the Wuskwatim Generation Project:

- Wuskwatim Generation Project Access Road Environmental Protection Plan & Field Guide.

- Wuskwatim Generation Project Construction Camp Environmental Protection Plan & Field Guide.

- **Wuskwatim Generation Project Environmental Protection Plan & Field Guide.**

- Wuskwatim Generation Project Heritage Resources Protection Plan

EnvPPs have also been developed for the Wuskwatim Transmission Project.

Preface

Wuskwatim Power Limited Partnership

Wuskwatim Power Limited Partnership (the "Partnership") is a limited partnership of which 5022649 Manitoba Ltd., a wholly owned subsidiary of Manitoba Hydro, is the general partner and Manitoba Hydro and Taskinigahp Power Corporation, wholly owned by Nisichawayasihk Cree Nation ("NCN"), are limited partners. The Partnership has entered in contracts with Manitoba Hydro for the management, construction and operation of the Wuskwatim generating station (the "Wuskwatim Project") in accordance with the provisions of the applicable agreements. Manitoba Hydro, as Project Manager, in turn will sub-contract much of the construction work to other contractors, including NCN Qualified Businesses.

During the planning phase of the Wuskwatim Project, extensive work was undertaken collaboratively by Manitoba Hydro and NCN. The Wuskwatim Project will be built on land owned by the Partnership, which land is located within Nisichawayasihk N'tuskenan ("our land" to Nisichawayasihk Nehethowuk, the people from where the three rivers meet and who speak the language of the four winds) and within the Nelson House Resource Management Area. The planning phase included environmental assessment and environmental approval processes. During the assessment process *Ethinesewin* (**traditional knowledge**, including the collective wisdom of *Nisichawayasihk Nehethowuk*) and western scientific knowledge were treated equally and meaningfully in the development of the studies and processes which formed the basis for the joint environmental impact statement. The Environmental Protection Plans for the Wuskwatim Project have been developed in a similar collaborative manner, including an equal and meaningful respect for *Ethinesewin* and western scientific knowledge.

The Partnership and Manitoba Hydro, as the Project Manager, are committed to implementing this Environmental Protection Plan. Companies which sub-contract with Manitoba Hydro to do work on the Wuskwatim Project will also be required to follow the terms of this and other applicable plans.

Nisichawayasihk Cree Nation and Kihche'othasowewin (the Great Law of the Creator

The *Nisichawayasihk Nehethowuk* traditionally live by reference to *Kihche'othasowewin* (the Great Law of the Creator), which is underpinned by spiritual and philosophical beliefs, values, principles and goals. *Nisichawayasihk Nehethowuk* customary law is the sum total of these beliefs, values and norms. All combined to guide and direct the conduct of *ithiniwuk* (individuals), *ka'esi minisichek* (the family), *ka'esi anisko'wakometochek* (the extended family), *mamawe'minisichek* (the clan) and *ka'esi'pisketuskan'nesichik* (the nation). In this way social order was maintained by doctrines that reflect *Kihche'othasowewin.*

Ceremonies are an important part of *Nisichawayasihk Nehethowuk* customary law and are performed primarily to seek guidance, reconciliation, restore harmony, reverse the potential of misfortune and achieve balance with one's surroundings. The principles of *Nisichawayasihk Nehethowuk* customary law are as follows:

1. ***Kwayaskonikiwin***, which means that the conduct of a person must be reconciled with ***Kihche'othasowewin*** (the Great Law of the Creator);

2. ***Kistethichekewin***, which means that the conduct of a person must be based on the sacred responsibility to treat all things with respect and honour. In the context of road access management, ***Kistethichekewin*** means that a person must show respect by requesting access.

3. ***Tawinamakewin***, which means that a person is welcome. In the context of road access management, ***Tawinamakewin*** means that a person granting access has a duty to consider a request for access, including consideration of the well-being of the person requesting access.

4. ***Aski Kanache Pumenikiwin***, which means that the conduct of a person must be in accordance with the sacred duty to protect ***N'tuskenan*** [the land, life, home and spiritual shelter entrusted to us by ***Kihche'manitou*** (the Creator) for our children ***michimahch'ohchi*** (since time immemorial)].

5. ***Ethinesewin***, which means traditional knowledge, including the influence of moons and seasons on climate, weather, animals, plants and ***Ithiniwuk*** (individuals) as well as seasonal harvesting cycles and practices. There is a duty to respect and seek ***Ethinesewin***.

6. ***N'totumakewin***, which means that a person must seek not to be understood but to first understand. ***N'totumakewin*** establishes a duty to teach as well as to understand and to share as well as to seek ***Ethinesewin***;

7. ***Ayakwamisiwin***, which means that a person must be cautious of his/her actions where there is uncertainty;

8. ***O'chenewin***, which means that what a person does to nature will come back to that person;

9. ***Aniskowatesewe kanache pumenikiwin***, which means that a person must act in accordance with the sacred responsibility to protect heritage resources;

10. ***Kanatethechikewin***, which means that the conduct of a person must be in accordance with the sacred responsibility to ensure that ***Ithiniwikuna*** (human remains) and ***Aniskowe Apuchetawina*** (artifacts; the things we use while here on Earth) must not be disturbed;

11. ***Asehewewin***, which means that what a person does to ***Ithiniwikuna*** (human remains) and ***Aniskowe Apuchetawina*** (artifacts; the things we use while here on Earth) will affect that person's whole being.

12. ***Nehetho Tipithimisowin***, which means the exercise of sovereignty. The conduct of all persons must be consistent with ***Kihche'othasowewin*** (the Great Law of the Creator) and must reflect decision-making roles in accord with ***Nehetho Tipithimisowin***.

To *Nisichawayasihk Nehethowuk* (the people from where the three rivers meet and who speak the language of the four winds), n'tuskenan (our land) has been entrusted to them by *Kihche'manitou* (the Creator) for their children *michimahch'ohchi* (since time immemorial).

NCN has based its collaboration with Manitoba Hydro on the development of the Wuswatim Project on *Aski Kanache Pumenikiwin* (the sacred duty and responsibility to protect *n'tuskenan*) and *Asehewewin* (what you do to *ithiniwikuna* [human remains] and *aniskowe apuchetawina* [artifacts] will affect your whole being). Project planning by Nisichawayasihk Cree Nation incorporated *Kihche'othasowewin* (the Great Law of the Creator) and reflected the principle of *Kwayaskonikiwin* (reconciliation). In considering the specific terms, conditions, protocols, guidelines, recommendations and best practices incorporated into this *Aski Ketapahchikewe Othaschikekwin* (environmental protection plan), NCN has applied its belief in O'chenewin (what you do to nature comes back to you).

Through NCN's participation in the planning for the Wuskwatim Project and in the development of this *Aski Ketapahchikewe Othaschikekwin* (environmental protection plan), *Kihche'othasowewin* (the Great Law of the Creator) and *Ethinesewin* (traditional knowledge, including the collective wisdom of *Nisichawayasihk Nehethowuk*)) have been integrated into this *Aski Ketapachchikewe Othaschikewin* (environmental protection plan).

Manitoba Hydro and Commitment to Environmental Protection

Manitoba Hydro supports the need to protect and preserve natural environments and heritage resources affected by its projects and facilities. This goal can only be achieved with the full commitment of Manitoba Hydro employees and consultants at all stages of projects from planning and design through implementation and the full commitment of contractors during the implementation phase.

As stated in the Corporate Environmental Management Policy:

> Manitoba Hydro is committed to protecting the environment. In full recognition of the fact that corporate facilities and activities affect the environment, Manitoba Hydro integrates environmentally responsible practices into its businesses, thereby:
>
> - Preserving or minimizing any adverse impacts, including pollution on the environment, and enhancing positive impacts,
> - Meeting or surpassing regulatory requirements and other commitments;
> - Considering the interests and utilizing the knowledge of our customers, employees, communities and stakeholders who may be affected by our actions;
> - Reviewing our environmental objectives and targets annually to ensure improvements in our environmental performance;
> - Continually improving our Environmental Management System; and
> - Documenting and reporting our activities and environmental performance.

Manitoba Hydro's environmental management policy has been incorporated in the plans for the construction and operation of the Wuskwatim Project. The use of environmental protection plans is a practical and direct implementation of Manitoba Hydro's commitment to responsible environmental stewardship.

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1.0 INTRODUCTION

1.1 Concept and Purpose of the Environmental Protection Plans *(Aski Ketapahchikewe Othaschikekwin)*

Environmental protection plans ("EnvPP's") are environmental protection *guidelines* that supplement project design, construction and operating specifications to prevent or minimize adverse environmental effects arising from the construction and operation of the Wuskwatim Project. They are designed as "user friendly" documents for use as reference documents by field construction and operating personnel. EnvPP's prescribe practical responses to legislation, regulations, licences, permits, standards, conditions, contracts, agreements, designs and specifications for specific situations at specific work locations. They identify and describe environmental protection measures for sites or features of importance to local communities or individuals.

The Wuskwatim Project is being developed on land owned by the Partnership. Because that land is located within N'tuskenan ("our land" to Nisichawayasihk Nehethowuk, the people from where the three rivers meet and who speak the language of the four winds) and the Nelson House Resource Management Area, *Kihche'othasowewin* (the Great Law of the Creator) and *Ethinesewin* (traditional knowledge, including the collective wisdom of *Nisichawayasihk Nehethowuk*) have been integrated into this EnvPP for the Wuskwatim Project.

EnvPPs also provide guidelines for site specific mitigation **monitoring** and reporting on environmental effects of specific activities during construction, operation and **decommissioning** of construction related infrastructure.

1.2 How to Use the Environmental Protection Plan

This EnvPP *(aski ketapahchekewe othaschekekwin)* is presented in a format that provides the user with quick reference and instruction regarding anticipated environmental concerns. It also describes procedures for dealing with unanticipated situations. The plan is organized into the following sections:

- **Preface**: Information about the Wuskwatim Power Limited Partnership. NCN and Manitoba Hydro.
- **Section 1:** Introduction, purpose and how to use the EnvPP.
- **Section 2:** Project Description (description of work to construct and operate the project).
- **Section 3**: Environmental Setting **(**features of local importance).
- **Section 4**: General practices used to prevent or minimize environmental impacts.

- **Section 5:** Site specific environmental protection measures, detailed description of impacted sites including present land use, terrain sensitivity to activities and mitigation measures.
- **Section 6:** Monitoring programs, follow up and project records.
- **Section 7:** Project management system including the responsibilities for management and staff.
- **Section 8:** References and Glossary.
- **Section 9:** Copies of available licenses, permits and special approvals.
- **Section 10:** Maps.

This EnvPP is subdivided into sections that are applicable to project construction, operation and decommissioning. Some words in the text are in **bold font** the first time they occur in the document and these words are defined in the glossary in section 8.2.

It is intended that all contractor staff and Manitoba Hydro project employees will be familiar with the contents of this EnvPP. This document and copies of all documents contained in the reference section of the EnvPP shall be available at the project work site. This EnvPP will be thoroughly reviewed with Contractors at pre-job meetings and copies of this EnvPP will be made available for relevant members of the Contractor's staff. Questions regarding the implementation of environmental protection measures shall be directed to the Manitoba Hydro Resident Manager or his/her delegate. This EnvPP will be a regular agenda item for project progress meetings.

1.3 Concept of the Environmental Protection Program

This EnvPP is one part of an environmental protection program that includes environmental protection plans and field guides, environmental management plans, and environmental monitoring plans:

- Access Road Environmental Protection Plan and Field Guide (*Aski Ketapahchikewe Othaschikekwin*).
- Construction Camp Environmental Protection Plan and Field Guide (*Aski Ketapahchikewe Othaschikekwin*).
- Generating Station Environmental Protection Plan and Field Guide (*Aski Ketapahchikewe Othaschikekwin*).
- Heritage Resources Protection Plan (*Aniskowatesewe Ketapahchikewe Othaschikekwin)*
- Access Management Plan.
- No Net Loss (Management) Plan.
- Sediment Management Plan.
- Physical Effects Management Plan.
- Aquatic Effects Monitoring Plan.
- Terrestrial Effects Monitoring Plan.
- Resource Use Monitoring Plan.

These plans are part of an environmental management program that includes such other elements as:

- Employment and training of Environmental Inspectors *(Aski Kihche O'nanakachechikeo or "AKO's).*
- Ongoing on-site inspection.
- Regular documentation of field inspection activities.
- Regulatory liaison
    - Work permits
    - Adaptive monitoring and management plans
- General and site specific environmental protection guidelines
- Monitoring requirements review
- Specialist consultant management program review
- *Ethinesewin* (traditional knowledge, including the collective wisdom of *Nisichawayasihk Nehethowuk*) as well as western scientific knowledge and community reporting
- **Follow-up** and adaptive research, monitoring and environmental protection programs
- Annual reporting

A summary of the EnvPP components, human resources and objectives is provided in Table 1-1 (page 4). Section 6.0 contains more information regarding the monitoring and follow-up components of the Environmental Protection Program.

Table 1-1: Summary of the Environmental Protection Program

Program Components	Environmental Protection Plan	Monitoring	Follow-up	Training
Purpose	• Guidelines for protection of the environment	• Compliance	• Verify EIS Predictions • Determine Effectiveness of Monitoring, Training and Environmental Protection Plans	• Ensure Environmental Protection Program is carried out effectively
Geographic Area	Worksite	Project Wide	Site Specific	N/A
Program Elements	• General Environmental Guidelines • Project Specific Environmental Guidelines • Site Specific Biophysical Land Classification • Permits and Licenses	• Aquatic • Terrestrial • Physical Environment • Access Management • Facilities	• Auditing, Rescoping and Adaptive Management of the Environmental Protection Plan, Monitoring and Training	• AKO • Course (Modular) • Environmental Protection Plan • Monitoring docs • Training
	• Senior Environmental Specialist • AKO • NCN • Resident Manager • Construction Inspectors	• Consultant Specialists • AKO • Senior Environmental Specialist • Construction Inspectors • Manitoba Conservation • DFO • NCN	• Senior Environmental Specialist • Resident Manager • NCN • Consultant Specialists • AKO • Construction Inspectors • Manitoba Conservation • DFO	• Consultant Specialists • Manitoba Hydro Staff • Senior Environmental Specialist • NCN

2.0 PROJECT DESCRIPTION

The project involves construction of a **generating station** at Taskinigup Falls. A detailed project description is contained in Volume 3 of the **Environmental Impact Statement (EIS)**, with an overview provided in Volume 1. The proposed in-service date for the generating station is 2010.

The proposed Wuskwatim Generating Station (GS) will be located in northern Manitoba, at Latitude 55° 32’ 29’’, and Longitude 98° 30’ 14’’. Wuswatim GS will be located approximately 48 km southwest of the city of Thompson and approximately 37 km ````southeast of the community of Nelson House and is within the Nelson House Resource Management Area. Wuskwatim GS site will be located at Taskinigup Falls, which is 1.5 km downstream of the outlet of Wuskwatim Lake on the Burntwood River. Wuskwatim GS will be the first hydroelectric generating station to be built on the Burntwood River to utilize the Churchill River Diversion (CRD) flows.

The Wuskwatim GS will harness the CRD’s flow, currently passing over the approximately 22 m combined elevation drop between Wuskwatim Falls and Taskinigup Falls. Wuskwatim GS will therefore be capable of producing as much as 200 MW of power at any time.

The amounts of land required for the construction, operation and maintenance of Wuskwatim GS, excluding the permanent transmission lines and associated works, are summarized in Table 2-1. See Figure 2-1 for a detailed layout of the construction area. Following construction, approximately 120 ha of land will be required for the ongoing operations and maintenance of the Project at site while the remaining land required for construction will be rehabilitated to varying degrees.

The following components from the construction of the Wuskwatim GS will create changes to the physical environment:

- Access road(s);
- Site clearing for Project infrastructure (including construction camp and the Manitoba Hydro and contractor work sites), immediate forebay and generating station;
- Off-site construction-material extractions (i.e. impervious and granular fill materials);
- Generating-station construction (excavation, powerhouse and spillway structures, dyke, main dam);
- Excavated material placement area (i.e. excess rock and overburden); and,
- Channel excavations at Wuskwatim Falls to improve flow conveyance.

All required land is currently Provincial Crown Land. Most of the land is within Manitoba Hydro's Churchill River Diversion license area and the Province of Manitoba's Water Power Reserve area, the exceptions are parts of the access road, construction power transmission line and granular borrow areas. The Wuskwatim GS site is within the Nelson House Resource Management Area (RMA).

Table 2-1 Summary of Lands Required for the Wuskwatim GS

Description	Amount of Land (ha)
Access Road (48 km long road with a 100 metre ROW, between GS and PR 391)	479
Construction Power Transmission Line (46 km transmission line with a 60 metre ROW, between GS and Thompson)	272
Granular Borrow Areas (Borrow areas G, H & J – Not all of the areas will be required for construction purposes but for assessment purposes it is assumed that all the borrow areas except J-1 will be required)	654
Impervious Borrow Areas (Borrow areas in the Primary Structures Areas and area SA-A Not all of the areas will be required for construction but for assessment purposes it is assumed that all the borrow areas will be required)	26
Construction of Infrastructure & Permanent Facilities at the GS (relatively conservative estimate as it includes 9.5 Ha of high bedrock areas which are not expected to be required for any of the activities)	147
Flooded Area (Land between Wuskwatim Falls and Taskinigup Falls that will be inundated as a result of construction of the generating station)	37
Approximate Area of Site Disturbance (approximate 100 metre buffer area around the construction site area)	487
Water Storage Area (A setback line will be established around the reservoir in accordance with accepted procedures to define a safe and practical distance beyond which development could proceed. The setback line forms the upper limits of an easement area which is referred to as the Lands Required for Water Storage Purposes. The lower level of the easement area is the reservoir Full Supply Level of 234.0 m)	2750

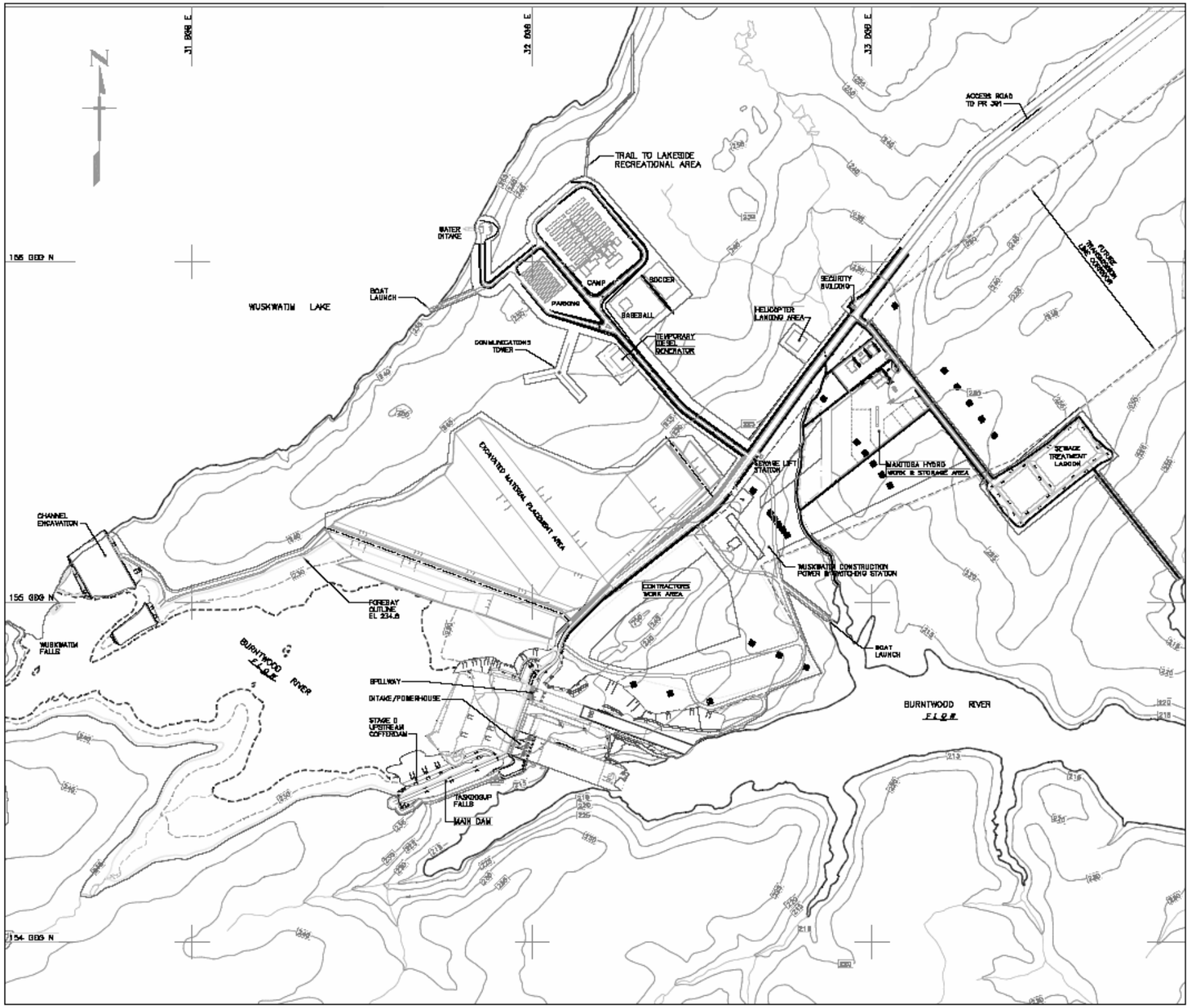

Figure 2-1 Layout of the Construction Site

3.0 ENVIRONMENTAL SETTING

As part of the construction of a **hydroelectric** generating station at Taskinigup Falls a campsite, work area and related **infrastructure** will be constructed. Detailed project setting information is contained in the EIS. References to appropriate EIS sections are provided below:

- Volume 1 Summary EIS
- Volume 4 Physical Environment
- Volume 5 Aquatic Environment
- Volume 6 Terrestrial Environment
- Volume 9 Heritage Resources

A number of features have been incorporated into the design of Wuskwatim GS to minimize potential adverse environmental effects.

Forebay Level and Flooded Area

Wuskwatim GS was redesigned so that the forebay level for the development would be within the existing water regime on Wuskwatim Lake and therefore minimize the amount of flooding. This reduces impacts on the existing environment. Wuskwatim design eliminates flooding on Wuskwatim Lake, with only minimal flooding occurring in the immediate forebay area. As a result of the Project, the water levels will rise about 7 metres in the immediate forebay area between Wuskwatim Falls and Taskinigup Falls. This will result in less then ½ km² of flooded land.

Plant Outflow Capability

Wuskwatim GS was redesigned so that the rated plant discharge would be within the existing flow regime of Wuskwatim Lake. This decision was made to reduce the impact on the existing environment by not changing the channel-forming flow.

Mode of Operation

The Wuskwatim GS was redesigned so that the mode of operation for the development would work within the current flow range established by the operation of the CRD and would not significantly affect the existing environment. Wuskwatim GS mode of operation will result in smaller water level and flow changes within the day than would be possible with a truly peaking plant.

Excavated Materials Placement Area

The area designated to receive the excess material produced from the excavations was redesigned to prevent additional land from being flooded and to include a top layer of organic material rather than a top layer of excess rock from the excavations. The design was improved by moving the southern berm that bounds the placement area further south to coincide with approximate edge of the existing shoreline. This reduces the amount of low-lying land that

would have been flooded by approximately 2 ha. The redesign also includes plans to recycle the organic material that currently covers the area for use as the surface layer over the excavated materials.

Station Equipment Design

Environmental protection considerations will be applied in the design and specification of all electrical and mechanical systems for the Wuskwatim G.S.

Oil Spill Prevention and Containment

Where feasible, permanent equipment will be specified to be oil free. The equipment shall also be designed to minimize the volume of contained oil. A permanent oil-containment system will be designed to guard against the possible contamination of the waterway in the event of an accidental spill.

Sewage Treatment

The sewage treatment plant will meet all provincial regulations.

Slope Protection and Site Drainage

All of the slopes of the permanent earthfill dams and dykes, as well as permanently exposed slopes in overburden, will have suitable erosion protection using a cover layer of granular or rockfill. Slopes may also be protected by means of a vegetative surface layer where the slopes are relatively flat and not subject to wave erosion. Ditching will be provided to direct surface runoff away from excavation slopes and to convey it at suitable gradients in a controlled manner to the river.

Access and Safety

Safety for employees and the general public represents Manitoba Hydro's most important goal and is the foundation of the Corporate Vision and Operating Principles. Safety is closely associated with site access. During construction, access to the GS site will be restricted and controlled to ensure public safety.

4.0 GENERAL ENVIRONMENTAL PROTECTION MEASURES FOR CONSTRUCTION, OPERATION AND DECOMMISSIONING

General Environmental Protection Measures have been organized by the following project phases***:***

- ***G General (applies to all phases of the project)***
- ***C Construction***
- ***O Operation***
- ***D Decommissioning***

4.1 General Management

1(G). Project specifications, guidelines, licenses and permits must be obtained prior to commencement of construction. All Manitoba Hydro employees and contractors working on this project will be made aware of these documents and their contents. These documents are presented in Section 9 of this EnvPP if available at the time of publication. Copies are also available from the Resident Manager's office or the Manitoba Hydro Senior Environmental Specialist in Winnipeg at [redacted]

2(G). One of the main functions of this Environmental Protection Plan is to demonstrate and document due diligence. In this context, due diligence involves taking all reasonable, practical steps to protect the environment during construction, operation and decommissioning phases of the Wuskwatim Project.

3(G). The Partnership supports the need to preserve and protect natural environments and heritage resources affected or which may be affected, directly or indirectly, by the Wuskwatim Project. In recognition of this objective, all Project participants will be required to undertake all necessary activities, steps, procedures and measures required to ensure work is done in strict compliance with contractual obligations and environmental and heritage regulations.

4.2 Regulatory Requirements

1(G). Manitoba Hydro requires that its employees and contractors comply with all Federal and Provincial **Regulatory** requirements relating to the construction, operations and decommissioning of its projects and facilities. General regulatory information is contained in the document:

"Guide to Environmental Legislation Applicable to Manitoba Hydro's Projects and Operations" Environmental Land Use and Planning. January 2004.

and other applicable Guidelines, Standards and Codes of Practice referenced in Section 8.1 "*List of References*". Site specific regulatory requirements for this project will be listed in the Manitoba Conservation work permit(s).

Section 9.0 "Licences, Regulatory Approvals and Permits" in this EnvPP references specific licences, approvals and permits required for this Project.

2(G). Environmental management and monitoring programs will be conducted in full cooperation with local authorities such as Natural Resource Officers (NRO).

4.3 Access and Access Roads

A 48 km long all weather access road is required to transport workers, materials and equipment from existing roads to Wuskwatim project work sites. In addition, temporary access routes will be constructed to gain access to **borrow areas** for construction materials and to facilitate movement around and within the generating station work area.

Potential environmental **impacts** associated with the construction and operation of access roads include: soil **erosion** and compaction, sedimentation of streams, contamination of soil and **groundwater**, disruption of surface and sub-surface drainage patterns, changes to soil moisture and fertility, soil warming and permafrost melting in peatlands, edge effects on plants adjacent to cleared areas, deposition of airborne road dust and airborne emissions from vehicles and construction equipment, accidental fires, loss and/or conversion of fish and wildlife habitat, proliferation of invasive plants, disturbance to heritage resources, salvage and disposal of timber, noise and aesthetics.

The following section describes practices that will be followed to minimize potential environmental impacts during road construction operation and decommissioning:

1(G). Clearing and habitat disturbance outside of the project area shall be minimized or avoided. Ensure that **right of way** boundaries, buffers and **sensitive areas** (see section 5.3) are clearly marked prior to clearing. Access to certain facilities and sites may be restricted due to the location of environmentally sensitive sites, (rare and endangered species), heritage sites, seasonal wildlife migration, staging, calving, spawning or nesting habitats.

2(G). Retain natural vegetation near water-crossings for as long as possible to minimize erosion, and do not grade into waterways. For temporary roads, vegetative **cover**, rockfill, slash or compacted snow must be used in areas of steep slopes to protect the **overburden**.

3(G). Any **fill** adjacent to waterways will be clean, earth free, permeable **granular** or rock fill material.

4(G). Where temporary access across waterways is required, and has been determined that the stream is fish habitat, crossings will be designed in a manner which will not create a barrier to fish passage or impede natural water **flow**.

6(G). Vehicles, machinery and pedestrian traffic will be limited to project related access routes and cleared project sites.

7(G). Temporary access routes designated for specific uses or seasonal use may only be used outside of these constraints during emergency conditions (e.g. safety issue such as forest fires etc.).

8(G). Contractors will wash equipment, machinery and tires prior to transport to the project areas to minimize the risk of invasive plant introduction or spread. (i.e. purple loosestrife from the southern part of the Province.)

9(G). Ditches shall be seeded with a grass mixture that will only contain native and/ or non-invasive introduced grasses (i.e., will not contain sweet clover or other herbs).

10(G). Runoff will be directed away from disturbed, erosion susceptible areas. Where monitoring programs indicate high concentrations of total suspended solids, site specific measures will be taken to reduce concentrations to acceptable levels.

11(C). Temporarily cleared areas shall be graded and stock-piled organic material spread to encourage re-growth of native vegetation and reduce the risk of invasive plant spread.

12(O). Snow storage areas, if required, shall be located at least 100 m from any stream, waterway or source of drinking water. Following the spring melt, debris at the snow disposal sites, including domestic and construction wastes, shall be collected and removed to an approved landfill site.

13(O). To reduce the possibility of vehicle and wildlife collisions, vehicle speed shall not exceed posted speed limits and wildlife warning signs shall be installed where appropriate.

14(O). Oil or petroleum products shall not be used to control dust.

15(O). Only products and application methods approved by regulatory authorities will be applied to dust suppression activities on access roads.

16(D). Temporary construction and haul routes and associated stream crossings shall be decommissioned at the completion of the construction phase according to specification requirements and shall be signed off by a NRO.

17(D). Construction and haul roads will be inspected prior to decommissioning to document areas of staining, stressed vegetation, debris, etc. Soil and groundwater samples will be taken at suspect areas to delineate the extent of any contaminated areas.

18(D). Decommissioned roadbeds will be revegetated if necessary. Natural regeneration will be considered wherever possible.

19(D). After decommissioning of culverts, natural drainage will be restored and shorelines stabilized.

20(D). Decommissioned roadbeds will be reclaimed. A terrestrial ecologist will provide specification requirements and will provide advice as required during reclamations.

21(D). Ongoing visual inspection of the worksite will be conducted by the AKO to ensure adequate restoration and minimal environmental degradation.

22(D). Temporarily cleared construction and haul routes areas that supported jack pine forest prior to construction (as identified in the EIS) shall be regenerated to jack pine forest. A terrestrial ecologist shall provide regeneration prescriptions and inspect regeneration efforts immediately after completion of work, at three years and again at seven years. (See the Terrestrial Effects Monitoring Plan.)

4.4 Borrow Pits and Quarries

Borrow pits are sites where stone, sand, gravel, till, clay, or other granular soils are extracted for the construction of the generating station, site facilities, transmission lines, and access roads. The term 'pit' is used when impervious or granular materials are extracted. The term 'quarry' is used where consolidated rock is removed. Some guidelines regarding design, operation and restoration of pits apply to quarries.

Environmental impacts of pit and quarry development can include the loss, reduction or disturbance of wildlife and habitat, erosion runoff, dust, soil/groundwater contamination, damage to historic resources, waste disposal, noise, and aesthetics.

The following section describes practices that will be followed to minimize potential environmental impacts associated with pits and quarries.

1(G). Regarding activities related to pits and quarries, reference will be made to the following:

> The provincial "*Mines and Minerals Act*"
>
> "*Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters.*" Department of Fisheries and Oceans. 1998.

2(G). Where pit and quarry operations are located close to public view, a form of visual screening will be left in place if possible. A visual screen generally consists of a vegetated buffer area between a public use area and a work-site.

3(G). The number of borrow pits opened during generating station development will be minimized. Existing borrow areas shall be used whenever reasonably possible.

4(G). The work face of the quarry should be oriented away from sensitive wildlife habitats, recreation areas and temporary and permanent settlements. This practice will direct noise away from environmentally sensitive areas (see section 5.3) and minimize potentially negative aesthetic impacts.

5(G). Borrow pits shall not be located within 100 m (110 yd.) of stream banks or steep slopes unless a specific exemption is provided by Manitoba Conservation.

6(G). A deep quarry excavation is preferable to a shallow excavation since a deep site minimizes the amount of surface disturbance relative to the amount of material excavated.

7(G). Signs will be posted to warn unauthorized personnel of safety hazards.

8(G). Before excavation starts in pits or quarries, **runoff** control measures shall be designed to redirect surface runoff away from access routes and pit and quarry walls.

9(G). **Organic** material, topsoil, and subsoil shall be stripped and piled separately for future site **rehabilitation**.

10(G). Site clearing shall be minimized, within the constraints of permitting the safe and efficient movement of personnel, vehicles and equipment, during the excavation of materials.

11(G). Erosion and dust from the site shall be controlled. Washing and maintenance of vehicles and equipment in the excavated area will not be permitted.

12(G). Quarry blasting operations will be scheduled to minimize disturbance to wildlife and to ensure the safety of workers. Spring (first open water to the end of July) is the most important season for wildlife as it is the critical reproductive period for most **species**.

13(G). Borrow pits shall be monitored for the presence of historic or heritage material by all project employees. If found, work shall cease and the Manitoba Hydro Resident Manager shall be contacted immediately. The Resident Manager or their delegate shall contact the project archeologist.

14(G). Appropriate site drainage and erosion control measures shall be implemented for borrow sites which are no longer needed.

15(G). Oil and grease changes on any vehicles will be prohibited in pits and should only occur in designated areas.

16(C). Garbage, debris or refuse shall not be discarded into the excavated areas.

17(D). To encourage revegetation, the organic layer will be segregated from other overburden soils and will be replaced on pit slopes and bottoms after borrow material has been removed from sites designated for decommissioning. Pit walls shall be left at a maximum slope of 4:1 (horizontal:vertical).

18(D). All waste, refuse, structures, material and equipment shall be removed by the contractor at the end of construction.

19(D). Temporary haul roads from permanently abandoned borrow areas will be decommissioned as outlined in Section 4.3.

20(D). The restored pit will be monitored by Manitoba Hydro for a period of time to determine if additional restoration activities are required. If appropriate for the site, revegetation will be allowed to reoccur naturally.

21(D). Depending on the planned future use for the site and the size of the excavation, pits and quarries should be backfilled with clean mineral soil or granular material, leveled or

sloped and if necessary revegetated. Reclamation plans shall be forwarded to Manitoba Industry, Economic Development and Mines and Manitoba Conservation.

22(D). Areas that are seeded with a grass mixture to assist rehabilitation will be seeded with a mixture that only contains native and/ or non-invasive introduced grasses (i.e., will not contain sweet clover or other herbs).

4.5 Clearing

To construct the generating station the immediate **forebay** area, powerhouse, powerhouse tailrace, **spillway**, spillway discharge channel, excavated materials area and associated facilities, it will be necessary to clear trees and other vegetation. Potential environmental impacts associated with clearing include: removal of **merchantable** timber and wildlife habitat, changes to soil, water, temperature and fertility in adjacent areas, erosion and fire hazards due to timber and slash stockpiling.

The following section describes practices that will be followed to minimize potential environmental impacts during clearing.

1(G). As much as possible restrict clearing activities outside the most sensitive breeding and brood-rearing months (ie May to late July) to reduce impacts to birds and other wildlife.

2(G). Where practical and viable merchantable timber will be salvaged and utilized.

3(G). Vegetation will be removed by mechanical means except where other selective clearing methods are stipulated.

4(G). Clearing and disturbance shall be limited to project areas and associated access routes. Whenever possible, existing access routes will be utilized and machinery shall not operate outside of the project areas and associated access routes. Storage areas shall be contained within the project areas and associated access routes.

5(G). Trees will be felled towards the cleared area to avoid damage to standing trees.

6(G). Windrows and piles of slash will be disposed of by methods prescribed in Manitoba Conservation work permits. Long term storage of cleared materials is discouraged to prevent forest fires, obstruction of wildlife movements and natural drainage. Clearing the vegetation may prevent forest fire, provide unobstructed wildlife movement and promote natural drainage. Windrows of snow containing any organic matter pushed up along tree lines will be pulled back onto clearings or rights-of-way. Refer to Manitoba Conservation Forest Practices Guidebook *"Brush Disposal"* 2005.

7(G). Cleared trees and/or vegetation shall not obstruct waterways and will be stored above the **ordinary high water mark.**

8(G). Areas requiring selective clearing (i.e., buffer zones, sensitive sites (see section 5.3)) shall be marked prior to clearing. The AKO will ensure these areas are noted by the contractors and not unduly disturbed by construction equipment and related activities. Buffer zones will be maintained as outlined in the document *"Consolidated Buffer Management Guidelines." Manitoba Natural Resources. March, 1996.*

9(G). Windrows and piles of slash shall be disposed of in accordance with Manitoba Conservation work permits. Long term storage of cleared vegetation is discouraged.

Clearing the vegetation will prevent forest fires, provide unobstructed wildlife movement and promote natural drainage. Windrows of snow containing any organic matter pushed up along tree lines will be pulled back onto clearings or rights-of way.

10(G). Any requirements for additional clearing outside the originally designated project area shall be reported to Manitoba Conservation. Revisions to work permits may be required. Trees located at the edge of clearings or rights-of-way, that can potentially affect the function of a Manitoba Hydro facility (transmission and distributions lines, buildings etc.) or human safety, will be removed. These trees are referred to as "danger trees".

11(G). Vegetative buffer zones shall be maintained between construction areas and natural waterbodies. Any deviations to buffer zones identified in the work permits shall only be made with the consent of Manitoba Conservation i.e.:

- With the exception of specific construction sites under the Environment Act License approvals, heavy equipment is not allowed within a minimum of 30 m (33 yds) of the ordinary high water mark except to allow temporary access across a stream or other waterbody.
- Buffer zones at stream crossings shall not be less than 100m (110yds) from the ordinary high water mark.
- Where the use of a buffer zone is not possible, other acceptable sediment control measures will be used. These will be detailed in a sediment control plan, which will be developed for NRO approval.
- Trees will not be felled into streams.
- Removal of standing and fallen trees in riparian **ecosystems** will be determined on a site specific basis.
- Slash produced during clearing for construction will not be left in a buffer zone.
- Unless otherwise specified by Manitoba Conservation, only manual removal of woody debris will occur from stream beds.

12(C). Trees containing large nests of sticks and areas where active dens or burrows occur will be identified, left undisturbed and reported to the NRO. Mitigation may be required to help preserve important wildlife species. Bear and wolf dens should be protected and avoided where possible when clearing. The AKO and a NCN member will identify these den sites prior to clearing and provide a list of sites to the contractor.

13(D). Soil that has been stockpiled during the course of construction may be used for the rehabilitation of cleared areas.

14(D). Soil/site preparation will be conducted if necessary to reestablish vegetation. These activities may consist of scarification, grading and fertilizing.

15(D). Revegetation may be required in disturbed areas to:

- stabilize erodible soils;

- create or restore wildlife habitat;
- prevent or delay the invasion of unwanted plant **species**; or
- to enhance or restore the aesthetic appeal of an area.

These sites will be specifically identified by the Natural Resources Officer as requiring special treatment after construction and during decommissioning, otherwise natural revegetation will be allowed to reoccur.

16(D). Areas that are seeded with a grass mixture to assist rehabilitation will be seeded with a mixture that only contains native and/ or non-invasive introduced grasses (i.e., will not contain sweet clover or other herbs).

17(D). Cleared areas that supported jack pine forest prior to construction (as identified in the EIS) will be regenerated to jack pine forest. A terrestrial ecologist shall provide regeneration prescriptions and inspect regeneration efforts immediately after planting, at three years and again at seven years. (See the Terrestrial Effects Monitoring Plan)

4.6 Grubbing

Grubbing is the removal of the roots of vegetation and will occur during access road, site infrastructure construction and for the powerhouse development.

Potential environmental impacts associated with grubbing include erosion, rutting and sedimentation of waterways.

The following section describes practices that will be followed to minimize potential impacts during grubbing activities:

1(G). Where possible grubbing will not occur within 2 m (2.5 yds) of standing timber in order to maintain the root systems of adjacent trees and reduce the occurrence of **blow down**.

2(G). Slash windrows that will be disposed of by burning shall be piled the maximum distance possible from standing timber.

3(G). Grubbing will not occur along the reservoir shoreline, except at the boat launch and other access locations.

4(G). Where possible special care shall be taken when grubbing in areas of fine-grained soils (clays, silts, fine sands, etc.) to minimize erosion, particularly during wet weather, to prevent rutting and erosion.

5(G). Pushouts will be designed to ensure that standing trees are not damaged.

6(G) With the exception of 3(G) no grubbing will occur within 100 m (110 yds) of a waterbodies.

7(G). When grubbing in areas susceptible to erosion into waterbodies erosion control blankets and/or silt fences may need to be installed.

8(G). Construction sites requiring extensive grubbing shall be stabilized (graded, seeded, etc.) as soon as practical, to minimize erosion.

9(G). Sediment released from grubbed material will be controlled to minimize entry into waterbodies.

4.7 Stripping and Grading

Grading is the process of reshaping the land to design elevations such as the site and haul road bed, drainage ditches, construction camps, work areas and **borrow pits**. Stripping involves the removal of topsoil and low vegetation to mineral soil. Stripping and grading is required for both permanent and temporary facilities.

Potential environmental impacts associated with stripping and grading include erosion, loss of habitat, disturbance of permafrost and sedimentation of waterways.

The following section describes practices that will be followed to minimize potential environmental impacts during stripping and grading.

1(G). Erosion control measures, if required, shall be in place prior to stripping.

2(G). Construction areas containing soil with high percentages of silt, artesian springs, or areas of previous erosion, shall require special design considerations, including erosion control techniques.

3(G). Whenever possible, stripped material will be segregated and stockpiled for later use in regrading and backfilling. The stripping stockpile shall be situated a minimum of 100 m from any waterbody.

4(G). Soil strippings shall be stockpiled in a manner that will not impede natural drainage and will remain available to rehabilitate disturbed sites. Depending on the condition of the soil at the time of rehabilitation and the planned future use of the site, the stockpiled soil will be replaced upon completion of project activities.

5(G). Excavated soil shall not be stockpiled at worksites adjacent to wetlands or waterways. This material shall be removed to an approved disposal area.

6(G). Stockpiled stripping material shall not block drainage ditches, and shall be prevented from washing into waterways.

7(G). Natural vegetation near stream crossings will be retained to minimize erosion.

8(G). In areas of permafrost, stripping through organic vegetative layers shall be avoided, in order to prevent ground ice from melting.

4.8 Aggregate Management

Granular materials are used to construct dykes and/or for concrete production. Materials are obtained either from drilling and/or blasting, or from borrow areas. Granular materials require some processing prior to use. A concrete aggregate plant will be established to crush, screen, wash, and stockpile materials.

Potential environmental concerns include: dust (air quality), disturbance to permafrost, disturbance to wildlife, noise and vibration impacts, impacts to waterbodies from contaminants/sediments, and safety (workers/storage).

The following section describes practices that will be followed to minimize potential impacts concerning aggregate management.

1(G). Aggregate management activities will only occur within the limits of the site, as specified under its operating license.

2(G). Motorized equipment will be equipped with spark-retarding capabilities in fire hazard areas.

3(G). Dust abatement procedures will be in place where practical.

4(G). Wastewater from washing operations and/or surface runoff within the plant site shall remove sediments prior to entering waterbodies. This shall include settling ponds and/or possible use of heavily vegetated areas. See the Sediment Management Plan for more details.

5(O). The contractor will submit a plan to Manitoba Hydro for monitoring release of effluent from settling pond(s) that will receive wastewater from aggregate washing and concrete processing. It is expected the plan will include measures for PH, Alkalinity, Water hardness, TSS and Major metals/metalloids.

6(D). Site remediation will occur as soon as practically possible after completion of construction. Waste steel, debris and other aggregate management waste will be removed from the site and stockpiles of materials will be left at site for future maintenance of the facilities.

4.9 Concrete Mixing Plant

The concrete mixing plant for the project will be located in the Contractor's work area. It will supply concrete for the duration of the project.

Potential environmental impacts associated with concrete mixing plants include the potential for waste water containing sediment, a high PH or petroleum contamination to enter waterways or soil, dust, and waste generation.

The following section describes practices that shall be followed to minimize potential environmental impacts at the campsite.

1(G) The concrete plant and all related infrastructure and storage areas will be located at least 100 m (110 yds) from any waterbodies.

2(G) Dust control at the mixing plant and aggregate storage areas may include tree or fence barriers and water dampening.

3(G) Contaminated and clean stormwater should be kept separate with dedicated stormwater systems.

4(G) When possible water used at the truck washout area will be collected and reused for washing.

5(G) The contractor will inspect the water storage area daily and immediately after rainstorms to ensure the capacity has not been exceeded and flow has not been obstructed.

6G) Reuse waste concrete whenever possible.

7(G). Fuel and chemicals shall be stored in a dedicated storage area with appropriate spill response equipment available.

8(G). The contractor will submit a plan to Manitoba Hydro for monitoring release of effluent from settling pond(s) that will receive wastewater from aggregate washing and concrete processing.

4.10 Blasting, Drilling and Rock Excavation

Blasting is used to loosen or break up rocks for removal. It is used during the excavation of **bedrock.** Drilling and/or boring can be used to collect soil and rock samples, to position charges for blasting, and to facilitate grouting. These activities will be employed during construction of the spillway and powerhouse (permanent works) and construction of the channel modifications at the outlet of Wuskwatim Lake (permanent works).

Potential environmental impacts include: dust (air quality), **contaminant** spills, sedimentation, safety (workers, storage), fly rock and debris, noise and explosive detonation effects on people, structures, fish and wildlife.

The following section describes practices that will be followed to minimize potential impacts during drilling and blasting.

1(G). The blasting contractor must be in possession of all required permits/certificates. Notification will be given to all affected parties including site employees and the local general public prior to each blasting event. The Contractor shall submit a Blasting Plan to Manitoba Hydro prior to each blast.

2(G). Reference will be made to Department of Fisheries and Oceans document *"Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters" 1998*. Blasting plans will be submitted to DFO and Manitoba Conservation prior to commencement of blasting in areas that could affect fish habitat.

3(G). Storage facilities and personnel handling explosives shall be in accordance with regulations in the provincial Workplace Safety and Health Act. Also refer to Manitoba Hydro Safety Publication 0016/05 "Transportation, Storage and Handling of Explosives".

4(G). Blasting plans will reflect the appropriate timing of events as they relate to critical life functions of fish and wildlife species ie spawning, nesting, calving and migration. Therefore, to reduce impacts to birds and other wildlife, blasting activities should be restricted to outside the most sensitive breeding and brood rearing months (ie May to late-July) as much as possible.

5(G). Whenever possible, large charges will be divided into smaller multiple time-delayed charges.

6(G). Mitigation measures such as exclusion and removal of fish from the blasting area, noise generating devices and an installation of bubble/air curtains may need to be implemented. If fish are removed from the area, blasting will be carried out as soon as possible so they do not have time to return to the site.

7(G). Drilling sites will be clearly marked with flagging tape and the flagging tape will be removed at the completion of the work.

8(G). Transportation of explosives shall comply with the federal Explosives Act.

9(G). Blast rock will be stockpiled for subsequent use or disposed of on site.

10(G). Vehicles, machinery, and equipment shall be kept in good working condition and free of fluid leaks. Motorized equipment will be equipped with spark-retarders.

11(C). The aquatic consultant will provide the Resident Manager with reports of results from blasting monitoring during periods when DFO guidelines cannot be met. The Resident Manager will forward the reports to the appropriate regulatory authorities. (See the Aquatic Effects Monitoring Plan for more details)

12(D). Waste (e.g., empty fuel and lubricant containers) and debris must be removed from the site upon completion of the work.

13(D). In accordance with the blasting plans, site remediation will occur as soon as possible after the blast and where appropriate, surplus excavated soils will be disposed of at an approved designated site.

14(D). Excessive volumes of debris that enters a waterway as a result of blasting shall be removed prior to the completion of the blasting program.

4.11 Drainage, Erosion and Sedimentation Control

Protection of natural drainage is an important issue during all phases of the project. Erosion protection methods will be used for all construction activities and sedimentation control measures will be applied at eroding sites. Reference will be made to the detailed draft sediment management plan for the project.

Potential environmental impacts associated with drainage and erosion include bank slumping and sediment loading into waterways, entry of debris, fuels or chemicals into waterways, loss of fish or wildlife habitat, interference with navigable waterways and aesthetics.

The following section describes practices that will be followed to minimize impacts associated with drainage, erosion and sedimentation. Note: Other sections make reference to erosion and sedimentation control specific to construction activities.

1(G). Natural drainage shall be maintained where possible. Measures will be taken to maintain normal flows as well as, prevent erosion and ponding.

2(G). Whenever possible, drainage water from construction areas shall be diverted through a vegetated area prior to entering a waterbody.

3(G). Sedimentation control shall be provided in sloped work areas and work areas adjacent to waterbodies. Acceptable methods of sedimentation control include:

- granular or rock armouring
- straw mulching and seeding;
- erosion control blanket and seeding;
- straw bale containment dam;
- silt fence; and
- sandbags, logs, planks, etc.

4(G). Where such erosion and sedimentation control measures are employed, sites shall be monitored and maintained by the contractor who installs them and the AKO and the effectiveness of the measures documented. See the project Sediment Management Plans.

5(G). To minimize erosion, exposed slopes shall be revegetated as soon as possible, where necessary.

6(G). Wastewater resulting from washing vehicles or equipment shall not be discharged directly into waterways. Vehicles and equipment shall be cleaned at a location dedicated for that purpose.

7(G). If necessary to prevent erosion, ditches will be stabilized with bioengineering methods (including seeding) involving vegetation and/or granular materials.

8(G). Before the drainage water reaches a waterway it will be diverted through settling ponds, if possible.

9(G). Culverts will be installed to prevent ponding or infilling.

10(G). Long roadside ditches slopes may require check dams, or culvert crossings to divert water flows and reduce erosion potential.

11(G). Construction and quarry runoff shall be treated, as necessary, by a means such as a sedimentation basin prior to discharge into natural waterways.

12(G). Silt contaminated water shall be filtered through rock/granular containment or silt fences.

13(G). Fabric in silt fences shall not be removed until all site work has been completed, disturbed areas have been stabilized and the sediment has been removed from the fabric.

14(G). Materials used for culvert stabilization should be clean, non erodible and completely cover any erodible materials.

15(G). Instream work in the Burntwood River will be managed to minimize activity and total suspended sediment inputs to the extent practicable during periods when spawning/incubation of key fish species is occurring.

16(G). The AKO will monitor the discharge point for site drainage monthly during the open water season.

17(G). For localized, short term activities that involve only small quantities of sediment-laden water, such water may be discharged to the surface providing no adjacent waterbodies are present.

18(C). Appropriate erosion control methods will be applied at culverts.

19(C). Erosion protection measures will be implemented as soon as practical in the immediate vicinity of a permanent water source or near a designated fish habitat area.

20(D). After the site has been rehabilitated monitoring of water quality will occur to ensure the rehabilitation was effective.

4.12 Marshalling Yards

Marshalling yards are used for the temporary storage of materials, equipment and building structures. They are also used for staging materials for delivery to work sites, equipment assembly, servicing of vehicles and machinery and for work support services such as carpentry and welding.

Potential environmental impacts associated with marshalling yards can include hazardous materials spills, habitat disruption, contamination of waterways, erosion, invasion of plant species and disturbance to **permafrost**. Marshalling areas shall be located to minimize potential environmental impacts.

The following section describes practices that will be followed to minimize potential environmental impacts at marshalling yards.

1(G). All sites will be included under Manitoba Conservation work permits and be located at least 100 m (110 yds) from any waterway unless otherwise authorized by Manitoba Conservation.

2(G). Marshalling areas shall be located to minimize potential negative environmental impacts. Minimizing the area cleared will potentially reduce mitigation or reclamation costs, minimize wildlife habitat loss and decrease the potential for erosion. Preferred locations are natural openings that will not require additional clearing and minimize surface soil disruption. Salvage timber should be limbed, bucked and stacked near the site.

3(G). The Contractor will provide, during tendering and as required, site preparation, operating and remediation procedures as well as emergency action plans. Regular inspection of the yards for compliance with these procedures and plans will be conducted during the construction period.

4(G). Topsoil and organic materials shall be removed during site preparation and stockpiled to be redistributed over the disturbed area during decommissioning.

5(G). Marshalling yards shall be located if possible where soils have high weight bearing capacity and low permeability. Permafrost soils shall be avoided as they are susceptible to thawing and subsidence.

6(G). Low permeability soils are preferred storage sites for fuels, lubricants and chemicals to minimize the possibility of migration into the water table.

7(G). Vehicles will only be refueled in designated areas. Heavy equipment may be refueled at construction sites. Oil changes will only be permitted in specified areas. Spill containment equipment must be available at all refueling sites. Refer to the *Manitoba Provincial Dangerous Goods Handling and Transportation Act.*

8(G). For fire safety considerations, marshalling yards shall be kept free of grass and vegetation.

9(G). Fuelling of vehicles will take place in a designated section of the marshalling yard.

10(D). Hazardous materials, fuel containers and other materials shall be removed from the site.

11(D). Once the yard is no longer required, structures and fences will be dismantled and salvaged. Equipment, supplies and other goods stored on site will be removed to a new location.

12(D). Garbage and debris shall be removed from the site and disposed of in a licensed landfill.

13(D). A terrestrial ecologist shall provide regeneration prescriptions. Revegetation may be required in disturbed areas to:

- Stabilize erodible soils;
- Create or restore wildlife habitat;
- Prevent or delay the invasion of unwanted plant species; or
- Enhance or restore the aesthetic appeal of an area.

These sites will be specifically identified as requiring special treatment after construction and during decommissioning, otherwise natural revegetation will be allowed to reoccur.

4.13 Cofferdams, Dams and Dykes

Cofferdams are constructed within a river to divert water from in stream construction activities. Cofferdams are temporary structures constructed of rock and/or earth. Dams and dykes are permanent earth structures designed to impound water in the forebay. Impacts can include loss of fish habitat, loss of wildlife habitat, loss of forested areas, noise and vibration, aesthetics, contaminant spills and sedimentation.

The following section describes practices that will be followed to minimize potential impacts associated with cofferdams and dykes.

1(G). Vehicles, machinery and equipment must be kept in good working condition and free of significant fluid leaks.

2(G). Construction within or in the vicinity of the river will involve measures for the prevention of fuels, or other chemicals being released into the river.

3(G). During construction, measures will be taken to minimize sediments from being released into the river.

4(G). Removal of vegetation, damage to topsoil and root zone layers, and damage to riverbanks will be kept to a minimum.

5(G). To the extent possible, excavation will be completed in the dry.

6(G). Construction and removal of cofferdams can release deleterious substances into waterbodies. Mitigation methods are described in a Sediment Management Plan.

8(G). The rock plugs will be removed at the end of project construction in a manner that ensures sedimentation is minimized.

9(G). Wastewater resulting from washing vehicles or equipment shall not be discharged directly into waterways. Vehicles and equipment shall be cleaned at a location dedicated for that purpose.

10(C). The AKO will conduct an ongoing visual inspection during major construction events to document activities that cause a major increase in TSS. Mitigation measures will be implemented and reports will be made to the designated agencies

11(C). Water that is captured behind cofferdams when they are initially closed off (i.e., the initial dewatering) and that will subsequently be dewatered, will be monitored for TSS.

12(C) The contractor will submit a plan to Manitoba Hydro for monitoring discharge of the water that collects behind cofferdams (i.e., from seepage and precipitation).

13(C). The AKO will coordinate a salvage fishery during dewatering of the cofferdams.

14(C). Prior to release of water from the cofferdam area after initial closure of the cofferdam the water will be monitored for TSS.

15(C). Water that collects behind cofferdams (from seepage and precipitation) will be tested for TSS, PH, Oil and grease, BTEX and Total extractable and volatile hydrocarbons prior to release.

16(O). Vegetation on the dam or dyke will be removed by mechanical means, or by an approved herbicide. If herbicide is used, a permit must be obtained from Manitoba Conservation and the herbicide applied by a licensed applicator. Public notification must be provided regarding any spraying activities.

17(O). Salts will not be used for ice control for any roadways located on dykes.

18(O). Sediment removed from silt traps shall be prevented from being washed into natural waterways by spreading it on a vegetated area. Sediment will not be disposed of in a natural waterway.

19(D). Materials from the cofferdams will be removed and placed in the excavated material placement area or reused on the project site.

4.14 Primary Concrete Structures & Associated Superstructures

The construction of facility components such as the intake, powerhouse and spillway involves the construction of reinforced concrete structures and superstructures. Hand crews, assisted by cranes, are used to construct the formwork (timber or steel) needed to support the concrete. Reinforcing steel is placed within the area enclosed by the formwork, followed by concrete supplied from an on-site concrete mixing plant. The concrete will be delivered to the fabrication area by ready-mix trucks, conveyor belts, pumps, buggies or cranes with concrete buckets and placed within the formwork. Following placement and initial curing, some of the concrete faces are washed with high-pressure jets.

Potential environmental impacts include: dust (air quality), disturbance to wildlife and aquatic habitat, noise and vibration, aesthetics, contaminant spills and sedimentation, and safety (workers/storage).

1(G). Storage, mixing and placing of concrete and grouting will be undertaken in the contractor work area or within the cofferdam, or at least 100 m away from the river or tributary streams. Measures will be taken to ensure that no concrete or construction debris enters waterbodies.

2(G). Water from concrete green cutting and wash water will be confined within the cofferdam and pumped into areas where solids can be removed prior to entering the river or tributary streams. (i.e., sump pits, settling ponds or heavily vegetated areas).

3(G). Dust control measures must be employed as required.

4(G). Spoil/waste concrete must be disposed of at a suitable location or removed to an approved landfill.

5(D). Waste steel, aggregate debris and other construction waste will be removed from the site, or disposed of in an approved location, upon completion of work.

4.15 General Fish and Wildlife Protection

Many project activities can impact fish and wildlife. Habitat loss, disruption, introduction of exotic species and introduction of contaminants into the environment are potential environmental impacts. As a general rule, project participants (contractor and Manitoba Hydro employees) are prohibited from carrying firearms in vehicles on project worksites and facilities.

General specifications in the various contract documents will include the following, as appropriate:

1(G). Wildlife will not be fed or harassed. Project personnel will be prohibited from hunting, feeding or harassing wildlife (furbearers, big game, birds, fish), on the project site, designated access routes or borrow areas.

All measures related to monitoring and management of fish and wildlife species must be approved by the local NRO.

2(G). **Nuisance wildlife** will be immediately reported to the NRO.

3(G). Trees containing large nests of sticks and areas where active dens or burrows occur will be identified, left undisturbed and reported to the AKO. The AKO will contact the NRO who will determine appropriate **mitigation** for each case.

4(G). Beaver dams shall not be removed without consultation and approval by the NRO. Reference will be made to the DFO document "*Manitoba Operational Statement Habitat Management Program DFO Beaver Dam Removal*" found at http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/mb/index_e.htm. The AKO will record it's removal and any contact made by the NRO with the appropriate NCN trapline or permittee holder.

5(G). Blasting plans will reflect the appropriate timing of events as they relate to critical life functions of fish and wildlife species ie spawning, nesting, calving and migration. Therefore, to reduce impacts to birds and other wildlife, blasting activities should be restricted to outside the most sensitive breeding and brood rearing months (ie May to Late-July) as much as possible.

6(G). To reduce the possibility of vehicle and wildlife collisions vehicle speed will not exceed posted speed limits and wildlife warning signs will be installed where appropriate.

7(G). The AKO will report any wildlife killed or injured in collisions with vehicles to the Resident Manager.

8(G). Periodic monitoring for birds killed in collisions with the communication tower and other tall structures or electrical conductors may be required. See the Terrestrial Monitoring Plan for more details.

9(G). Wildlife is attracted to untidy campsites. Cleanliness, proper storage of food and garbage and common sense are the best avoidance practices.

4.16 Heritage Resources

Heritage resources are indicators of past human activities. They provide valuable information about past lifeways, are a link between past and present generations, and are the surviving tangible products of past culture. Culture can be described as the fabric of human existence and is the source of one's identity.

Heritage resources were an important component of the environmental impact assessment. The assessment considered a number of sources of information, including previous heritage resource surveys, predictive modeling, and preparatory research including a literature review. Field research was undertaken specifically for the Wuskwatim Project. These are described in Volume 9 of the Environmental Impact Statement. The assessment concluded:

> *"It is expected that most of the heritage resources in the central area of the development, the section of river between Wuskwatim Falls and Taskinigup Falls, have been previously impacted by CRD. Archaeological sites not discovered during the various archaeological surveys, or by the archaeological study team HRIA field study, may be present within the footprint of the generating station."*

General archaeological surveys have been conducted near the proposed Wuskwatim generating station site, at select borrow locations and along the right-of-way of the access road. However, additional heritage resources may only become evident during construction and operation of the Wuskwatim Project. Undiscovered sites may remain.

The Partnership has concluded that it is important to implement an *Aniskowatesewe Ketapahchikewe Othaschikekwin* (Heritage Resources Protection Plan) to achieve its commitment to protect heritage resources. Any human remains or heritage objects that may be found, discovered or disturbed during the development of the Wuskwatim Project will be treated in the manner set out in section 5.2 of the *Aniskowatesewe Ketapahchikewe Othaschikekwin* (Heritage Resources Protection Plan), which is consistent with the provisions and procedures outlined in Manitoba's "Policy Concerning the Reporting, Exhumation and Reburial of Found Human Remains" (1987) and with the *Heritage Resources Act*.

4.17 Non-Hazardous Waste Management and Recycling

Non-hazardous or conventional waste consists of either liquid or solid waste. Liquid waste includes gray water (wash water and kitchen water); or industrial wastewater from core drilling, concrete washing, wash water from aggregates, or other sediment loaded wash water streams. Solid waste includes inert inorganic materials such as rock, concrete, clay and granular materials; organic materials such as wood construction material and vegetation; or domestic garbage, such as paper, kitchen waste, packaging, etc.

Environmental concerns related to waste management practices arise from the storage, handling and disposal of waste associated with non-hazardous waste. This includes minimizing the amount of waste and proper disposal of waste.

The following section describes practices that will be followed to minimize impacts caused by non-hazardous waste.

1(G). Work sites shall be kept tidy at all times. Construction waste and sewage shall be collected for proper disposal. Domestic garbage shall be collected and disposed of regularly to minimize human/wildlife interaction. Domestic garbage shall be stored in containers with covers and shall be disposed of in a licensed landfill.

2(G). Procedures for burning waste materials shall follow Manitoba Conservation work permits.

3(G). Recycling programs will be developed for paper, cardboard, glass and plastic where feasible.

4(G). Opportunities for waste reduction, material reuse or recycling shall be identified and a program developed and implemented.

5(G). Food wastes will be stored in airtight containers and will be removed from the campsite at regular intervals to a licensed landfill site.

6(G) Non-reusable demolition and construction debris will be disposed of at a landfill site operating under a permit from the *Waste Disposal Ground Regulation, MR 150/91*, or an Environment Act License pursuant to the Environment Act.

7(O). Waste materials remaining at snow disposal sites after melting shall be disposed of at an approved landfill.

4.18 Hazardous Materials Storage/Disposal and Workplace Hazardous Material Information System (WHMIS)

Hazardous materials are any products that may be a hazard to human health, property or the environment. Hazardous materials include a variety of substances such as antifreeze, propane, solvents, and battery acid. WHMIS shall be implemented to ensure proper procedures are followed regarding the safe use, handling, storage and disposal of hazardous materials as well as procedures for emergency response.

Hazardous materials may be used throughout all phases of the project. Potential environmental impacts from hazardous materials could include health and safety issues and contamination of land and water.

The following section describes practices that shall be followed to minimize or eliminate hazards to people, property and the environment associated with hazardous materials.

1(G). All applicable laws, regulations and standards for the safe use, handling, storage and disposal of chemical products including hazardous waste as well as procedures for emergency conditions will be followed (e.g. *"Dangerous Goods Handling and Transportation Act"*, etc.).

2(G). In accordance with the "*Workplace Health Hazard Regulation (M.R. 53/88)"* an inventory of controlled products including hazardous waste will be maintained on site and updated as required by M.R. 53/88. A copy of all Material Safety Data Sheets (MSDS) will be readily available to employees.

3(G). Adherence to WHMIS requires proper labeling and current Materials Safety Data Sheets (MSDS) for chemical products. This includes an inventory list of controlled product(s) used, stored, handled or disposed of at the workplace. For more information refer to the Manitoba Hydro documents "*Workplace Hazardous Materials Information System (WHMIS) in Manitoba Hydro"*.

4(G). Contractors and relevant Manitoba Hydro employees must have WHMIS training in compliance with regulatory and Corporate policy requirements.

5(G). Hazardous materials will be stored within dedicated areas at work camps and marshalling yards in full compliance with regulatory requirements. Storage of hazardous materials must be located a minimum of 100 metres (110 yds) from a waterway.

6(G). Areas dedicated for hazardous material storage shall provide spill containment and facilitate clean up through measures such as:

- maximum separation from sensitive features (water bodies);
- clear identification of the materials present;
- access restricted to authorized personnel and vehicles only;
- bermed storage areas;
- dedicated spill response equipment.

7(G). Storage sites for petroleum products shall be secured and signs will be posted which include hazard warnings, who to contact in case of a spill, access restrictions and under whose authority the access is restricted will be posted.

8(G). If stored outside, containers shall be labeled and stored in weatherproof containers on spill containment pallets and under a weatherproof tarp. The contractor/spill response coordinator will monitor daily for leaks, and check to ensure that labels are still present and legible.

9(G). Indoor storage of flammable and combustible chemicals shall be in fire resistant and vented enclosed storage area or building in accordance with *"National Fire Code"* standards.

10(G). Containers shall be inspected for leaks and to ensure labels are still present and legible daily by the Contractors and weekly by Manitoba Hydro. A product inventory shall be maintained by the Contractor and retained for inspection upon request by Manitoba Hydro and Regulatory Authorities.

11(G). General clean-up in storage areas and sites will be undertaken in accordance with regulatory standards. If necessary soil will be remediated or disposed of in a manner approved by regulatory authorities.

12(G). Where possible, non-hazardous products will be used in place of hazardous products.

13(G). All hazardous materials will be transported according to the ***"Dangerous Goods Handling and Transportation Act".***

14(G). Hazardous wastes must be segregated by type.

15(O). Pesticide use shall be in accordance with *Manitoba Regulation 47/2004 and the* Manitoba Hydro document *"Pesticide Application Requirements for Manitoba Hydro Employees and Contractors"*. This document contains information on both health and safety and environmental protection. Any chemical vegetation control onsite will require approval by an Environment Officer.

16(D). Prior to disposal, hazardous materials shall be stored in a bermed area with an impervious liner to contain any spill or release of material. Storage sites shall be secured, and signs that include hazard warnings, who to contact in case of a release (spill), access restrictions and under whose authority the access is restricted will be posted. Manitoba Hydro and the Contractors will provide protective equipment; first aid kits and spill response kits appropriate for the hazardous waste at the sites.

17(D). Hazardous wastes shall be disposed of in accordance with Manitoba Hydro's "*Hazardous Materials Management Handbook*." See Appendix A Figure 1 for a summary of Corporate Waste Streams & Disposition.

18(G). General clean-up in storage areas and sites where releases occurred will be undertaken in accordance with regulatory standards. If necessary, soil will be remediated or disposed of in a manner approved by regulatory authorities.

4.19 Petroleum Products Handling and Storage

Petroleum products include products such as gasoline, diesel, heating oil, aviation fuel, grease, hydraulic fluids and new or used lubricating oil. Environmental impacts may result from spills or leaks and can include soil or groundwater contamination, fire, and surface water, fire, or workplace safety and health concerns.

The following section describes practices that will be followed to minimize impacts associated with petroleum products.

1(G). Petroleum products will be transported in accordance with the Manitoba "*Dangerous Goods Handling and Transportation Act*." A permit is required for handling and storage of fuel products and shall be obtained from Manitoba Conservation.

2(G). Petroleum products shall be labeled as to their contents and stored and handled within dedicated areas at marshalling yards in accordance with Manitoba Regulation 188/2001 respecting "*Storage and Handling of Petroleum Products and Allied Products*." Petroleum products storage and equipment servicing areas shall be located a minimum of 100 metres (110 yds) from a waterbody.

3(G). All new and existing underground and all aboveground tanks with a capacity greater than 5000 L shall be registered with Manitoba Conservation. New tanks must be registered before installation. Tanks shall be designed, installed, managed and operated in accordance with the "*Dangerous Goods Handling and Transportation Act"* and "*Manitoba Hydro Code of Practice for Storage and Handling of Petroleum Products and Allied Products Storage Tank Systems*."

4(G). Construction, installation or removal of petroleum product storage tank systems shall only occur under the supervision of a registered licensed petroleum technician.

5(G). Dedicated petroleum storage areas shall provide spill containment and facilitate clean up through measures such as:

- maximum separation from environmentally sensitive features (water bodies, permafrost, important habitat);
- clear identification of the materials present;
- access restricted to authorized vehicles only;
- impervious bermed storage areas;
- dedicated spill response equipment.

6(G). Storage sites for petroleum products shall be secured and signs including hazard warnings, who to contact in case of a spill, access restrictions and under whose authority the access is restricted will be posted.

7(G). All employees involved in the handling and storage of fuels and hazardous materials shall have WHMIS training.

8(G). Whenever possible, aboveground storage tanks shall be used for the storage of bulk petroleum products. The tanks shall be equipped with overfill protection and spill containment consisting of perimeter dykes or secondary containment in the tank design. If dykes are used, the containment areas shall be dewatered after a rainfall event and the containment water disposed of as specified by Manitoba Conservation. Product inventory shall be taken weekly by the owner/operator on all aboveground tanks greater than 5000 L and retained for inspection upon request.

9(G). All underground storage tanks will be provided with overfill protection devices and secondary containment, with remote monitoring devices to detect for leakage in the secondary containment structure. Product inventory shall be taken daily on underground tanks and retained for inspection upon request.

10(G). Bulk waste oil shall be stored in aboveground oil tanks, which shall have secondary containment and a weatherproof cover. Waste oil may be recycled by Manitoba Hydro or a reputable recycling agency. Waste oil shall never be used as a dust suppressant.

11(G). Petroleum product containers shall be inspected daily by the Contractors and weekly by Manitoba Hydro. Product inventory shall be taken daily and retained for inspection upon request by Manitoba Hydro and Regulatory Authorities.

12(G). The Manitoba Hydro Resident Manager shall designate on-site Emergency Spill Response Coordinators.

13(G). Materials required for spill containment and clean up shall be available at all sites where construction related activities occur. All vehicles hauling fuel shall carry materials and equipment for emergency spill containment.

14(G). Contractors shall prevent fuel, lubricants or compounds from being released. All empty containers from equipment refueling and servicing shall be removed to a licensed disposal site.

15(G). Contractors shall be thoroughly familiar with provincial/federal spill response compliance procedures and Manitoba Hydro's spill response procedure outlined in the "*Manitoba Hydro Hazardous Materials Management Handbook"* and adherence thereto must be a condition of their contracts.

16(G). At locations where stationary oil filled equipment is used, oil containment measures such as secondary containment shall be incorporated.

17(G). Documentation describing Manitoba Hydro's process for recycling waste oils and other materials shall be made accessible to contractors.

18(G). Fuel barrels will be securely fastened to vehicles during transport and if possible during refueling operations.

19(G). All petroleum product storage sites and mobile transportation units, will at all times be equipped with the appropriate categories of equipment and volumes of fire suppression products.

20(G). Maintenance (oil changes, repair of hydraulic hoses, etc.) will be carried out in designated areas, where possible, and as far away from waterbodies as possible.

21(D). Oil contaminated soils resulting from releases shall be remediated or disposed of in a manner approved by regulatory authorities.

4.20 Site Cleanup, Decommissioning & Rehabilitation

Site cleanup involves the removal or rehabilitation of debris, quarries, borrow pits, roads, work areas, chemicals, fuels, oils, buildings, fences, and equipment that are not required for operation of the generating station, after construction is complete. Potential impacts include soil and groundwater contamination, alteration of habitat, erosion, and aesthetics.

The following section describes practices that will be followed to minimize potential environmental impacts during site cleanup.

1(D). Sites will be inspected prior to decommissioning to document areas of staining, stressed vegetation, debris, etc. Soil and groundwater samples will be taken at suspect areas to delineate the extent of any contamination.

2(D). Where fuel or hazardous materials have been stored, or machinery repaired, soil testing may be required. Hazardous wastes will be disposed of as outlined in Manitoba Hydro's "*Hazardous Materials Management Handbook*."

3(D). Construction equipment, fencing, garbage, steel, concrete, etc. will be removed from the site for use elsewhere, or to an approved landfill. Material will not be disposed of in waterways.

4(D). Stockpiled organic material, topsoil, and subsoil originally removed from the site will be replaced, where appropriate.

5(D). Natural regeneration of abandoned sites will be considered, wherever possible.

6(D). The entrance to abandoned access roads will be suitably barricaded to prevent vehicle access.

7(D). Areas disturbed by project activities will be graded and any drainage obstructions, including culverts and crossings, will be removed.

8(D). In areas of high erosion risk, permanent erosion control measure or structures may be required.

9(D). Erosion control methods will be established and reseeding, mulching, rock stabilization, etc. may be required.

10(D). Ongoing visual inspection will be required to ensure adequate restoration and minimal environmental degradation.

11(D). Underground works such as septic tanks, sewage collection tanks, water tanks, heating oil tanks, and fuel tanks will be removed and disposed of in accordance with regulations.

12(D). Temporary underground concrete work will be removed. Deep concrete installations such as piles, etc., should be cut off at least 2.0 m below ground surface.

13(D). Pit privies will be backfilled with local material.

14(D). Chemical products will be transported to another storage site or disposed of in accordance with all applicable laws and regulations.

15(D). A post construction reclamation plan will be developed.

16(D). A risk assessment will be conducted at potentially contaminated sites. Prior to leaving the property, soil and groundwater at hazardous materials storage or petroleum storage tank locations will be analyzed for contamination. Depending on the risk for contamination this may require a thorough borehole installation and soil and groundwater-sampling program. Samples should be taken in accordance with Manitoba Conservation's "*Guideline for Environmental Site Investigations in Manitoba*." Contaminant parameters should be compared to Manitoba Conservation's remediation criteria for soil.

17(D). If required a remediation action plan will be developed for the treatment of soil contaminated to levels in excess of Manitoba Conservation's Guidelines. Remediation may involve the use of numerous on-site or *in-situ* technologies or the removal of contaminated soil to an approved facility. Prior to any remediation program, Manitoba Conservation representatives will be consulted for approval of the selected technology.

18(D). Concrete pads will be removed to an approved landfill site.

19(D). Garbage will be collected and disposed of to a licensed landfill before abandonment of the project site.

20(D). Soil/site preparation will be conducted if necessary for re-establishing vegetation. These activities may consist of scarification, grading and fertilizing.

4.21 Release and Emergency Response

Trained Manitoba Hydro employees will be assigned responsibility for environmental inspection and response team leadership, as described in the Hazardous Materials Release response plan developed for this project by the contractor. Basic and special emergency spill response equipment, as required, will be available on site and from standby sources. All equipment both mobile and stationary, requiring fuels and lubricants, is a potential source of low flow leakage of contaminants. In the event of a release, project management can obtain support and other equipment, if necessary, from the services of other Manitoba Hydro projects and facilities and external agencies such as the Manitoba Conservation, and the RCMP.

A safety officer will be employed during construction to ensure that Manitoba Hydro employees receive appropriate training and to supervise local emergency groups such as the fire brigade. The **Dam** Safety program identifies procedures to be followed in the unlikely event of a dam break.

The following section describes practices that will be followed to minimize potential impacts to the environment and people at project facilities and work sites in the event of a release or emergency.

1(G). The Manitoba Hydro document "*Hazardous Materials Management Handbook Part 1: Spill Response—General Guidelines"* outlines procedures for:

Identifying Hazards;
Protecting Yourself, Containing the Spill and Securing the site;
Notifying Agencies and Appropriate People;
Sampling and Analysis;
Clean-up; and
Shipping, Storage and Disposal

Contractors shall be aware of the above procedures and adherence thereto must be a condition of their contracts. See Appendix A Figure 2 for a summary flow chart of managing releases of dangerous goods and hazardous wastes.

2(G). Large volume releases of contaminants (oil, sewage, etc.) require mobilization of all available resources (equipment, trained workers, etc.). Internal reporting, appropriate regulatory agencies and affected public will be contacted immediately.

3(G). Emergency spill response kits (absorbents, fire extinguishers, etc.) will be conveniently located adjacent to petroleum and hazardous material storage facilities and at other project locations. Spill response equipment will be capable of containing and recovering a release from the largest containers, tanks, or equipment and be suitable for the site location (for example, spill containment booms adjacent to a waterbody).

4(G). **In the event of a release:**

- **the on-site Emergency Spill Response Coordinator shall be notified immediately and action will be taken to contain the fuel or chemical spill or remove ruptured containers in a manner described in the spill response plan by the most expedient means to a predetermined site.**

- **See Appendix A Figure 3 for Manitoba Hydro Release Reporting Protocol.**

- **if releases occur as a result of circumstances outside of normal work practices or the practice of due diligence, inform the Hazardous Materials Officer of the Manitoba Hydro Employee Safety and Health Department (204) 474-3259 or after hours (204) 799-3304.**

5(G). Manitoba Conservation's 24 Hour Emergency Response Line (Winnipeg (204)-944-4888), Environment Canada's 24 Hour Emergency Response Line (Winnipeg (204)-981-7111) and the NRO in Thompson (204) 677-6640 shall be notified if more than 100 litres (22 gals) of petroleum product are released or if any amount enters a waterway. Refer to the Manitoba Hydro document "*Hazardous Materials Management Handbook Part 1"* for complete notification procedures and incident report forms.

6(G). Selected other externally reportable releases include:

1. Oils & Lubricants: 100 litres/22 gals
2. Fuels: 100 litres/22 gals
3. Battery Acid: 5 litres/1 gal
4. Propane: any quantity that could pose a danger to public safety or a sustained 10 min release or 100 litres/22 gals

For a list of all reportable quantities for releases refer to MR 439/87 respecting Environmental Accident Reporting or Appendix A Figure 4 Reportable Quantities for Spills.

7(G). When reporting a release prepare a hazardous materials incident report. See Appendix A Figure 5 for an example.

8(G). Site clean-up and disposal of contaminated material shall be managed as directed by the Emergency Spill Response Coordinator in consultation with the NRO. The Manitoba Hydro Resident Manager or appointed designate shall be the on-site Emergency Spill Response Coordinator.

9(G). As part of the Dam Safety Program, emergency procedures will be written and followed in the case of dam failure.

10(G). Procedures for fire response are outlined in the Manitoba Hydro Document *"Fire Response Manual"*. The procedures apply to all personnel who work for Manitoba Hydro including consultant and contract representatives.

11(G) It shall be the responsibility of the construction manager to see that proper fire fighting practices are established and that adequate fire fighting equipment is installed and maintained in all buildings, vehicles and work areas. It shall be the responsibility of the fire marshal to see that all requirements and instructions are carried out and that crews are instructed and trained so that they are capable of taking the necessary precautions for the prevention of fire and for fire fighting if the need arises.

12(G) Fire extinguishers shall be mounted in locations where they will be most readily available. This is usually on the wall immediately inside a doorway. Care must be taken that the extinguisher is not located in such a position that the opening of the door would interfere with reaching the extinguisher.

13(G). Emergency response/evacuation procedures will be adhered to in case of forest fires.

4.22 Workplace Safety and Health

Workplace safety and health shall be the "first priority" and "most important goal" during the project. Employee health and safety and the protection of the general public from hazards are regulated and will be enforced.

The following guidelines will be used to ensure a safe work environment:

1(G). All workplace safety measures will be followed as per Government regulations, guidelines and codes of practice and Manitoba Hydro's Employee Safety and Health publications including the *"Corporate Occupational Safety and Health Rule Book"* 2003.

2(G). All activities will be undertaken in compliance with prevailing Safety and Health requirements. Workplace Safety & Health Committees will be established as required and safety meetings will be held as required. Manitoba Hydro employees will be instructed by the Resident Manager in all necessary special conditions associated with this project. These conditions will apply to both Manitoba Hydro and Contractor staff.

3(G). All project workers will receive regular safety training as required under legislation.

5.0 SITE SPECIFIC ENVIRONMENTAL PROTECTION AND MONITORING, TERRAIN SENSITIVITY AND MITIGATIVE MEASURES

Section 5 contains *guidelines* for Contractors, Field Inspectors and Equipment Operators. The following information emphasizes that environmental protection measures must be considered and the appropriate degree of caution taken for every activity and for all three levels of terrain sensitivity. They do not imply that clearing and construction activities may not proceed on project sites with potentially high (red colour designation on aerial photographs) sensitivity ratings. Local environmental conditions will be variable and in many cases unpredictable; therefore, final decisions regarding operating procedures will be made in the field.

Three broad categories of sensitivity have been assigned to terrain components found within the project area. Sensitivity ratings are based on the potential impacts to soils and landforms resulting from conventional clearing and construction methods. A colour code has been designated to illustrate the sensitivity ratings.

LOW :

Soil properties such as texture, structure, internal drainage and topographic expression can sustain mechanical clearing activities and repeated heavy machinery traffic. Vegetation communities associated with stable terrain types are resilient and will recover and maintain adequate ground cover. Permafrost is non-existent or at depths unlikely to be affected by clearing and traffic.

MODERATE :

Soil properties and vegetation communities are somewhat susceptible to disturbance and may require mitigative prescriptions that will avoid cumulative degradation over time. The ground cover associated with the less stable terrain types is moderately resilient and may require some form of prescribed rehabilitation. Permafrost is more widespread on the lower slopes and depressions.

HIGH :

Terrain types such as permafrost areas, stream courses and unstable slopes are highly sensitive to the passage of heavy machinery and if subjected to the total removal of vegetative cover, they are considered to be highly sensitive. Where the removal of ground cover is an unavoidable impact; selective clearing and retention of the shrub understory, if possible, is required to limit the extent of disturbance.

5.1 Stream Crossings

Class 1
Streams are categorized as Class 1 where the combined upstream drainage area is in excess of 30 km^2 (12 mi^2). Streams and rivers of this size most often exhibit perennial flow characteristics. Variability in seasonal flow and the maintenance of year-round flow are influenced by regional or local terrain and climatic conditions, depending on the size of the watershed. For example the Nelson River has a large watershed basin and year-round flow, in contrast some smaller waterways may cease to flow seasonally due to the influence of local terrain (retention in upstream **bogs**, drainage through porous soils) and climate (precipitation). Waterways of this size are likely to contain important feeding, **spawning** and **overwintering** habitat for resident fish populations.

Class 2
Streams are categorized as Class 2 at locations where the upstream drainage area is greater than 10 km^2 (4 mi^2) but less than 30 km^2 (12 mi^2). Depending on annual precipitation conditions, terrain type, and the presence and size of lakes, bogs and swamps which they drain or interconnect, these water courses may or may not flow throughout the open water period (May/June to November) at the crossing site. Streams of this size are frequently narrow (less than 5 m (16 ft) wide) but may be substantially wider at some sites. These streams are often capable of providing spawning habitat in spring, supporting summer populations of small fish species and providing suitable nursery habitat for juvenile fish, and possibly serving as migratory corridors for fish moving between or into lake or downstream river habitats during spring or fall.

Class 3
Streams are categorized as Class 3 at locations where the upstream drainage area is 10 km^2 (4 mi^2) or less. Streams of this size are generally ephemeral in nature, but have a capacity to support fish on a seasonal basis and particularly in their lower **reaches**. Depending on species present in the watershed and the nature of the substrate and hydrology, some of these stream sites may provide spring and early summer spawning habitat for fish. Depending on local terrain and precipitation conditions, they may cease to flow by mid-summer.

Buffer Zones
Buffer zones are required along waterways to protect riparian habitats (shorelines and streambanks). This protection is particularly important during spring and other periods when high water levels and ice will scour disturbed, cleared shorelines and carry heavy silt loads into downstream spawning areas causing severe habitat degradation. The buffer zone should therefore extend out from the waterbody at least as far as the zone of influence of the waterbody on vegetation and terrain; i.e. to include flood plains, bank slopes and associated vegetation growth. See the document *"Shorelines, Shorelands and Wetlands: A Guide to Riparian Ecosystem Protection at Manitoba Hydro Facilities"* for more detail on buffer zones and riparian areas.

5.2 Lakes/Ponds (Permanent Standing Water)

As with rivers and streams, the objective is not only to protect water quality and fish and **waterfowl** habitat in lakes and ponds but to maintain a buffer zone to guard against unnecessary disturbances to riparian ecosystems.

Environmental protection criteria for lakes and ponds include, but are not limited to:

- Non-degradation of surface and groundwater quality - this applies equally to lakes with flow through as well as confined catchments that don't appear to support fish.

- Prevention of erosion in riparian areas that could result in siltation and turbidity in waterbodies.

- Maintenance of waterfowl habitat and minimization of barriers to waterfowl use of a waterbody - minimal disturbance to natural vegetation will ensure continued cover for nesting and brood rearing.

- Maintenance of aesthetics - open water bodies offer broad sight lines and any change to the natural appearance should be minimized in areas of recreational importance and areas of traditional human use.

5.3 Ecologically Sensitive Sites

Ecologically sensitive sites are those that contain regionally uncommon to rare habitat types, habitat types with low resilience to disturbance, habitat types with low resilience to indirect effects (e.g., altered soil temperature or drainage) or high potential to support rare plant species.

Ecologically sensitive sites in the Project area include those containing:

- Jack pine forest on dry soils;
- White spruce concentrations;
- Balsam fir concentrations;
- **Excess ice** in organic soil horizons;
- Provincially or regionally rare plant species;
- Plants with low competitive ability;
- Vegetation complexes or plant species maintained by natural environmental extremes (e.g., high or low fertility);
- Rich fen vegetation;

Environmental protection criteria for ecologically sensitive sites include, but are not limited to:

- Ensuring that qualified personnel clearly mark these sites well in advance of project activities;
- Avoiding these sites wherever feasible;
- Minimizing disturbance of these sites where avoidance is not feasible;
- Minimizing alterations to natural drainage, groundwater levels and sub-surface flows in these sites and adjacent areas;
- Minimizing alterations to soil temperature in these sites and adjacent areas;
- Minimizing the risk of accidental fire starts;
- Minimizing the risk of invasive or non-native plant introductions or expansions.

5.4 Site Specific Environmental Protection Plans

INTRODUCTION

Manitoba Hydro is planning to construct a Construction Camp and associated facilities required for the construction of a generating station at Taskinigup Falls. Prior to the clearing and construction activities a self-evaluation program was implemented by Manitoba Hydro. An environmental protection plan has been prepared to describe the terrain types in the pre-selected area, to identify environmentally sensitive ecosystems and to prescribe mitigating measures in order to minimize any harmful impacts of construction and traffic while constructing the campsite and associated facilities.

METHODOLOGY

Aerial photos acquired by Manitoba Hydro in 1985, (scale 1:20 000) and Forest Inventory photos obtained in 1989, (scale 1:15, 840), were interpreted to delineate recurring patterns of various mineral and organic terrain that occur along the proposed alignment. Terrestrial ecosection attributes such as upland and lowland soil types, textures, drainage, presence of permafrost, slope and relief classes were classified by applying an ecological land classification system.

Detailed terrain analysis highlights the ecosystems that may be impacted by clearing and construction activities. Photo-interpreted ecosection polygons were heads-up digitized using the Manitoba Hydro orthophotos as the base map. Detailed descriptions of the ecosite and ecosections are included in the report text, (pages 62). Environmental sensitivity ratings for the ecosection polygons are displayed as colored dots on the graphics. Sensitivities are categorized as:

High Sensitivity – Red
Moderate Sensitivity – Yellow
Low Sensitivity – Green

UPLAND MAP SYMBOL CATEGORIES & DEFINITIONS

The **upland ecosite** symbols annotated on the aerial photos are abbreviated as follows:

RELIEF	SLOPE	SOIL TEXTURE	LANDFORM	TOPOGRAPHY
(Meters)	(Percent)	(Mineral Soils)	(Category)	(Surface Expression)
a - 0 to 2	1 - 0 to 5	c - clay	L - Lacustrine	b - blanket
b - 3 to 5	2 - 6 to 15	l - loamy	G - Glaciofluvial	a - apron
c - 6 to 20	3 -16 to 30	s - sandy	R - Bedrock	r - ridged
d - 21 to 50	4 -32 to 60	ss-skeletal	(sand and gravel)	h- hummocky

LOWLAND MAP SYMBOL CATEGORIES and DEFINITIONS

The **lowland ecosite** symbols annotated on the aerial photos are abbreviated as follows:

RELIEF	SLOPE	SOIL TEXTURE	LANDFORM	TOPOGRAPHY
(Meters)	(Percent)	(Organic Soils)	(Category)	(Surface Expressions)
a – 0 to 2	1 – 0 to 5	fibric	B – Bog	v - veneer
b – 3 to 5	2 – 6 to 15	mesic		t – plateau
		humic	F – Fen	h – horizontal
				c – collapse
				s – stream

ECOSECTION: c.3 cLv4 cLb3 aRhr3 Environmental Sensitivity: Low 1

Relief Class: c - 6 to 20 meters **Slope Class: 3** 16 - 30% strongly sloping to hummocky

Ecosite: cLv4 – Clay Lacustrine veneer 40% (located on the apex and upper slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of moderately well drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Veneer: A mantle of clay and silt varves (layers), generally less than 1m thick that reveals the underlying bedrock.

Ecosite: cLb3 –Clay Lacustrine blanket 30% (located on the upper, mid & lower slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of imperfectly drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosite: aRhr3 – Acidic (Precambrian) Bedrock hummocky 30% (located on the apexes).
Acidic: Igneous intrusive or extrusive bedrock having more than 66% silicon oxide.
Bedrock: A general term for the rock, usually solid, that is exposed or underlies surficial mineral or organic soil material.
Hummocky: Terrain having a broken, irregular surface with distinct knobs or mounds and depressions.
Ridged: Terrain having exposed bedrock ridges.

Ecosection Description: This recurring pattern of landforms, soils and vegetation consisting of clay Lacustrine veneer and blanket and acidic Bedrock hummocks and ridges is characterized by very well to imperfectly drained, gently undulating to moderately sloping topography. The upland protection forest cover on the exposed bedrock is usually comprised of scattered, mature and immature jack pine and white birch. Shrub cover consists of clumps of alder and clusters of bearberry while the ground cover is mainly patches of lichens and mixed mosses. The heavier clay sediments on the mid and lower slopes support healthy stands of pure black spruce, white spruce and trembling aspen in pure or mixed stands. The shrub cover may be alder, wild rose and twinflower and the ground cover is usually a continuous carpet of feathermosses.

Mitigative Measures: Machine clearing is permissible throughout the seasonally frozen clay Lacustrine blanket and veneer during the winter months. The ground vegetation on the exposed bedrock is more fragile and less resilient where there are thin pockets of loamy soil and needs to be protected by lifting the dozer blade to avoid completely scalping the lichens and mosses. Culverts should be installed to avoid impeding any surface flow along the lower slopes of the clay sediments.

ECOSECTION: c.2 cLb 3 cLv2 aRh3 Bv2 Environmental Sensitivity: Low 2

Relief Class: c - 6 to 20 meters **Slope Class: 2** 6 - 15% gently to moderately sloping

Ecosite: cLb3 –Clay Lacustrine blanket 30% (located on the upper, mid & lower slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of imperfectly drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosite: cLv2 – Clay Lacustrine veneer 20% (located on the apex and upper slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of moderately well drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Veneer: A mantle of clay and silt varves (layers), generally less than 1m thick that reveals the underlying bedrock.

Ecosite: aRh3 – Acidic (Precambrian) Bedrock hummocky 30% (located on the apexes).
Acidic: Igneous intrusive or extrusive bedrock having more than 66% silicon oxide.
Bedrock: A general term for the rock, usually solid, that is exposed or underlies surficial mineral or organic soil material.
Hummocky: Terrain having a broken, irregular surface with distinct knobs or mounds and depressions.

Ecosite: Bv2- Bog veneer 20% (located on the mid and lower slopes)
Bog: Poorly drained sphagnum or forest peat materials accumulated over thousands of years in a wet, nutrient deficient, (ombrotrophic), environment. Near the surface, the organic materials are usually undecomposed (fibric); the middle layers are partially decomposed, (mesic), and the bottom layers are well decomposed, (humic), peat. Localized permafrost may occur bordering the runnels (intermittent drainage channels) where tree growth is denser.
Veneer: - An extensive area of thin, (>0.25 to <1 m.), organic material overlying, clay lacustrine sediments. Minor runnels, form a dendritic pattern draining the organic terrain.

Ecosection Description: This recurring pattern of landforms, soils and vegetation consisting of clay Lacustrine blanket and veneer, acidic Bedrock hummocks and veneer Bog is characterized by very well and imperfectly to poorly drained, gently undulating to moderately sloping topography. The upland protection forest cover on the exposed bedrock is usually comprised of scattered, mature and immature jack pine and white birch. Shrub cover consists of clumps of alder and clusters of bearberry while the ground cover is mainly patches of lichens and mixed mosses. The heavier clay sediments on the mid and lower slopes support healthy stands of pure black spruce, white spruce and trembling aspen in pure or mixed stands. The shrub cover may be alder, wild rose and twinflower and the ground cover is usually a continuous carpet of feathermosses. The lowland forest cover is predominantly stunted black spruce and scattered tamarack associated with a dense shrub layer of ericaceous shrubs including Labrador tea, bog rosemary, bog laurel and leatherleaf and a heavy ground carpet of sphagnum and feathermosses.

Mitigative Measures: Machine clearing is permissible throughout the seasonally frozen clay Lacustrine blanket and veneer and sandy Glaciofluvial components during the winter months. The ground vegetation on the exposed bedrock is more fragile and less resilient where there are thin pockets of loamy soil and needs to be protected by lifting the dozer blade to avoid completely scalping the lichens and mosses. Culverts should be installed to avoid impeding any surface flow along the lower slopes of the clay sediments.

ECOSECTION: b.2 cLb4 cLv2 Bv3 Bt1 Environmental Sensitivity: Low 3

Relief Class: b – 3 to 5 meters **Slope Class: 2** – 6 to 15% gently to moderately sloping

Ecosite: cLb4 – Clay Lacustrine blanket 40% (located on mid and upper slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of moderately well drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosite: cLv2 – Clay Lacustrine veneer 20% (located on the apex and upper slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of moderately well drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Veneer: A mantle of clay and silt varves (layers), generally less than 1m thick that reveals the underlying bedrock.

Ecosite: Bv3- Bog veneer 30% (located on the mid and lower slopes)
Bog: Poorly drained sphagnum or forest peat materials accumulated over thousands of years in a wet, nutrient deficient, (ombrotrophic) environment. Near the surface, the orga nic materials are usually undecomposed (fibric); the middle layers are partially decomposed, (mesic), and the bottom layers are well decomposed, (humic) peat. Localized permafrost may occur bordering the runnels (intermittent drainage to channels) where tree growth is denser.
Veneer: An extensive area of thin (>0.25 to <1 m.), organic material overlying, clay lacustrine sediments. Minor runnels, form a dendritic pattern draining the organic terrain.

Ecosite: Bt1 – Peat plateau 10% (located in level, poorly drained depressions).
Peat plateau: Peat plateaus are associated with permafrost and their elevated height (approx. 1 m.) above the surrounding wetlands is primarily due to ice lens formation in the frozen core. Their sizes vary from several hectares to tens of hectares. Sphagnum and forest peat materials are formed over thousands of years in a wet, ombrotrophic (nutrient deficient) environment. The dense tree, shrub and ground cover maintains the permafrost table, found 0.5 m. below the surface, by providing ample seasonal insolation.

Ecosection Description: This recurring pattern of landforms, soils and vegetation consisting of clay Lacustrine blanket and veneer, Bog veneer and peat plateaus is characterized by moderately well and imperfectly to poorly drained, gently undulating to moderately sloping topography. The upland forest cover usually comprises black spruce, white spruce and trembling aspen in pure or mixed stands. The shrub cover may be alder, wild rose and twin flower and the ground cover is usually a continuous carpet of feathermosses. The lowland forest cover is predominantly stunted black spruce and scattered tamarack associated with a dense shrub layer of ericaceous shrubs including Labrador tea, bog rosemary, bog laurel and leatherleaf and a heavy ground carpet of sphagnum and feathermosses. The elevated, nearly level peat plateaus have a frozen permafrost core and occupy the depressions. The protective forest cover is dense black spruce with shrub cover consisting of Labrador tea, ericaceous shrubs including appleberry and the ground cover is dominantly sphagnum moss and bog cranberry.

Mitigative Measures: Machine clearing is permissible through the seasonally frozen clay Lacustrine blanket and veneer and Bog veneer components during the winter months. However, since the minor drainage channels (runnels) may possess permafrost, it is advisable to hand clear the tree cover along the edges of the runnels and leave the moss layer undisturbed by raising the dozer blade to avoid scouring the peat surface. If the route is being developed into an all weather road, culverts should be installed to avoid impending subsurface lateral flow.

Selective clearing is obligatory in the Peat plateaus to protect and maintain the permafrost table. Leave the shrub and ground cover relatively undisturbed by raising the dozer blade when clearing the route. Culverts should be installed at the runnel locations to avoid impeding subsurface lateral flow.

ECOSECTION: c.2 cLb4 cLv2 aRh2 Bv2 Environmental Sensitivity: Low 4

Relief Class: c - 6 to 20 meters **Slope Class: 2** 6 - 15% gently to moderately sloping

Ecosite: cLb4 –Clay Lacustrine blanket 40% (located on the upper, mid & lower slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of imperfectly drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosite: cLv2 – Clay Lacustrine veneer 20% (located on the apex and upper slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of moderately well drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Veneer: A mantle of clay and silt varves (layers), generally less than 1m thick that reveals the underlying bedrock.

Ecosite: aRh2 – Acidic (Precambrian) Bedrock hummocky 20% (located on the apexes).
Acidic: Igneous intrusive or extrusive bedrock having more than 66% silicon oxide.
Bedrock: A general term for the rock, usually solid, that is exposed or underlies surficial mineral or organic soil material.
Hummocky: Terrain having a broken, irregular surface with distinct knobs or mounds and depressions.

Ecosite: Bv2- Bog veneer 20% (located on the mid and lower slopes)
Bog: Poorly drained sphagnum or forest peat materials accumulated over thousands of years in a wet, nutrient deficient, (ombrotrophic), environment. Near the surface, the organic materials are usually undecomposed (fibric); the middle layers are partially decomposed, (mesic), and the bottom layers are well decomposed, (humic), peat. Localized permafrost may occur bordering the runnels (intermittent drainage channels) where tree growth is denser.
Veneer: - An extensive area of thin, (>0.25 to <1 m.), organic material overlying, clay lacustrine sediments. Minor runnels, form a dendritic pattern draining the organic terrain.

Ecosection Description: This recurring pattern of landforms, soils and vegetation consisting of clay Lacustrine blanket and veneer, acidic Bedrock hummocks and veneer Bog is characterized by very well and imperfectly to poorly drained, gently undulating to moderately sloping topography. The upland protection forest cover on the exposed bedrock is usually comprised of scattered, mature and immature jack pine and white birch. Shrub cover consists of clumps of alder and clusters of bearberry while the ground cover is mainly patches of lichens and mixed mosses. The heavier clay sediments on the mid and lower slopes support healthy stands of pure black spruce, white spruce and trembling aspen in pure or mixed stands. The shrub cover may be alder, wild rose and twinflower and the ground cover is usually a continuous carpet of feathermosses. The lowland forest cover is predominantly stunted black spruce and scattered tamarack associated with a dense shrub layer of ericaceous shrubs including Labrador tea, bog rosemary, bog laurel and leatherleaf and a heavy ground carpet of sphagnum and feathermosses.

Mitigative Measures: Machine clearing is permissible throughout the seasonally frozen clay Lacustrine blanket and veneer and sandy Glaciofluvial components during the winter months. The ground vegetation on the exposed bedrock is more fragile and less resilient where there are thin pockets of loamy soil and needs to be protected by lifting the dozer blade to avoid completely scalping the lichens and mosses. Culverts should be installed to avoid impeding any surface flow along the lower slopes of the clay sediments.

ECOSECTION: b.2 cLb6 Bv4 **Environmental Sensitivity: Low** 5

Relief Class: b – 3 to 5 meters **Slope Class: 2** – 6 to 15% gently to moderately sloping

Ecosite: cLb6 – Clay Lacustrine blanket 60% (located on mid and upper slopes).

Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.

Lacustrine: Sediments generally consisting of moderately well drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.

Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosite: Bv4- Bog veneer 40% (located on the mid and lower slopes)

Bog: Poorly drained sphagnum or forest peat materials accumulated over thousands of years in a wet, nutrient deficient, (ombrotrophic) environment. Near the surface, the organic materials are usually undecomposed (fibric); the middle layers are partially decomposed, (mesic), and the bottom layers are well decomposed, (humic) peat. Localized permafrost may occur bordering the runnels (intermittent drainage to channels) where tree growth is denser.

Veneer: An extensive area of thin (>0.25 to <1 m.), organic material overlying, clay lacustrine sediments. Minor runnels, form a dendritic pattern draining the organic terrain.

Ecosection Description: This recurring pattern of landforms, soils and vegetation consisting of clay Lacustrine blanket and Bog veneer is characterized by moderately well and imperfectly to poorly drained, gently undulating to moderately sloping topography. The upland forest cover usually comprises black spruce, white spruce and trembling aspen in pure or mixed stands. The shrub cover may be alder, wild rose and twin flower and the ground cover is usually a continuous carpet of feathermosses. The lowland forest cover is predominantly stunted black spruce and scattered tamarack associated with a dense shrub layer of ericaceous shrubs including Labrador tea, bog rosemary, bog laurel and leatherleaf and a heavy ground carpet of sphagnum and feathermosses.

Mitigative Measures: Machine clearing is permissible through the seasonally frozen clay Lacustrine blanket and Bog veneer components during the winter months. However, since the minor drainage channels (runnels) may possess permafrost, it is advisable to hand clear the tree cover along the edges of the runnels and leave the moss layer undisturbed by raising the dozer blade to avoid scouring the peat surface. If the route is being developed into an all weather road, culverts should be installed to avoid impending subsurface lateral flow.

ECOSECTION: c.3 cLb4 cLv2 aRh 2 Bv2 Environmental Sensitivity: Low 6

Relief Class: c - 6 to 20 meters **Slope Class: 3** 16 - 30% strongly sloping to hummocky

Ecosite: cLb4 –Clay Lacustrine blanket 40% (located on the upper, mid & lower slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of imperfectly drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosite: cLv2 – Clay Lacustrine veneer 20% (located on the apex and upper slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of moderately well drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Veneer: A mantle of clay and silt varves (layers), generally less than 1m thick that reveals the underlying bedrock.

Ecosite: aRh2 – Acidic (Precambrian) Bedrock hummocky 20% (located on the apexes).
Acidic: Igneous intrusive or extrusive bedrock having more than 66% silicon oxide.
Bedrock: A general term for the rock, usually solid, that is exposed or underlies surficial mineral or organic soil material.
Hummocky: Terrain having a broken, irregular surface with distinct knobs or mounds and depressions.

Ecosite: Bv2- Bog veneer 20% (located on the mid and lower slopes)
Bog: Poorly drained sphagnum or forest peat materials accumulated over thousands of years in a wet, nutrient deficient, (ombrotrophic), environment. Near the surface, the organic materials are usually undecomposed (fibric); the middle layers are partially decomposed, (mesic), and the bottom layers are well decomposed, (humic), peat. Localized permafrost may occur bordering the runnels (intermittent drainage channels) where tree growth is denser.
Veneer: - An extensive area of thin, (>0.25 to <1 m.), organic material overlying, clay lacustrine sediments. Minor runnels, form a dendritic pattern draining the organic terrain.

Ecosection Description: This recurring pattern of landforms, soils and vegetation consisting of clay Lacustrine blanket and veneer, acidic Bedrock hummocks and veneer Bog is characterized by very well and imperfectly to poorly drained, gently undulating to moderately sloping topography. The upland protection forest cover on the exposed bedrock is usually comprised of scattered, mature and immature jack pine and white birch. Shrub cover consists of clumps of alder and clusters of bearberry while the ground cover is mainly patches of lichens and mixed mosses. The heavier clay sediments on the mid and lower slopes support healthy stands of pure black spruce, white spruce and trembling aspen in pure or mixed stands. The shrub cover may be alder, wild rose and twinflower and the ground cover is usually a continuous carpet of feathermosses. The lowland forest cover is predominantly stunted black spruce and scattered tamarack associated with a dense shrub layer of ericaceous shrubs including Labrador tea, bog rosemary, bog laurel and leatherleaf and a heavy ground carpet of sphagnum and feathermosses.

Mitigative Measures: Machine clearing is permissible throughout the seasonally frozen clay Lacustrine blanket and veneer and sandy Glaciofluvial components during the winter months. The ground vegetation on the exposed bedrock is more fragile and less resilient where there are thin pockets of loamy soil and needs to be protected by lifting the dozer blade to avoid completely scalping the lichens and mosses. Culverts should be installed to avoid impeding any surface flow along the lower slopes of the clay sediments.

ECOSECTION: c.2 cLb4 cLv2 aRh2 Bv2 Environmental Sensitivity: Low 7

Relief Class: c - 6 to 20 meters **Slope Class: 2 6** - 15% gently to moderately sloping

Ecosite: cLb4 –Clay Lacustrine blanket 40% (located on the upper, mid & lower slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of imperfectly drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosite: cLv2 – Clay Lacustrine veneer 20% (located on the apex and upper slopes).
Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.
Lacustrine: Sediments generally consisting of moderately well drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.
Veneer: A mantle of clay and silt varves (layers), generally less than 1m thick that reveals the underlying bedrock.

Ecosite: aRh2 – Acidic (Precambrian) Bedrock hummocky 20% (located on the apexes).
Acidic: Igneous intrusive or extrusive bedrock having more than 66% silicon oxide.
Bedrock: A general term for the rock, usually solid, that is exposed or underlies surficial mineral or organic soil material.
Hummocky: Terrain having a broken, irregular surface with distinct knobs or mounds and depressions.

Ecosite: Bv2- Bog veneer 20% (located on the mid and lower slopes)
Bog: Poorly drained sphagnum or forest peat materials accumulated over thousands of years in a wet, nutrient deficient, (ombrotrophic), environment. Near the surface, the organic materials are usually undecomposed (fibric); the middle layers are partially decomposed, (mesic), and the bottom layers are well decomposed, (humic), peat. Localized permafrost may occur bordering the runnels (intermittent drainage channels) where tree growth is denser.
Veneer: - An extensive area of thin, (>0.25 to <1 m.), organic material overlying, clay lacustrine sediments. Minor runnels, form a dendritic pattern draining the organic terrain.

Ecosection Description: This recurring pattern of landforms, soils and vegetation consisting of clay Lacustrine blanket and veneer, acidic Bedrock hummocks and veneer Bog is characterized by very well and imperfectly to poorly drained, gently undulating to moderately sloping topography. The upland protection forest cover on the exposed bedrock is usually comprised of scattered, mature and immature jack pine and white birch. Shrub cover consists of clumps of alder and clusters of bearberry while the ground cover is mainly patches of lichens and mixed mosses. The heavier clay sediments on the mid and lower slopes support healthy stands of pure black spruce, white spruce and trembling aspen in pure or mixed stands. The shrub cover may be alder, wild rose and twinflower and the ground cover is usually a continuous carpet of feathermosses. The lowland forest cover is predominantly stunted black spruce and scattered tamarack associated with a dense shrub layer of ericaceous shrubs including Labrador tea, bog rosemary, bog laurel and leatherleaf and a heavy ground carpet of sphagnum and feathermosses.

Mitigative Measures: Machine clearing is permissible throughout the seasonally frozen clay Lacustrine blanket and veneer and sandy Glaciofluvial components during the winter months. The ground vegetation on the exposed bedrock is more fragile and less resilient where there are thin pockets of loamy soil and needs to be protected by lifting the dozer blade to avoid completely scalping the lichens and mosses. Culverts should be installed to avoid impeding any surface flow along the lower slopes of the clay sediments.

ECOSECTION: a.1 Bt4 Fh2 Fc1 cLb3 Environmental Sensitivity: Mod 8

Relief Class: a - 0 to 2 meters **Slope Class: 1** 1- 5% nearly level to very gently sloping.

Ecosite: Bt4- Peat plateau 40% (located in level, poorly drained depressions).

Peat plateau: Peat plateaus are associated with permafrost and their elevated height (approx. 1 m.) above the surrounding wetlands is primarily due to ice lens formation in the frozen core. Their sizes vary from several hectares to tens of hectares. Sphagnum and forest peat materials are formed over thousands of years in a wet, ombrotrophic (nutrient deficient) environment. The dense tree, shrub and ground cover maintains the permafrost table, found 0.5 m. below the surface, by providing ample seasonal insolation.

Ecosite: Fh2- Fen collapse 20% (located in the level saturated depressions).

Fen horizontal: A fen is a peat-filled, flat, low lying, extensive area with a high water table. The organic materials are deep (2 to 3 meters), well (humic), to moderately decomposed (mesic), sedge peat. Fens are mainly rich in nutrients (minerotrophic) that are derived from the surrounding upland mineral soils.

Ecosite: Fc1- Fen collapse 10% (located in the level, saturated depressions).

Fen collapse: These collapse scars have developed as a result of melting permafrost in or along the perimeter of peat plateaus. The collapse portion of the organic landform has a high water table and the collapsing edge may form a steep bank. It is speculated that the weight of the biomass causes the permafrost to deteriorate and commence melting.

Ecosite: cLb3– Clay Lacustrine blanket 30% (located on the upper, mid & lower slopes).

Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.

Lacustrine: Sediments generally consisting of imperfectly drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.

Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosection Description: The elevated peat plateaus have a frozen permafrost core and are slightly raised above the adjoining saturated wetlands. The protective forest cover is dense black spruce with shrub cover consisting of Labrador tea, ericaceous shrubs including appleberry and ground cover consisting of sphagnum mosses and bog cranberry. The treeless horizontal fens are saturated, sedge filled depressions that may support a sparse shrub cover of leatherleaf, bog rosemary and bog laurel and dense ground cover of sedges, grasses and reeds. The collapse scars are occupied by scattered black spruce regeneration, ericaceous shrubs, sphagnum mosses and cotton grass.

Mitigative Measures: Selective clearing is obligatory in the Peat plateau to protect and maintain the permafrost table. Leave the shrub and ground cover relatively undisturbed by raising the dozer blade when clearing the route. Since the fen surfaces in the winter are mainly ice, any shrub growth should be retained by lifting the dozer blade to avoid sheering off the sparse cover. The collapse scar surfaces should also be protected by lifting the dozer blade while clearing the route. Culverts should be installed frequently in the fens to avoid impeding sub-surface lateral flow.

Machine clearing is permissible through the seasonally frozen clay Lacustrine blanket component during the winter months. However, since the minor drainage channels (runnels) may possess permafrost, it is advisable to hand clear the tree cover along the edges of the runnels and leave the moss layer undisturbed by raising the dozer blade to avoid scouring the peat surface. Culverts should be installed to avoid impeding subsurface lateral flow.

ECOSECTION: b. 2 Bv6 cLb3 Bt1 Environmental Sensitivity: Mod 9

Relief Class: b - 3 to 5 meters **Slope Class: 2** 6- 15% gently to moderate sloping.

Ecosite: Bv6 – Bog veneer 60% (located on the mid and lower slopes)

Bog: Poorly drained sphagnum or forest peat materials accumulated over thousands of years in a wet, nutrient deficient, (ombrotrophic) environment. Near the surface, the organic materials are usually undecomposed (fibric); the middle layers are partially decomposed, (mesic), and the bottom layers are well decomposed, (humic), peat. Localized permafrost may occur bordering the runnels (intermittent drainage channels) where tree growth is denser.

Veneer: An extensive area of thin (>0.25 to <1 m.), organic material overlying, clay lacustrine sediments. Minor runnels, form a dendritic pattern draining the organic terrain.

Ecosite: cLb3–Clay Lacustrine blanket 30% (located on the upper, mid & lower slopes).

Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.

Lacustrine: Sediments generally consisting of imperfectly drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.

Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosite: Bt1 – Peat plateau 10% (located in level, poorly drained depressions).

Peat plateau: Peat plateaus are associated with permafrost and their elevated height (approx. 1 m.) above the surrounding wetlands is primarily due to ice lens formation in the frozen core. Their sizes vary from several hectares to tens of hectares. Sphagnum and forest peat materials are formed over thousands of years in a wet, ombrotrophic (nutrient deficient) environment. The dense tree, shrub and ground cover maintains the permafrost table, found 0.5 m. below the surface, by providing ample seasonal insolation.

Ecosection Description: The bog veneer forest cover is predominantly stunted black spruce and scattered tamarack associated with a dense shrub layer of ericaceous shrubs including Labrador tea, bog rosemary, bog laurel and leatherleaf and a heavy ground carpet of sphagnum and feathermosses. The elevated, nearly level peat plateaus have a frozen permafrost core and occupy the depressions. The protective forest cover is dense black spruce with shrub cover consisting of Labrador tea, ericaceous shrubs including appleberry and the ground cover is dominantly sphagnum moss and bog cranberry.

Mitigative Measures: Machine clearing is allowed through the bog veneer component during the winter months. However, since the minor drainage channels (runnels) may possess permafrost, it is advisable to hand clear the tree cover along the edges of the runnels and leave the moss layer undisturbed by raising the dozer blade to avoid scouring the peat surface. Selective clearing is obligatory in the Peat plateaus to protect and maintain the permafrost table. Leave the shrub and ground cover relatively undisturbed by raising the dozer blade when clearing the route. Culverts should be installed at the runnel locations to avoid impeding subsurface lateral flow.

Machine clearing is permissible through the seasonally frozen clay Lacustrine blanket component during the winter months. However, since the minor drainage channels (runnels) may possess permafrost, it is advisable to hand clear the tree cover along the edges of the runnels and leave the moss layer undisturbed by raising the dozer blade to avoid scouring the peat surface. Culverts should be installed to avoid impeding subsurface lateral flow.

ECOSECTION: b. 2 Bv5 Bt2 cLb3 Environmental Sensitivity: Mod 10

Relief Class: b - 3 to 5 meters **Slope Class: 2** 6- 15% gently to moderate sloping.

Ecosite: Bv5 – Bog veneer 50% (located on the mid and lower slopes)

Bog: Poorly drained sphagnum or forest peat materials accumulated over thousands of years in a wet, nutrient deficient, (ombrotrophic) environment. Near the surface, the organic materials are usually undecomposed (fibric); the middle layers are partially decomposed, (mesic), and the bottom layers are well decomposed, (humic), peat. Localized permafr ost may occur bordering the runnels (intermittent drainage channels) where tree growth is denser.

Veneer: An extensive area of thin (>0.25 to <1 m.), organic material overlying, clay lacustrine sediments. Minor runnels, form a dendritic pattern draining the organic terrain.

Ecosite: Bt2 – Peat plateau 20% (located in level, poorly drained depressions).

Peat plateau: Peat plateaus are associated with permafrost and their elevated height (approx. 1 m.) above the surrounding wetlands is primarily due to ice lens formation in the frozen core. Their sizes vary from several hectares to tens of hectares. Sphagnum and forest peat materials are formed over thousands of years in a wet, ombrotrophic (nutrient deficient) environment. The dense tree, shrub and ground cover maintains the permafrost table, found 0.5 m. below the surface, by providing ample seasonal insolation.

Ecosite: cLb3–Clay Lacustrine blanket 30% (located on the upper, mid & lower slopes).

Clay: Particles less than .002 mm. Contains up to 60% clay and 40% silt and fine sand.

Lacustrine: Sediments generally consisting of imperfectly drained clay, silt and fine sand, deposited in glacial lake beds thousands of years before the present time.

Blanket: A mantle of clay and silt varves (layers), thick enough to mask the underlying soils or bedrock but still conforming to the general underlying topography.

Ecosection Description: The bog veneer forest cover is predominantly stunted black spruce and scattered tamarack associated with a dense shrub layer of ericaceous shrubs including Labrador tea, bog rosemary, bog laurel and leatherleaf and a heavy ground carpet of sphagnum and feathermosses. The elevated, nearly level peat plateaus have a frozen permafrost core and occupy the depressions. The protective forest cover is dense black spruce with shrub cover consisting of Labrador tea, ericaceous shrubs including appleberry and the ground cover is dominantly sphagnum moss and bog cranberry.

Mitigative Measures: Machine clearing is allowed through the bog veneer component during the winter months. However, since the minor drainage channels (runnels) may possess permafrost, it is advisable to hand clear the tree cover along the edges of the runnels and leave the moss layer undisturbed by raising the dozer blade to avoid scouring the peat surface. Selective clearing is obligatory in the Peat plateaus to protect and maintain the permafrost table. Leave the shrub and ground cover relatively undisturbed by raising the dozer blade when clearing the route. Culverts should be installed at the runnel locations to avoid impeding subsurface lateral flow.

Machine clearing is permissible through the seasonally frozen clay Lacustrine blanket component during the winter months. However, since the minor drainage channels (runnels) may possess permafrost, it is advisable to hand clear the tree cover along the edges of the runnels and leave the moss layer undisturbed by raising the dozer blade to avoid scouring the peat surface. Culverts should be installed to avoid impeding subsurface lateral flow.

ECOSECTION: a.1 Fh10 **Environmental Sensitivity: Mod** 11

Relief Class: a - 0 to 2 meters **Slope Class: 1** 1 - 5% nearly level to very gently sloping.

Ecosite: Fh10 – Fen horizontal 100% (located in the level, saturated depression)

Fen horizontal: A fen is a peat-filled, flat, low lying, extensive area with a high water table. The organic materials are generally deep (2 to 3 meters), well (humic), to moderately decomposed (mesic), sedge peat. Fens are mainly rich in nutrients (minerotrophic) that are derived from the surrounding upland mineral soils.

Ecosite Description: The fen is a narrow band of moderately deep, poorly drained peat that supports mature trees, willow, alder and sedges.

Mitigative Measures: Machine clearing is allowed during the winter months. However, since the minor drainage channels (runnels) may possess permafrost, it is advisable to hand clear the tree cover along the edges of the runnels and leave the moss layer undisturbed by raising the dozer blade to avoid scouring the peat surface. The fen surfaces in the winter are mainly ice and require no precautionary environment measures. Culverts should be installed both in the veneers at the runnel locations and frequently in the fens to avoid impeding sub-surface lateral flow.

STREAM CROSSINGS

There is one small stream (runnel) that crosses the Mile 17 access road route in the construction camp area. This small, intermittent stream (runnel) is 1 -2 meters wide and drains less than 10 km^2. The flows vary seasonally and with rainfall. Water flows during spring run-off and after a rainfall. Water is found in depressions at other times. It is important to minimize the disturbance of vegetation by leaving a buffer zone of ground vegetation and shrub cover.

CLASS 3 The combined upstream drainage area is less than 10 km^2 (4$mi.^2$).

There is one small stream (runnel) that intersects the Mile 17 access route in the construction camp area.

Stream Crossing XR 3 Location: Ecosection a.1 Fh 10 (11) 12

MITIGATION MEASURES

This Class 3 small stream (runnel) is only moderately sensitive to minor disturbance caused by winter road construction. The approaches are gradually sloping to level and the possibility of erosion is minimal. Leave the ground and shrub cover intact while clearing the route by lifting the dozer blade and retaining the snow cover.

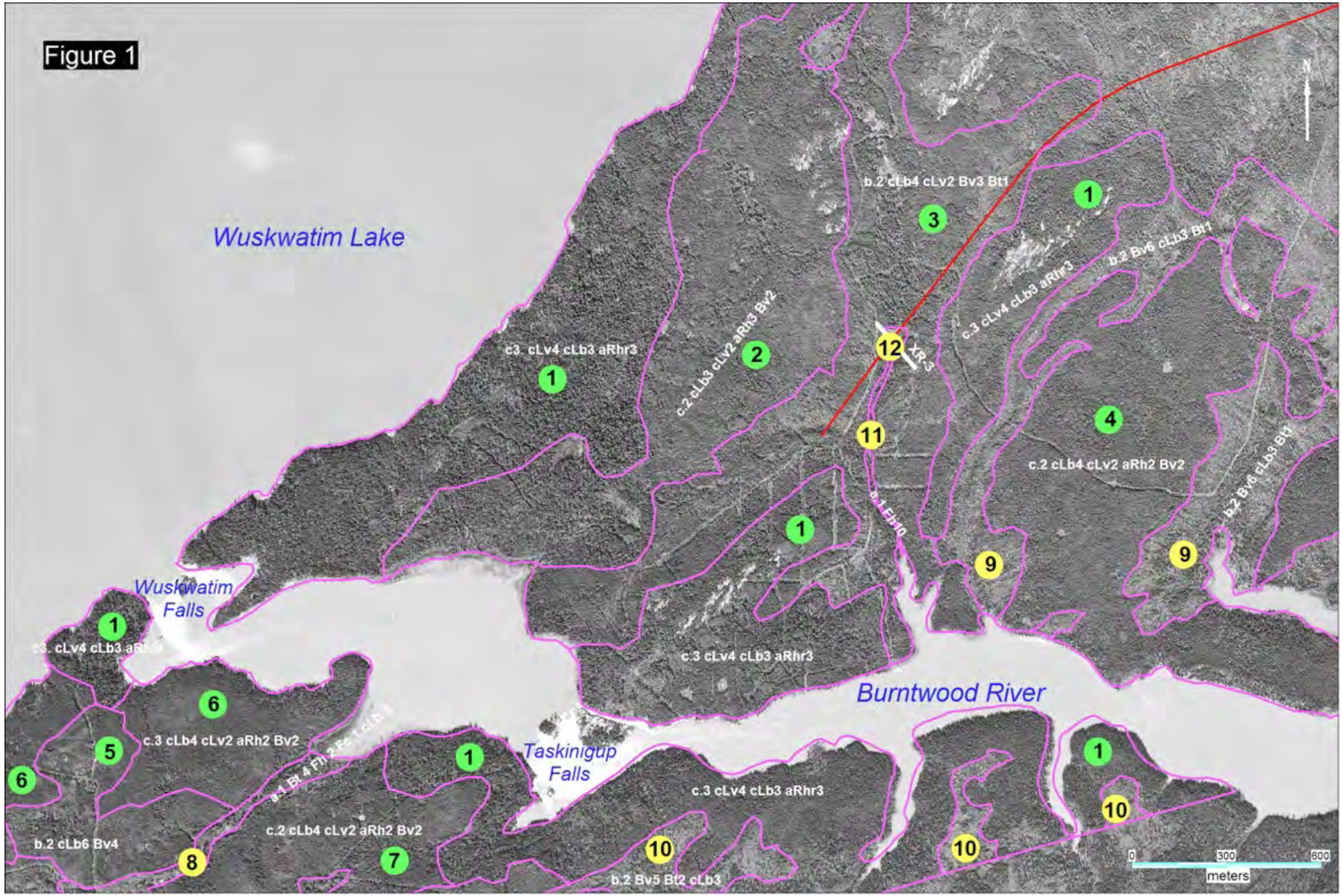

Figure 1. Ecosections in Wuskwatim generating station area. See preceding pages for descriptions of ecosections.

6.0 MONITORING, FOLLOW UP AND REPORTING

This EnvPP for the Wuskwatim Generating Station Access Road will be audited annually during construction. The audit will help to evaluate the guidelines in the EnvPP and construction activity monitoring results, to learn from experience, and to improve environmental impact assessments and project planning.

Concurrent with field experience and the audit, **adaptive management** plans will be developed to address any events or impacts that are currently unanticipated. These adaptive management plans will be integrated into the existing mitigation and monitoring plans.

An annual report of the Partnership's monitoring programs will be produced with the following information:

- A summary of actions taken to comply with regulatory requirements and the environmental protection plans.
- Contraventions of regulatory requirements and deviations from guidelines in the environmental protection plan guidelines.
- Corrective actions taken in the case of any contraventions and alternate mitigation measures employed, if applicable.
- Results of monitoring within the EnvPP
- Identification of events or impacts unanticipated at the time that the environmental protection plan was prepared.
- Description of adaptive management plans being developed to address new information since the environmental protection plan was developed.
- Identification of means by which *Ethinisewin* (traditional knowledge, including the collective wisdom of *Nisichawayasihk Nehethowuk)* has been integrated into adaptive management plans based on western scientific knowledge. (Groups participating in the *Ethinesewin* program will review the synthesis before it is released to regulators and other publics.)

On an annual basis during construction, these reports will be provided to Manitoba Conservation. As the community in whose *Aski* (traditional territory) the Wuskwatim Project is being developed, the reports will also be provided to the NCN Wuskwatim Implementation Coordinator and the Nelson House Resource Management Board. The Resident Manager or delegates will meet with Manitoba Conservation, the NCN Wuskwatim Implementation Coordinator and/or the Nelson House Resource Management Board, if requested. The NCN Wuskwatim Implementation Coordinator may invite NCN resource users and/or other NCN members to the meeting. If possible, meetings with NCN representatives will occur in early spring *(sekwun).*
The reports will also be provided to the downstream communities of Tataskweyak Cree Nation (at Split Lake) and York Factory First Nation. As well, an annual report of the Partnership will be produced and made available to the general public.

6.1 Daily and Weekly Project Record Reports

This section contains sheets to record environmental incidents on a daily, weekly and per incident basis. Copies of these forms should be copied and stored in a separate binder. The Senior Environmental Specialist will monitor the records. Each month the AKO will submit a report to the Resident Manager based on a summarization of incidents and activities occurring during the previous month.

Environmental Protection Plan Incident Reporting Form

Date_____ **Form ___of___ for Today**

Name of Environmental Inspector (AKO) _____

Weather:_____

Incident to Report (who, what, when, where)

_____

_____

_____

_____

Outcome of Incident (Include who reported to and suggestions for future)

_____

_____

_____

_____

_____

Signature_____

Environmental Inspector DAILY LOG WUSKWATIM GENERATION PROJECT

NAME:_____ DATE: _____
YY/MM/DD

LOCATION:_____ HOURS WORKED: _____

WEATHER:_____

Construction Activities List (circle all that apply)

Clearing the Right of Way
Clearing Stream Crossings
Culvert Installation
Culvert Maintenance
Borrow Pit Clearing
Borrow Pit Operation
Other_____
Borrow Pit Decommissioning
Camp Construction
Access Trails
Marshalling Yards

Comments: (Environmental Protection methods applied, success of methods, duration and timing of works, revisions made to the methods)

Follow-up Actions:

AKO Evaluation

Did you have enough information to carry out your duties today? Yes No

It was difficult to carry out the AKO tasks in the following situations:

Weekly Summary Report

AKO Weekly Summary Report

Project: Wuskwatim Generating Station Name:

From: _____, 200__ To: _____, 20__

Overall Weather Conditions:_____
_____

Environmental Activities/Issues Summary:
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Follow up Action Required:
_____
_____
_____

AKO Signature: Date:

Monthly Report Form Wuskwatim Project

Name of Environmental Inspectors:

Report for Month_____ of Year_____

Key Environmental Issues/Activities Undertaken at site:

Summary of Follow-up Undertaken (Including who any incidents were reported to):

Signature:

7.0 ENVIRONMENTAL PROTECTION REPORTING STRUCTURE

The Resident Manager will be the senior management authority on site during the construction of the project. During the operations phase of the project, the senior management authority will be the Plant Manager.

Reporting to the Resident Manager will be an Environmental Supervisor. Environmental Inspectors *(Aski Kihche O'nanakachechikeo or* "AKO's") will report to the Supervisor. The Environmental Supervisor and the Environmental Inspectors will have the responsibility and first-line authority to ensure that all environmental protection plans *(Aski Ketapahchikewe Othaschikekwin)* are followed.

7.1 Project Team's Environmental Roles and Responsibilities

The Resident Manager:

- Applies for the project work permit;
- Ensures construction/activities cease if a heritage resource is discovered;
- If a heritage resource is discovered, in accordance with the Heritage Resources Protection Plan, contacts the Project Archeologist and the NCN Archeologist and others as provided in the plan;
- Ensures all project activities are conducted according to the Environmental Protection Plan and any work permits/regulations;
- Consults with and informs the Senior Environmental Specialist if changes are made to the guidelines;
- Ensures that both Manitoba Hydro employees and all contractors are aware of the contents of the Environmental Protection Plan and other permits/guidelines; and
- Ensures that both Manitoba Hydro Employees and Contractors follow all safety guidelines
- Reviews reports prepared by the Environmental Inspectors

Environmental Supervisor (Onsite):

- Supervises the Environmental Inspector
- Ensures construction/activities cease if a heritage resource is discovered;
- If a heritage resource is discovered, in accordance with the Heritage Resources Protection Plan, contacts the Project Archeologist and the NCN Archeologist and others as provided in the plan;

- Ensures all project activities are conducted according to the Environmental Protection Plan and any work permits/regulations;

- Consults with and informs the Senior Environmental Specialist if changes are made to the guidelines;
- Ensures that both Manitoba Hydro employees and all contractors are aware of the contents of the Environmental Protection Plan and other permits/guidelines;
- Reviews reports prepared by the Environmental Inspectors

AKO (Environmental Inspector):

- Conducts some project specific monitoring.
- Records and reports how traditional knowledge is being used in the project.
- Acts as the onsite monitor of heritage resources found, discovered or disturbed during the course of the project.
- Monitors and reports on the effectiveness of the environmental protection measures outlined in the EnvPP and applied to the project.
- Prepares daily, weekly and monthly reports and submits them to the Environmental Supervisor, Senior Environmental Specialist and the Resident Manager.
- Reports any changes to the EnvPP *(Aski Ketapahchikewe Othaschikekwin)* to the Resident Manager.

- Discuss problems with on-site Environmental Supervisor.
- Discuss difficult problems with Environmental Supervisor and the Senior Environmental Specialist.

The Senior Environmental Specialist:

- Prepares the Environmental Protection Plan *(Aski Ketapahchikewe Othaschikekwin)*;
- Advises the Resident Manager of any environmental related project issues;
- Ensures the Resident Manager is aware of the guidelines in the work permits, regulations and the Environmental Protection Plan *(Aski Ketapahchikewe Othaschikekwin)* ; and
- Monitors the site upon decommissioning and ensures all environmental protection measures were implemented.
- Develops a training program for the AKO's (Environmental Inspectors).
- Assists the AKO's with complex environmental protection issues.
- Reviews the AKO reports.
- Circulates and reviews the results of the monitoring programs and assists in decisions to adapt or rescope the program.

- Provides regular/annual reports to the regulators and stakeholders regarding the state of monitoring and environmental protection on the project site.

Manitoba Hydro Employees and Contractors:

- Report any discoveries of heritage resources to the Resident Manager;
- Follow all guidelines and regulations set out in the Environmental Protection Plan and work permits/regulations; and
- Report any violations of the guidelines and regulations to the Resident Manager.

Natural Resources Officer:

- Approves the work permit and establishes any special regulations/conditions for the duration of the project; and
- Monitors the project during all phases of the project including construction, operations and decommissioning and enforces compliance with all applicable regulations.
- Responsible for management of the environment.

Consultants

- Conduct environmental monitoring programs on behalf of the Wuskwatim Limited Partnership.
- Prepare written reports and deliver at a prescribed frequency for review by the Wuskwatim Limited Partnership.
- Participate in consultations regarding re-scoping of monitoring plans and follow up programs.

Regulators

- Ensures conditions in licenses and permits are followed

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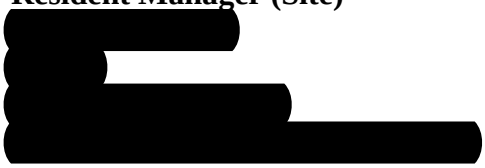
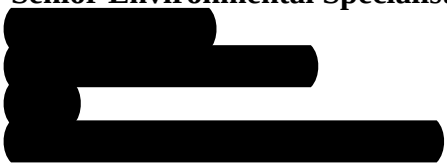
7.2 Project Contact Information

Resident Manager (Site)

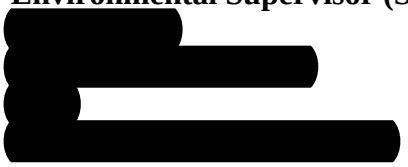


Resident Engineer (Site)

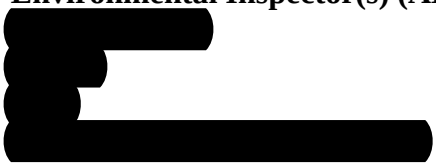
Senior Environmental Specialist (Winnipeg)



Environmental Supervisor (Site)



Environmental Inspector(s) (AKO) (Site)



Safety Supervisor (Site)

Natural Resources Officer Thompson

Project Archeologist

[redacted]

NCN Archeologist

[redacted]

Manitoba Provincial Heritage Resources Branch

[redacted]

RCMP Thompson

[redacted]

Fire Emergency Calls

[redacted]

Ambulance Emergency Calls

[redacted]

Spill Response

Manitoba Conservation

[redacted]

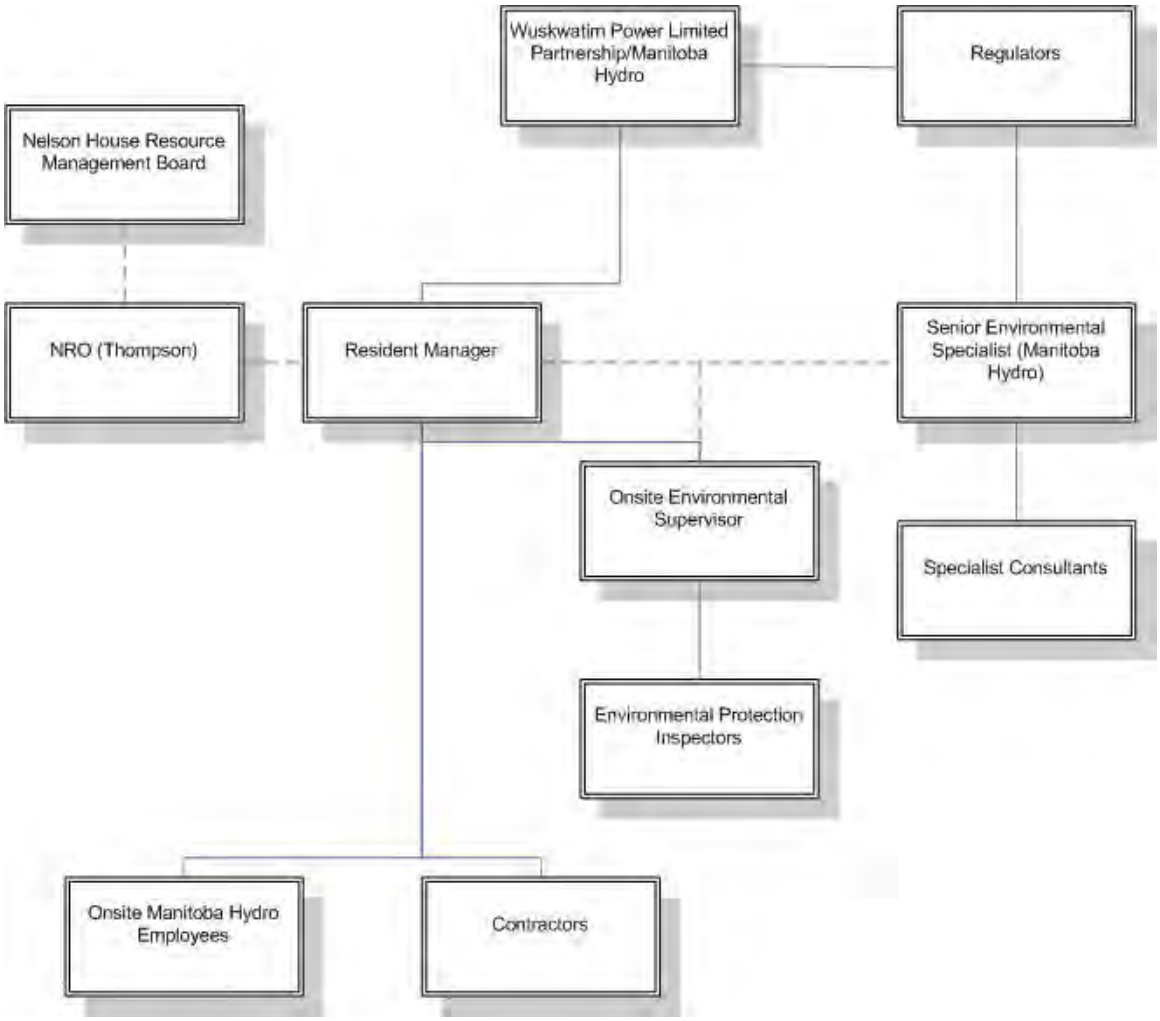
Environment Canada

[redacted]

EMPLOYEE SAFETY & HEALTH

[redacted]

7.3 Project Environmental Communications Chart



8.0 REFERENCES AND GLOSSARY

8.1 List of References

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8.2 Glossary

Adaptive Management - a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. Adaptive management employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed.

Bedrock - the solid rock that underlies soil and the regolith that is exposed at the surface.

Bog - wetland ecosystem characterized by an accumulation of peat, acid conditions and a plant community dominated by *Sphagnum* moss.

Borrow Areas - or borrow 'sites' or 'pits'; areas were materials (e.g., gravel, sand, silt, clay) are excavated for use.

Borrow Pit - the hole left by the removal of material (usually sand or gravel) for construction purposes.

Buffer - an area of land separating two distinct land uses that acts to soften or mitigate the effects of one land use on the other.

Cofferdam - a temporary barrier, usually an earthen dyke, constructed around a work site in a river, so the work site can be de-watered or the water level controlled. See dam.

Concrete Aggregate - crushed rock or gravel of varying size used in the production of concrete. Aggregate is mixed with sand, cement, and water and other additives to produce concrete.

Contaminant - any physical, chemical, biological, or radiological substance or matter in the environment.

Cover- 1) vegetation such as trees or undergrowth that provides shelter for wildlife; **2)** the surface area of a stratum of vegetation as based on the vertical projection on the ground of all above-ground parts of the plant; and **3)** the material in or overhanging the wetland area of a lake or stream which provides fish with protection from predators or adverse flow conditions, e.g., boulders, deep pools, logs, vegetation.

Dam - a structure holding back water, usually in a river. It may be designed to control the flow and release of water. It may also be designed to generate electricity.

Decommissioning - to take out of active use (typically involves the dismantling and removal of the original structure(s) and associated facilities).

Dyke - an embankment, usually constructed to prevent flooding of low lying areas and thus limit the extent of flooding.

Ecosystem - a functional unit consisting of all living organisms (plants, animals, microbes, etc.) in a given area, and all non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be any size (e.g., a log, pond, forest) but always functions as a whole unit.

Environmental Impact Statement (EIS) - a document setting out the results of an environmental impact assessment (see EIA), including adverse (and sometimes positive) effects of a proposed development. The document is filed as part of an application for environmental approvals under the *Environment Act* (Manitoba) or the *Canadian Environmental Assessment Act.*

Environmental Management System- An EMS is a system for consistently and systematically organizing and reporting decisions and actions which may impact the environment. It includes the organizational structure, responsibilities, practices, processes, and resources for planning and implementing an organization's environmental policies, objectives and targets. Continual improvement is an integral part of the system.

Erosion – 1) the wearing away of the earth's surface by the action of water, wind, current, etc.; and, 2) in reference to fish – the wearing away of tissues, typically used in reference to fins.

Fill - natural soils that are manually or mechanically placed. Soil or loose rock used to raise a grade.

Flow - motion characteristic of fluids (liquids or gases); any uninterrupted stream or discharge.

Follow-up- a program for verification of the accuracy of the environmental assessment of a project and determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project. (CEAA)

Forebay - the portion of a reservoir immediately upstream of a hydroelectric facility.

Furbearer - referring to those mammal species that are trapped (e.g., marten, fox, etc.) for the useful or economic value of their fur.

Generating Station - a complex of structures used in the production of electricity. A hydroelectric generating station would include the powerhouse, spillway, dam(s) and transitions structures.

Granular Fill - fill material including sand and gravel.

Groundwater - the portion of sub-surface water that is below the water table, in the zone of saturation.

Habitat - the place where a plant, animal or microorganism lives; often related to a function such as breeding, feeding, etc.
Hydraulic - of, involving, moved by, or operated by a fluid, especially water, under pressure.

Hydrocarbon - an organic compound that contains only carbon and hydrogen, and no other elements; derived mostly from crude petroleum and also from coal tar and plant sources. Excessive levels may be toxic.

Hydroelectric - electricity produced by converting the energy of falling water into electrical energy (i.e., at a hydro generating station).

Impact - a positive or negative effect of a disturbance on the environment or a component of the environment.

Infrastructure - the basic features needed for the operation or construction of a system (e.g., access road, construction camp, construction power, batch plant, etc.).

Merchantable - a tree or a stand of trees that has reached maturity (rotation age and/or size) and is suitable and/or ready for harvest.

Mercury (Hg) - a natural metallic element that occurs in soils and minerals of the earth's crust.

Monitoring - measuring the state of the environment after a project is implemented to see if anticipated impacts have actually occurred and how mitigation measures have been applied.

Ordinary High Water Mark- As defined in the DFO Manitoba Operational Statements is the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).

Organic - soils of the Organic order are composed largely of organic materials. They include most of the soils commonly known as peat, muck, or bog and fen soils. Most organic soils are saturated with water for prolonged periods. These soils occur widely in poorly and very poorly drained depressions and level areas in regions of subhumid to perhumid climate and are derived from vegetation that

grows in such sites.

Overburden - the soil (including organic material) or loose material that overlies bedrock.

Overwinter - to remain through the ice-covered period.

Permafrost - permanently frozen ground.

Reach - term used to describe sections of a river.

Recreational - where the primary intent is enjoyment.

Regulatory - pertaining to legal requirements.

Rehabilitation - restoring to a more normal state; when referring to land, restoring the area to promote re-vegetation.

Riparian Zone – normally used to refer to the zone within which plants grow rooted in the water table of rivers, stream, lakes, ponds, reservoirs, spring, marshes, seeps, bogs, and wet meadows. The riparian zone is influenced by, and exerts an influence on, the associated aquatic ecosystem. A minimum and maximum distance from top of bank, or the high water mark may be specified.

Right-of-Way (RoW) - area or strip of land cleared to accommodate a road or transmission line

Runoff - portion of liquid (water) that does not percolate into the ground and is instead discharged into surface water bodies.

Spawning Habitat - areas suitable for the deposition of eggs and their incubation.

Species - a group of inter-breeding organisms that can produce fertile offspring.

Spillway - a structure that allows normal and/or flood flows to bypass the powerhouse in a manner that protects the structural integrity of the dam.

(TK) Traditional Knowledge- Scientific knowledge held by Aboriginal or indigenous people around the world. It is based upon an intimate connection with the lands and waters, oral tradition since time immemorial, and draws upon the people's spiritual connectedness to the land.

Transmission Line - carry the power produced at a generating station to other parts of Manitoba Hydro's existing power system.

Turbine - a machine in a hydroelectric generating station which converts the energy of flowing water into rotary mechanical energy. This rotational energy is then transferred to the generator for conversion to electrical energy.

Waterfowl - ducks, geese and swans (game birds that frequent water).

(WSK) **Western Scientific Knowledge**- Scientific knowledge accumulated by systematic study using what is described as the scientific method and organized by general principles

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9.0 LICENSES, REGULATORY APPROVALS AND PERMITS

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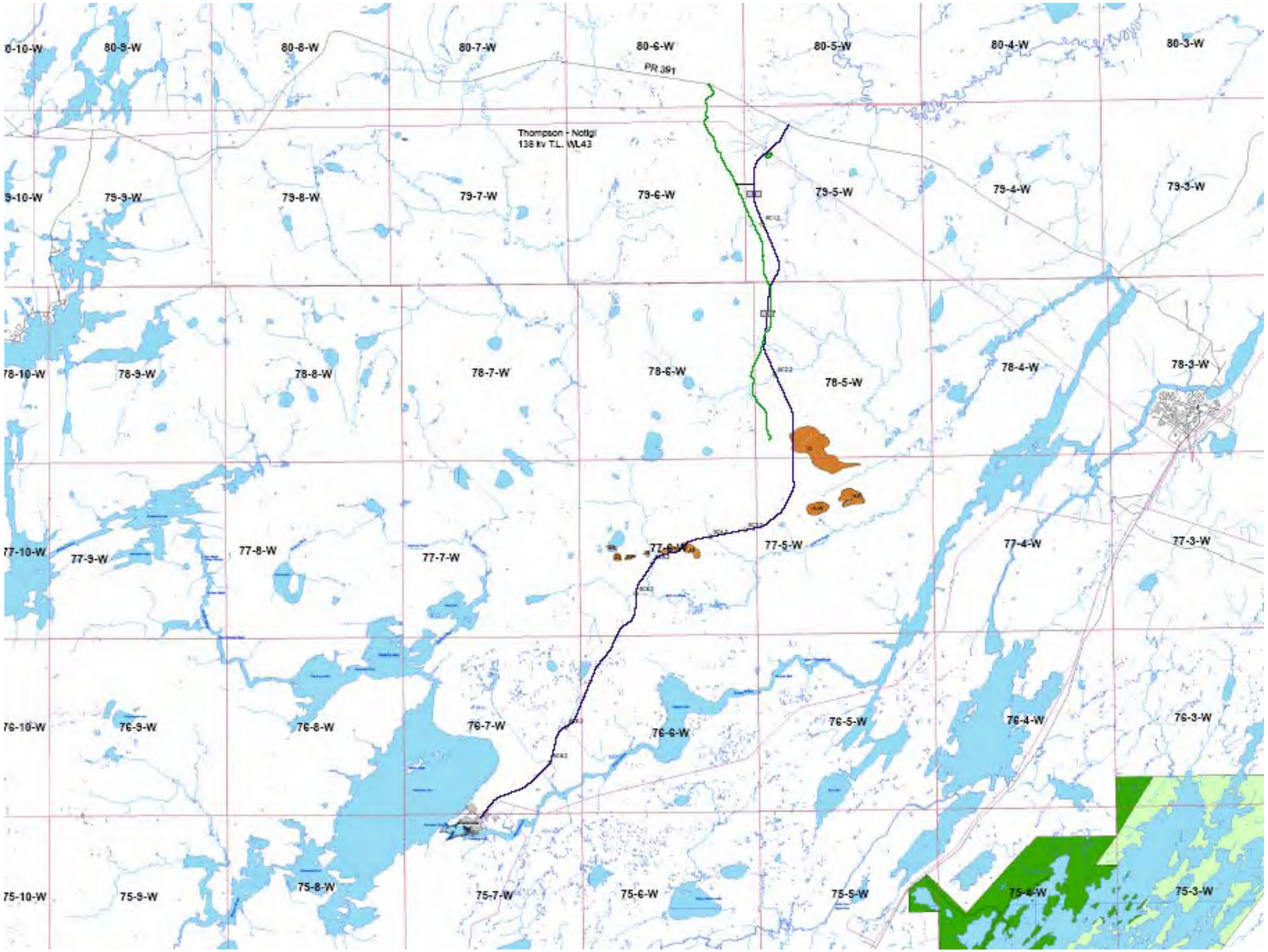
10.0 KEY MAP OF THE PROJECT AREA



Appendix A **Figure 1**

Manitoba Hydro

Corporate Waste Streams & Disposition

Reduce
Reuse
Recycle

If you have any questions about waste stream disposal or waste streams not listed below contact the Waste Management Coordinator at 474-4366 or the Corporate Hazardous Materials Officer at 474-3259 or refer to the Hazardous Materials Management Handbook

Reuse - using a product more than once, either for the same purpose or for a different purpose. Reusing, when possible, is preferable to recycling because the item does not need to be reprocessed before it can be used again.

Disposal - removing the material from the workplace to a licensed landfill facility, or to a licensed facility responsible for the destruction of the material. Verify that the licensed facility will accept the waste stream.

Recycle - a series of activities that includes collecting recyclable materials that would otherwise be considered waste, sorting and processing recyclables into raw materials such as fibers, and manufacturing raw materials into new products. Recycling turns materials into valuable resources and generates a host of environmental, financial, and social benefits. After collection, materials (e.g., glass, metal, plastics, and paper) are separated and sent to facilities that can process them.

Hazardous Waste Streams	Send To	Reuse	Recycle	Disposal
Aerosol containers	WSC		•	
Antifreeze	WSC	•	•	
Asbestos	WSC/Local			•
Batteries: dry cells	WSC		•	
wet cells (substations, gate stations)	WSC		•	
wet cells (automotive, marine, equipment)	Fleet/WSC		•	
rechargeable (metal hydride, lithium, ni-cad)	WSC		•	
Chemical containers (plastic)	Local/WSC		•	•
Chemicals (surplus)	WSC	•		•
Compressed gas cylinders	Supplier/Local	•	•	•
Electrical apparatus (oil-filled): Non-PCB	WSC	•	•	•
PCB	WSC	•	•	•
Filters (oil and fuel)	WSC		•	
Fire Extinguishers	FPS	(474-4227 or 474-4177)		
Fire Systems	FPS	(474-4227 or 474-4177)		
Grease	WSC		•	•
Laboratory waste	WSC			•
Lead containing material	WSC		•	•
Light/lamp bulbs: fluorescent	WSC		•	
incandescent	WSC		•	
street light	WSC			•
Mercury (liquid and in sealed switches)	WSC			•
Oils: hydraulic	WSC/Local		•	
insulating	WSC	(see Non-PCB and PCB)		
lubricating	WSC/Local		•	
Non-PCB contaminated materials: soils/solids	WSC			•
insulating oils	WSC	•	•	
PCB contaminated materials: soils/solids	WSC			•
insulating oils	WSC	•	•	
Paint: all except latex – manifest required	WSC			•
latex – no manifest required	WSC	•		•
Radioactives (smoke detectors, test equipment)	WSC			•
Solvents: halogenated	WSC			•
non-halogenated	WSC		•	•
Tires	Local/Fleet		•	
Other Waste Streams				
Aluminum cans	Local		•	
Cardboard	WSC		•	
Electronics (computers, printers, cell phones)	IT/WSC		•	
Insulating materials (rubber/fiberglass)	WSC		•	•
Paper (office)	Local		•	
Scrap metals	WSC/Local	•	•	
Street light heads (all parts)	WSC	•	•	•
Toner containers & printer cartridges	WSC/Supplier	•	•	
Wood poles, cross arms, rail ties	WSC	•		•
Wood pallets	WSC	•	•	•

Hazardous Material
(yellow with removable top)
CIIC
27 67 01

Used Insulating Oil
(black with yellow top)
CIIC
78 98 89

Waste Antifreeze
(green)
CIIC
27 67 11

Waste Lube Oil
(orange)
CIIC
27 67 09

Waste Halogenated Products
(red)
CIIC
27 67 07

Waste Non-Halogenated Products
(blue)
CIIC
27 67 08

You must ensure that waste streams are properly identified and transported according to TDG regulations.

Issued February, 2003

Figure 2 Managing Releases of Dangerous Goods or Hazardous Wastes other than PCB's

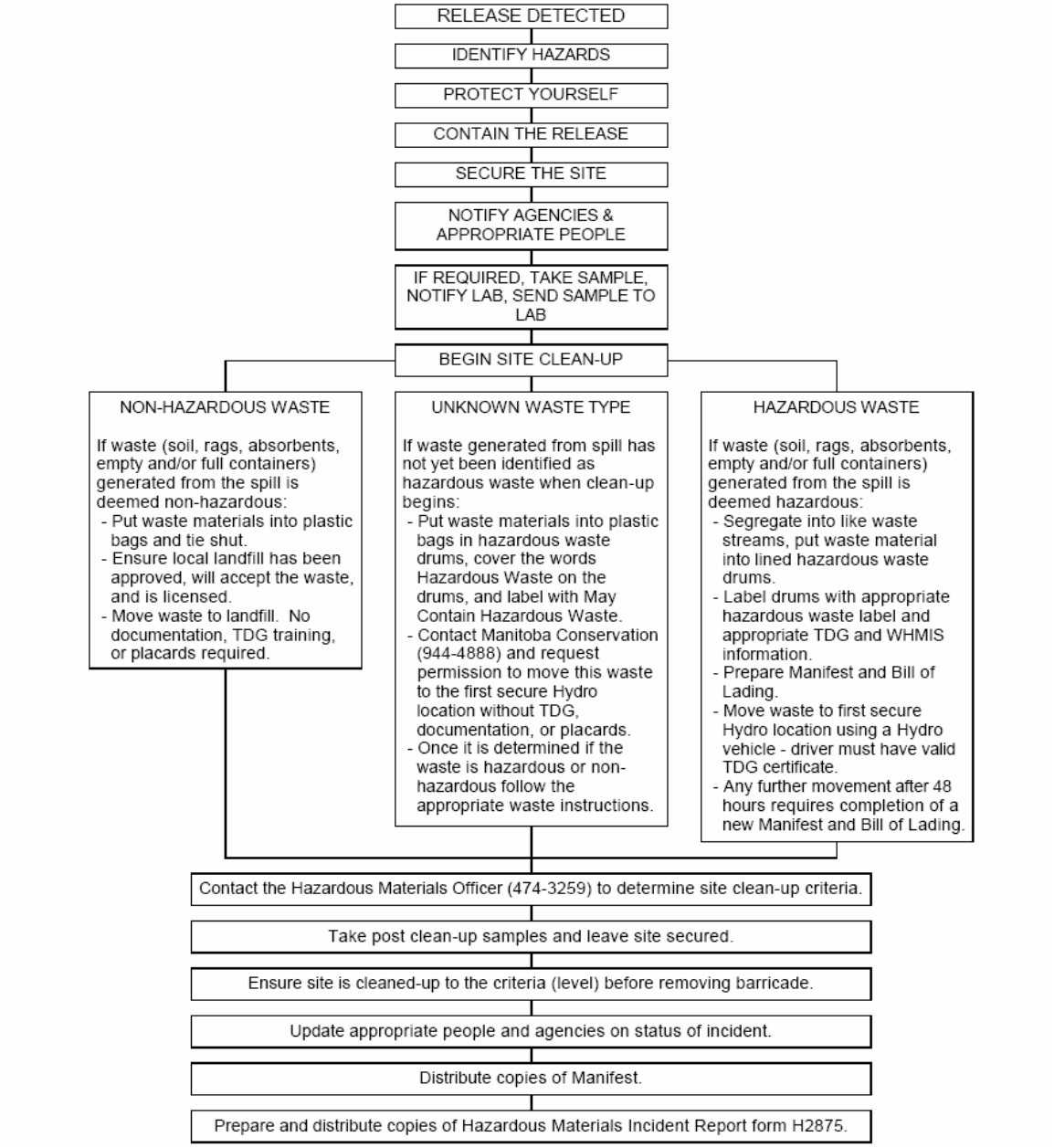


Figure 3

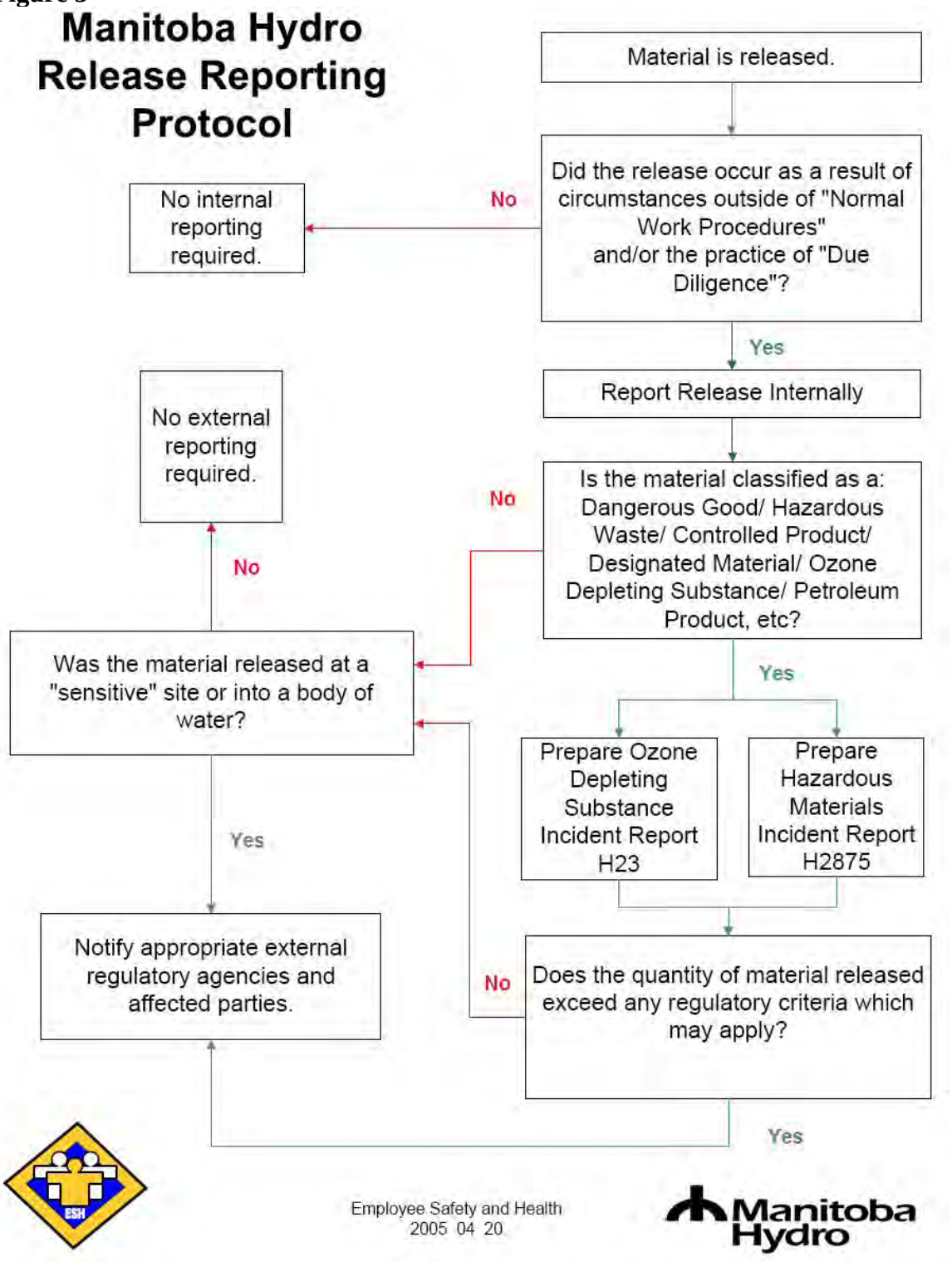

Manitoba Hydro Release Reporting Protocol
Material is released.
Did the release occur as a result of circumstances outside of "Normal Work Procedures" and/or the practice of "Due Diligence"?
No
No internal reporting required.
Yes
Report Release Internally
Is the material classified as a: Dangerous Good/ Hazardous Waste/ Controlled Product/ Designated Material/ Ozone Depleting Substance/ Petroleum Product, etc?
No
No external reporting required.
No
Was the material released at a "sensitive" site or into a body of water?
Yes
Prepare Ozone Depleting Substance Incident Report H23
Prepare Hazardous Materials Incident Report H2875
Yes
Notify appropriate external regulatory agencies and affected parties.
No
Does the quantity of material released exceed any regulatory criteria which may apply?
Yes
ESH
Employee Safety and Health
2005 04 20
Manitoba Hydro

Figure 4

Reportable Quantities for Spills

CLASSIFICATION	HAZARD	REPORTABLE QUANTITY OR LEVEL
1	Explosives	All
2.1	Compressed Gas (Flammable) (i.e. Propane)	100 L*
2.2	Compressed Gas (i.e. Sulpherhexafluoride SF_6)	100 L*
2.3	Compressed Gas (toxic) (i.e. Hydrogen Sulphide)	All
2.4	Compressed Gas (Corrosive) (i.e. Anhydrous Ammonia)	All
3	Flammable Liquids (includes Petroleum Products)	100 L
4	Flammable Solids (i.e. Sulphur)	1 Kg
5.1 Packing Groups I and II	Oxidizer (i.e. Hydrogen Peroxide)	1 Kg or 1 L
5.1 Packing Groups III	Oxidizer (i.e. Lead Oxide)	50 kg or 50 L
5.2	Organic Peroxide	1 Kg or 1 L
6.1 Packing Group I	Acute Toxic (i.e. Waste Capacitor Fluids - chlorinated)	5 Kg or 5 L
6.1 Packing Groups II and III	Acute Toxic (i.e. Pesticides)	5 kg or 5 L
6.2	Infectious	All
7	Radioactive (i.e. Nuclear Densimeters)	Any discharge or radiation level exceeding 10 m Sv/h at the package surface and 200 USv/h at 1m from the package surface
8	Corrosive (i.e. Batteries)	5 KG or 5 L
9.1	Miscellaneous (i.e. Asbestos) except PCB mixtures)	50 Kg
9.1	PCB Mixture	500 grams
9.2	Aquatic Toxic (i.e. Zinc Sulphate)	1 Kg or 1 L
9.3	Wastes (Chronic Toxic) (i.e. Waste Lubricating Oil	5 Kg or 5 L
Ozone Depleting Substances	(i.e. R-11 Refrigerant)	10 Kg

* Container Capacity (refers to container water capacity)

SOURCES: MR 439/87 Environmental Accident Reporting Regulation

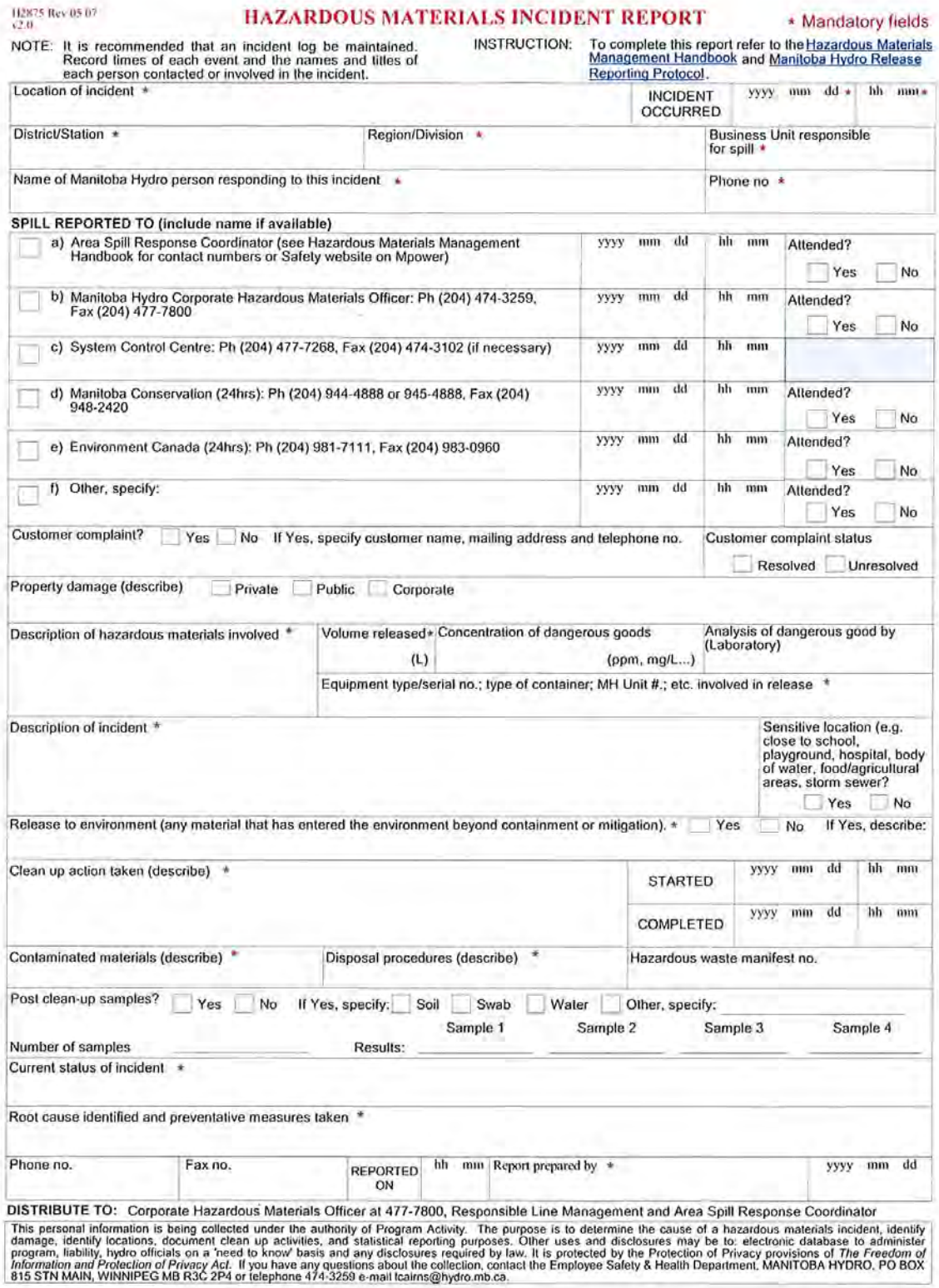
NOTE: PCB or PCB contaminated oil spills (greater than 1 gram) and spills of any dangerous good/hazardous waste to a waterway must also be reported to Environment Canada.

ESH

Employee Safety and Health
2005 04 20

Manitoba Hydro

Figure 5



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HAZARDOUS MATERIALS INCIDENT REPORT

* Mandatory fields

NOTE: It is recommended that an incident log be maintained. Record times of each event and the names and titles of each person contacted or involved in the incident.

INSTRUCTION: To complete this report refer to the Hazardous Materials Management Handbook and Manitoba Hydro Release Reporting Protocol.

Location of incident *	INCIDENT OCCURRED	yyyy mm dd *	hh mm *
District/Station *	Region/Division *	Business Unit responsible for spill *	
Name of Manitoba Hydro person responding to this incident *		Phone no *	

SPILL REPORTED TO (include name if available)

☐ a) Area Spill Response Coordinator (see Hazardous Materials Management Handbook for contact numbers or Safety website on Mpower)	yyyy mm dd	hh mm	Attended? ☐ Yes ☐ No
☐ b) Manitoba Hydro Corporate Hazardous Materials Officer: Ph (204) 474-3259, Fax (204) 477-7800	yyyy mm dd	hh mm	Attended? ☐ Yes ☐ No
☐ c) System Control Centre: Ph (204) 477-7268, Fax (204) 474-3102 (if necessary)	yyyy mm dd	hh mm	
☐ d) Manitoba Conservation (24hrs): Ph (204) 944-4888 or 945-4888, Fax (204) 948-2420	yyyy mm dd	hh mm	Attended? ☐ Yes ☐ No
☐ e) Environment Canada (24hrs): Ph (204) 981-7111, Fax (204) 983-0960	yyyy mm dd	hh mm	Attended? ☐ Yes ☐ No
☐ f) Other, specify:	yyyy mm dd	hh mm	Attended? ☐ Yes ☐ No

Customer complaint? ☐ Yes ☐ No If Yes, specify customer name, mailing address and telephone no.	Customer complaint status ☐ Resolved ☐ Unresolved
Property damage (describe) ☐ Private ☐ Public ☐ Corporate	

Description of hazardous materials involved *	Volume released * (L)	Concentration of dangerous goods (ppm, mg/L...)	Analysis of dangerous good by (Laboratory)
	Equipment type/serial no.; type of container; MH Unit #.; etc. involved in release *		

Description of incident *	Sensitive location (e.g. close to school, playground, hospital, body of water, food/agricultural areas, storm sewer? ☐ Yes ☐ No
Release to environment (any material that has entered the environment beyond containment or mitigation). * ☐ Yes ☐ No If Yes, describe:	

Clean up action taken (describe) *	STARTED	yyyy mm dd	hh mm
	COMPLETED	yyyy mm dd	hh mm

Contaminated materials (describe) *	Disposal procedures (describe) *	Hazardous waste manifest no.

Post clean-up samples? ☐ Yes ☐ No If Yes, specify: ☐ Soil ☐ Swab ☐ Water ☐ Other, specify: _____

	Sample 1	Sample 2	Sample 3	Sample 4
Number of samples				
Results:				

Current status of incident *					
Root cause identified and preventative measures taken *					
Phone no.	Fax no.	REPORTED ON	hh mm	Report prepared by *	yyyy mm dd

DISTRIBUTE TO: Corporate Hazardous Materials Officer at 477-7800, Responsible Line Management and Area Spill Response Coordinator

This personal information is being collected under the authority of Program Activity. The purpose is to determine the cause of a hazardous materials incident, identify damage, identify locations, document clean up activities, and statistical reporting purposes. Other uses and disclosures may be to: electronic database to administer program, liability, hydro officials on a 'need to know' basis and any disclosures required by law. It is protected by the Protection of Privacy provisions of *The Freedom of Information and Protection of Privacy Act*. If you have any questions about the collection, contact the Employee Safety & Health Department, MANITOBA HYDRO, PO BOX 815 STN MAIN, WINNIPEG MB R3C 2P4 or telephone 474-3259 e-mail tcairns@hydro.mb.ca.