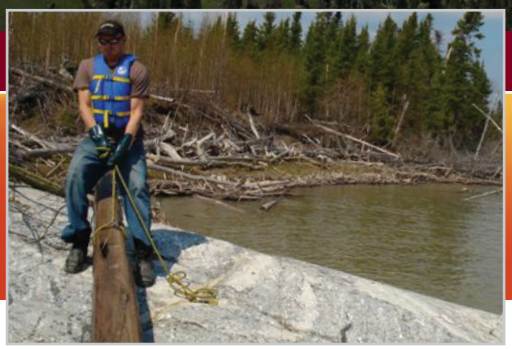


Keeyask Generation Project

Waterways Management Program

Hydropower Limited Partnership

Manitoba Conservation and Water Stewardship Client File 5550.00
Manitoba Environment Act Licence No. 3107

June 2015

KEEYASK GENERATION PROJECT

WATERWAYS MANAGEMENT PROGRAM

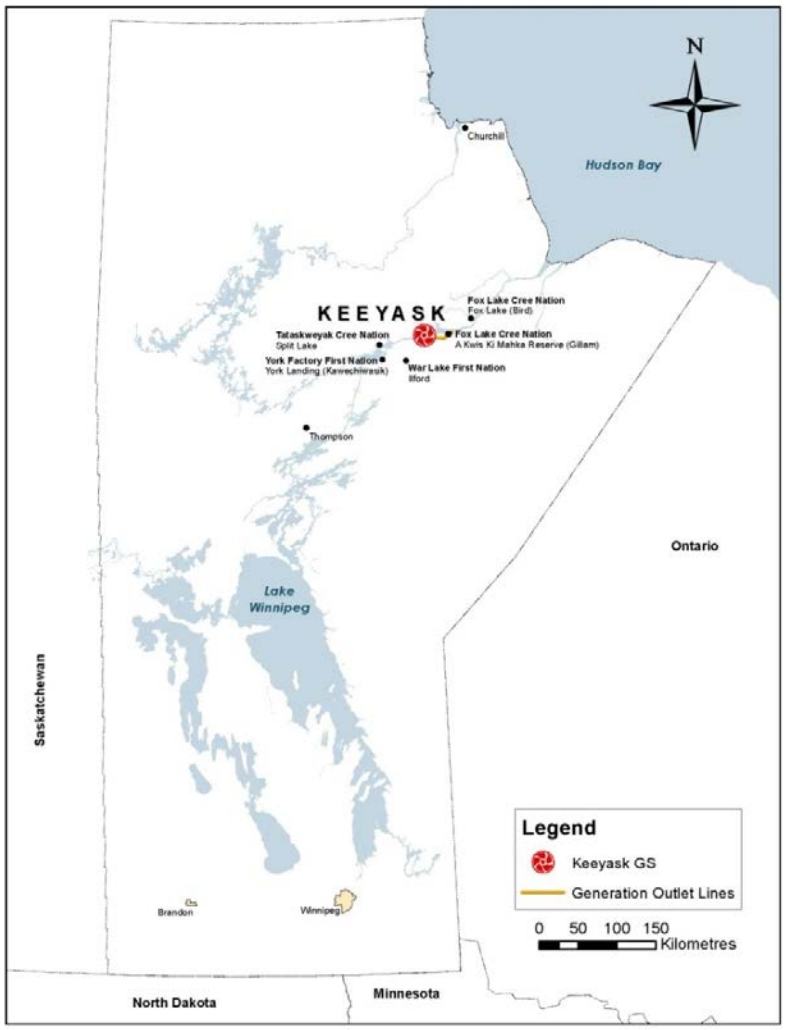
Schedule 11-2

JOINT KEEYASK DEVELOPMENT AGREEMENT

PREFACE

KEEYASK ENVIRONMENTAL PROTECTION PROGRAM

An Environmental Protection Program (the Program) has been developed to mitigate, manage and monitor potential environmental effects described in the *Keeyask Generation Project: Response to EIS Guidelines* during the construction and operation phases of the Keeyask Generation Project (the Project) shown on Map 1. The Program includes a collection of plans grouped in the following categories: Environmental Protection Plans, Environmental Management Plans, and Environmental Monitoring Plans.



Map 1: Location of Keeyask Generation Project

Figure 1 lists all of the plans included in the Program. It also demonstrates how the Program will be managed. The Keeyask Hydropower Limited Partnership (the Partnership) has delegated authority to Manitoba Hydro to manage construction and operation of the Project including

implementation of the Program. The organizational structure of the Partnership for this aspect of the Project includes a Monitoring Advisory Committee (MAC), which includes participants from each of the Keeyask Cree Nations (KCNs) and Manitoba Hydro. Manitoba Hydro will be guided on the implementation of the Program by the MAC, the Partnership Board of Directors and ongoing discussion with Regulators.

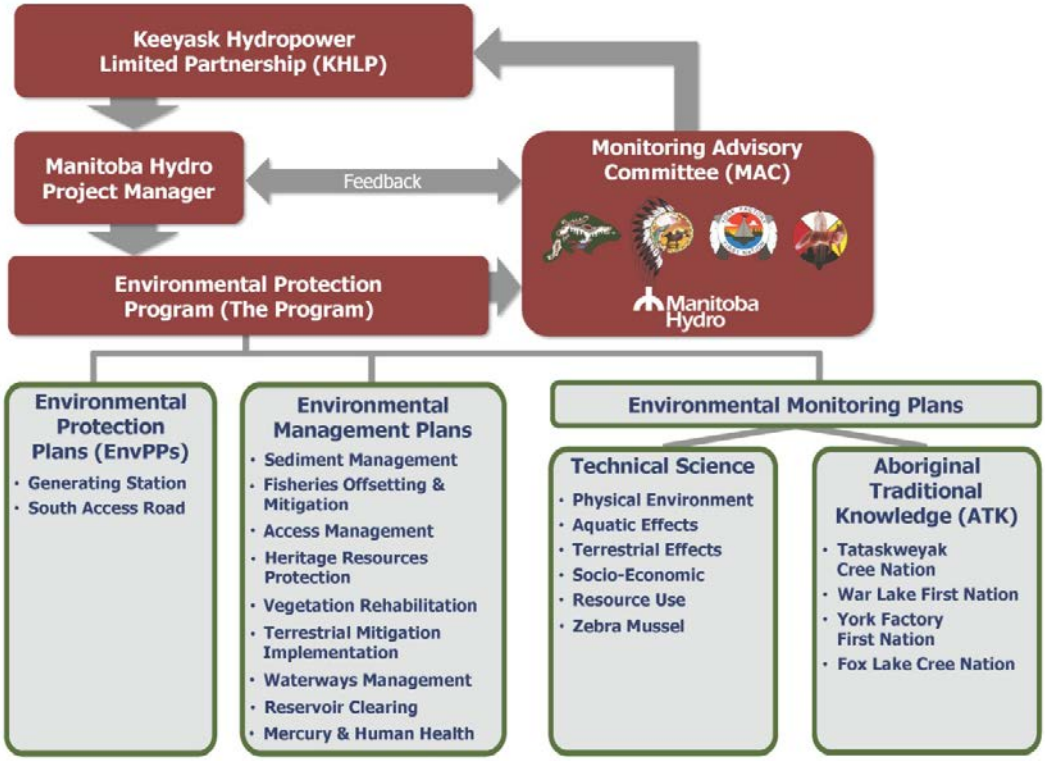


Figure 1: Environmental Protection Program

The Environmental Protection Plans (EnvPPs) provide detailed, site-specific environmental protection measures to be implemented by the contractors and construction staff to minimize environmental effects from construction of the generating station and south access road. They are designed for use as reference documents providing the best management practices to meet or exceed regulatory requirements. EnvPPs are organized by construction activity, highlighting measures to reduce the impact of a specific work activity (e.g., tree clearing or material placement in water). Contractors' compliance with the EnvPPs is a contractual obligation. Under Manitoba Hydro's construction site management, a Site Environmental Lead will be responsible for monitoring compliance and determining when corrective actions are required.

The Environmental Management Plans focus on minimizing effects on specific environmental parameters. They outline specific actions that must be taken during construction and in some cases into the operational phase to mitigate Project effects. The management plans include monitoring to determine success of the actions taken and to determine other actions that need to be undertaken (adaptive management). Implementation of these plans will involve Manitoba

Hydro's staff, the KCNs, specialized consultants and contractors under the direction of the Project Manager.

The Environmental Monitoring Plans are designed to measure the actual effects of the Project, test predictions or identify unanticipated effects. During the course of the environmental assessment, numerous requirements for monitoring were identified. There will be both technical science monitoring and Aboriginal Traditional Knowledge (ATK) monitoring undertaken. The technical science monitoring will be conducted by Manitoba Hydro and specialized consultants contracted by Manitoba Hydro, who will in turn hire members of the KCNs to work with them to fulfil the monitoring activities. Manitoba Hydro will also have contracts with each of the KCNs to undertake ATK monitoring of the project.

The activities that occur and the results generated from the Environmental Protection Program will be discussed at MAC meetings. The MAC is an advisory committee to the Partnership Board of Directors and will review outcomes of the programs and, if appropriate provide advice and recommendations to the Partnership on additional monitoring or alternative mitigation measures that may be required. The MAC will provide a forum for collaboration among all partners. On behalf of the Partnership, the MAC will also ensure that the outcomes of the Environmental Protection Program are communicated more broadly on an annual basis to Members of the KCNs, regulators and the general public.

SCHEDULE 11-2

KEEYASK HYDROPOWER LIMITED PARTNERSHIP

WATERWAYS MANAGEMENT PROGRAM

DATED .

SCHEDULE 11-2

KEEYASK HYDROPOWER LIMITED PARTNERSHIP

WATERWAYS MANAGEMENT PROGRAM

1. INTRODUCTION

The **Keeyask Project** will alter the water regime and associated aquatic and terrestrial ecosystems on the Nelson River upstream of Gull Rapids to Clarke Lake and downstream of Gull Rapids to Stephens Lake. Upstream of the **Keeyask Project**, the water levels on some water bodies will increase significantly and will inundate initially forty-five (45) square kilometres (17.4 square miles) of land.

It is expected significant amounts of floating debris will be generated by the initial impoundment of the reservoir. Floating islands and bogs are expected to exist for some time after initial impoundment. Thereafter, other floating debris is expected to be generated as shorelines erode around the reservoir's perimeter. The impoundment and resulting debris will create navigation hazards.

This **Waterways Management Program** describes the agreed programs and plans discussed in section 7 of the **Project Description** that will be implemented by the **Limited Partnership** to reduce potential impacts and accommodate users of the waterway, as well as manage associated safety liabilities for the **Keeyask Project**. This **Waterways Management Program** will be reviewed from time to time by the **Limited Partnership** to ensure that it continues to meet its objectives.

Hydro will implement this **Waterways Management Program**, using existing **Hydro** management and field supervisory staff, as a service to the **Limited Partnership**, and the costs of the program will be included in annual operation and maintenance budgets and reports provided to the **Limited Partnership**.

2. OBJECTIVE

The objective of the **Waterways Management Program** is to contribute to the safe use and enjoyment of the waterway from Split Lake to Stephens Lake throughout the pre-flooding and operational stages of the **Keeyask Project**, in a manner consistent with sections 7.2.1 through to 7.2.7 of the **Project Description**.

3. PROGRAM

3.1 Phase One (1) – Pre-Flooding

The first phase of the **Waterways Management Program** will consist of implementing the measures outlined in section 7.2 of the **Project Description** in the pre-flooding period, including support for clearing activity before impoundment of the reservoir.

An important activity before impoundment will be to work with **Members** of the **Keeyask Cree Nations** to identify and contribute to impact management measures at high priority spiritual and heritage sites that will be flooded.

3.2 Phase Two (2) – Post Flooding

The second phase of the **Waterways Management Program** will consist of implementing waterways management activities after flooding. The **Waterways Management Program** will deliver the services outlined in sections 7.2.2 to 7.2.7 of the **Project Description** and also will provide support services, as required, for reclamation of disturbed sites along shorelines.

4. PROGRAM ACTIVITIES

4.1 Program Activities: Phase 1

In each year of the four (4) year period after construction start and before impoundment, two (2) boat patrols, four (4) persons in total employed as **Hydro** seasonal employees, supplemented as required with local labour, including two (2) persons required for a winter ice trail crew, hired on a short-term basis through a local **KCN Business**, will:

(a) operate a multi-purpose boat patrol, monitor waterway activities and liaise with individuals and groups using the Nelson River;

(b) stabilize shoreline at sensitive streams using low impact techniques;

(c) plan and implement protection and preservation measures using low impact techniques at high priority, spiritually and culturally significant, historical or heritage sites from Gull Rapids to Split Lake;

(d) assist with the relocation of graves to sites not affected by Keeyask, in cooperation with involved **Members**;

(e) construct and maintain a safety cabin;

(f) cut and maintain trails and portages; and

(g) install and monitor regularly the condition of safe ice trails and the nature and extent of their use.

Initial equipment required will consist of two (2) boats, motors and a trailer, two (2) snow machines, sleighs and trailers and safety clothing and equipment, chainsaws, a GPS, ice auger and related equipment.

Low impact techniques include hand placement of field stone and planting of willows to protect a site.

4.2 Program Activities: Phase 2

The activities to be undertaken, in different time periods after impoundment, include the following:

(a) collecting floating debris;

(b) monitoring waterway activities and liaising with individuals and groups;

(c) preparing forebay depth charts and travel routes;

(d) marking safe travel routes, by installing and maintaining navigation and hazard markers;

(e) installing and maintaining water level staff gauges;

(f) constructing and maintaining safe landing sites and required docks and shelters;

(g) installing and monitoring regularly the condition of safe ice trails and the nature and extent of their use;

(h) planning and implementing the remaining protection and preservation measures at spiritually and culturally significant, historical or heritage sites using low impact techniques;

(i) monitoring and maintaining shoreline stabilization measures previously installed at sensitive streams;

(j) maintaining trails and portages.

4.3 Years One (1) to Five (5) Following Impoundment

In each year from years one (1) to five (5) following impoundment, a crew of up to twenty-five (25) workers, configured as two (2) primary boat patrols and three (3) supplementary work crews, will operate five (5) multi-purpose boats for one hundred (100) days in each open water season for the first three (3) and potentially five (5) years. A two (2) person ice trail crew would also operate in this period.

The four (4) persons making up the two (2), two (2) person primary boat patrol crews will be employed as **Hydro** seasonal employees. The workers making up the supplementary work crews and the ice trail crew will be hired on a short term basis through a local contractor.

Below the powerhouse of the **Keeyask Project**, it is expected that concerns will arise with respect to the unknown effects of powerhouse flows. To help manage downstream issues one of the boat patrol crews will operate as a temporary boat patrol for the first three (3) years. The primary function of this boat patrol will be to implement safety measures, deliver information to downstream resource users, and help people become accustomed to the powerhouse's operating mode. The future requirement for this measure would be evaluated thereafter.

4.4 Years Six (6) to Ten (10) Following Impoundment

In each year from years six (6) to ten (10) following impoundment, it is expected that during the open water season, one (1) or more maintenance crews of up to twelve (12) local workers in total, hired on a short term basis through a local contractor, may be required. The maintenance crews would work in conjunction with two (2) person making up a boat patrol crew who will be employed as Hydro seasonal employees. During the ice covered season, when it is safe to travel, a two (2) person ice trail crew will be hired on a short term basis through a local contractor.

4.5 Following Year Ten

In each year after year ten (10), it is expected two (2) persons, making up a boat patrol crew, will be employed as **Hydro** seasonal employees during the open water season and two persons making up a two (2) person ice trail crew will be hired on a short term basis through a local contractor during the ice covered season.

5. SELECTION OF PROGRAM PERSONNEL

5.1 Factors to be Considered on Hiring

The following factors will be considered by **Hydro** in its selection of **Waterways Management Program** personnel:

(a) direct experience and familiarity with open water and winter travel conditions on the Nelson River and Gull Lake;

(b) satisfactory safety record in operating watercraft;

(c) demonstrated safety skills and competencies for working in challenging environmental conditions;

(d) previous work experience in performing required Waterways Management Program tasks;

(e) proven wilderness survival skills; and

(f) personal relationship to Gull Lake.

APPENDIX 1

EXCERPT FROM JKDA PROJECT DESCRIPTION

WATERWAYS MANAGEMENT PROGRAM RELEVANT SECTIONS

SCHEDULE 7-1

KEEYASK PROJECT

PROJECT DESCRIPTION

7. ENHANCEMENT MEASURES TO REDUCE ADVERSE EFFECTS

The **Keeyask Project** has been designed by **Hydro** in cooperation with the **Keeyask Cree Nations** to avoid, reduce, or mitigate adverse effects.

7.1 PROJECT DESIGN & OPERATION

Hydro has given priority to the avoidance or reduction of adverse effects in the design of the **Keeyask Project** and the operating parameters of the **Keeyask Generating Station**. The forebay **FSL** of 159.0 metres (521.7 feet) was agreed to so that the operation of the **Keeyask Generating Station** will not affect the water level on Split Lake during open water conditions. The operating range of 1.0 metre (3.3 feet) between the **FSL** and the **MOL** will avoid or reduce many potential adverse effects of the **Keeyask Project**.

7.2 MEASURES TO ALLEVIATE ADVERSE EFFECTS

In addition to design and operation considerations**, Hydro** and the **Keeyask Cree Nations** have agreed upon a number of programs and plans to reduce the potential impacts of the **Keeyask Project**. Some of the plans and programs have seldom or never been used in northern Manitoba and it is expected that ongoing monitoring will be required to determine their success. As a result of the monitoring, and following consultation with the **Keeyask Cree Nations**, some aspects of the plans and programs may be modified, expanded, reduced, or eliminated, depending on their degree of success.

7.2.1 Reservoir Clearing & Waterways Management

The **Reservoir Clearing Plan**, attached as Schedule 11-1 to the **JKDA**, sets out standards and guidelines, as well as a timeline, for the clearing of the areas to be flooded.

Woody debris that is mobilized during the flooding of the reservoir and that may present a hazard to navigation or impact **Hydro's** operations will be removed during and immediately following reservoir impoundment, as set out in the **Waterways Management Program**, attached as Schedule 11-2 to the **JKDA**.

7.2.2 Reservoir Depth Charts and Travel Routes

Depth charts for the **Keeyask Generating Station** reservoir will be developed to illustrate the depth of water throughout the reservoir as an aid for boat travel. Using the water level readings from water level gauges, the charts may be used to determine the depth of water throughout the reservoir at the instant in time of the water level measurement. As an example, a preliminary reservoir depth chart is shown in Figure 16, which illustrates the depth of water during low flow conditions and when the forebay is at the **MOL** level of 158 metres (518.4 feet).

The depth chart will also illustrate safe travel routes that should be used during all water level conditions. The chart will indicate the approximate depth of water along each route, also shown in Figure 16.

7.2.3 Navigation and Hazard Marking

Navigation buoys will be installed and maintained along primary travel routes and along charted routes to shore access points at locations where there is a serious risk of striking a rock or reef depending on water level. Private Buoy Regulations under *The Canada Shipping Act* will be adhered to with respect to placement, display, size and maintenance of buoys. The location of the navigation and hazard buoys would be indicated on the reservoir depth charts, as shown in Figure 16.

7.2.4 Reservoir Water Level Information

A series of manual water level gauges (staff gauges) will be located near selected access points to show the water level at that location. The water level gauges will provide information required to interpret the reservoir depth charts and determine the depth of water along travel routes. Water level forecasts for Split Lake and Stephens Lake will continue to be provided. The preliminary locations of the water level gauges are shown on Figure 16.

7.2.5 Safe Landing Sites

Recognizing that the reservoir will be used for resource harvesting, boat travel and a variety of other pursuits, a number of potential landing sites have been identified along the shoreline. These landing sites also would be used for emergency purposes.

7.2.6 Ice Monitoring & Safe Trails Program

The forebay and tailrace areas generally will have safer ice conditions following the construction of the **Keeyask Project** than existed prior to construction. There will be locations, however, where travel on the ice will be dangerous and where ice conditions will be unknown or uncertain, especially during the first few winters. Safe trails over the ice will be marked each year. Ice development will be monitored for a number of years to help identify and map safe travel areas and unsafe travel areas. Monitoring will continue until ice travel maps are considered reliable.

7.2.7 Historic Resources Protection/Preservation

The new shoreline following construction of the **Keeyask Project** will be surveyed periodically to identify culturally significant sites so that they can be protected or preserved. This program will be implemented with the **Waterways Management Program** and requires that boat patrol staff be trained to identify historic resources or that trained staff are present on selected boat patrols.