Keeyask Generation Project

Post Reservoir Impoundment

Message from Dave Bowen, Keeyask Project Director

With reservoir impoundment now complete, we are seeing the resulting changes to the land and the waterways for the first time. Downstream of Clark Lake to the Keeyask Project site, people may be observing higher water levels, new shorelines, increased debris and other impacts. Although these changes were expected and planned for, Manitoba Hydro acknowledges that the effects of impoundment are an environmental and cultural loss to our partner First Nation communities.

During the impoundment process, Manitoba Hydro and partner First Nations monitoring staff worked together to undertake monitoring activities. Manitoba Hydro will continue to work with the communities to understand and share knowledge of project effects from both Indigenous and technical science perspectives.

Reservoir impoundment was completed on September 5, 2020.

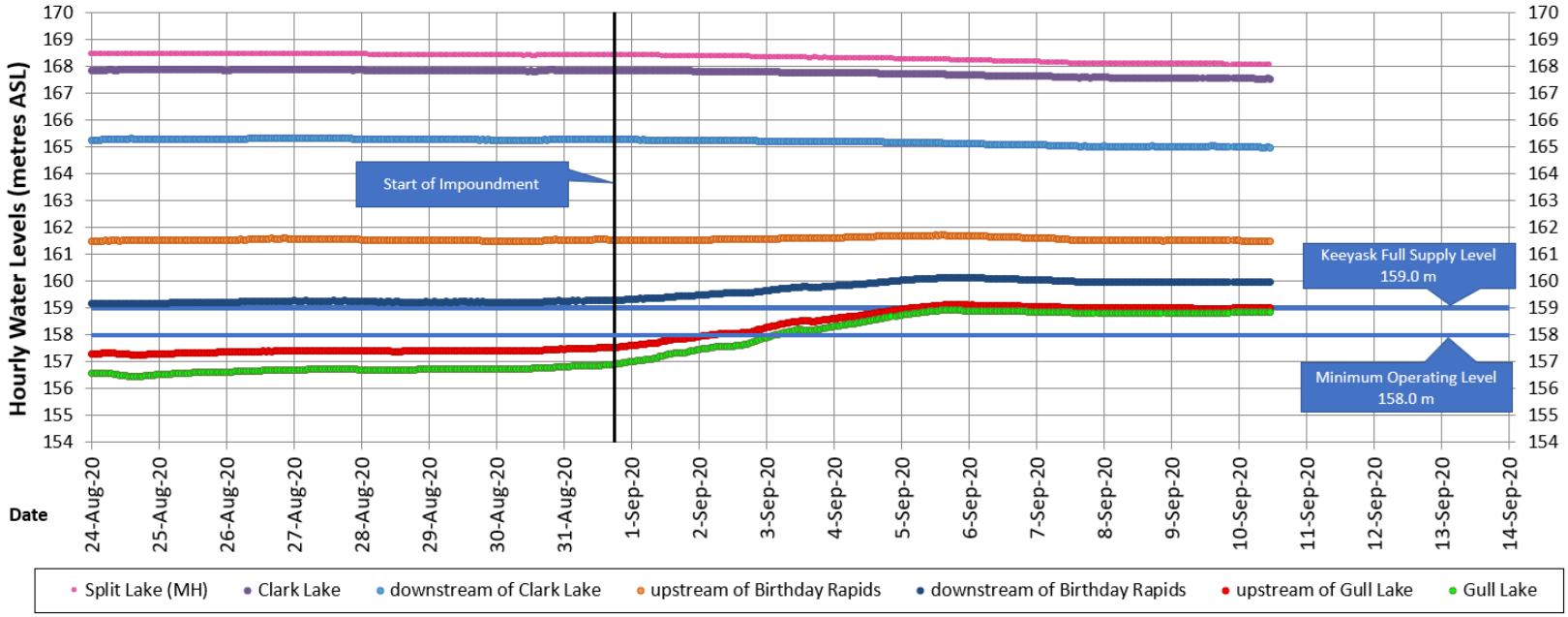
The water level on the Keeyask forebay (Gull Lake) reached a peak water level on Gull Lake of 158.92 metres (521.4 feet) on September 5, 2020. It is expected that the forebay water level will fluctuate within the normal operating range of 158 to 159 metres (518.4 to 521.7 feet) going forward. Water level monitoring data show no changes to water levels on Split Lake and Clark Lake due to the impoundment of the Keeyask Generating Station reservoir.

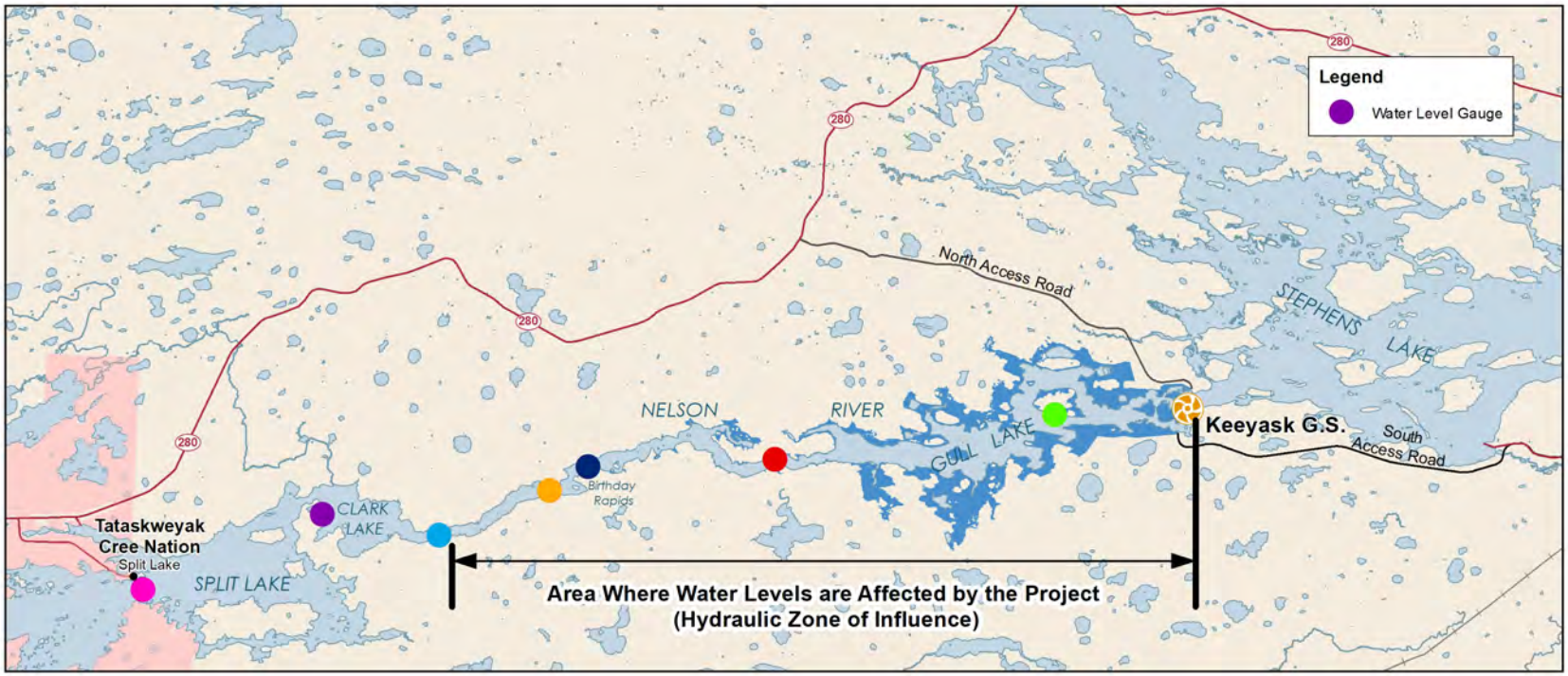
Impoundment is the process of holding back some of the water flowing through the spillway to raise water levels behind the Keeyask Generating Station.

STAY SAFE: Water levels on the Nelson River from Clark Lake outlet to the Keeyask Project site have changed, please travel with caution.

A debris management program is being implemented and will continue until freeze-up. Implementation of this program will then resume during the 2021 open water season, consistent with the Joint Keeyask Development Agreement.

During the 2020-21 winter season, a land-based trail providing a safe, alternate travel route will be installed from Clark Lake to Gull Lake on the north side of the Nelson River. In future years, safe ice trails will be installed on Gull Lake.


Hourly Water Levels (metres ASL)
Date
Start of Impoundment
Keeyask Full Supply Level 159.0 m
Minimum Operating Level 158.0 m
Split Lake (MH)
Clark Lake
downstream of Clark Lake
upstream of Birthday Rapids
downstream of Birthday Rapids
upstream of Gull Lake
Gull Lake


Legend
Water Level Gauge
North Access Road
STEPHENS LAKE
NELSON
RIVER
GULL LAKE
Keeyask G.S.
South Access Road
Birthday Rapids
CLARK LAKE
Tataskweyak Cree Nation
Split Lake
SPLIT LAKE
Area Where Water Levels are Affected by the Project
(Hydraulic Zone of Influence)

What can I expect to see now that reservoir impoundment is complete?

The impounded reservoir now extends approximately 42 kilometres from the Keeyask Generating Station to about 3 kilometres (2 miles) downstream of the outlet of Clark Lake with anticipated changes to water levels and flows.

It is anticipated that there will be ongoing changes along the new shorelines including erosion of the shoreline and the resurfacing of submerged peat. Woody debris and floating peat are expected to accumulate in the backbays and some debris is expected to move downstream into Stephens Lake when the spillway is operating. A debris management program is being implemented and will continue until freeze-up. Implementation of this program will then resume during the 2021 open water season, consistent with the Joint Keeyask Development Agreement.

The water level in the Keeyask forebay (Gull Lake) may fluctuate up to 1 metre (3 feet) on a daily or weekly basis. The reservoir area is predicted to expand by approximately 7 to 8 square kilometres (4 to 5 square miles) over many years due to ongoing shoreline erosion and disintegration of areas of peat.

New shoreline with floating woody debris. *Photo taken Sept 3, 2020*

How will reservoir impoundment affect wildlife in the area?

During impoundment, areas of wildlife habitat were lost; birds and wildlife have been displaced to surrounding areas of suitable habitat. Prior to impoundment, trees were cleared from the reservoir area to reduce debris in the waterways. In addition, beaver and muskrat were trapped out of the reservoir area by the TCN registered trapper and alternative bird nesting habitat was constructed. The creation of a new off-system marsh wetland just south of the Keeyask spillway is being planned.

Will I be able to access my cabin/camp and areas that I hunt, fish and harvest seasonal foods after reservoir impoundment?

If the area you would like to access is not located between the Keeyask Project site and about 3 km downstream of Clark Lake, there are no changes due to impoundment.

Reservoir impoundment increased water levels up to about 3 kilometres (2 miles) downstream of Clark Lake. However, at this location, the change is small and is not noticeable. As you approach Birthday Rapids, there are some noticeable changes. For average flow conditions, the water level is expected to be about 1 metre (3 feet) higher just upstream of Birthday Rapids and about 2 metres (6 feet) higher downstream of the rapids.

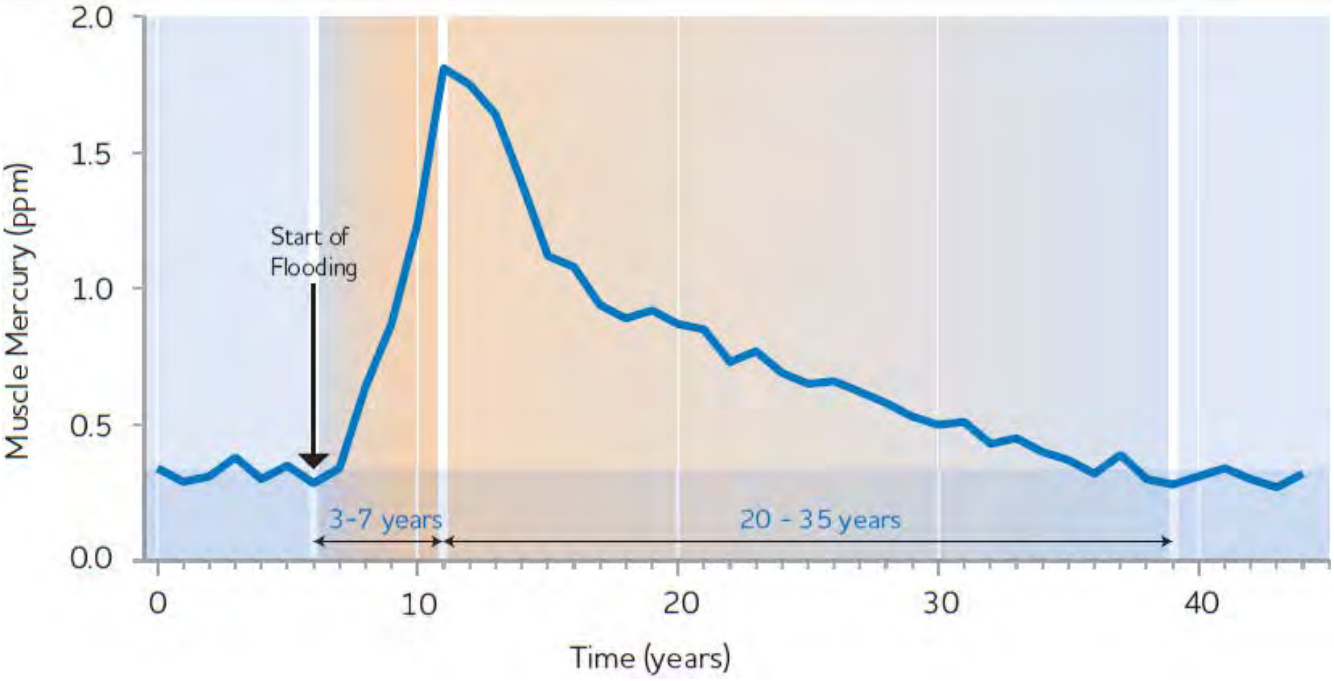
Through the Keeyask Adverse Effects Agreements, programs are available to address the adverse effects of the project, including lost resource use opportunities.

How will reservoir impoundment affect the wild foods I eat?

Now that impoundment has occured, mercury levels in fish are expected to rise in Gull Lake and, to a lesser extent, in Stephens Lake. Mercury levels will peak within three to seven years and then gradually decrease over 20 to 30 years.

Mercury is a metal found naturally in the environment. Flooding of soil or wetlands causes this mercury to be converted into methylmercury, by bacteria living in the soil. This methylmercury makes its way through the food web into the fish. People can be exposed to this form of mercury by eating fish, particularly large predatory fish, such as pickerel and jackfish. High levels of mercury can cause health problems in humans, particularly for children, youth and women who could become pregnant.

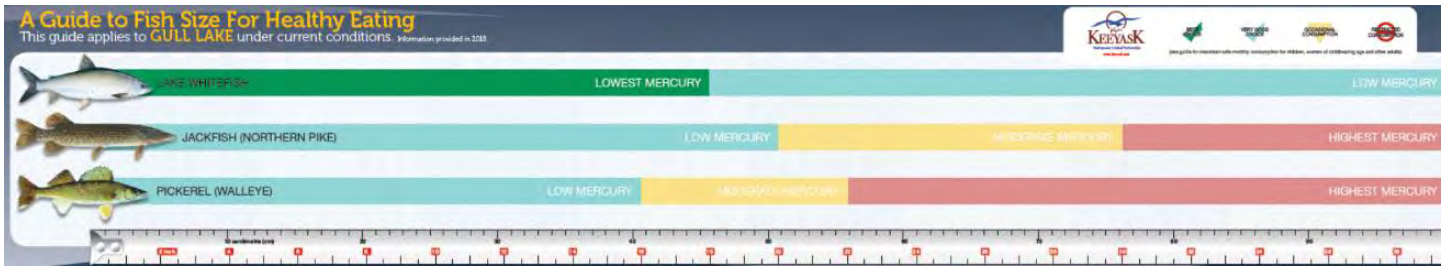
Typical timeline of mercury levels in predatory fish after impoundment.



The partner First Nations and Manitoba Hydro have worked together since 2007 to study and address Keeyask Project effects of mercury on partner First Nation community members. Monitoring for mercury in fish, wildlife and plants in the Keeyask area is ongoing. In addition, partner First Nation community members can voluntarily submit plant, Lake Sturgeon, and wildlife samples for mercury analysis.

Free confidential hair sampling is available to help members understand how much mercury is in their body so an informed decision can be made about eating fish. Sampling occurred last year and will continue after impoundment.

Hair sampling (see photo on left) and resource materials (like the fish measuring tape below) are available through the Mercury Community Coordinators in the partner First Nation communities.



Eating fish and other wild foods is more than just nutrition – it is part of mino pimatisiwin or "living the good life". Fish consumption advice was developed for Gull, Stephens and Split lakes to help build understanding about mercury and the risks and benefits of eating fish. These recommendations will be continuously updated after impoundment based on fish monitoring results.

Mercury levels in wildlife (e.g. moose, beaver, muskrat, snowshoe hare), waterfowl (ducks and geese) and plants (blueberries and Labrador tea) are also being monitored, and are expected to remain low in mercury and remain as healthy wild food options.

Partner First Nation members can CONTACT their MERCURY COMMUNITY COORDINATOR for confidential hair sampling, to submit a wildlife or plant sample, or to learn more about community events and healthy fish consumption.

Mercury Community Coordinators:
- **Lyndsey Keeper (Tataskweyak Cree Nation)**
- **Darwin Flett (War Lake First Nation)**
- **Joanne Lavallee (Fox Lake Cree Nation)**
- **Nellie Redhead (York Factory First Nation)**

Long-term monitoring

Over the coming year or so as generating units come in service, the Keeyask Project will begin to shift from a construction to an operation phase. Monitoring on the land and water will continue for many years and will focus on understanding the long-term changes that occur as a result of the Keeyask Project. Both Indigenous and technical science perspectives will be instrumental to documenting and understanding project effects.

ATK monitoring staff from FLCN doing a ground survey (above), and a boat survey (left) thanks to boat driver from TCN.
Photos taken Sept 4, 2020

WLFN ATK monitor (above) and YFFN ATK monitor (right) participating in helicopter surveys.
Photos taken Sept 3, 2020

Biologist checking for small mammals on a floating peat island. *Photo taken Sept 1, 2020*

Wildlife crew surveying bank swallow colonies by boat.
Photo taken Sept 1, 2020

TCN ATK monitor participating in helicopter surveys.
Photo taken Sept 5, 2020

BEFORE IMPOUNDMENT

Birthday Rapids Looking Downstream - *photo taken Sept 1, 2020*

Goose Creek - *photo taken August 25 2020*

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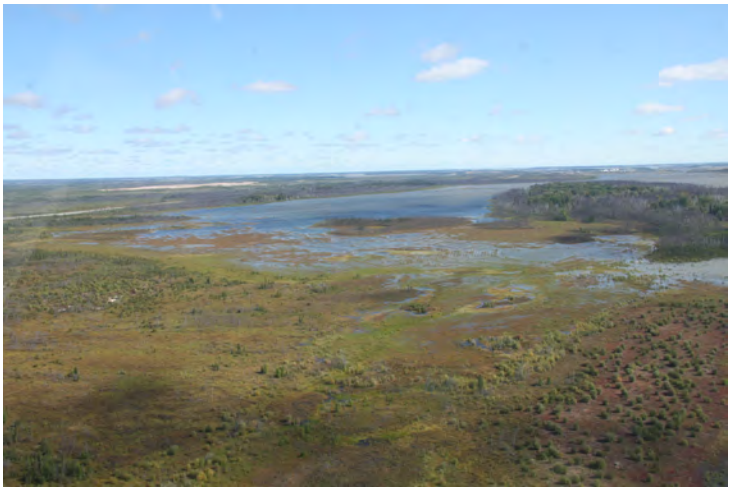
AFTER

Birthday Rapids Looking Downstream - *photo taken Sept 5, 2020*

Goose Creek - *photo taken Sept 5 2020*



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BEFORE IMPOUNDMENT

South Dyke looking West- *photo taken August 25 2020*

North Dyke - *photo taken August 25 2020*

AFTER

South Dyke looking West- *photo taken Sept 5, 2020*

North Dyke - *photo taken Sept 5, 2020*

The Keeyask Generation Project is in the Split Lake Resource Management Area, and within the ancestral homeland of the four partner First Nations: Tataskweyak Cree Nation, War Lake First Nation, York Factory First Nation, and Fox Lake Cree Nation. When completed, it will be a reliable source of renewable energy providing 695 megawatts of power.

If you have questions about the Keeyask impoundment process, please call your KCN Site Representative or e-mail Diana Mager at dmager@hydro.mb.ca

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