Frequently Asked Questions

About

Renfrew Power Generation

the amendment to the Bonnechere River Water Management Plan

and

water management

About Renfrew Power Generation

1. Who owns Renfrew Power Generation (RPG) and what do we do?

RPG is a privately-owned business. Its sole shareholder is the Town of Renfrew. RPG uses the water from the Bonnechere River to turn generators to produce electricity which is sold to the Province of Ontario under contract. RPG uses its own revenues to operate three power generating plants with two dams in the Town of Renfrew, and three control dams at Round Lake, Golden Lake, and Lake Clear.

Producing electricity, a renewable energy form, is one part of our business. We also monitor water levels and maintain flows in the Bonnechere River—necessary to maintain a continuous, uninterrupted supply of water to service the Town of Renfrew's drinking water plant, dilute treated wastewater, supply firefighting needs, protect fish and wildlife habitat, and support business, tourism, recreation and agriculture. The legally binding Bonnechere River Water Management Plan creates that balance.

2. What is the Bonnechere River Water Management Plan?

The Bonnechere River flows from Algonquin Park at McKaskill Lake to the Ottawa River at Lac des Chats. Managing the flows and levels of the 145 km (90 mile) Bonnechere River is accomplished using an integrated plan called the *Bonnechere River Water Management Plan (BRWMP).* We are responsible for monitoring and maintaining water levels and flows as indicated in the BRWMP.
https://www.dropbox.com/s/4rkd0v2t5tyg9xc/Bonnechere_Amended_WMP_Final_OCT2019%20-%20Compressed1.pdf?dl=0

3. How does RPG measure water levels?

RPG uses electronic gauges that are remotely interrogated by computer. The Golden Lake sensor is located at the County Bridge (entrance to Pikwàkanagàn reserve) and the Round Lake sensor is mounted on the Tramore Dam. Lake Clear is read manually, measuring water surface to a known benchmark. Lake Clear is read once a week. Sensor readings for Round Lake and Golden Lake are taken every 15 minutes and averaged for the day.

4. What does RPG do in the winter?

RPG has started snow sampling program with MNRF in 2019. The sample site is in Algonquin Park near Foy Lake. Samples are taken every two weeks as the MNRF requires. RPG produces a graph to show the snow depth and snow water equivalent and posts a link on our website. As a data base is developed this will eventually help with forecasting possible Freshet conditions. The data is also sent to MNRF to help produce their provincial picture. RPG also measures ice thickness on all three lakes.
http://www.renfrewpg.ca/water-levels-flow-history/

5. What is MNRF's role in water management?

The Bonnechere River Water Management Plan, created by the Ministry of Natural Resources and Forestry (MNRF) and power producers, in consultation with many other stakeholders, regulates storage and discharges at each of the dams. RPG must adhere to operational limits for each dam or be held liable by the MNRF. All incidents must be reported to the MNRF and investigated. Negligence is a serious offence and carries stiff penalties. The MNRF also declares floods or droughts and provides watershed condition statements.

6. RPG participates with many groups and is proud to be a good corporate citizen.

1. The Standing Advisory Committee or (SAC) is an advisory group set up by the four power producers. The membership consists of a council-appointed representative from each municipality along the Bonnechere River. SAC's role is to give input to the power producers on all water management activities. Minutes are available on the RPG website.
2. RPG also participates in the freshet calls. These telephone calls are an invite only and set up by the Ministry of Natural Resources and Forestry (MNRF), and Renfrew County. The purpose is to gather information from all emergency managers, water managers, MNRF, and other agencies to help direct where support is needed. Although described as freshet calls, they can be quickly adapted to assist in a drought situation.

The Amendment

1. How will the amendment to the Bonnechere River Water Management Plan improve Round Lake and Golden Lake operations?

Renfrew Power Generation (RPG) will be able to lower water levels in Round Lake by an additional 50 cm (19.7 in) to 169.60 metres between September and March. The drawdown will make more room in Round Lake to hold snowmelt and heavy rains when spring *freshet* begins. The action is expected to lower the risk of severe flooding, shoreline erosion and ice damage there and at Golden Lake.

RPG expects the permanent amendment to be in place by the end of 2020. RPG has been working closely with Bowfin Environmental Consulting and in partnership with the Township of

Killaloe, Hagarty and Richards, the Ministry of Natural Resources and Forestry (MNRF), the Ministry of Environment, Conservation and Parks (MECP), Fisheries and Oceans Canada (DFO), and the Algonquins of Ontario (AOO).

2. What are the specifics of the amendment?

Killaloe, Hagarty and Richards Township Mayor Janice Visneskie Moore proposed the amendment to RPG in 2017 on behalf of the Stakeholders to address high water issues and shoreline and property damage caused by heavy flooding at both Round Lake and Golden Lake.

The amendment permits a drawdown of an additional 50 cm of water to 169.60 metres from Round Lake between September and March.

Drawdown at Round Lake is to start in September at targeted rates recommended by the 2005 ice study to March 1. The drawdown to 169.60 metres will be the target every year. The space created will take in freshet water, helping to reduce peak flows.

The original suggested dates to begin drawdowns were adjusted to provide enough time for a slow and orderly drawdown of water to minimize the impact on spawning trout, recreation.

http://www.renfrewpg.ca/wp-content/uploads/amend-info-web.pdf

http://www.renfrewpg.ca/wp-content/uploads/FAQ-website-amendment.pdf

3. What has been accomplished?

Given the approvals that were necessary and the time taken to develop acceptable Plans, to date: MNRF has given their approval, DFO has agreed as long as adequate monitoring is completed which Bowfin is developing in conjunction with the Algonquins of Ontario, MECP has issued an authorization to December 31st 2020. We continue to work with MECP for a permanent solution. This will likely involve a monitoring plan also. During the 2019/2020 drawdown RPG sampled ice and water levels at key locations as part of working with MECP.

4. Will the new amendment prevent all flooding?

No. Nothing is a guarantee. The record-setting flooding in both 2017 and 2019 were caused by rapid snowmelt and heavy rainfall. There are so many variables we cannot predict or control. We anticipate that the increased drawdown will lessen the risk.

In the meantime, we drawdown levels as low as permitted, take snow samples, observe weather forecasts, and precipitation records along with other data to help assess and manage spring run-off scenarios.

Spring Freshet

Although spring freshet can last just a few weeks, much is done to prepare year-round. The annual drawdown or release of water from the lakes makes room for high water levels that come with spring rains and snow melt and starts in the fall. Over the winter, snow surveys are conducted to measure the snow depth and its snow water equivalent, historical information is reviewed, weather forecasts monitored, storage capacity analysed, water flows and levels measured against water management

plans, and information exchanged between power generators, the Ministry of Natural Resources and Forestry, and municipalities to ensure preparedness for whatever Mother Nature has in store.

1. How are the dams operated and what is a stop log?

Stoplogs are used at each of RPG's dams to control the water levels or stop the flow of water. Stop logs are added or removed depending on the time of the year.
Although the length varies by dam, wooden stoplogs are all 12 inches (30 cm) high and 12 inches (30 cm) wide. Logs are removed manually, one at a time, using a specially designed, manually operated winch. Installation is accomplished by lowering each stop log down one at a time and then jacking to create a seal. Each dam has spillways which retain the logs which are stacked one on top of another. Round Lake has three spillways, Golden Lake has five spillways, and Lake Clear has two spillways. Removal and installation are completed systematically across the dam, spillway by spillway, row by row. In other words, stoplog operations are not all completed in one spillway if multiple stoplog operations are being carried out.

2. Why are water levels lowered in the lakes before freshet?

Water is released at a controlled rate from Round Lake and Golden Lake in the fall and over the winter to make electricity and to prepare for spring freshet levels when water levels rise because of heavy rain and snowmelt. The drawdown makes room for spring freshet's high waters and helps to reduce peak flows. Round Lake is a deeper lake, so the drawdown takes much longer than Golden Lake. RPG carefully manages the outflow of Round Lake to minimize impacts to the Golden Lake levels as it becomes a pass through for water as it is drained first.

3. Why does it seem water levels are higher now during freshet than in the past?

There have been changes not only to the weather but also the introduction of water management planning. The Bonnechere River Water Management Plan was created in 2004 and sets limits for water levels and flows. The latest amendment focuses on increasing drawdown at Round Lake, levels which are very similar to pre-2004. The weather we cannot do anything about, but the water management plan can be amended to better adapt to weather changes.

4. Does RPG hold water during freshet for power production?

Absolutely not! RPG only holds water in the lakes after spring freshet to provide summer water levels required for fisheries and recreation.

Golden Lake Freshet

1. Why do Golden Lake levels rise so quickly?

Golden Lake is fortunate to have many known tributaries feeding into the lake. This is a detriment during freshet because these feeders carry uncontrolled run-off directly into the lake. Golden Lake, a shallow lake, must also pass all upstream run-off too.

2. What is restricting water flow at Golden Lake?

A Bathymetry study, funded by RPG, shows that the narrowing of the river, the natural river bottom profile between the county bridge (entrance to Pikwàkanagàn Reserve) to the Golden Lake dam creates a natural restriction that works like a funnel reducing flow. Even when water levels are drawndown by removing all the logs at the Golden Lake dam, the lake is still not empty. RPG measures levels at both the lake and the dam and records lower water levels at the dam even during the floods of 2017 and 2019. This further supports that water is being held back and not reaching the dam.

3. Why aren't levels lowered earlier in the fall on Golden lake?

Changing when the drawdown takes place will not help due to the natural restriction affecting the flow. We have better results when weather is cold and dry over the winter. An earlier drawdown at Golden Lake could create issues with aquatic life and for associated agencies. Current practice meets the demand for fall water recreation.

4. Is the design of the Golden Lake dam contributing to the high waters during freshet?

As mentioned before, the restrictions upstream of the dam are the control points when all the stoplogs are removed. If the wide-open dam were holding water in the lake, water levels at the dam would be very high and using the weir portions of the structure. This was not the case in 2017 or 2019 which were the extreme years to date.

Round Lake Freshet

1. Why are logs not added to the Tramore dam during freshet when Round Lake levels are well below the limits and Golden Lake levels are over?

Round Lake levels begin to rise later than Golden Lake levels. That is a good thing because the longer it takes for Round Lake to fill up, the less water Golden Lake must pass. As the operator we look at the system as a whole and try to make the best determination considering, on the ground conditions, BRWMP requirements, RPG exposure (legal consequences), and weather. During Freshet we encounter a backwater from Golden Lake all the way back to the Tramore dam. Water is almost equal from one side of the dam to the other. To have a noticeable downstream impact several logs would need to be added until a differential across the dam is achieved. To achieve this water level would need to be raised at Round Lake. In past years as we add logs to Tramore dam very little increase to decline rate at Golden Lake was observed. Unfortunately, Golden Lake operates on its own when all logs are out. Also, as the level declines at Round Lake the flow is naturally decreasing also, you will observe there is not a direct response from Golden Lake. Although a major player I don't believe the Bonnechere River is the main issue at Golden Lake during Freshet, but it is the only one we have some control over. There are approximately 25 uncontrolled tributaries that drain into Golden Lake. It's easy for the public to look at the charts and draw a conclusion on what should be done. Other perspectives: Why do you not remove more logs at Tramore dam when level approaches the Licence of occupation and continues to rise and where levels will peak is unknown, Round Lake suffers

because of Golden Lake inability to drain out. These are not my words but what RPG hears. Also, Wilber Lake, requests to add logs to Golden dam to lower their levels….

2. Why can't more stoplogs be pulled from Tramore Dam when levels are high at Round Lake during freshet?

As water levels increase on Round Lake, levels at Golden Lake, usually, are already quite high. We must again consider the entire system. Removing logs means more water would flow into Golden Lake which already struggles to pass water. Depending on how critical levels are on Golden Lake, this could change conditions for the worst. High water levels at Golden Lake result in backing water up to the Tramore Dam. Removing more logs at Tramore Dam, at this point, has no benefit as it has nowhere to go.

Erosion and Ice push

1. What is ice push, and can it be prevented?

Ice push is a natural process and it cannot be prevented. With lower water levels, the ice push will be down lower on the shore, but it still occurs. It has the potential to undermine the shore, making it unstable at the lower level. RPG follows recommendations outlined in the 2005 ice study. Ice push is more prominent when we receive a freeze-thaw cycle. Ice can also be damaging when levels rise and float the large ice sheets which then act like bulldozers to the shore when high winds occur. There are shoreline protection methods available, but how effective they are is controversial and can be quite expensive.

2. What is shoreline erosion, and can it be prevented?

Erosion is a natural process and more destructive when water levels are high. Wave action also intensifies damage. Shoreline erosion occurs until such time as rock is encountered, then the process slows significantly. There are methods of protection available; how effective they are is controversial and can be quite expensive.

3. Why do levels decline during the summer? Can't more logs be added?

Summer levels are usually achieved by July 1st at the latest. Levels decline naturally because of evaporation, and sublimation and is more evident in hot and dry periods. RPG must maintain flow for the entire system to keep the river flushed and provide a drinking water supply to municipalities and sewage facility discharge dilution. To maintain this flow, RPG attempts to capture rain by adding log(s) as necessary, always keeping minimum flows in mind.

Information

1. Where can I see the graph of the snow sampling program?

Here is the link: http://www.renfrewpg.ca/water-levels-flow-history/

2. Where can I find water level information from RPG?

   RPG posts water level charts on our website http://www.renfrewpg.ca/water-levels-flow-history/ and Facebook page daily during freshet, and weekly (Mondays) for all other times of the year. There is also other valuable information available on our website.

3. What do the lines represent on the Lake charts RPG produces?

   Y axis (left margin) shows water elevation in meters above sea level.

   X axis(bottom) shows days of the year, Day 1 is Jan 1st……Day 365 is Dec 31. This corresponds to the (BRWMP) Bonnechere River Water Management Plan. The Lake Clear chart shows weeks of the year.

   Yellow Line represents the maximum water level issued to RPG from the province of Ontario known as the Licence of Occupation.

   Dark blue line shows the maximum upper water level limit which was introduced in 2004 as part of the BRWMP.

   Light blue line shows the minimum lower water level limit introduced in 2004 as part of the BRWMP.

   Purple line indicates the average operating average.

   Orange/black dots indicates the actual water level. Each black dot represents a day.

   The title of graph identifies which lake, range of chart data, and how many logs are in the dam at the time of publish.

Have a question or need more information? call us at 613-433-3715 or email us at info@renfrewpg.ca