

EELS' LAKE COTTAGERS ASSOCIATION

EELS' LAKE WATER LEVEL SURVEY

October 15, 2017

BACKGROUND

Eels' Lake, shown in attached map, is a large body of water with an irregular shoreline and an uneven lake bottom. It has many narrow channels, inlets and bays with some 425 shoreline properties and 2 business enterprises located on the lake. It is one of 33 reservoir lakes used to supply water to the Trent-Severn Waterway System (TSW) with its' water level controlled and monitored by the TSW by a dam built in 1947 which allows water to flow into Eels' Creek. The dam has a capacity for 12 logs, each 12 inches in height, resulting in a potential maximum vertical water drop at the dam, and on the lake, of 12 feet. Typically, all 12 logs are placed in the dam by early spring. Removal of the logs is dependent on the water requirements for the Trent-Severn Waterway with logs removed and replaced as necessary depending on rainfall amounts during the summer. The winter "dam set" is 4 logs with the top log never having been removed.

ISSUE

At issue are the safe navigational, economic and recreational consequences for the users of the lake should for any environmental or operational need of the TSW, it ever be necessary to remove the 4th log in the dam. It is the position of the Eels' Lake Cottagers Association that significant benefits would result to all lake users if 5 logs were to be used for the winter set instead of 4. Our position is that this change can be accommodated with the adoption, by the TSW, of an alternative lake level draw down scheme based on the reasonable requirements and needs of each individual lake versus that of the current equal draw down approach used by the TSW across all the reservoir lakes.

PROCEDURE

The survey was conducted as follows;

1. A visual inspection of the dam was undertaken to confirm a winter set of 4 logs. It should be noted that while the survey was undertaken in mid-October, following a very wet summer, there is no assurance that the need to remove the 4th log will not occur at any other time, especially in a hot and dry summer caused by changing climatic conditions resulting in a need for water in the Trent-Severn.
2. The height, or head, of water going over the top of the 4th log in the dam was then determined. This was done by lowering a long sturdy mast through the grate on the

top of the dam until it was resting on the surface of the top log. The mast was then marked at the height of the grate and then raised until the bottom of it touched the surface of the water going over the 4th log. This level was again marked on the mast and the distance between the 2 marks measured. The result was the head of water flowing over the dam was 16 inches.

3. On the lake a total of 16 locations were identified where low water levels, at this time of year, are considered dangerous to safe navigation. These locations are shown on the map and are identified as points A through P. These are generally at the entry points to bays, inlets and channels and passed very closely by boaters getting to and from their cottage properties at the time of the survey. At each of these points a measuring tape, supported by a strong backer board, was lowered into the water and the distance to the bottom of the lake at that point was recorded. In the spring of 2018 a visual count of the cottage properties beyond these points, and negatively impacted by low water levels, will be conducted. The Table that follows shows the results of the survey.

CONCLUSIONS

1. On October 15th, the day the survey was conducted with 4 logs in the dam and a head of water of 16 inches, 19% (3 of 16) of the locations surveyed were considered non-navigable and unsafe. With no water flowing over the dam and with 4 logs (normal TSW placement), 3 logs, or 5 logs placed in the dam this percentage changes to 69%, 100% and 31% respectively. Any of these conditions are possible following winter set, but improved when 5 logs are used. However, the possibility remains that any of these scenarios could occur at any time given the potential for changing climatic conditions.
2. On the day of the survey there were 4 logs in the dam with a head of water at the dam of 16 inches. In contrast to the summer of 2017 which was very wet, in drought-like conditions such as 2016 the volume of water in the lake and ultimately spilling over the dam would be reduced. In the absence of substantial rainfall, safe navigation on the lake would be jeopardized as demonstrated by the survey results. The Eels' Lake Cottagers Association, to support more stable and safe water levels on the lake, is in favour of increasing the dam's winter set to 5 logs from the current 4 log practice.

SUPPORTING MEASUREMENTS & CALCULATIONS

- *Measured head of water over 4th log at the dam was 16".*
- *Height of dam when 4 logs placed @ 12" each is 48".*
- *The depth of water from the surface to the base of the dam was 64" (16" + 48").*
- *Calculated depth of water from the surface to the top of the 3rd log is 28" (16" + 12").*
- *Calculated depth of water from the surface to the top of the 5rd log is 4" (16" - 12").*