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# Parks Canada - Ontario Waterways

## Trent-Severn Waterway National Historic Site of Canada

Township of Minden Hills  
July 18<sup>th</sup>, 2017

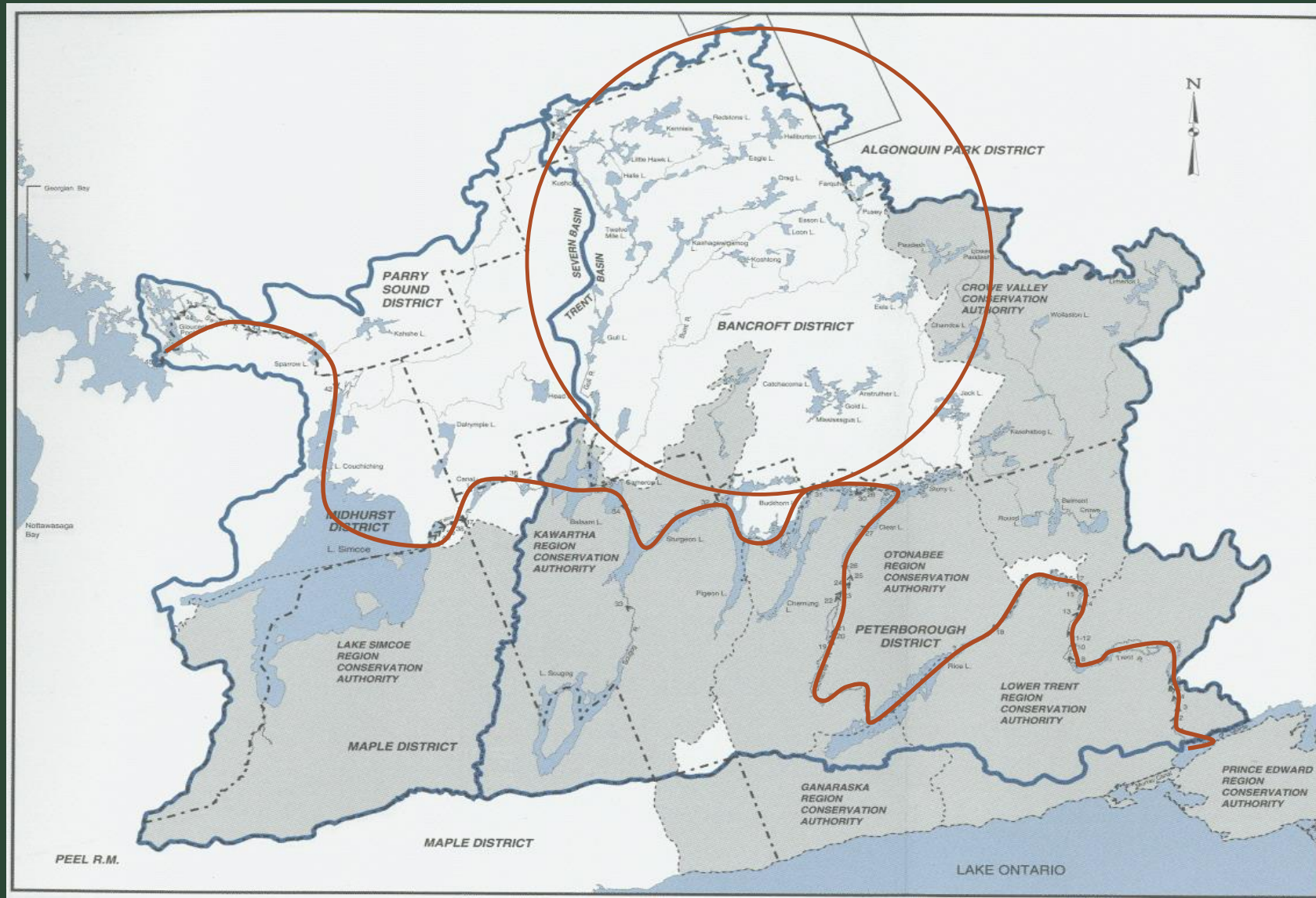


# Water Management Interests

- Navigation and recreational interests
- Public Safety and Flood Mitigation
- Environment (Wildlife and Fishery)
- Water Supply
- Green Energy



# Trent and Severn Watersheds

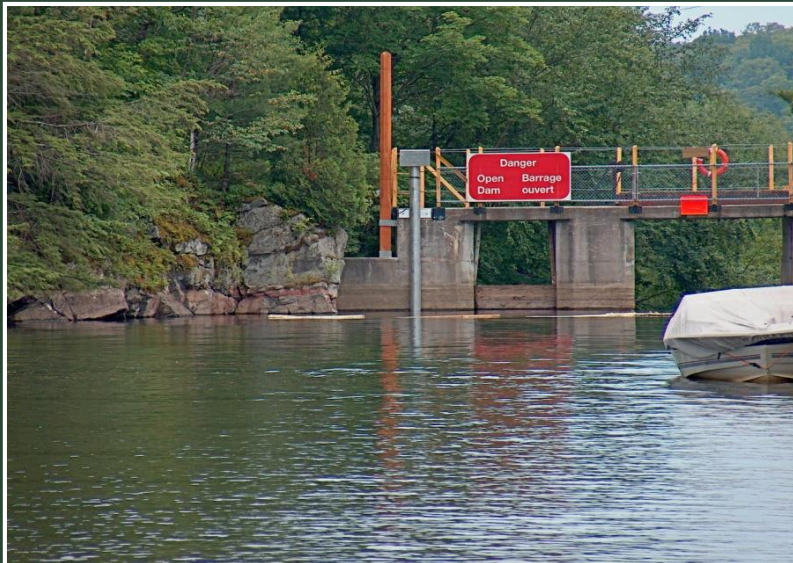




# Monitoring Network

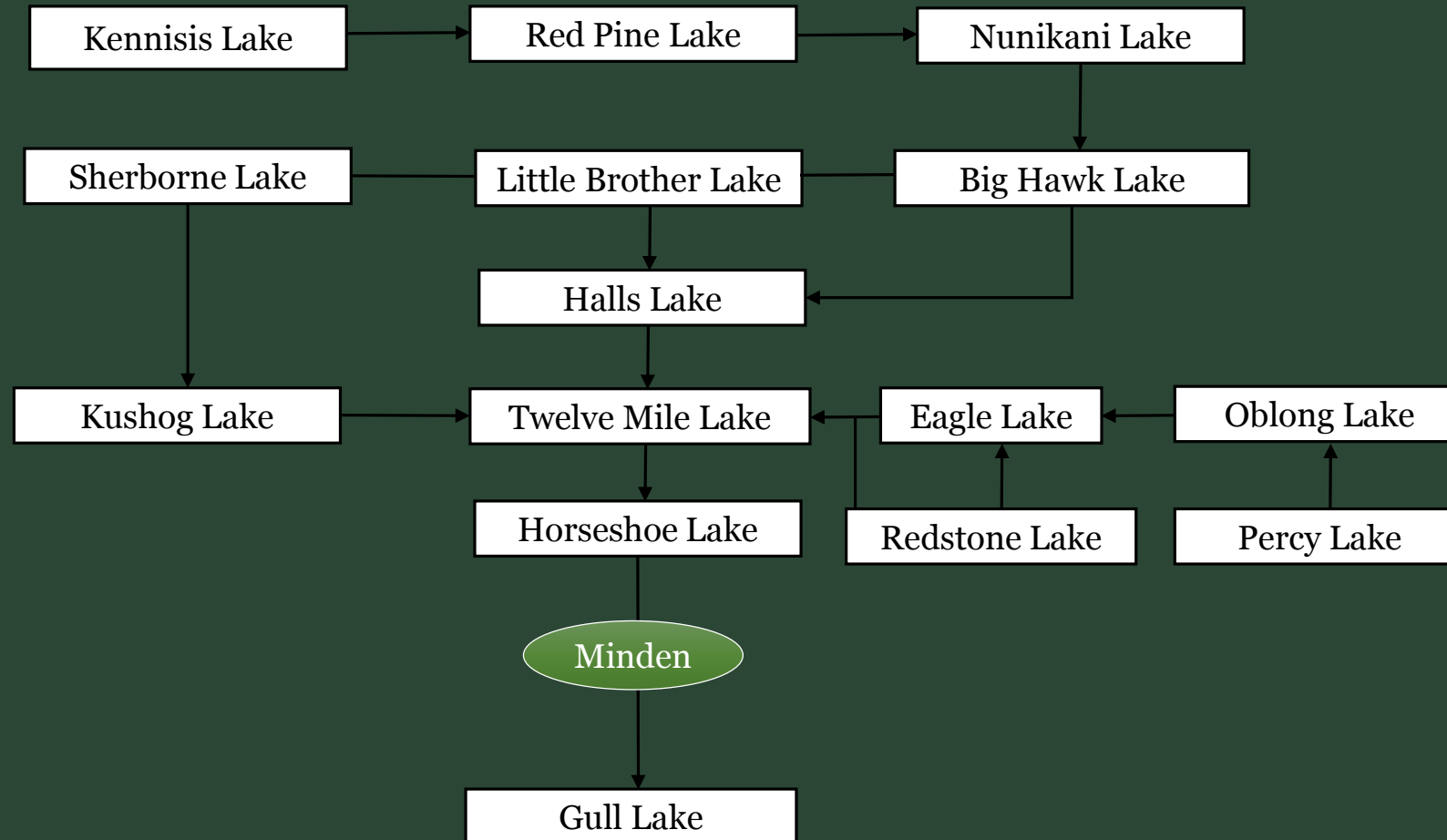
Level gauges on the Kawartha Lakes, Haliburton Reservoirs, and the Severn River system

- 100 Manual Level Gauges (weekly/daily readings)
- 90 Automatic Level Gauges (daily/hourly readings)
- 12 Flow Gauges: rated level gauges, flow meters
- 11 Rainfall Accumulation Gauges





# Gull River – Upstream of Minden



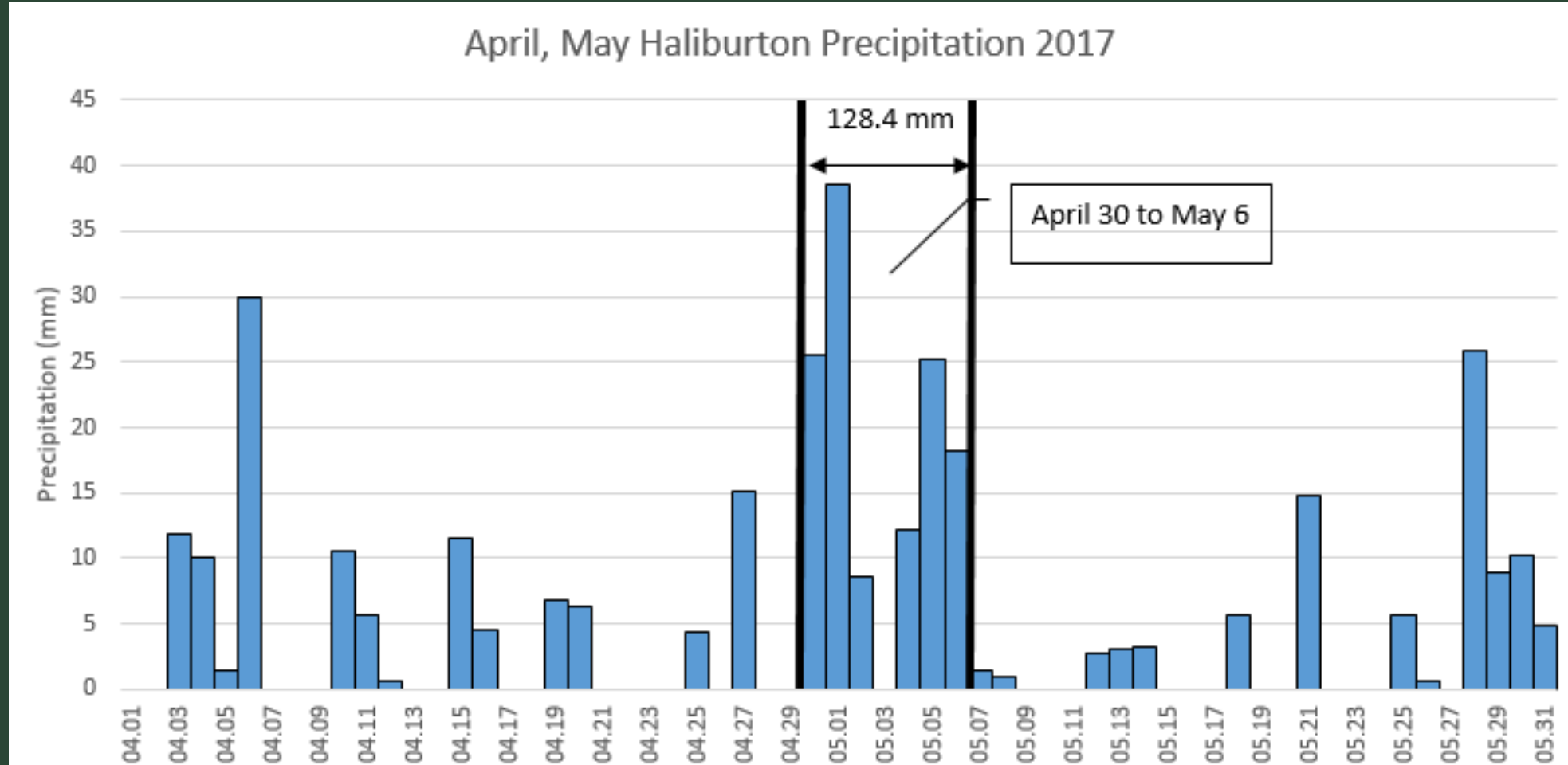


# Annual Cycle of Operation – Reservoir Lakes

- 1 Set winter stoplog settings at most dams.
- 2 Use snow survey results and other data to show whether early refilling is necessary.
- 3 Monitor the spring rise of the lakes and adjust the dams accordingly.
- 4 Aim to have the lakes full by the end of Spring.
- 5 Draw water according to the need for navigation (equal percentage basis). A computer model is utilized to aid this process.
- 6 Set the dams to their winter settings in the fall.



# Rainfall – April, May



- Monthly Average for April 75.6 mm
- Monthly Average for May 93.3 mm



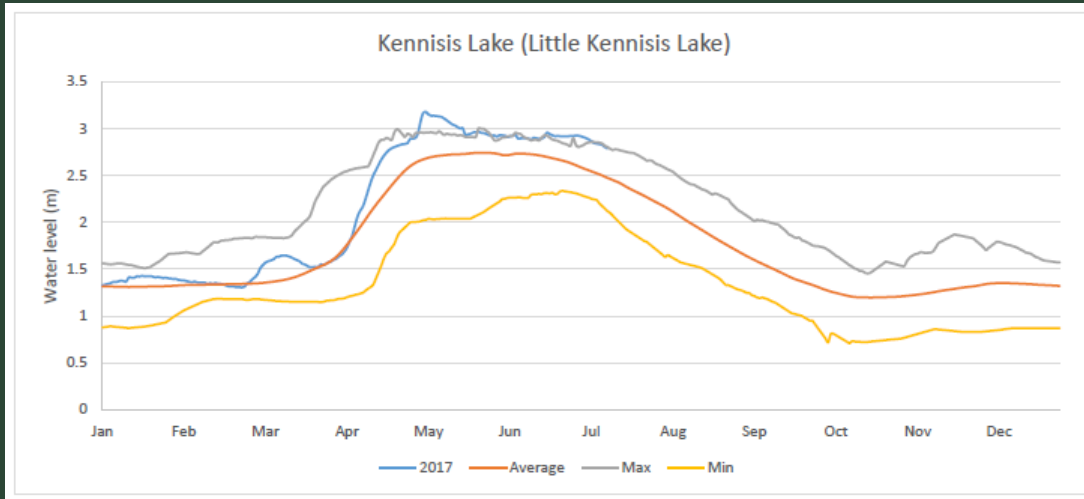
# Winter/Spring Precipitation Haliburton

<b>Month</b>	<b>Ppte Total mm</b>	<b>Rain mms</b>	<b>Snow cms</b>	<b>Normal Monthly Total mms</b>	<b>Actual as % of Normal</b>
<b>2016 Nov.</b>	<b>53</b>	<b>42</b>	<b>10</b>	<b>116</b>	<b>46%</b>
<b>2016 Dec.</b>	<b>153</b>	<b>19</b>	<b>134</b>	<b>87</b>	<b>176%</b>
<b>2017 Jan.</b>	<b>82</b>	<b>29</b>	<b>53</b>	<b>100</b>	<b>82%</b>
<b>2017 Feb.</b>	<b>100</b>	<b>45</b>	<b>55</b>	<b>73</b>	<b>137%</b>
<b>2017 March</b>	<b>83</b>	<b>69</b>	<b>14</b>	<b>75</b>	<b>111%</b>
<b>2017 April</b>	<b>144</b>	<b>131</b>	<b>13</b>	<b>75</b>	<b>192%</b>
<b>2017 May</b>	<b>190</b>	<b>189</b>	<b>1</b>	<b>93</b>	<b>205%</b>
<b>2017 June</b>	<b>168</b>	<b>168</b>	<b>0</b>	<b>81</b>	<b>207%</b>

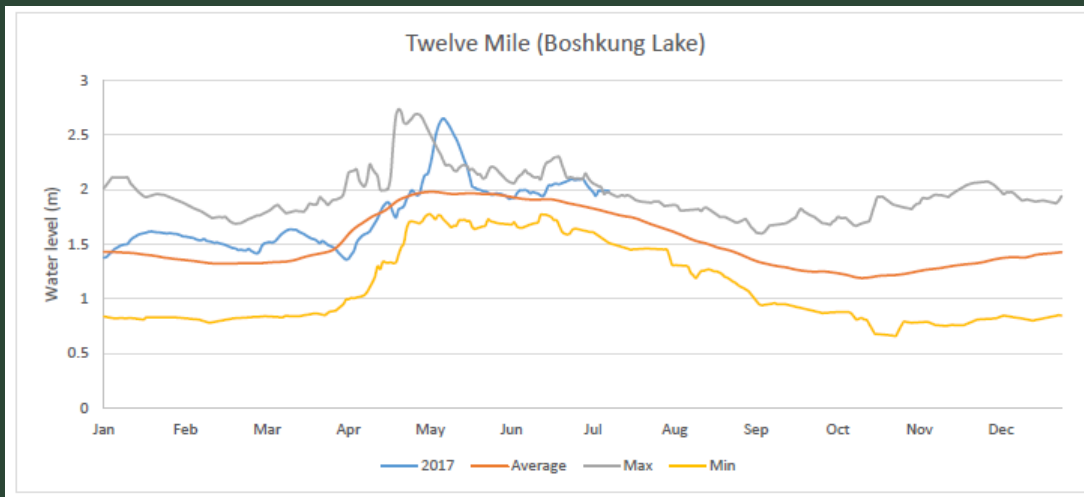




# Overfilled Lakes – During Event

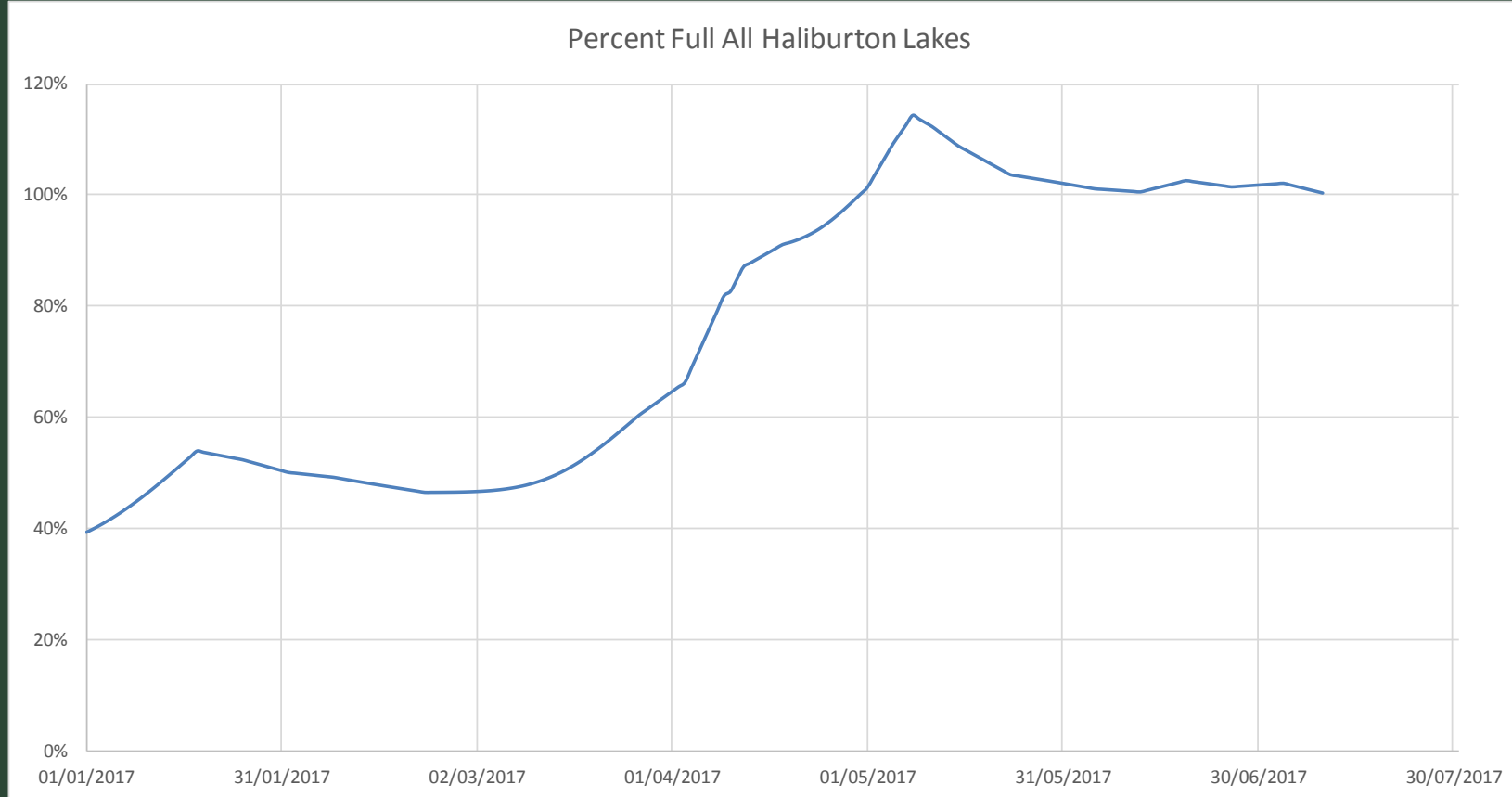


- Lakes were near full following the completion of the Spring Runoff (mid April)
- Lakes were set to absorb average to above average rainfall
- Lakes did not have sufficient storage available to absorb the **severe** rainfall that occurred





# Timeline of Event



- Spring freshet (snow-melt) was done by mid April
- 72.8 mm rainfall event from April 30 to May 2
- 55.6 mm rainfall event from May 4 to May 6



# Timeline of Event Continued

- Calls with partners began in the beginning of May
- Significantly increase outflow at Twelve Mile, Horseshoe and Gull Lake to make as much storage as possible
- Reduced outflow from upstream locations and overflowed lakes above to provide Minden with preparation time
- The peak came through Minden on May 12
- The peak flow observed at Norland was similar to 2013



# TSW Improvements

## Enhanced Communications

- Daily phone calls with MNRF for watershed status updates to their support public flood forecasting and messaging
- Advanced warning for the Township of Minden Hills
- Daily phone calls with Minden Hills reps regarding dam operations, expected time of peak, in to assist with their emergency response
- Frequent daily updates on the Parks Canada website and through email distributions for the public

Automated Gauge Network Improvements and Inflow forecasting

Infrastructure Investment - \$59M in dam improvements in Haliburton

Engaging stakeholders – CEWF, cottage and lake associations, WMAC



# Continued Areas for Potential Improvement

- Understanding Climate Change and potential impacts
- Flood mapping for the region to improve flood forecasting and development planning
- Flood resistance of private and public property



# Thank You

Ontario Waterways