

# **2022-23 Water Management in the TSW Reservoirs with focus on The Central Gull River Area**

***Boshkung Lake Property Owners Association Meeting –  
July 8, 2023***

**Ted Spence  
Chair of the Coalition for Equitable Water Flow (CEWF.ca)  
& Professor Emeritus in Environmental Studies York U.**

# Welcoming the BLPOA back to CEWF Membership

- CEWF Is a Volunteer Organization established in 2006 to provide input to - **Panel on the Future of the Trent Severn Waterway (2007)**
- Aims to represent the interests of more than 30,000 waterfront property owners on **“Reservoir” and “Flow-Through” (RaFT)** lakes in Haliburton and Northern Peterborough Counties
- **33 Member Lake Associations** representing 91% of the TSW’s reservoir lake storage capacity
- Sub-watersheds included:
  - **Gull, Burnt & Mississagua Rivers plus Nogies, Eels & Jack’s Creeks**
- In 2016 entered a new partnership with 6 local municipalities in Haliburton and Peterborough Counties, **the Upper Trent Water Management Partnership (UTWMP).**

# CEWF Objectives



- To promote an **Integrated Approach to Water Management at the Watershed Level**
- To maintain **dialogue with TSW management**
- To promote **shared information and understanding of Water Management issues/practices**
- To promote **approaches to ensure safe navigation, access to waterfront property, economic sustainability and the avoidance of negative environmental and economic impacts for residents on the Reservoir and Flow Through (RAFT) lakes.**

# Outline of today's presentation

- We will begin with the new CEWF Video presenting an overview of TSW operations and a review of climate change projections for our area. [Video can be viewed at CEWF.ca](https://www.cewf.ca)
- We will then review recent water management experience on the TSW with a focus on the reservoirs lakes and Boshkung Lake area in particular.

# Coalition for Equitable Water Flow

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 VIDEO:  
"Water Level Extremes -  
What you can do"

## Latest Water Level News

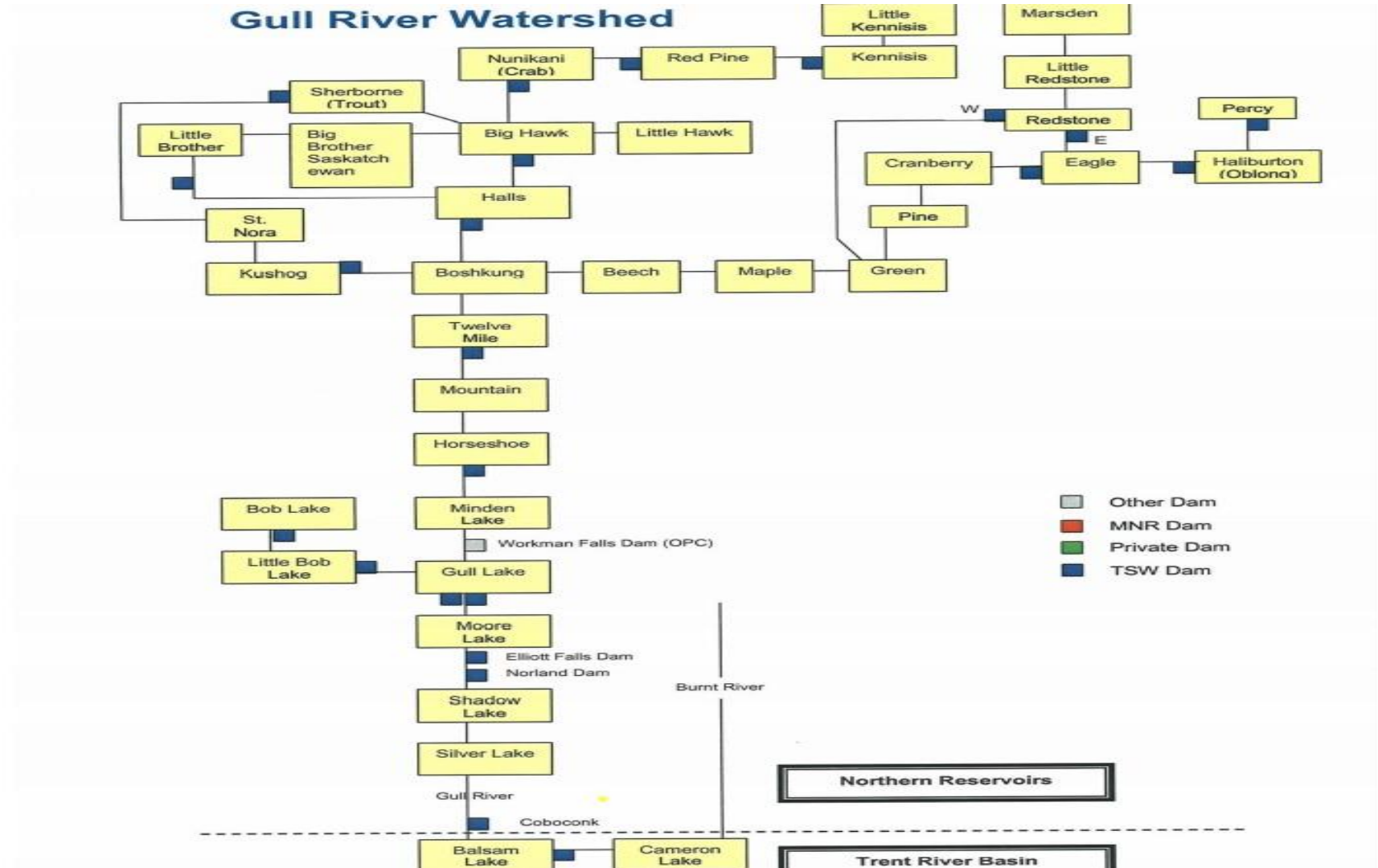
### ANNOUNCING TWO NEW CEWF VIDEOS!

June 9 2023 | By CEWF

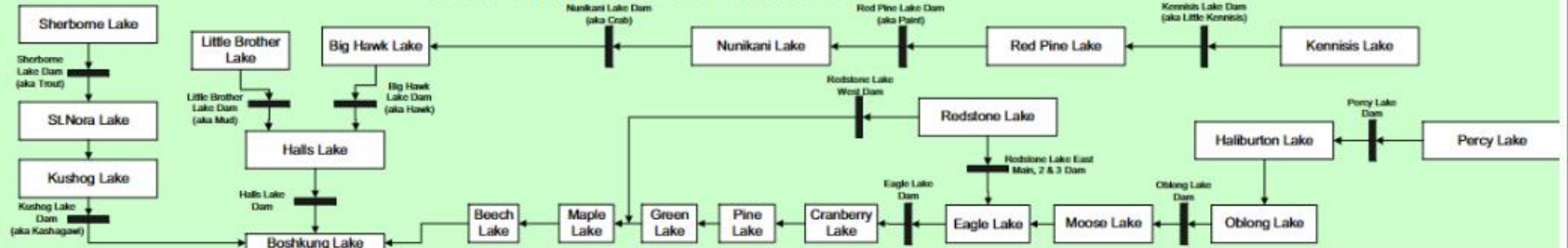
Extreme Water Levels - What You Can Do As you know, local water level changes have been more extreme in recent years due to changing weather patterns. The CEWF works closely with the Trent Severn Waterway (TSW) in representing property owners on the

# 17 Gull River Reservoirs

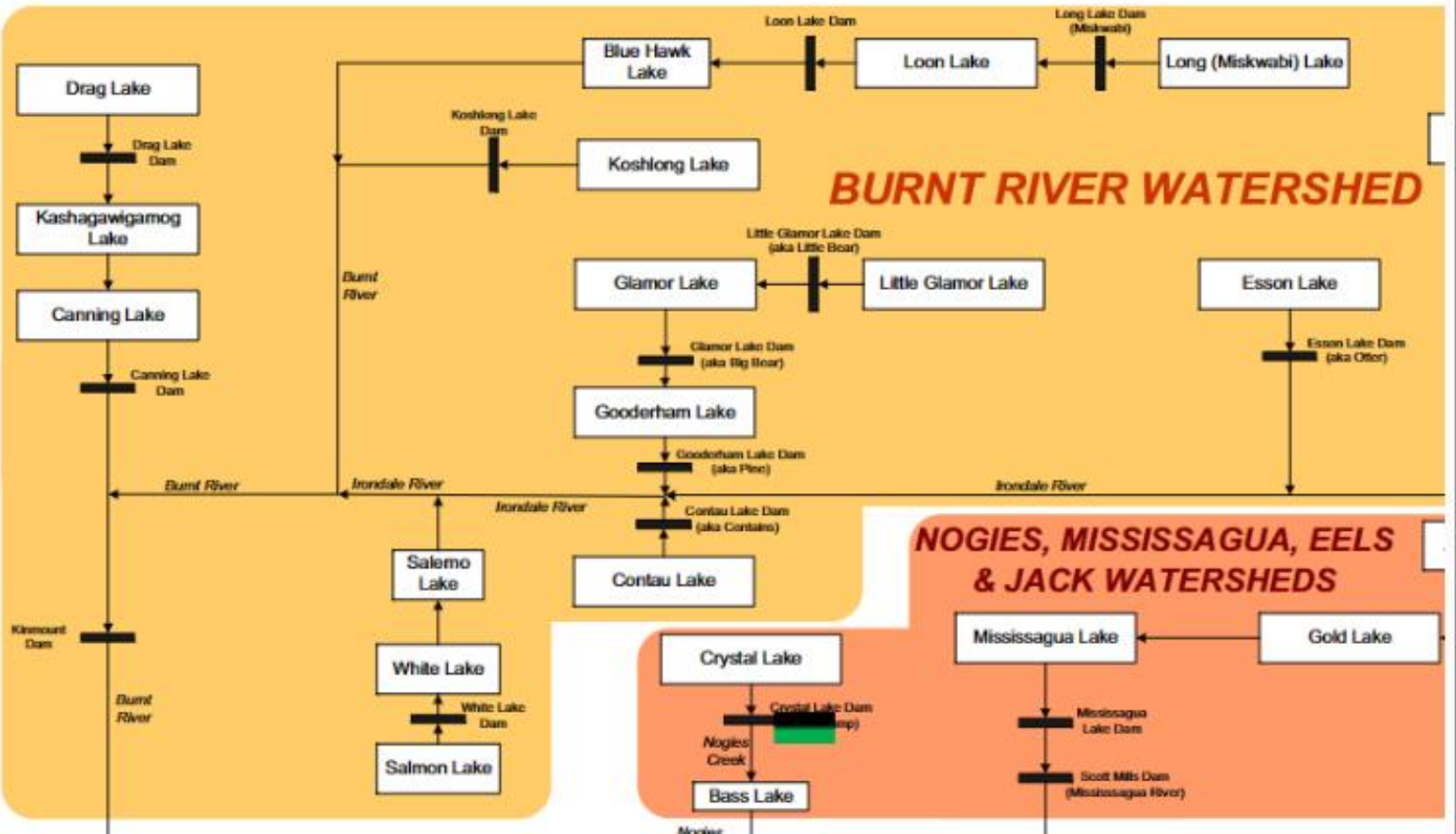
*54% of Total Storage and 6 of the 10 largest reservoirs*



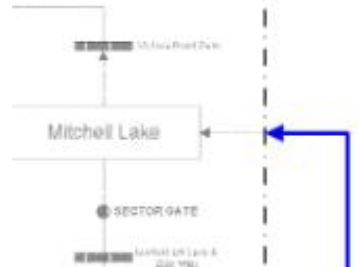
# GULL RIVER WATERSHED



# BURNT RIVER WATERSHED



# NOGIES, MISSISSAGUA, EELS & JACK WATERSHEDS



# Every Year Brings New and Different Challenges but None Greater than in 2021, 2022 and now 2023

*In most recent summers reservoir levels have been close to normal on most of our lakes but TSW has had to continuously adjust to and manage for extreme weather conditions each year. Often this has included water conservation with minimum flows downstream on Otonabee and Trent Rivers and periods of restricted flows on flow-through lakes and river sections.*

- 2021 Very dry winter and spring with early snowmelt and **record low water levels** in spring resulting from drought and drawdown for canal followed by extreme rainfall and **record high levels** by early August.
- 2022 normal spring then dry followed by extreme rainfall late May and early June (**135mm in 10 days**) **overflowing system with Canal closure** and active water management. Dry July with wet August with concentrated rainfall events and active water management.
- 2023 some winter rainfall events followed in April by extreme rain (192% of normal) and very warm periods with rapid runoff. Significant rainfall events in June and extreme heat in early July. There has been active water management in the winter and throughout the spring and early summer.

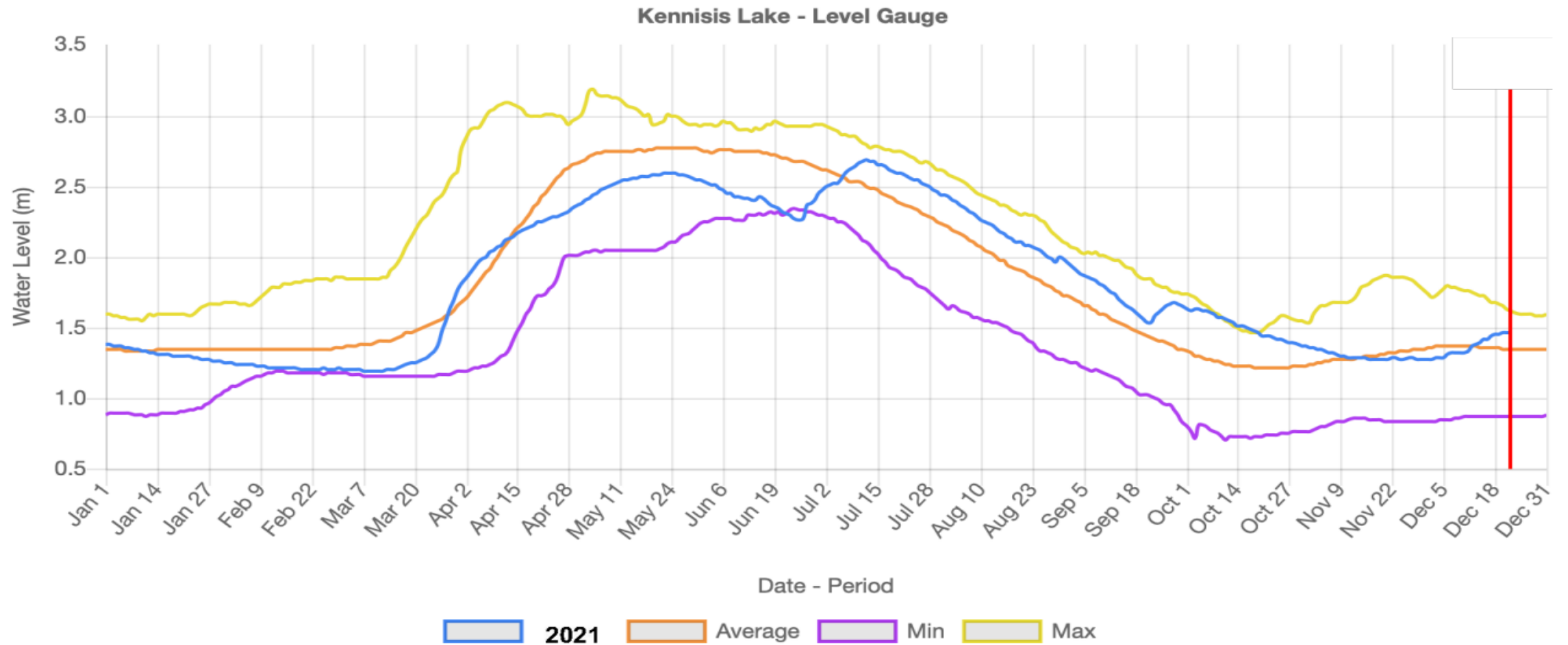


# Looking Back 2021

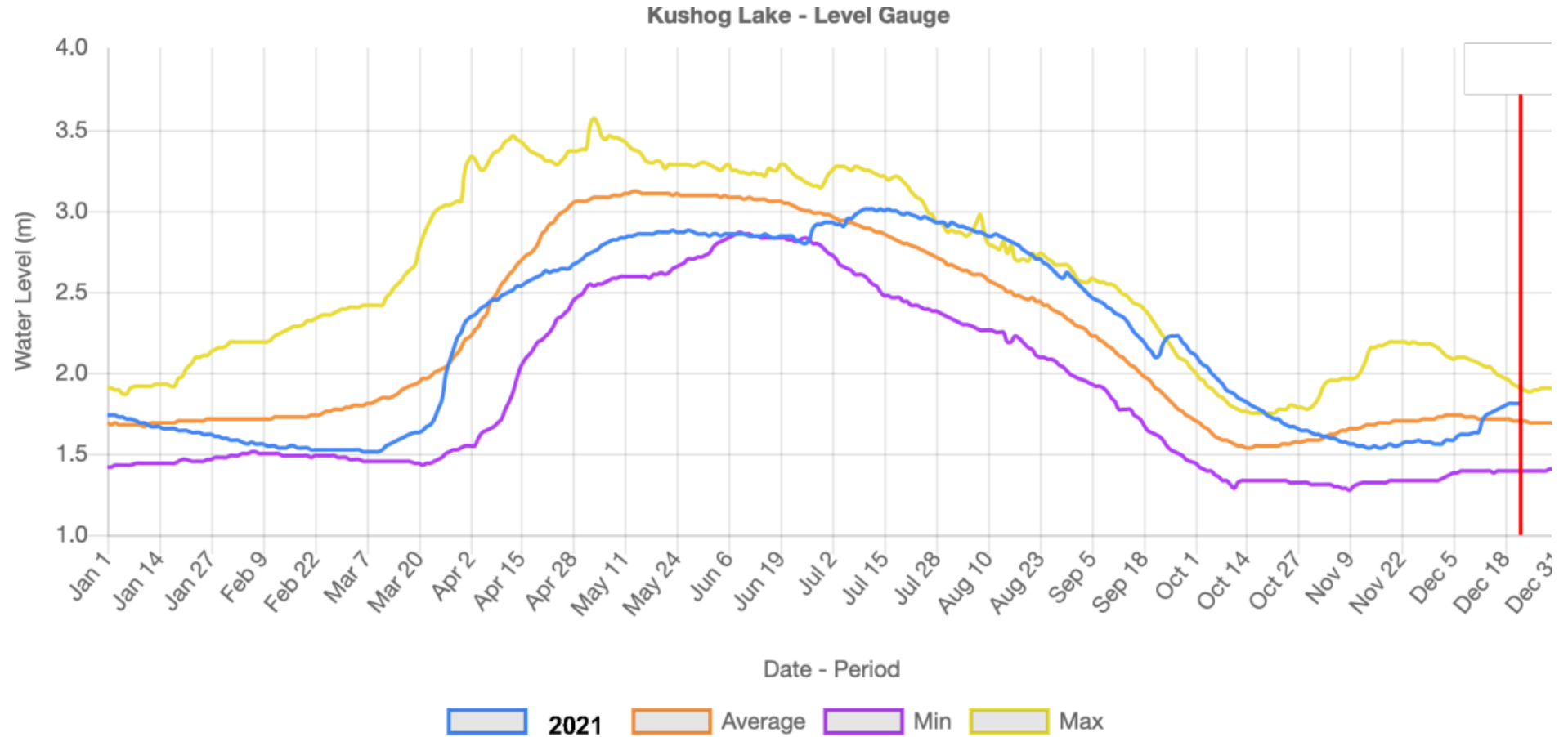
## 2020-2021 Haliburton Precipitation Summary to Aug 31 2021

<b>Month</b>	<b>Ppte Total mm</b>	<b>Rain mm</b>	<b>Snow cms</b>	<b>Normal Monthly mms</b>	<b>Actual as % of Normal</b>	<b>Month End Snow on Grd cms</b>	<b>Notes</b>
<b>2020 Sept to Dec</b>	<b>352</b>	<b>260</b>	<b>92</b>	<b>414</b>	<b>85%</b>		<b>A dry fall in 2020</b>
<b>2021 Jan</b>	<b>47.8</b>	<b>1</b>	<b>46.8</b>	<b>100</b>	<b>48%</b>	<b>44</b>	<b>Dry Month but snowpack above normal 32cms at month end no rain or thaw</b>
<b>2021 Feb</b>	<b>100</b>	<b>8</b>	<b>92</b>	<b>73</b>	<b>137%</b>	<b>75</b>	<b>Normal month end snowpack is 42cms.</b>
<b>2021 Mar</b>	<b>47.2</b>	<b>41.4</b>	<b>5.8</b>	<b>75</b>	<b>63%</b>	<b>0</b>	<b>Another dry Month but warm with melt</b>
<b>2021 April</b>	<b>70.8</b>	<b>69.4</b>	<b>1.4</b>	<b>76</b>	<b>93%</b>	<b>0</b>	<b>Dry Month until 34 mm last 4 days</b>
<b>2021 May</b>	<b>27</b>	<b>27</b>	<b>0</b>	<b>93</b>	<b>29%</b>		<b>Extremely dry month</b>
<b>2021 June</b>	<b>125</b>	<b>125</b>	<b>0</b>	<b>81</b>	<b>154%</b>		<b>Dry start with 72 mm in last 6 days</b>
<b>2021 July</b>	<b>179</b>	<b>179</b>	<b>0</b>	<b>90</b>	<b>199%</b>		<b>A very wet month</b>
<b>2021 Aug</b>	<b>56</b>	<b>56</b>	<b>0</b>	<b>79</b>	<b>71%</b>		<b>Another dry month</b>

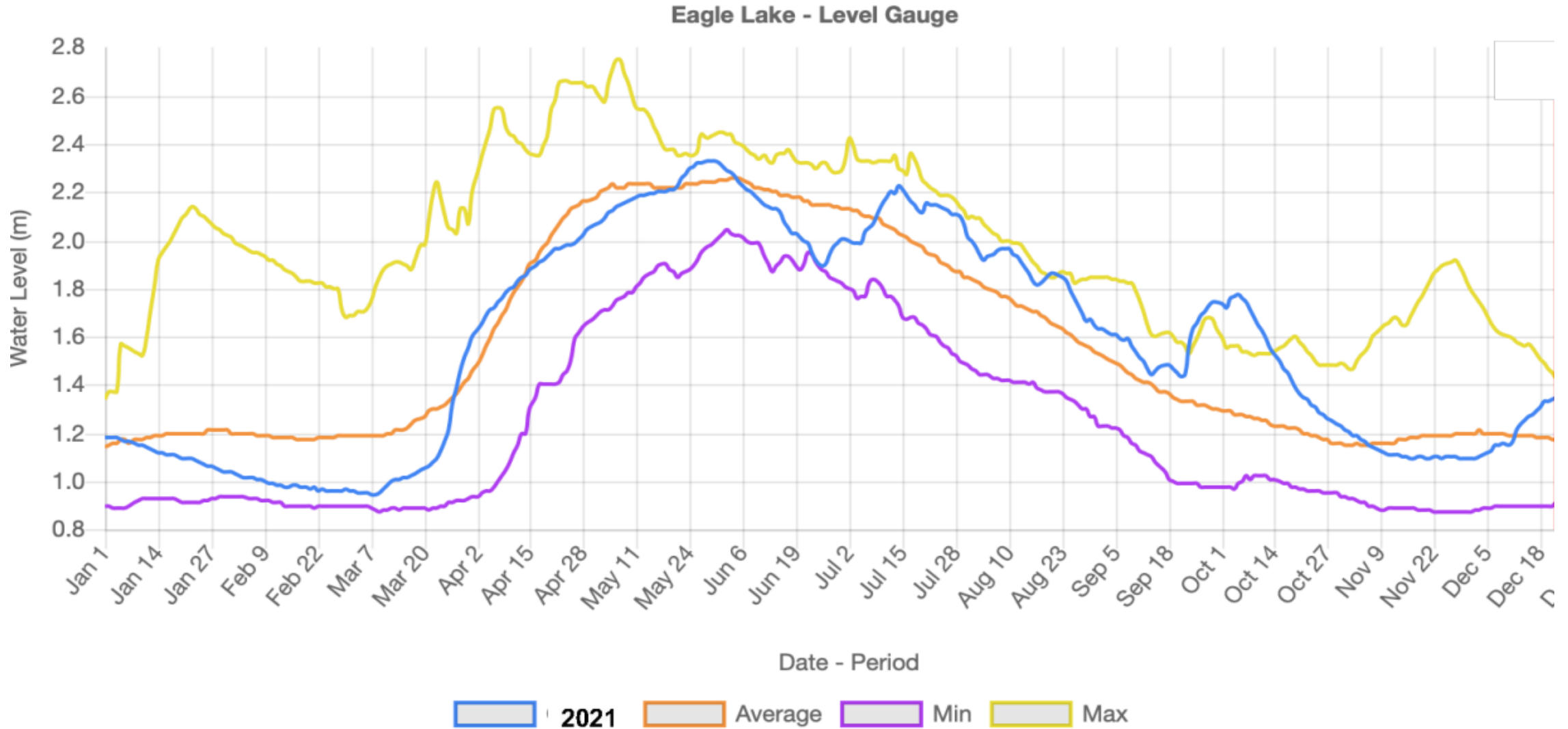
# LOOKING BACK - Kennisis Lake 2021



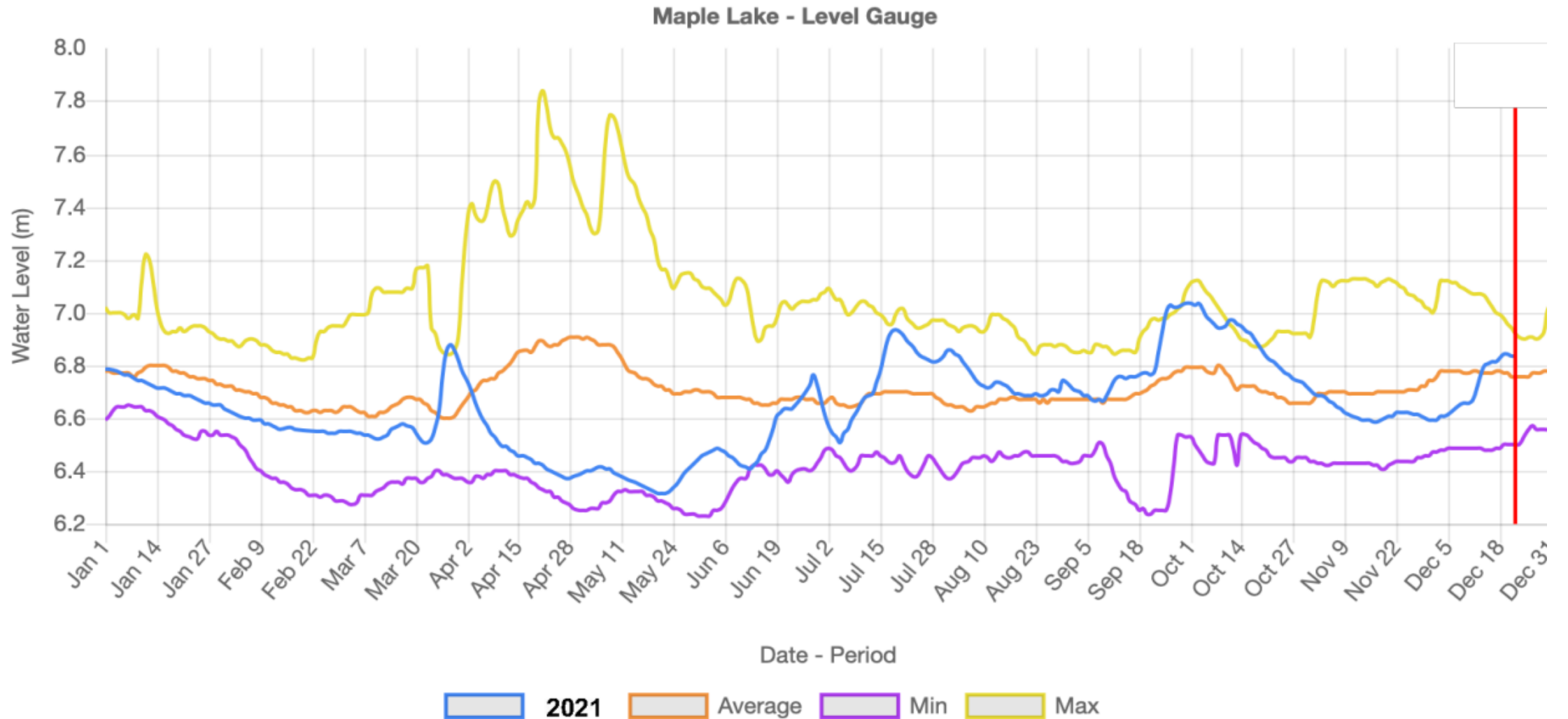
# LOOKING BACK - Kushog Lake 2021



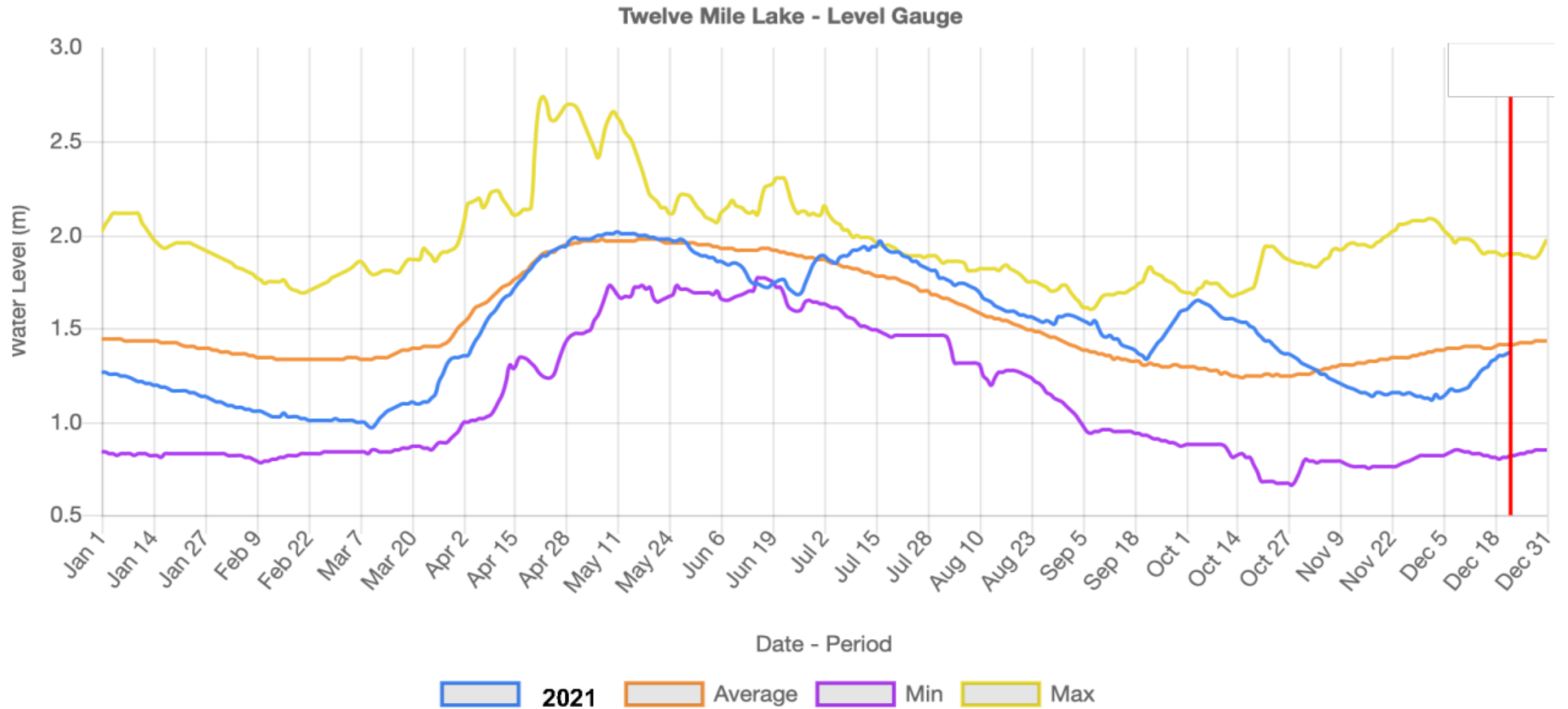
# LOOKING BACK – Eagle Lake 2021



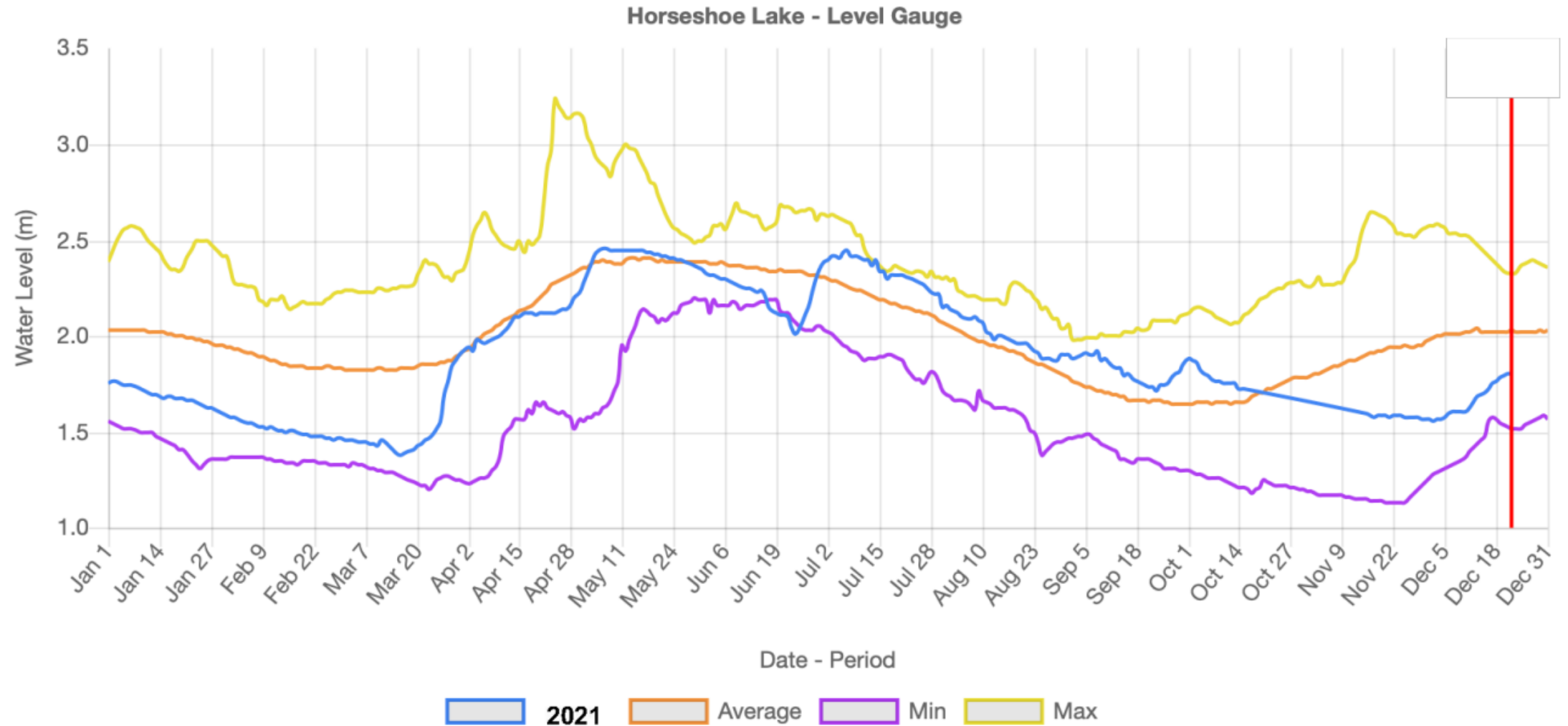
# LOOKING BACK – Maple Lake 2021



# LOOKING BACK - Twelve Mile Lake 2021



# LOOKING BACK - Horseshoe Lake 2021





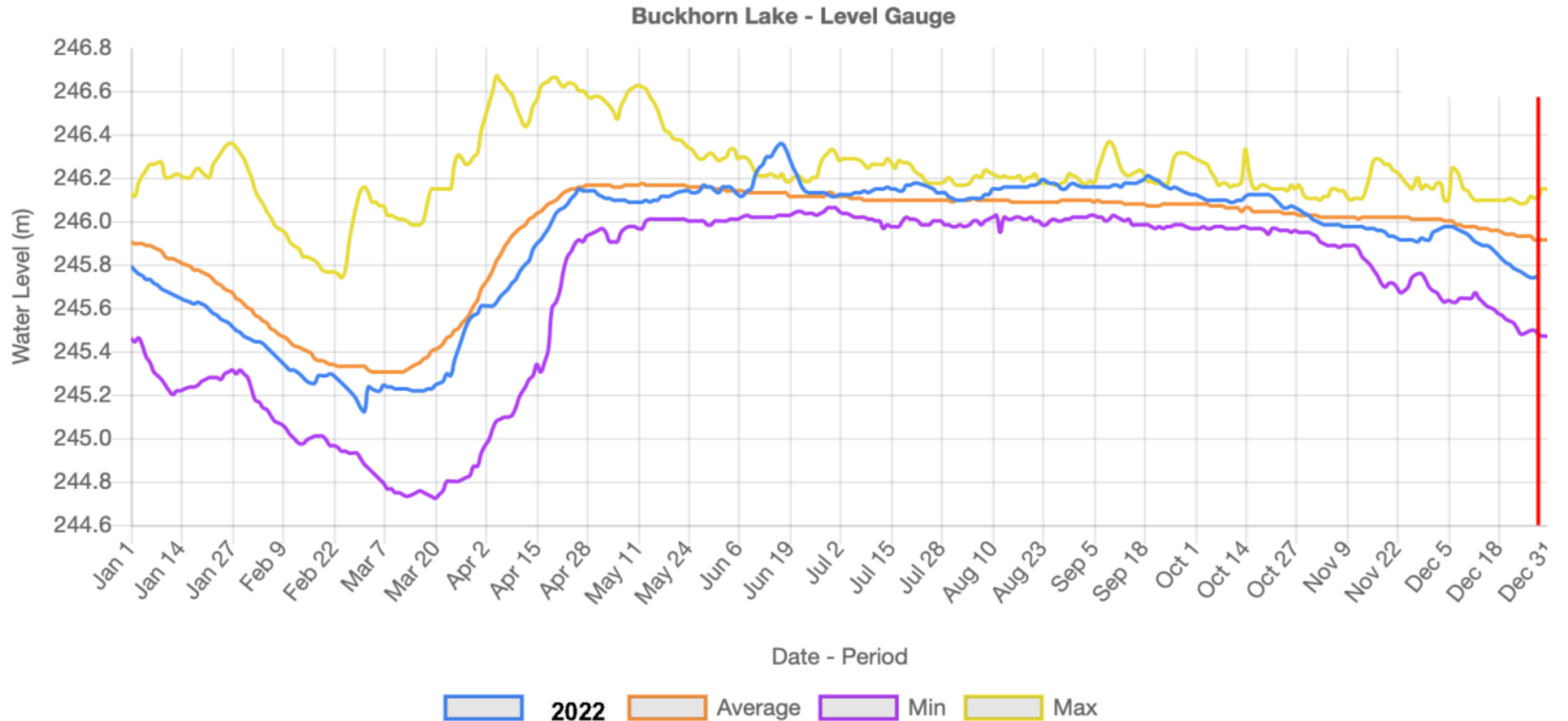
# Looking Back 2022

## 2022 Haliburton Precipitation Summary

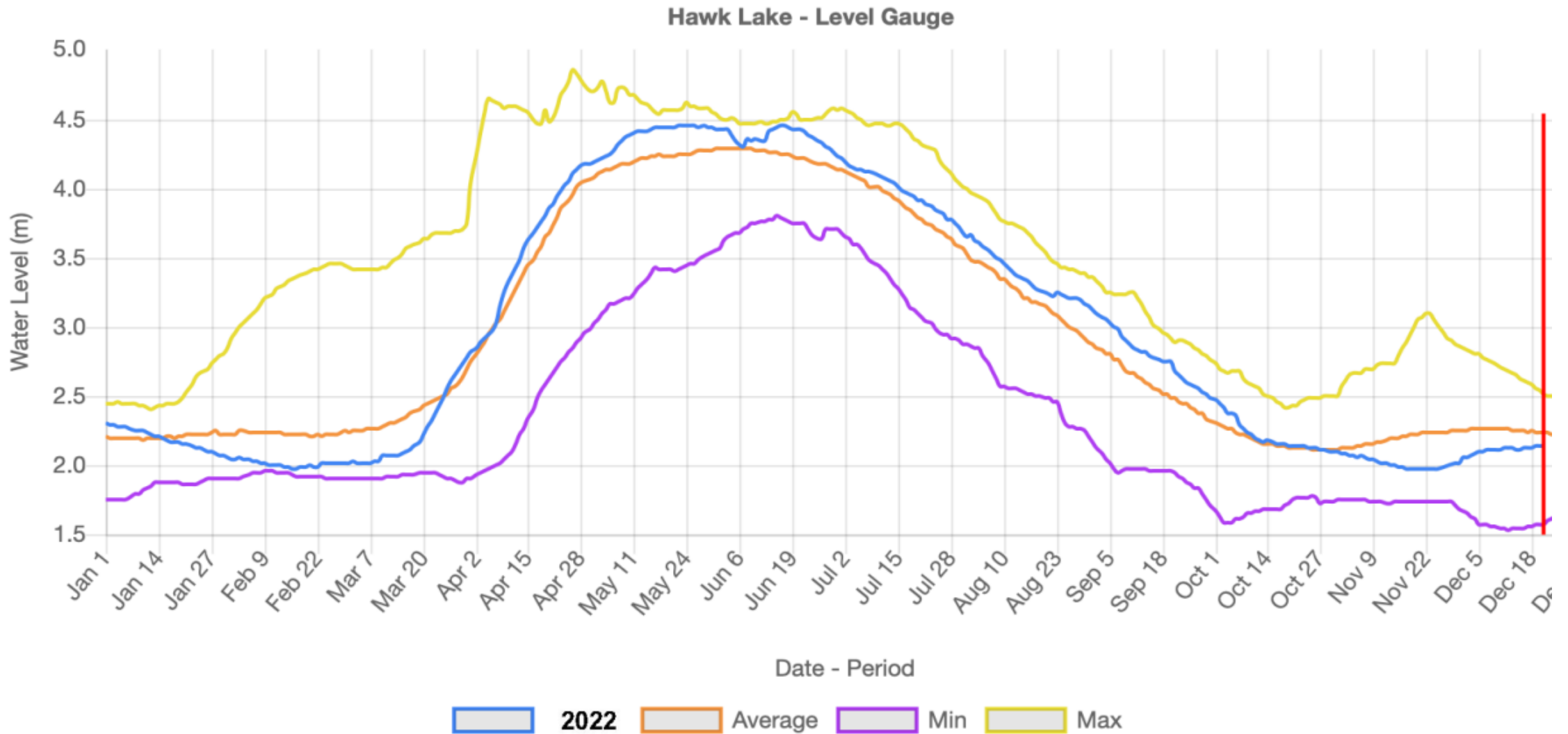
Month	Ppte Total mm	Rain mm	Snow cms	Normal Monthly mms	Actual as % of Normal	Month End Snow on Grd cms	Notes
2022 Jan	62	0.4	62	100	62%	34	Dry and cold month with no Thaw events - normal snowpack month end is 32cms
2022 Feb	126	41	85	74	170%	55	A wet month with two rainfall events 15mm on the 16th and 22mm on 22nd. Normal Month end snowpack is 42cms
2022 Mar	56	27	29	75	75%	15	A dry month
2022 April	85	79	6	76	112%		normal month
2022 May	76	76		93	82%		Dry to the 21st and then <b>24mm in last week</b>
2022 June	96	96		81	119%		Very wet start to month - <b>90mm in first 12 days</b>
2022 July	67	67		90	74%		Dry month with active water management
2022 Aug	140	140		79	177%		A wet month with concentrated significant rainfall events
2022 September	84	84		100	84%		A dryer month with only 4 significant rainfall events
2022 October	73	73		100	73%		Another dryer than normal month.
2022 Nov	89	41	48	116	77%	T	A very dry month with 42mm on last two days
2022 Dec	113.4	26	87	87	130%	27	Fairly dry to 17th then significant snowfall normal month end snow depth 22 cms
Data are from Environment Canada see links at CEWF.ca							

# LOOKING BACK 2022- A Canal Lake Example

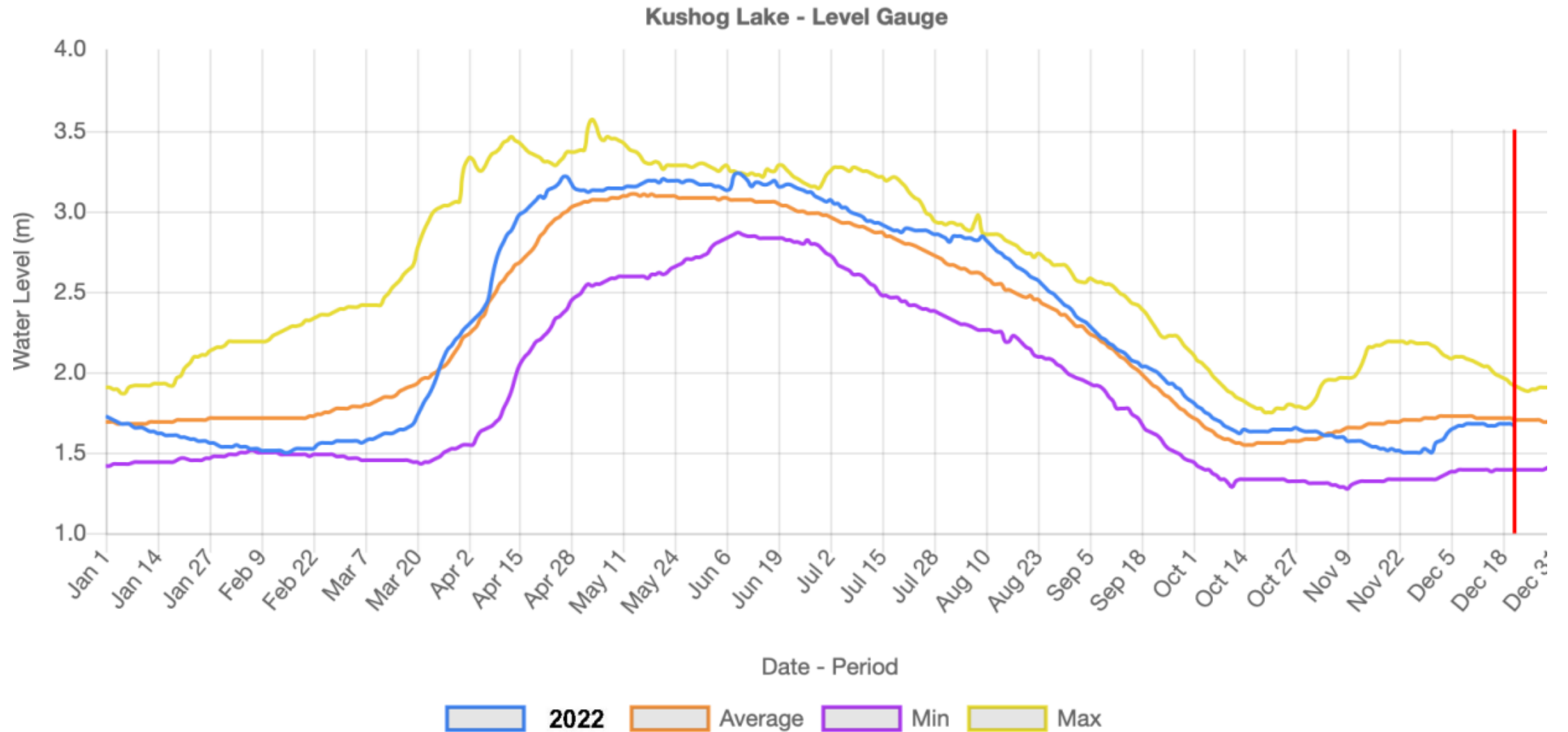
*Overfilled system in June led to Canal closure for several days.*



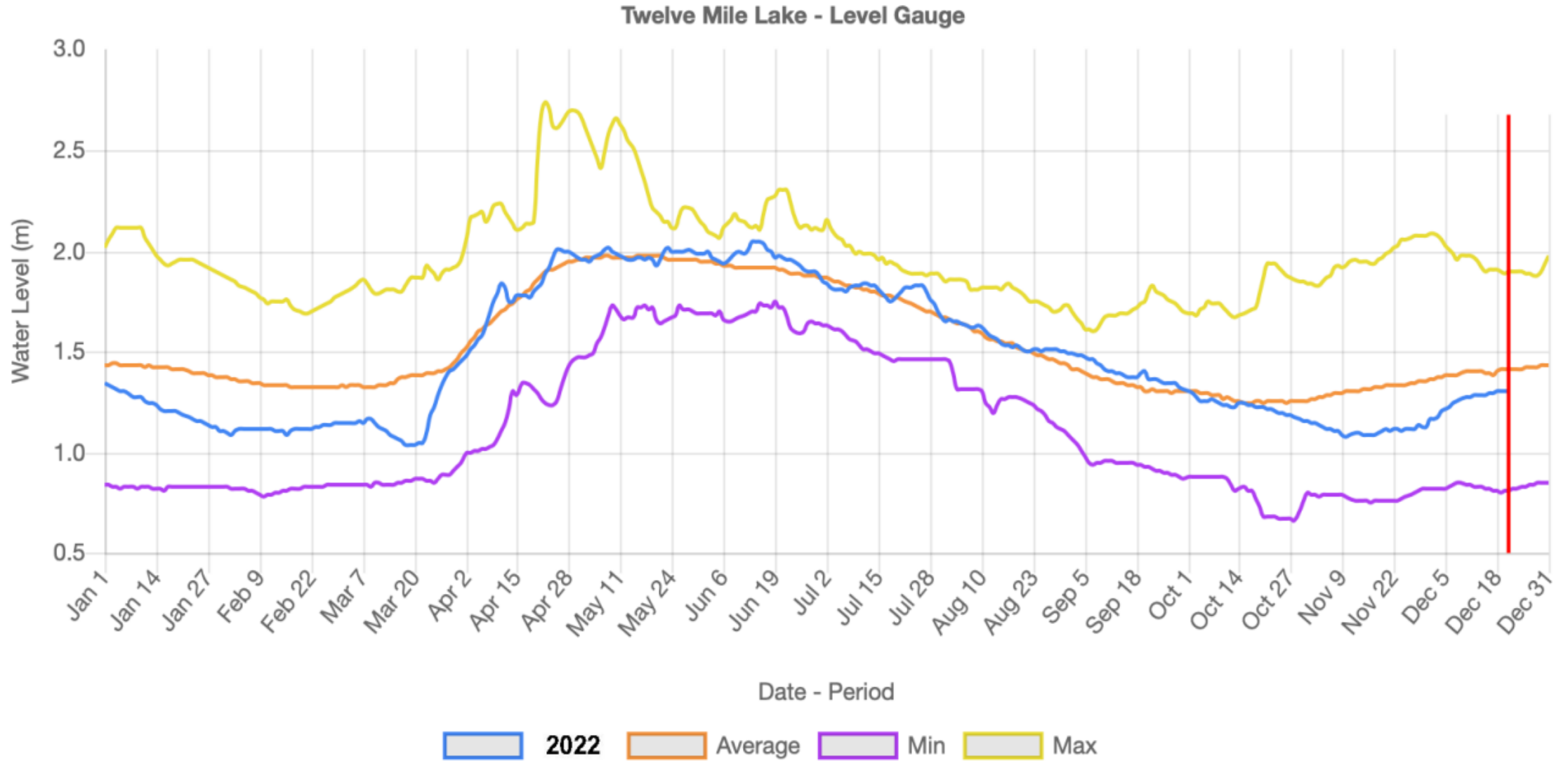
# LOOKING BACK – Hawk Lake 2022



# LOOKING BACK - Kushog Lake 2022



# LOOKING BACK - Twelve Mile Lake 2022



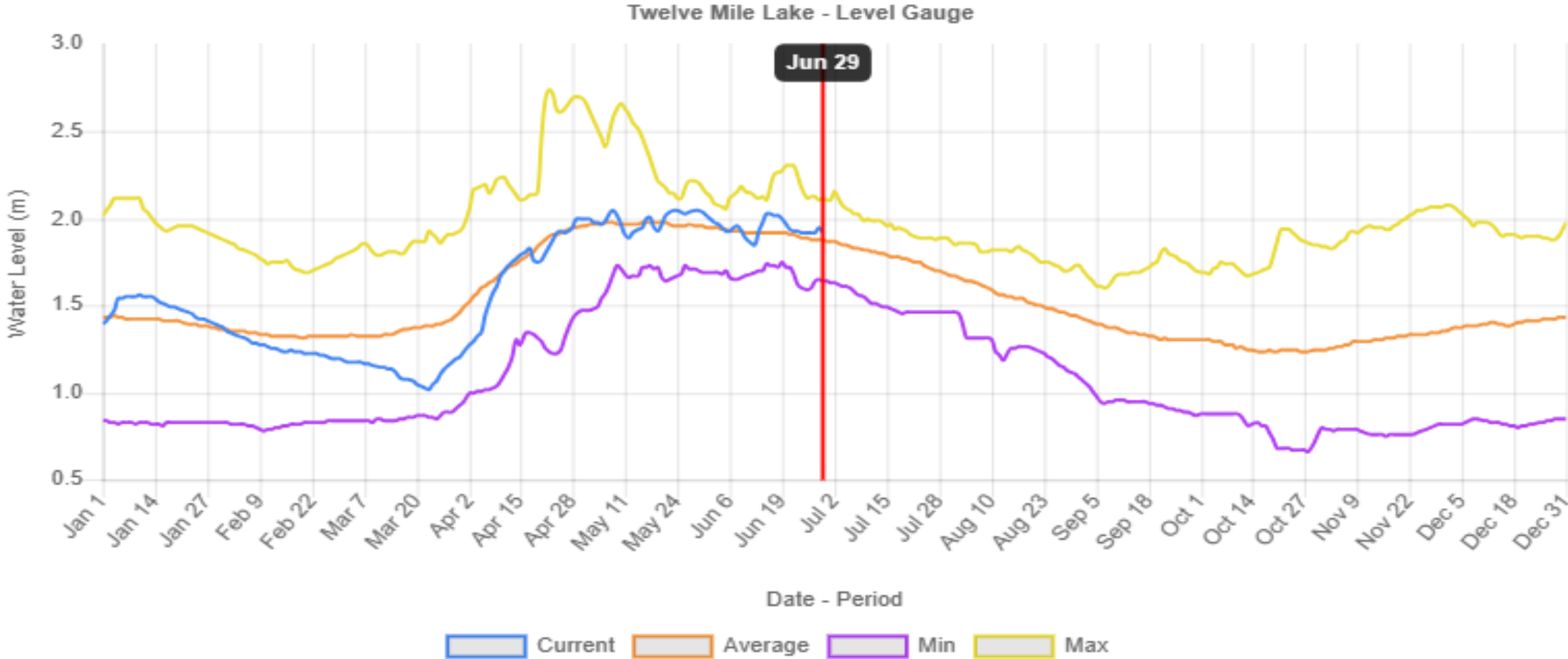
2023

## 2023 Haliburton Precipitation Summary to June 30, 2023

Month	Ppte Total mm	Rain mm	Snow cms	Normal Monthly mms	Actual as % of Normal	Month End Snow on Grd cms	Notes
2023 Jan	73	20	53	101	73%	45	Another drier than normal month. <b>But 18mm rain on 4th.</b> Normal month end snow depth 32 cms
2023 Feb	68	22	46	74	92%	38	<b>22 mm of rain on the 9th.</b> Normal month end snow depth 42 cms
2023 Mar	80	36	44	75	107%	22	<b>16 mm rain on 31st.</b> Normal month end snowpack 16 cms
2023 April	144	144	1	75	192%	0	<b>50mm rain on the 5th followed by very warm temperatures from 10th to 16th causing major melt. Then 35 mm on the 16th and 17th. Then more than 50mm between April 29 and May 2.</b>
2023 May	62	62		93	67%		Dryer month but with significant event of <b>36 mm on 19 and 20.</b>
2023 June	110	110		81	136%		<b>Continuing dry until 11th and 12 when 54mm rain fell. Then 50mm+ from 24th to 27th.</b>

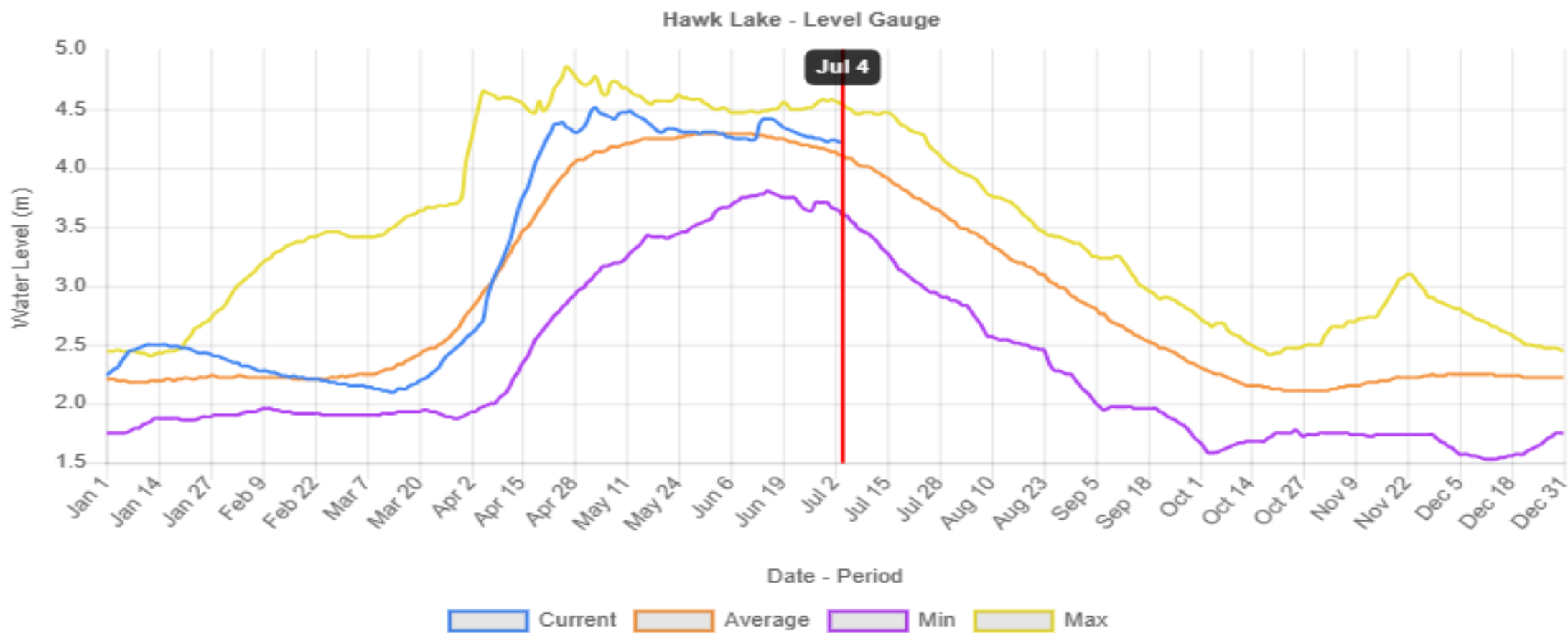


# Twelve Mile Lake 2023



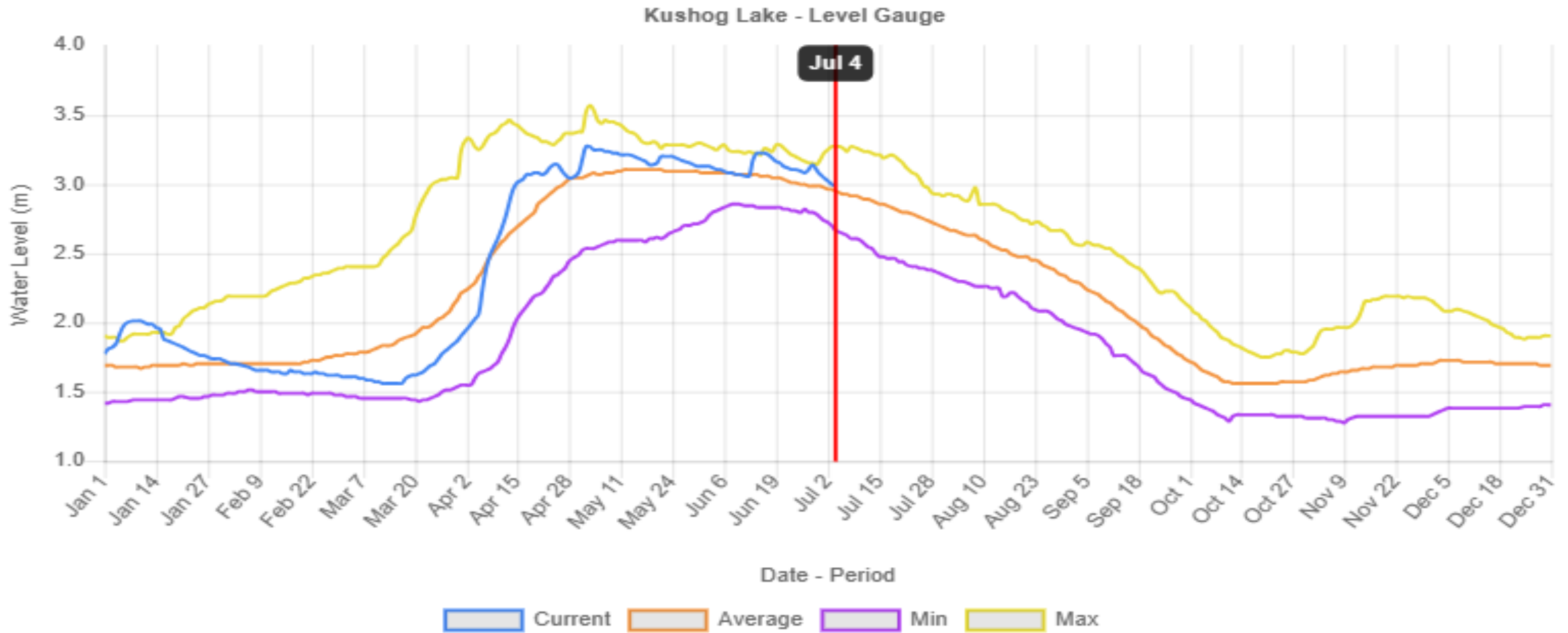
Last Updated: Jun 29, 2023

# Hawk Lake 2023



Last Updated: Jul 4, 2023

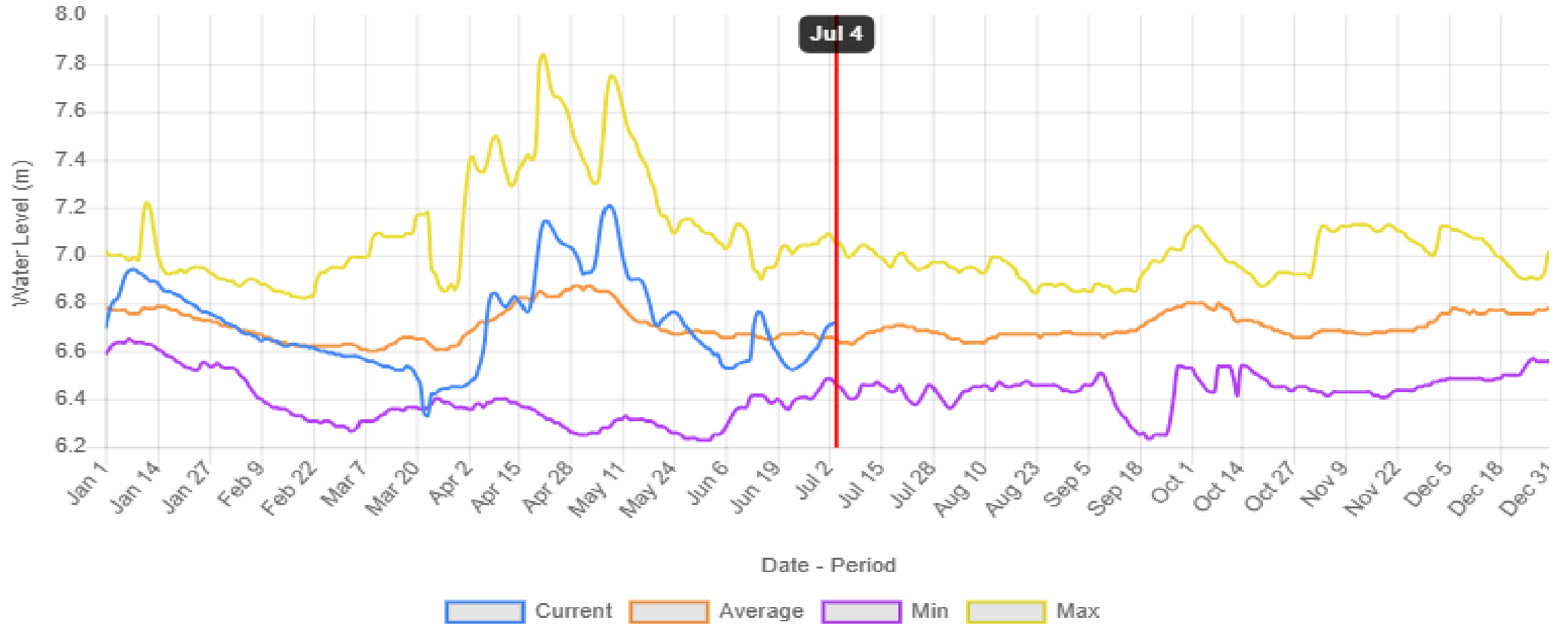
# Kushog Lake 2023



Last Updated: Jul 4, 2023

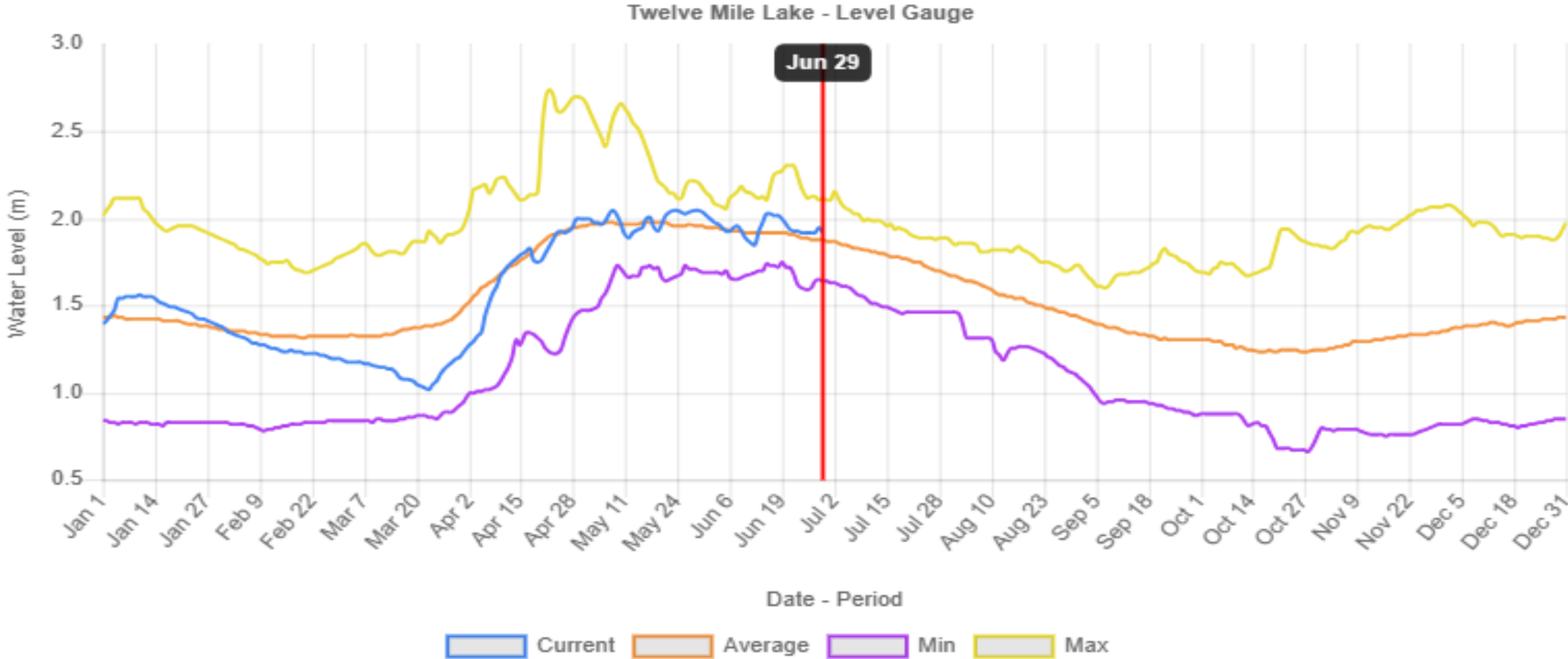
# Maple Lake 2023

Maple Lake - Level Gauge



Last Updated: Jul 4, 2023

# Twelve Mile Lake 2023




Last Updated: Jun 29, 2023

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# Drawdown Forecast July 4, 2023

## Forecasted Water Levels - Haliburton Area

**Start Date:** 7/3/2023

**End Date:** 7/17/2023

Lake Name	Start Date Water Level (m)	End Date (Target) Water Level (m)	Target Differential metres (m)	Full Level metres (m)
<b>Gull River Watershed</b>				
Kennisis Lake	2.710	2.536	-0.174	2.90
Redpine Lake	1.101	1.016	-0.085	1.22
Nunikani Lake	3.000	2.704	-0.296	3.05
Hawk Lake	4.220	3.950	-0.270	4.42
Halls Lake	2.416	2.414	-0.002	2.59
Sherborne Lake	1.490	1.350	-0.140	1.52
Kushog Lake	2.994	2.850	-0.144	3.20
Percy Lake	1.851	1.737	-0.114	1.98
Haliburton Lake	2.933	2.751	-0.182	3.05
Redstone Lake	3.440	3.412	-0.028	3.66
Eagle Lake	2.187	2.053	-0.134	2.29
Maple Lake	6.714	6.641	+/-0.15	
Twelve Mile Lake	1.875	1.820	-0.055	1.98
Horseshoe Lake	2.325	2.260	-0.065	2.44
Big Bob Lake	2.847	2.622	-0.225	2.90
Little Bob Lake	1.485	1.328	-0.157	1.52
Gull Lake	2.057	1.998	-0.059	2.13
Moore Lake	1.527	1.429	-0.098	1.52

# Questions?

Thank You