Water Level History on Beaver Lake

2021 Friends of Beaver Lake

Summer Picnic—Lunch and Learn

Fact Set

Beaver Lake is a **Groundwater Flow Thru Lake** (GFL) by classification….

Water Balance Equation =
Groundwater Inflows (59%) + Rainfall (41%)
less
Seepage Outflows (21%) Evaporation (37%) Outflow to Pine Lake (42%)

Significant Studies completed on Beaver/Pine/North Lake and the impact of groundwater usage and drought conditions—WLC has reviewed these studies

Rainfall charges groundwater inflows with some lag….

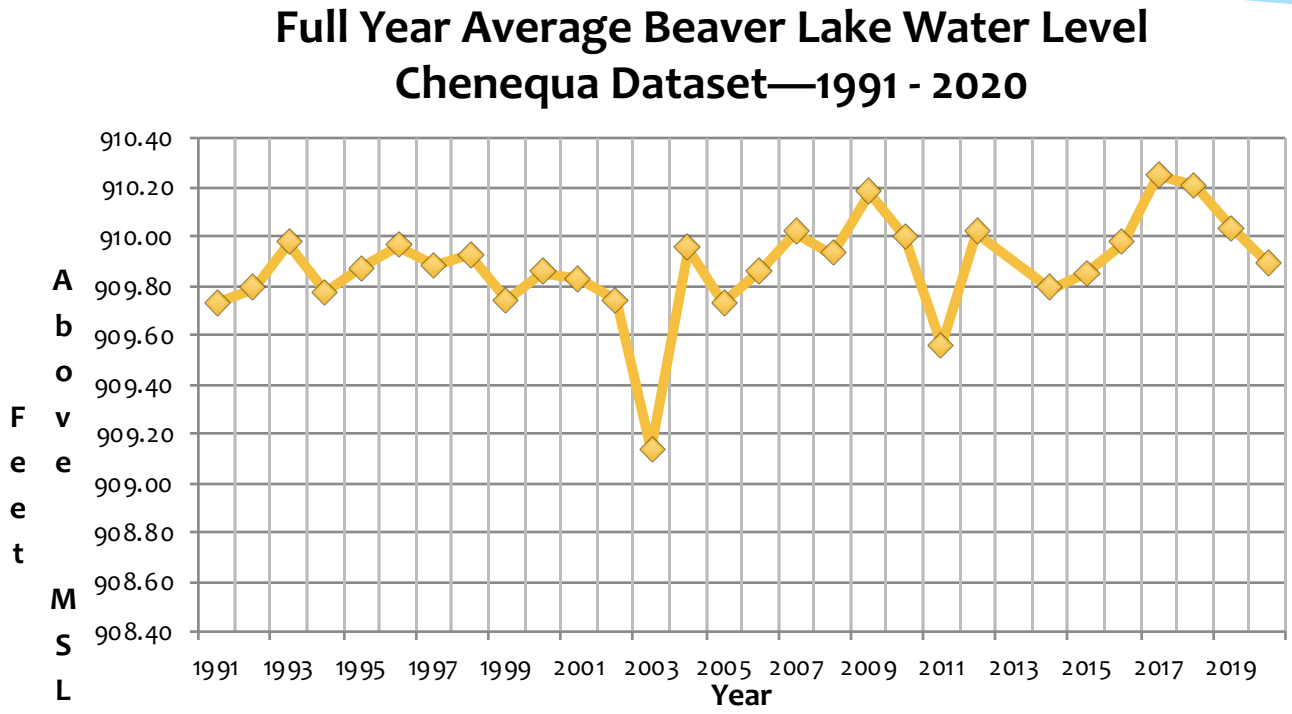
Evaporation volume impacted by ambient weather (humidity, heat, wind) and length of time exposed (shorter ice coverage more evaporation)

Outflow to Pine Lake limited by fixed weir across culvert… streamflow stops below 909.54’

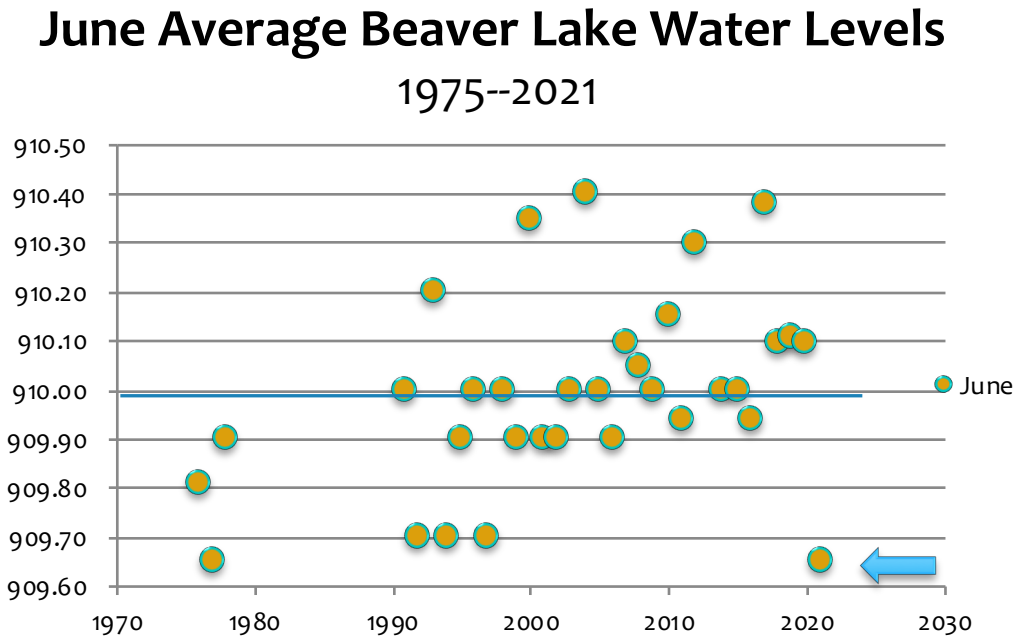
Fact Set—*Continued*

* Water Levels are calculated as the level above Mean Sea Level (MSL)
* We have the dataset, with some months/years missing, from 1927 onward for Beaver Lake; we accept that these data points were accurately gathered and transcribed
* Lake level readings are taken by Chenequa forester in Boysa's boathouse
* Beaver Lake residents set the outflow dam higher in the 1930s to hold onto more water—lawsuits ensued and ultimately it was ordered to be lowered by 7 inches. This level is unchanged since that time at (believed to be) 909.54' above MSL
* The bar across the culvert stopped water flow for much of June, 2021
* June 1st water level reading 909.65'; June 21st water level 909.60' (per Chenequa Forester Cody Lincoln). Between these two points in time there was no flow.
* Water flow to Pine Lake stopped for extended periods in 1895-96 and in the 1930s (this information from Public Service Commission of WI proceedings (1937-1940). Other lengthy stoppages likely in the 1970s and other timeframes.

Historical Beaver Lake Water Levels



Historical Beaver Lake Water Levels



Statistics for *Full* June Dataset (1930 - 2021)

*Mean – 909.96'

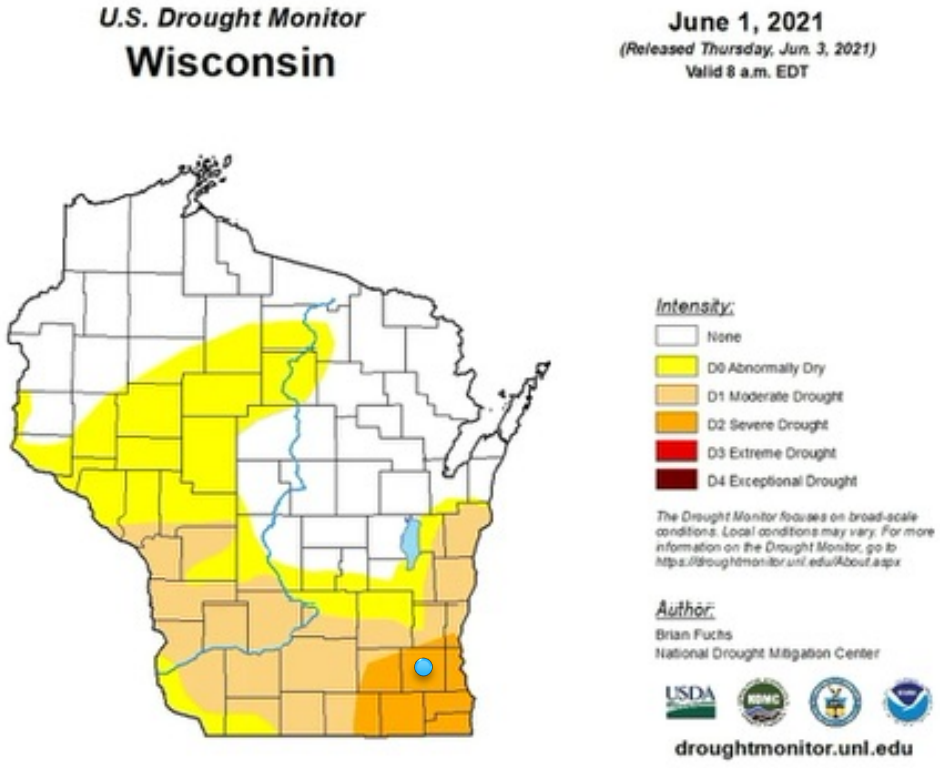
*Max – 910.54'

*Min – 908.57'

*1 standard deviation across the full dataset is .28'

*June 2021 reading is just over 1 standard deviation off mean level… within 67% of normal reading (not a huge outlier), but clearly a low reading

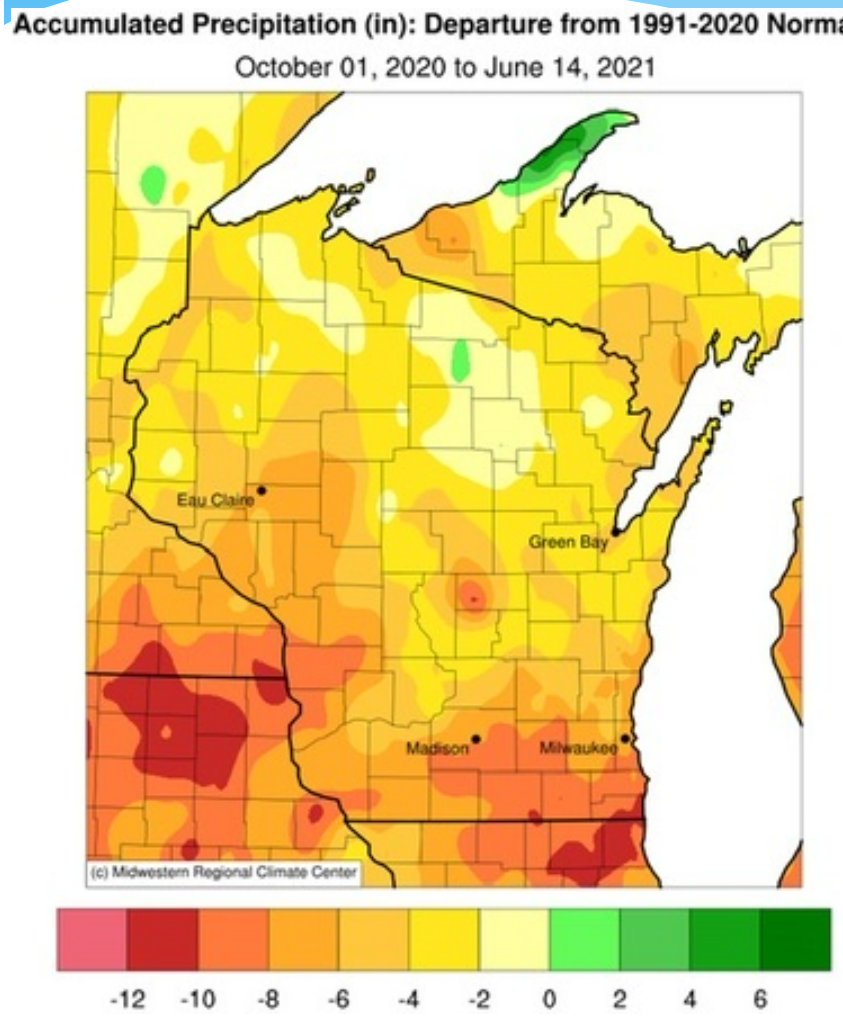
Drought Condition Map



Drought conditions in force for SE Wisconsin

Indicates shortfall in rainfall, but also works to deplete wetlands and result in lack of pressure on groundwater springs?

Wisconsin/Waukesha Rainfall Deficit



(-) Measured rainfall shortages since end of season last year would appear to account for much if not all of the lower levels of Beaver Lake vs. recent and historical averages (-6+ inches)

(+) Snowfall slightly above average for this season (~5 inches)

(-) Temp hotter than average by 6 degrees

Current Conditions….

With recent rains this week water levels (6/26) are just cresting the weir and beginning to flow to Pine Lake….