

With the spring melt happening early this year and the summer heat now upon us, we are experiencing stream water levels that are lower than normal. Following last weeks rain, water levels rose along while recharging the groundwater storage. Based on our monitored streams, local water levels are now ~ 7-10 days lower than normal. With continued hot weather and minimal rain, expect stream water levels to continue to drop, remaining lower than normal.

The message a month ago was to prepare for a hot summer, encouraging deep watering and identify areas able to withstand reduced watering. Now we need to continue to focus on watering conservatively, reducing where you can and preparing for drier conditions ahead. Comparing conditions to previous drought years, current conditions appear less severe than what was seen in 2015 and 2021. The Province has set the Boundary Region at a Drought Level 3 and is now recommending a voluntary 30% reduction in water use for all surface and groundwater licence holders. For anyone receiving water from a Water Supplier (Irrigation District, Municipality, Community Water System, etc) connect with your supplier to determine what water restrictions are in place. The RDKB has identified recommendations through the [Boundary Region Drought Response Plan](#).

Provincial Drought Level for Boundary Region (see BC [Drought Information Portal Map](#) below)

The drought levels for the main Boundary watersheds, Kettle and Okanagan, and five Kettle sub-watersheds is level 3.

(A) Kettle River Watershed: Level 3 (severely dry) and (B) Okanagan River Watershed: Level 3 (severely dry)

Subs: Upper Kettle River (3), West Kettle River (3), Middle Kettle River (3), Granby River (3), and Lower Kettle River (3)

Surface and Groundwater levels (see below for graphs)

- The Boundary region has nine real time surface monitoring sites ([Water Survey of Canada](#)). Most streams peaked earlier this year and are showing a normal rate of water level drop post freshet. A sharp rise in levels can be seen on the graphs from July 12-14 responding to the rain throughout the watershed. Most streams are experiencing a Mean Annual Discharge (MAD) of 30% or higher. Information on MAD provided below.
- The Boundary Region has three [groundwater observation wells](#); unfortunately, there have been issues at the Beaverdell and Grand Forks wells. Beaverdell appears to be working, reporting normal water levels, and the Midway well reported an early peak with the natural decline happening earlier than normal this year (5yr avg).

Climate and Agricultural Drought Analysis (graphs and maps below)

- The Boundary has experienced (mostly) less than average rain this past month, along with higher-than-normal temperatures. Although over 60-days the precipitation percentile is normal for the south and east regions.
- ECCC continues to forecast higher-than-average temp for the next 3 months, but slightly less elevated than what was initially predicted. There continues to be no clear precipitation forecasting message for this region.

Fisheries

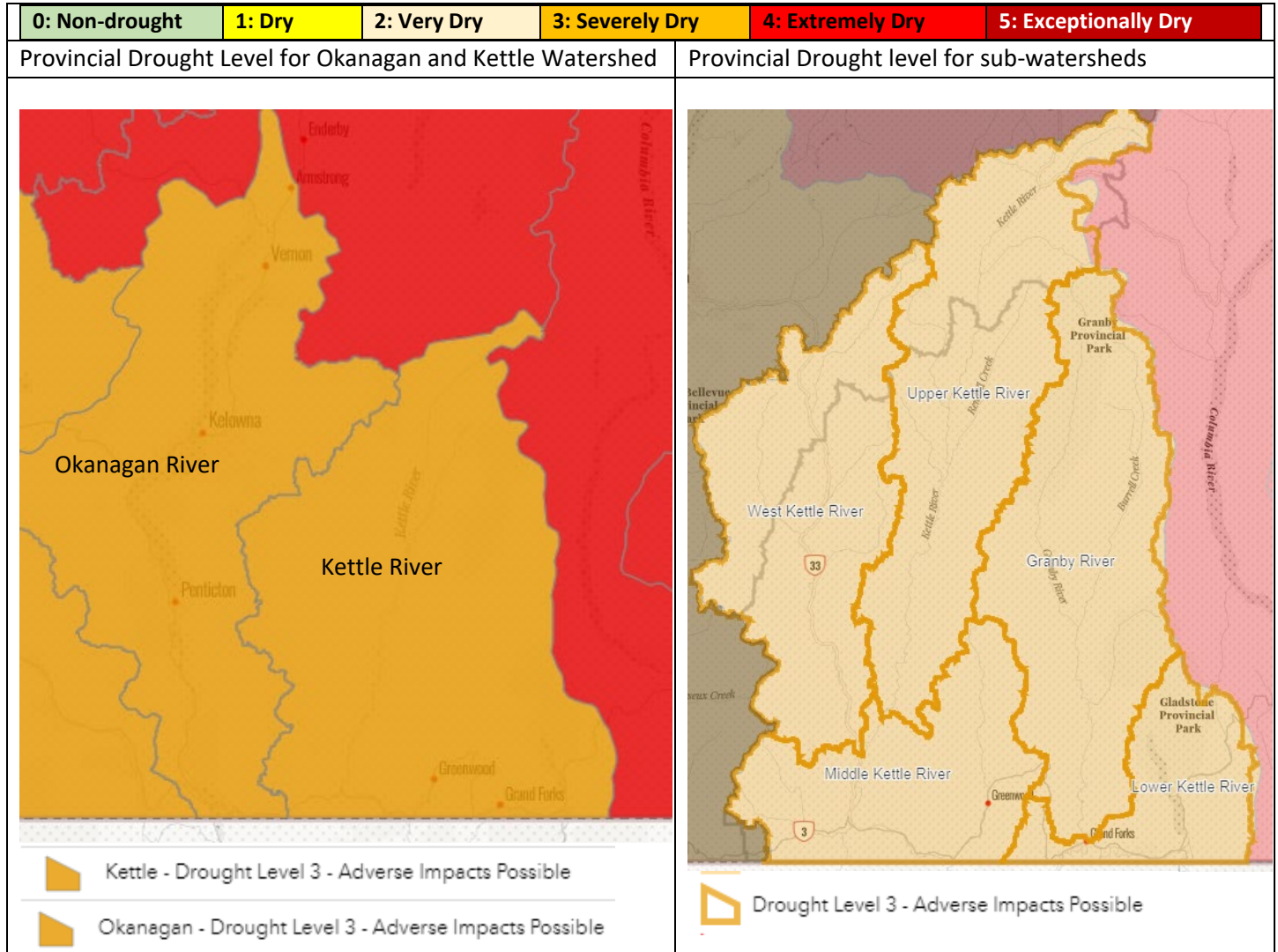
- As the air temperature (temp) increases, so do our stream water temp. Water temps are monitored at 3 Water Survey of Canada station (graphs below) with the maximum temp reaching 22.5°C. See [Provincial Fisheries Drought Management Plan](#) (2019) for information on high water temp impacts for different fish species. Water temp stress for Rainbow Trout starts at around 20°C.
- RDKB water temp monitoring has been installed at 6 locations. Manual data retrieval is required, with data now available for Boundary Creek (max: 20.1°C) and Kettle River (max: 22.3°C). Water temp info for these sites will be posted at kettlriver.ca/category/conditions/temp.

RDKB water use recommendations for households

- Remain WaterSmart and FireSmart, check for and repair water leaks, reduce non-essential outdoor water, such as lawn watering, and water essential outdoor areas during times of low evaporation - in the evenings.

[BC Drought Portal](#) offers a review of the BC drought levels and links to drought information. Real time discharge (flow) measurements and water temperatures below for the larger river systems are from WSC ([Water Survey of Canada](#)) and [Northwest River Forecast centre](#). The groundwater level information is provided by the [Province of BC Groundwater Monitoring](#) program. [Snow Survey and Water Supply Bulletin](#) is published by the Province of BC. Ministry of Agriculture and Agri-Food Canada produces the [drought analysis](#) and [AgroClimate maps](#). [Environmental Canada](#) provides the 3-month Probabilistic forecasts for Temperature and Precipitation.

Provincial Drought Level for the Boundary Region: colour coding (6-level system)



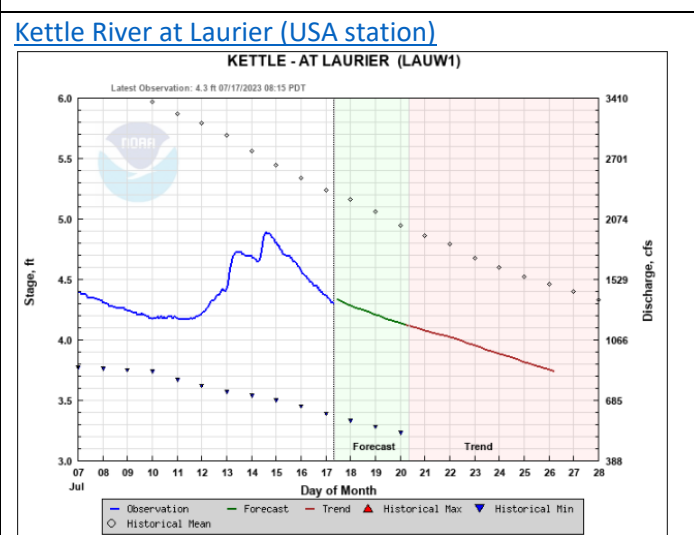
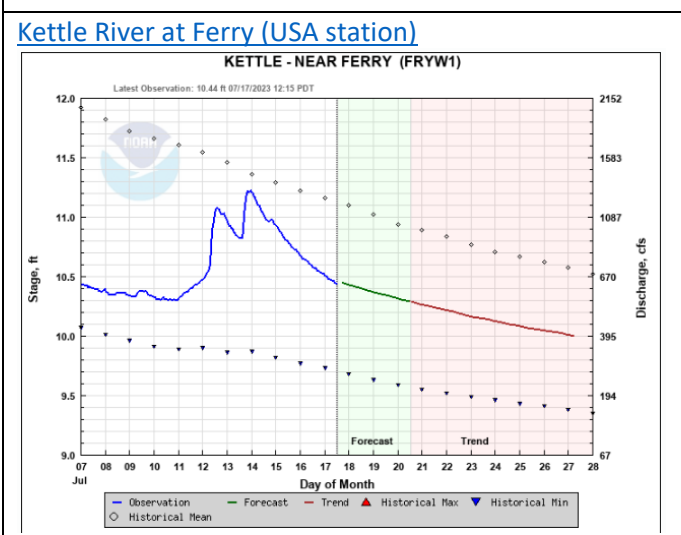
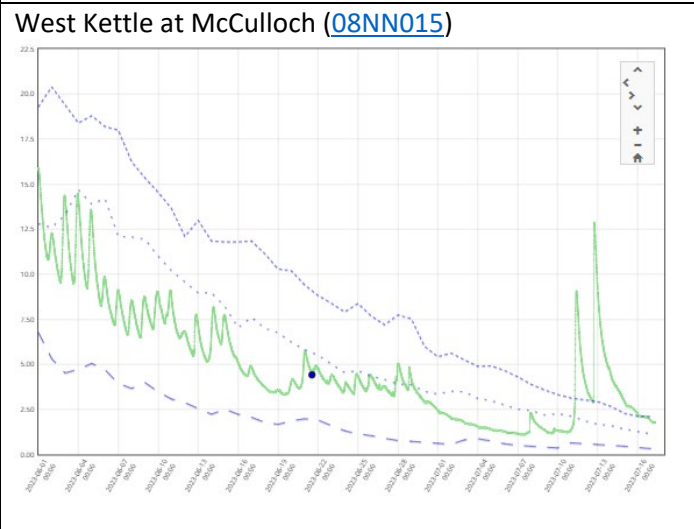
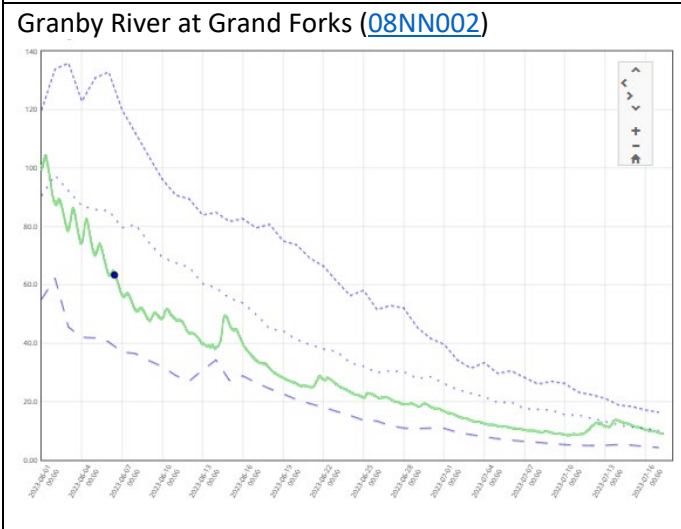
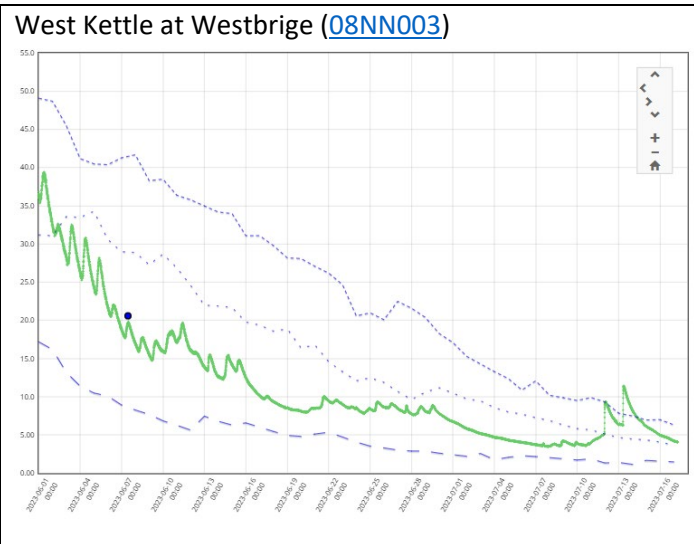
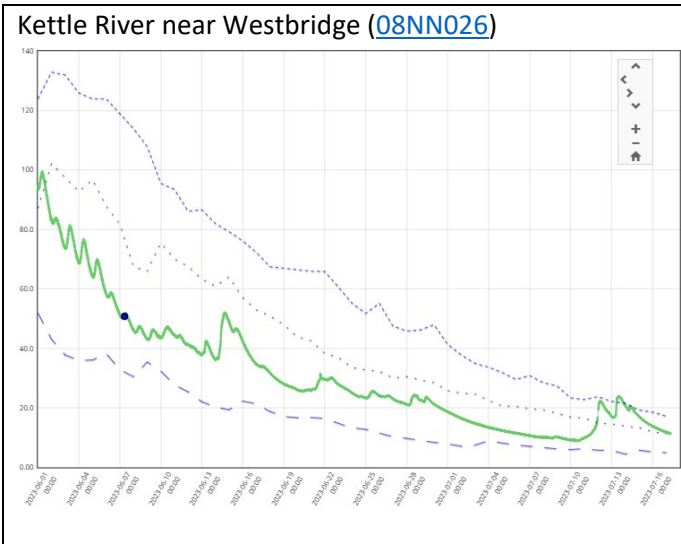
Surface and Groundwater Levels (Boundary Region)

Discharge for WSC streams relative to their Mean Annual Discharge (MAD). MAD and water temperature are tools used to assess fisheries and ecosystem habitat conditions in a stream. A minimum of 5% MAD has been determined as necessary for general fish survival in the Boundary streams, with 20% MAD recommended during the spawning periods.

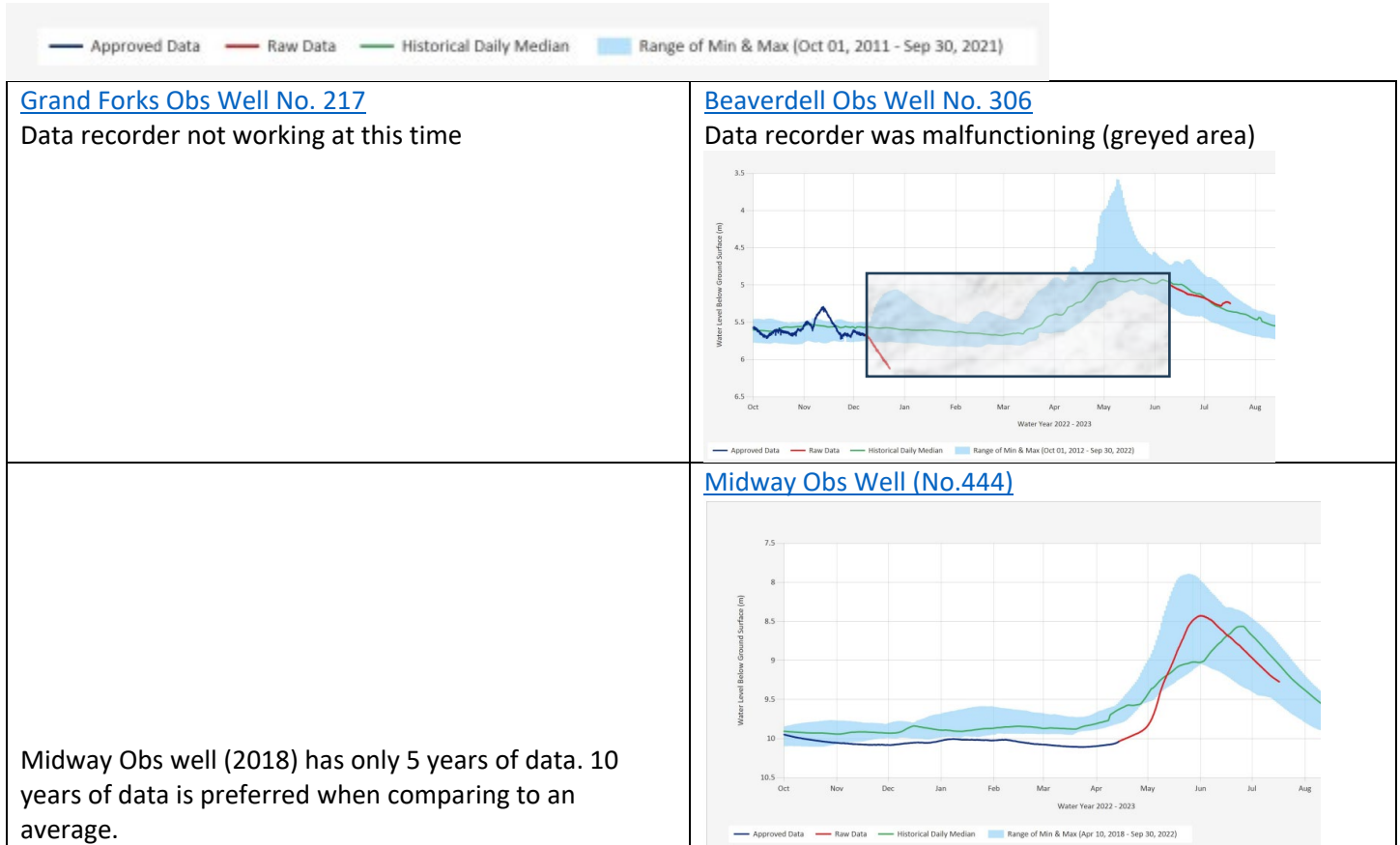
Date	Station	Stream	Current Discharge (cms)	% of MAD	Comments based on current water level for this time of year
17-Jul	08NN002	Granby River at Grand Forks	9.00	29.0%	lower quartile
17-Jul	08NN003	West Kettle River at Westbridge	4.08	30.5%	lower quartile
17-Jul	08NN026	Kettle River at Westbridge	11.30	40.4%	lower quartile
17-Jul	08NN015	West Kettle River near McCulloch	1.78	50.9%	average
17-Jul	08NN028	Lost Horse Near Christian Valley	----	----	not functioning
17-Jul	08NN023	Burrell Creek Above Gloucester Crk	0.934	21.5%	lower quartile
17-Jul	08NN019	Trapping Creek near the Mouth	0.823	57.7%	above average
17-Jul	FRYW1	Kettle River at Ferry (cms)	18.52	41.9%	between avg and min
17-Jul	LAUW1	Kettle River at Laurier (cms)	37.77	45.1%	between avg and min

Realtime WSC stations: June 1 – July 17, 2023				
Maximum Water Temperature	WSC Station Number	Max (°C)	Date of Max	No. events over 20°C
	08NN002	22.4	July 16	13
	08NN003	22.5	July 15 & 16	13
	08NN026	21.6	July 15	6
RDKB manual water temp stations: started monitoring June 25, 2023				
Water temps above 20°C are a fisheries concern.	Monitoring location	Max (°C)	Date of Max	No. events over 20°C
	Boundary Creek (Jul16)	20.1	June 30	1
	Kettle River - Atwood Bdg (Jul12)	22.3	July 8	10
	Kettle River – Danville (coming)	n/a	n/a	n/a
	July Creek (coming)	n/a	n/a	n/a
	Sutherland Creek (coming)	n/a	n/a	n/a
	Sandner Creek (coming)	n/a	n/a	n/a

Legend for the Water Survey of Canada stations. Discharge is in cubic metres per second (cms): June 1 – July 17, 2023

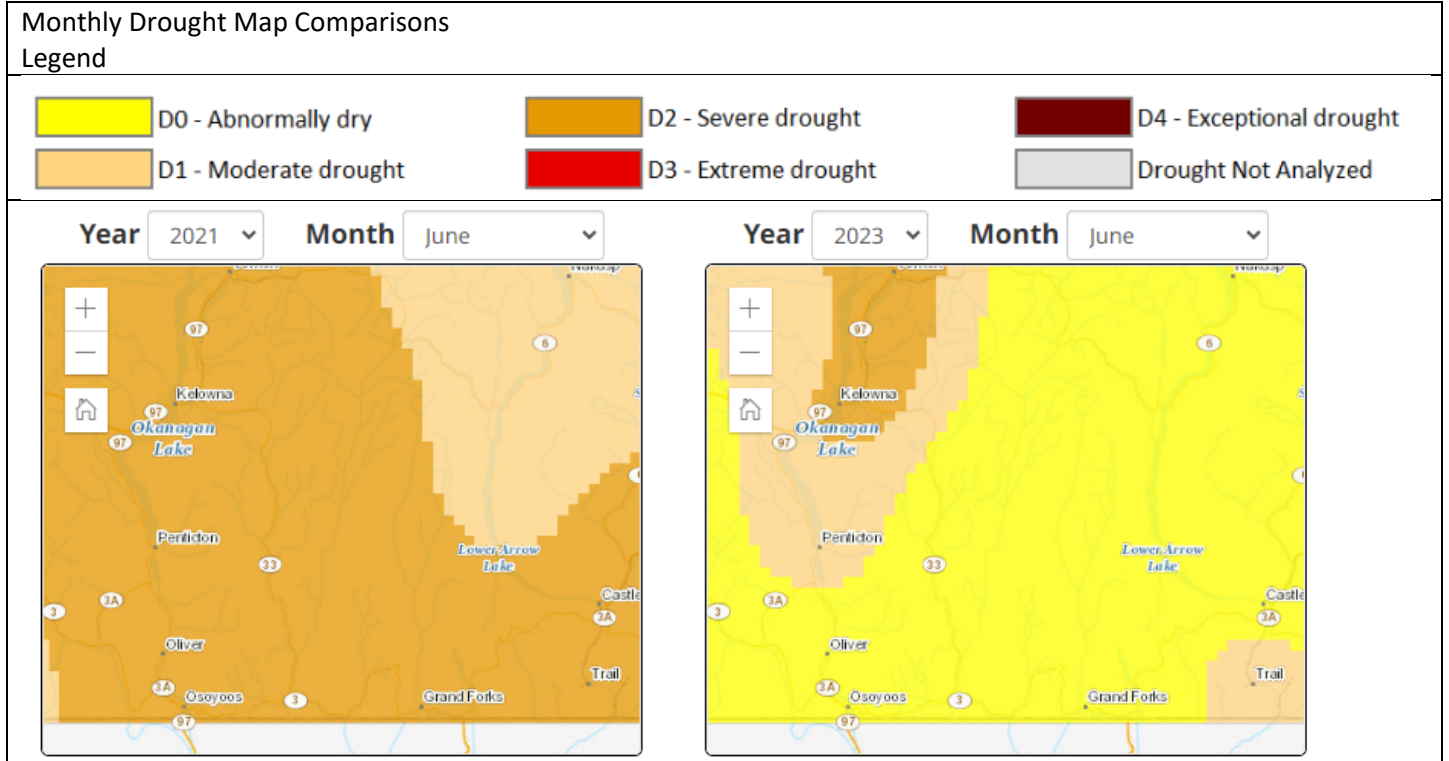


Groundwater Observation Wells



Climate and Agricultural Drought Analysis

Ministry of Agriculture and Agri-Food Canada: [Precipitation Percentage of Normal](#) and [Drought Analysis](#)



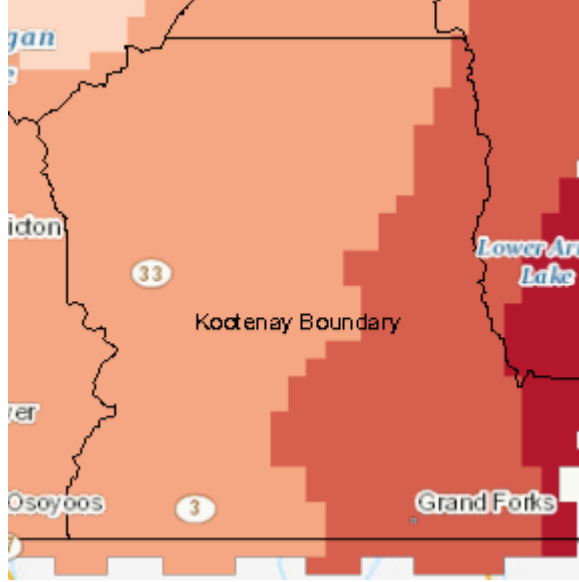
Agroclimate Interactive Maps
Temperature and Precipitation

Legend

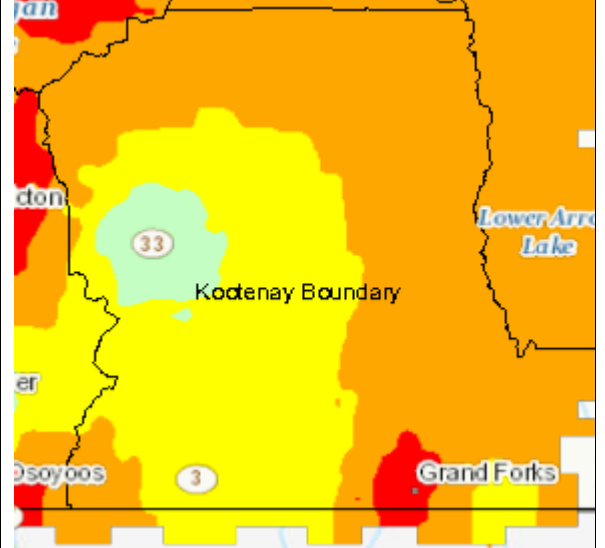
Temperature - Mean temperature difference from normal

- < -5
- 5 to / à -4
- 4 to / à -3
- 3 to / à -2
- 2 to / à 0
- 0 to / à 2
- 2 to / à 3
- 3 to / à 4
- 4 to / à 5
- > 5

Mean Temp difference from normal (July 10))



Percent of average precipitation Past 30-days (from July 15, 2023)



Percentage of avg precipitation: Red < 40; Orange 40-60; Yellow 60-85; Green 85-115.

Legend

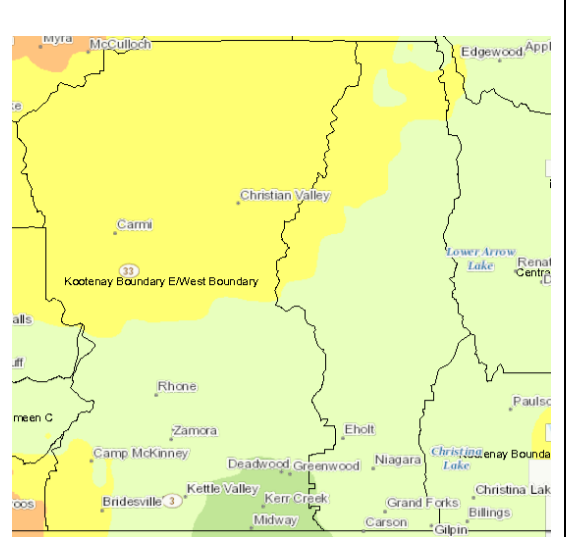
Precipitation - Precipitation percentile

- Exceptionally Low (0th to 2nd)
- Extremely Low (2nd to 5th)
- Very Low (5th to 10th)
- Moderately Low (10th to 20th)
- Below Normal (20th to 40th)
- Near Normal (40th to 60th)
- Above Normal (60th to 80th)
- Moderately High (80th to 90th)
- Very High (90th to 95th)
- Extremely High (95th to 98th)
- Exceptionally High (98th to 100th)

Precipitation percentile (50th is normal) Past 30-days (from July 15, 2023)



Precipitation percentile (50th is normal) Past 60-days (from July 15, 2023)



Temperature

Precipitation

