

Water Availability and Drought Conditions Report

APRIL 2021

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for April 2021.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
 - During April, the central, southwest, northwest and Interlake regions of agri-Manitoba experienced moderately dry (60 – 85 % of median) to extremely dry (< 40 % of median) conditions. Conditions in the eastern region were normal (85 – 115 %) to above normal (>115 %). In northern Manitoba conditions were drier in the south, with extremely dry conditions surrounding The Pas and Island Lake, and normal in the north.
 - Over the past three months (February, March, April), most of southern Manitoba experienced severely dry (40 – 60 %) to extremely dry conditions, except for eastern agri-Manitoba which observed moderately dry to normal conditions. Conditions in northern Manitoba were generally moderately to severely dry, with some regions of normal to above normal precipitation.
 - Over the past 12 months, most of agri-Manitoba observed moderately dry conditions with regions of severe dryness in the Interlake, central, and southwest regions. Conditions in northern Manitoba were normal to above normal.
- Spring runoff across most southern Manitoba sub-basins was well below normal. As of April 29, 2021, most rivers and lakes across southern Manitoba were showing below normal (10th – 25th percentile) to much below normal (< 10th percentile) conditions.
- As of April 30, 2021, groundwater levels at west and central Manitoba indicator stations were in the normal range. Water levels in the eastern portion of the province ranged from above normal at Sandilands, below normal in the extreme southeast and Anola, and much below normal in the Steinbach region. The groundwater level in the central Interlake is below normal and is within the normal range at Selkirk. Spring recharge has ranged from approximately average in the southeast and slightly below average at Oak Lake to much below average at other locations.
- The April 30, 2021 Canadian Drought Monitor assessment showed that the central, southwest and Interlake regions of agri-Manitoba were experiencing extreme drought conditions (D3). Severe drought conditions (D2) were occurring in the northwest and eastern regions, dissipating to moderate drought conditions (D1) towards the Ontario border.
- Most provincial water supply reservoirs are at or close to full supply levels, except for Lake Minnewasta, Jackson Lake and Deloraine Reservoir which are not expected to fill this spring without significant precipitation. Dugout water levels are generally classified as below normal, but adequate for the time being. In some regions, the spring runoff in small intermittent streams was insufficient to meet the demand for licensed water allocations.
- The wildfire danger is generally moderate in the south and low in the north. To date, 28 wildfires have burned a total area of 5,768 hectares. Many municipalities continue to implement burning restrictions this spring due to the dry conditions.

Drought Indicators

Precipitation Indicator

Precipitation is assessed to determine the severity of meteorological dryness and is an indirect measurement of agricultural dryness.

Three precipitation indicators are calculated to represent short term (one month; Figure 1), medium term (three months; Figure 2) and long term (12 months; Figure 3) conditions. The indicators compare current monthly precipitation totals to historical data to calculate the per cent of median precipitation that occurred over the past one, three or twelve months. Historical medians are computed from 45 years of data (1971 – 2015).

Due to large distances between meteorological stations in northern Manitoba, the interpolated contours in this region are based on limited observations and should be interpreted with caution.

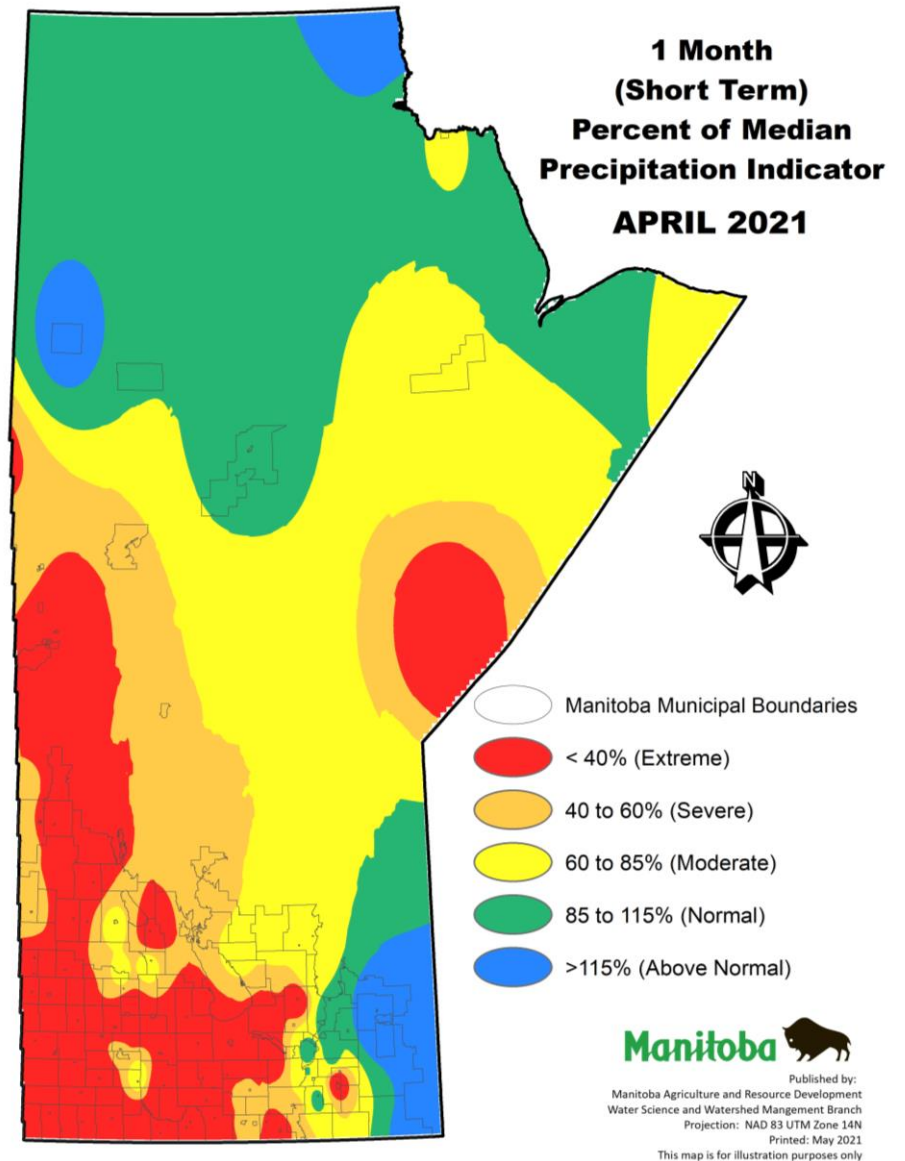


Figure 1: One month (short term) per cent of median precipitation indicator.

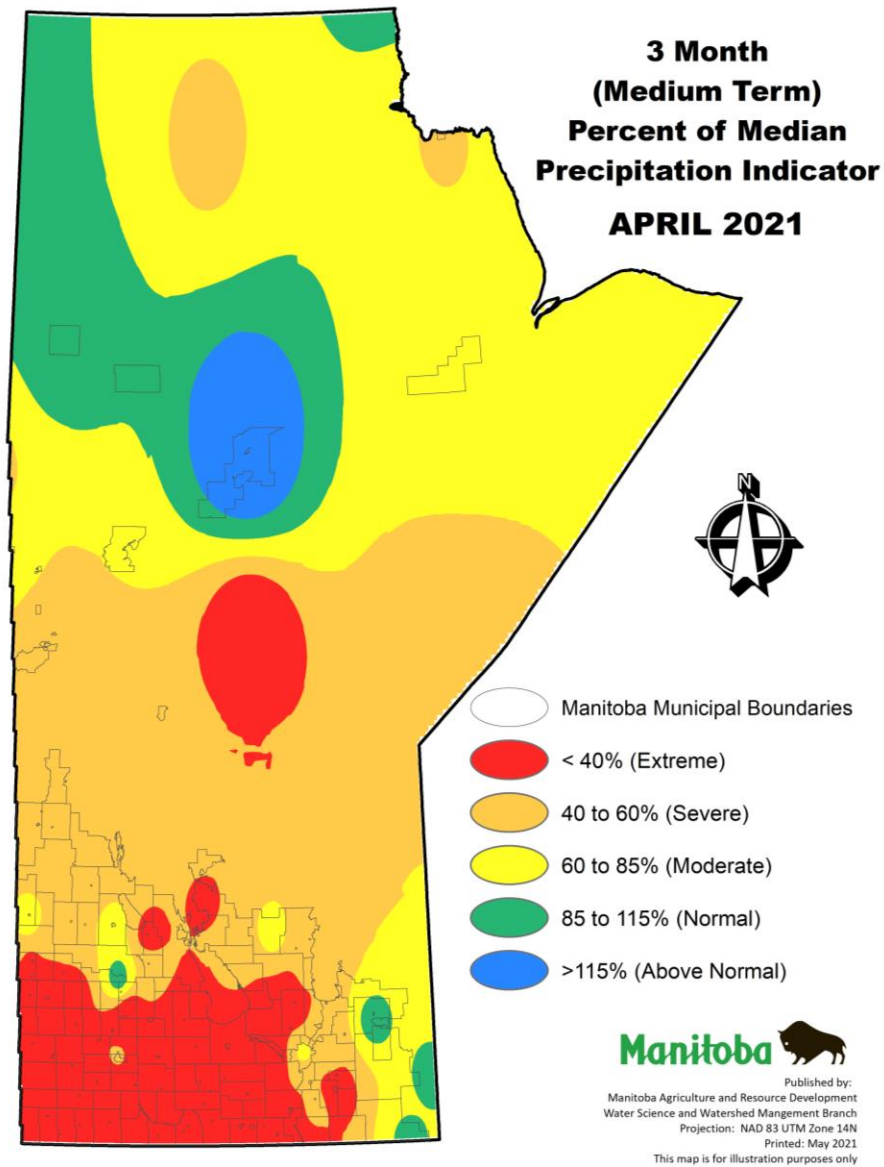


Figure 2: Three month (medium term) per cent of median precipitation indicator.

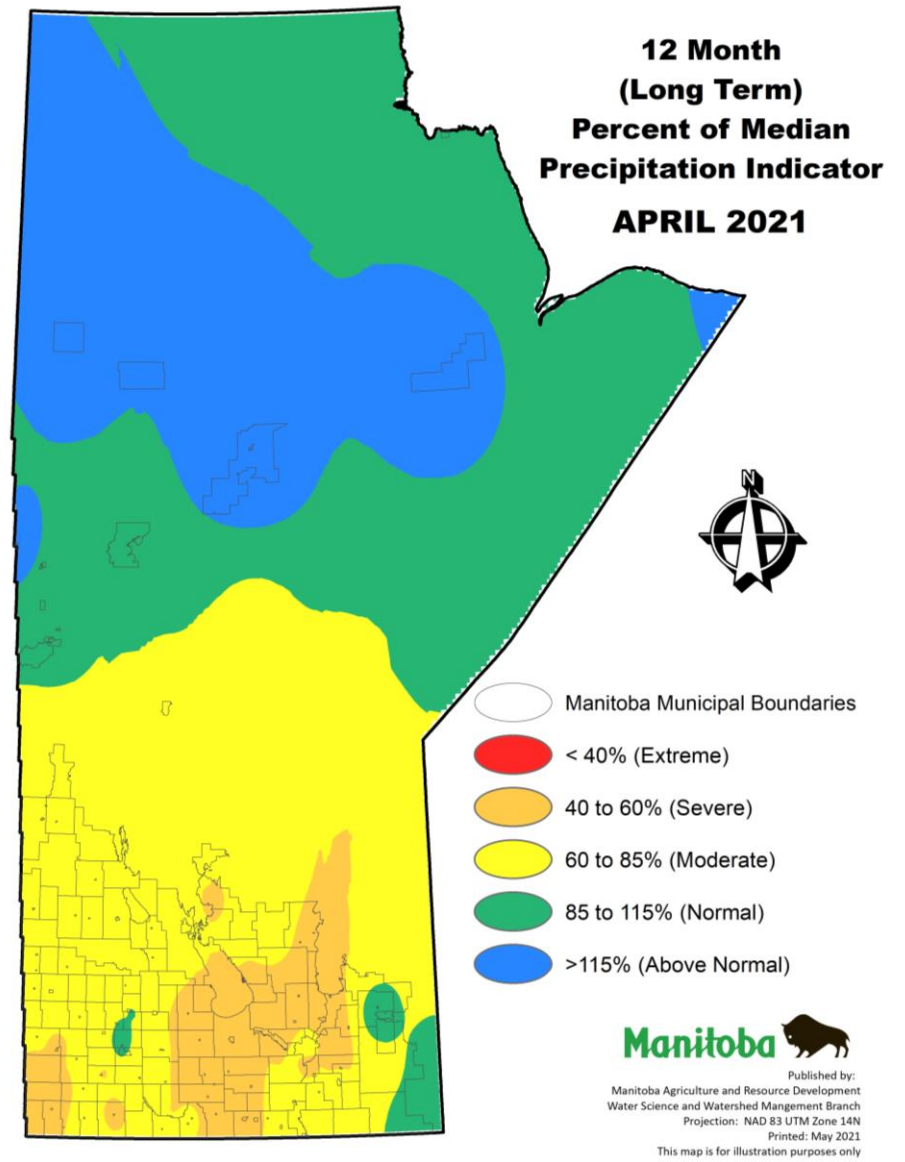


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

Streamflow & Lake Level Indicator

The streamflow and lake level indicator is based on average daily flows and levels compared to historical values for that particular day.

This indicator is used to determine the severity of hydrological dryness in a watershed and is summarized on Figure 4, representing hydrological conditions for April 29, 2021.

Streamflow and lake level percentile plots for all of the rivers and lakes included on Figure 4 are available on the [Manitoba Drought Monitor website](#) under the *Drought Indicator Map* tab.

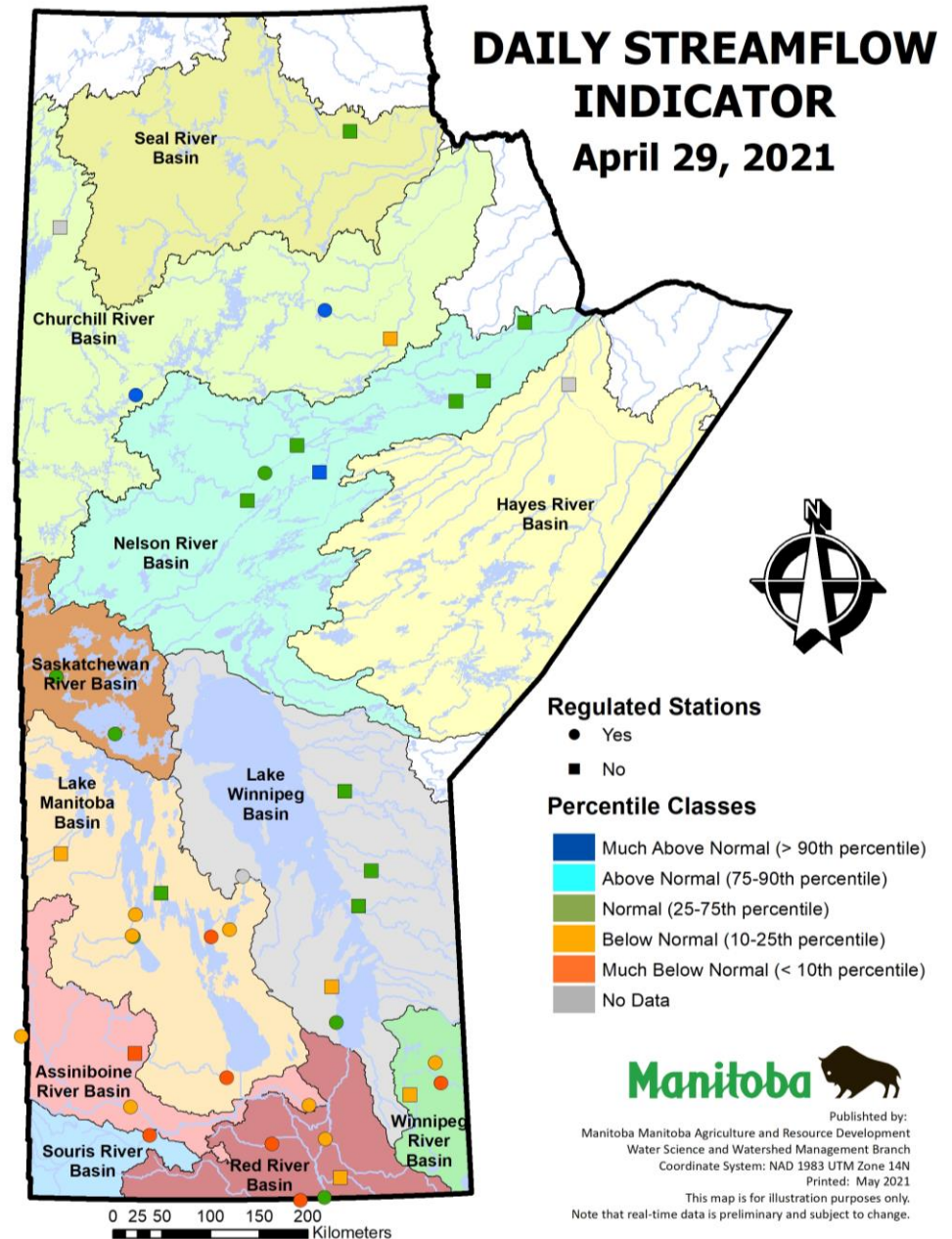


Figure 4: Daily streamflow and lake level indicator for April 29, 2021.

Groundwater Indicator

Water level responses to precipitation fluctuations in most aquifers lag considerably behind surface water responses, so even prolonged periods of below normal precipitation may not have a significant negative effect on groundwater levels. Most aquifers also store very large quantities of groundwater and can continue to provide water during extended periods of dry weather. Consequently, the major concern regarding groundwater and dry periods relates to water levels in shallow wells. As the water table drops, there is less available drawdown in shallow wells and some wells may 'go dry', even in short-term drought conditions.

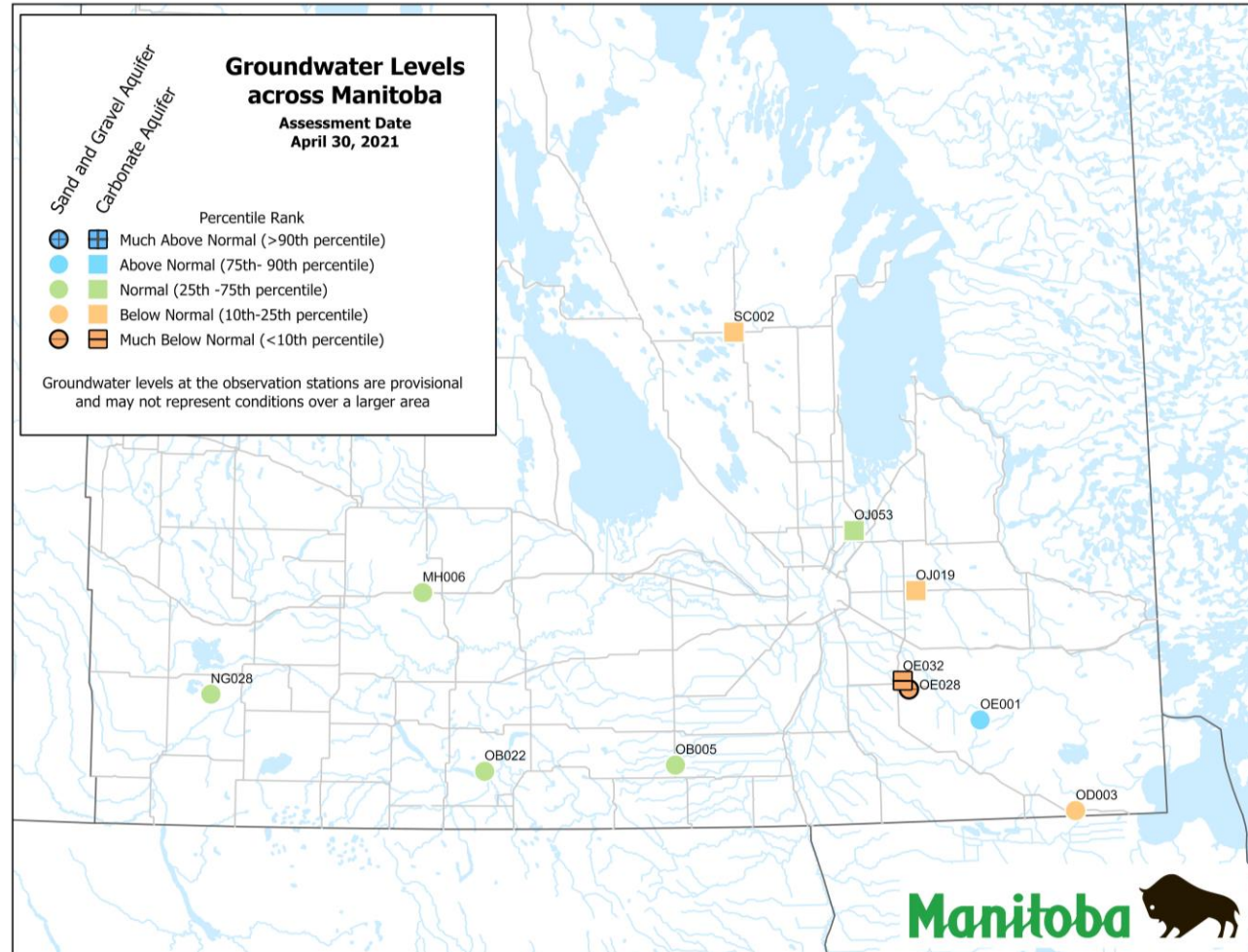


Figure 5: Groundwater indicator on April 30, 2021 for select groundwater monitoring sites.

Canada and United States Drought Monitors

The Canadian Drought Monitor and the United States Drought Monitor map the extent and intensity of drought conditions across Canada and the continental U.S.A.

Drought Monitor assessments are based on a suite of drought indicators, impacts data and local reports as interpreted by federal, provincial/state and academic scientists.

The Canadian and United States Drought Monitor maps use the following classification system:

- D0 (Abnormally Dry) – represents an event that occurs every 3 to 5 years;
- D1 (Moderate Drought) – 5 to 10 year event;
- D2 (Severe Drought) – 10 to 20 year event;
- D3 (Extreme Drought) – 20 to 50 year event; and
- D4 (Exceptional Drought) – 50+ year event.

Additionally, the map indicates the duration of drought as either short-term (S; less than 6 months) or long-term (L; more than 6 months) (Figure 6).

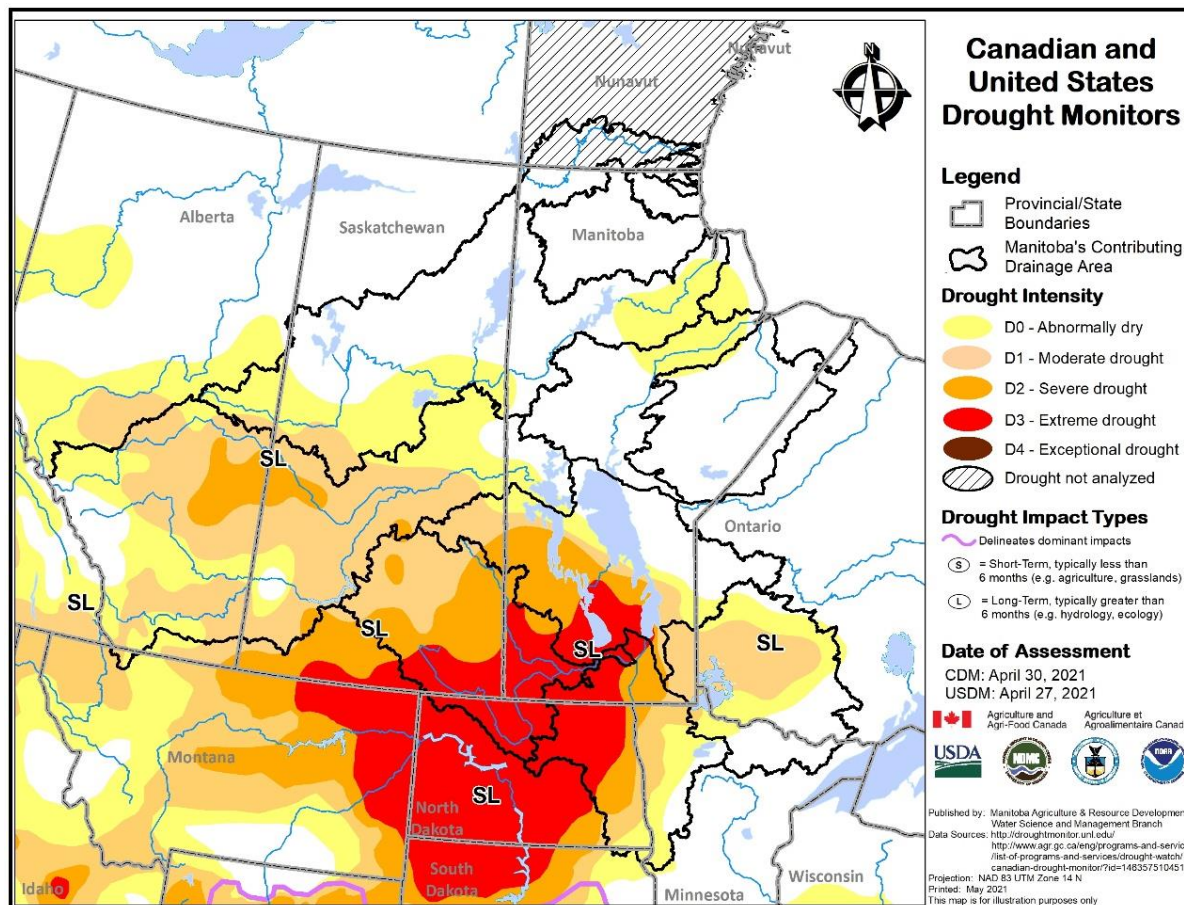


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of April 30, 2021.

Water Availability

Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – April 30, 2021 (Southern and Western Manitoba).

Lake or Reservoir	Community or Co-ops Supplied	Target Level (feet)	Latest Observed Level (feet)	Observed date	Supply Status (Recent - Target) (feet)	Storage at Target Level (acre-feet)	Storage at Observed Level (acre-feet)	Supply Status (observed storage/target storage) (%)
Lake of the Prairies (Shellmouth) ^{1*}	Brandon, Portage, Cartier Regional Water Co-op	1,402.5 ¹	1400.78	April 29, 2021	-1.72	300,000	278,870	93%
Lake Wahtopanah (Rivers)*	Rivers	1,536	1536.44	April 30, 2021	0.44	24,500	25,494	104%
Minnewasta (Morden)*	Morden	1,082	1075.42	April 30, 2021	-6.58	3,150	2,160	69%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	972.40	April 30, 2021	0.40	3,810	3,996	105%
Vermilion*	Dauphin	1,274	1274.40	April 30, 2021	0.40	2,600	2,694	104%
Goudney (Pilot Mound)*		1,482	1482.20	April 20, 2021	0.20	450	460	102%
Jackson Lake*		1,174	1172.62	April 30, 2021	-1.38	2,990	2,645	88%
Manitou (Mary Jane)*		1,537	1536.64	April 30, 2021	-0.36	1,150	1,117	97%
Turtlehead (Deloraine)*	Deloraine	1,772	1769.62	April 30, 2021	-2.38	1,400	1,252	89%
Lake Irwin*		1,178	1177.85	April 30, 2021	-0.15	3,800	3,708	98%
Minnedosa*		1,682	1682.88	April 30, 2021	0.88	1,688	1,929	114%
Kenton Reservoir		1,448	1446.97	February 25, 2021	-1.03	600	524	87%
Killarney Lake		1,615	1613.88	February 18, 2021	-1.12	7,360	6,846	93%
Elgin		1,532	1531.48	March 9, 2021	-0.52	520	484	93%
St. Malo		840	840.16	February 23, 2021	0.16	1,770	1,797	102%
Boissevain	Boissevain	1,697	1695.57	February 18, 2021	-1.43	505	404	80%

¹ Summer target level and storage;
 * Real-time water level gauge.

On Farm Water Supply

Farm water supply updates from Manitoba Agriculture and Resource Development's Crop Report Issue 2 (published May 4, 2021) are provided in Table 2.

Table 2: On Farm Water Supply (Dugout) Conditions.

Region	General Dugout Condition
Eastern	Dugouts that did not receive any runoff are at less than 50% capacity in some areas. Dugouts that received runoff are full. Availability of livestock water was reported as adequate for the region.
Interlake	Livestock water supplies are currently adequate. Dugout levels are low for this time of year, and water tables are down.
Southwest	Dugout levels vary from area to area with levels from 30% to 70% full. Reports of well water tables down 10 feet from normal.
Central	Little to no spring runoff has not recharged dugouts and groundwater. Water reserves will be lower than normal to start the grazing season.
Northwest	Dugouts are full to adequate but with no spring runoff may become depleted without more timely spring rains (April 27, 2021).

Soil Moisture

Manitoba Agriculture and Resource Development's mapping shows the soil moisture conditions for the top 30 cm on May 2, 2021.

Soil moisture levels are rated as follows: < 20 % Very Dry, 20 – 40 % Dry; 40 – 70 % Optimal; 70 – 90 % Wet and >90 % Very Wet in relation to the soil saturation level (maximum recorded at that station).

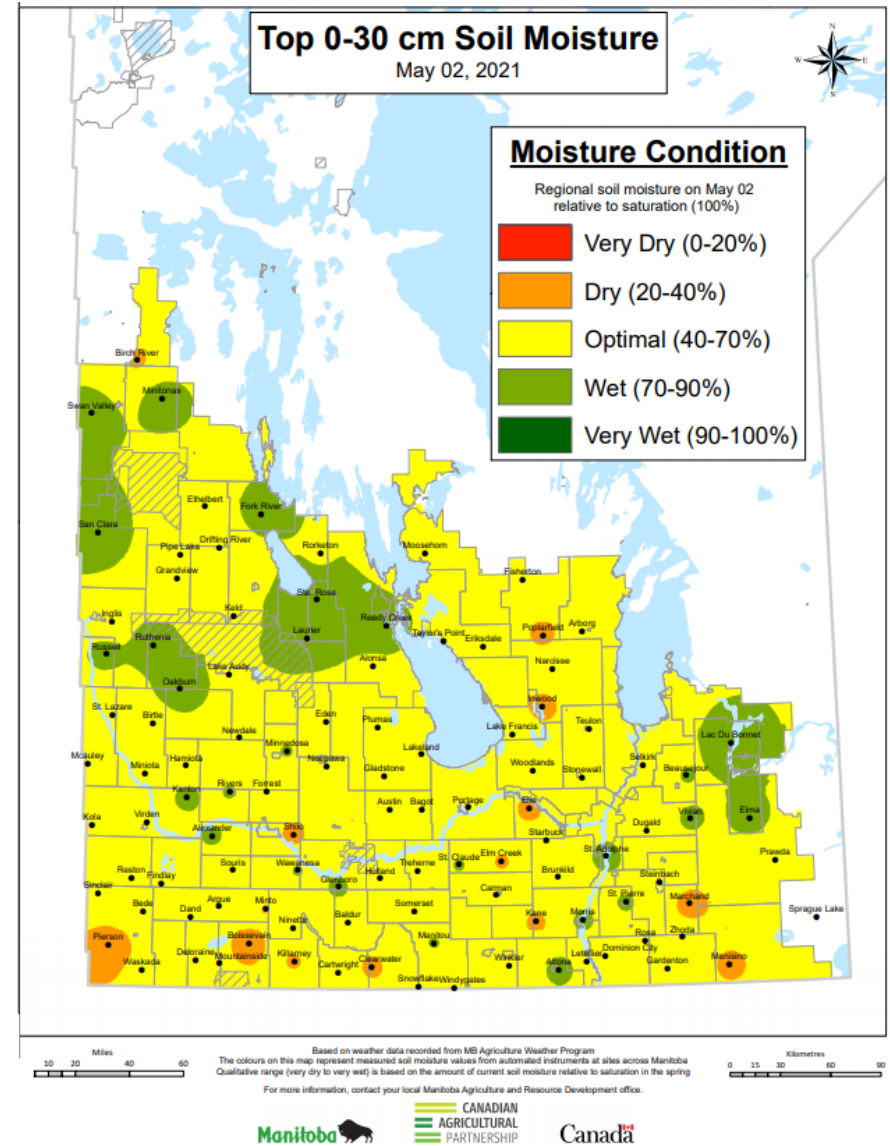


Figure 7: Manitoba Agriculture and Resource Development's May 2, 2021 mapping of soil moisture conditions in the top 0 – 30 cm.

Wildland Fires

As of May 5, 2021 Conservation and Climate's Wildfire Program reported 28 wildfires this year to date, burning a total area of 5,768 hectares. Most of the burned area occurred in the eastern region. The wildfire danger is generally moderate in the south and low in the north. Human caused fires will be the concern due to continued dry spring conditions.

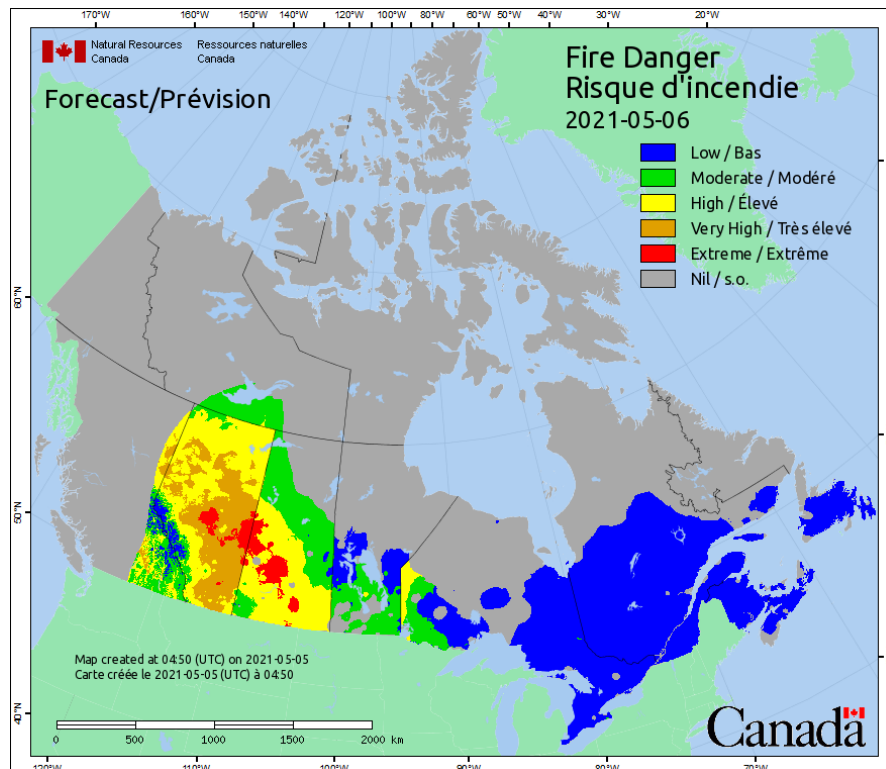


Figure 8: Fire Danger mapping by Natural Resources Canada.

Many municipalities continue to implement burning restrictions this spring. Additional information is available through the local municipal offices or through the interactive [Current Municipal Burning Restrictions](#) map.

Impacts due to Dry Conditions

Spring hydrologic drought impacts continue to occur. Well below normal winter precipitation resulted in insufficient spring runoff to meet licensed allocations in some regions, particularly water supplies for irrigation. Several water supply reservoirs did not reach full supply level this spring, including Jackson Lake, Lake Minnewasta and Deloraine Reservoir. The City of Morden has implemented water conservation measures.

Recent rain helped keep dust down and provide a little seedbed moisture, but will quickly dissipate. Much of agri-Manitoba has optimal seeding moisture conditions at this time, but will soon need additional rain to spur germination of annual crops and growth of pastures and hayfields. Conserving existing soil moisture remains top of mind for farmers, and many are using limited-disturbance openers for fertilizer and seeding, where possible. Concern for lack of moisture in the lower soil profile continues. Some areas will see slightly lower soybean acres this year, due to concerns about dry conditions in lighter textured soils.

Generally, winter feed supplies are adequate, but shortages may arise if there are significant delays to cattle going on to pasture. Dugout levels are below normal, but adequate for the time being; however, many producers are concerned about water for pastures. There have been reports in the southwest and the Interlake that well water tables are well below normal conditions. Rains are much needed for recharge.

Past reports, drought mapping and other information and resources are available on the [Manitoba Drought Monitor](#) website.

For further information, please contact:

Carly Delavau, Ph.D, P.Eng.
Senior Water Supply Engineer
Surface Water Management Section, Water Branch, Manitoba Agriculture
and Resource Development
Box 14, 200 Saulteaux Crescent, Winnipeg, Manitoba R3J 3W3
Ph. (204) 806-4557, Fax (204) 945-7419
E-mail : Carly.Delavau@gov.mb.ca

Acknowledgements

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Manitoba Infrastructure - Reservoir level information:

<https://www.gov.mb.ca/mit/floodinfo/index.html>

Manitoba Conservation and Climate's Fire Program:

<https://www.gov.mb.ca/sd/fire/>

Manitoba Agriculture and Resource Development:

Crop Reports:

<http://www.gov.mb.ca/agriculture/crops/seasonal-reports/crop-report-archive/index.html>

Topsoil moisture conditions:

<https://www.gov.mb.ca/agriculture/weather/weather-conditions-and-reports.html>

Environment and Climate Change Canada:

Flow and lake level information:

http://www.wateroffice.ec.gc.ca/index_e.html

Agriculture and Agri-Food Canada:

Canadian Drought Monitor:

<https://www.agr.gc.ca/eng/agriculture-and-climate/drought-watch>

United States Drought Monitor:

<https://droughtmonitor.unl.edu/>