Water Availability and Drought Conditions Report

MARCH 2021

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for March 2021.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
  - During March, most of southern Manitoba experienced extremely dry (< 40 % of median) conditions, except for northwest agri-Manitoba which observed moderately dry (60 – 85 %) to normal (85 – 115 %) conditions. In northern Manitoba, conditions ranged from above normal (115 %) in the west to severely dry (40 – 60 %) in the east.
  - Over the past three months (January, February, March), most of southern Manitoba experienced severely dry to extremely dry conditions, except for northwest agri-Manitoba which observed moderately dry to normal conditions. Conditions in northern Manitoba were drier in the south and generally normal to above normal elsewhere, except for Churchill which observed severely dry conditions.
  - Over the past 12 months, most of agri-Manitoba observed moderately dry conditions with pockets 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 March 30, 2021, streamflows and lake levels across southern Manitoba were still generally in the normal range (25^{th} – 75^{th} percentile); however, many rivers are beginning to quickly drop into the below normal category. Below normal (10^{th} – 25^{th} percentile) conditions were observed on the Mossy River and Whiteshell River, and much below normal (< 10^{th} percentile) conditions were observed on the Winnipeg River, Boyne River, Souris River, Whitemouth River, and on Lake Manitoba.
- As of March 31, 2021, groundwater levels from index wells from the Assiniboine Delta aquifer and the Sandilands area were reporting above normal (> 75^{th} percentile) conditions. Water levels in the Steinbach and Anola areas were in the much below normal and below normal categories, respectively. The remainder of the index wells were within the normal range. Some recharge has been measured at several locations. Under the current conditions, spring aquifer recharge is expected to be substantially below normal for most of the province.
- The March 31, 2021 Canadian Drought Monitor assessment showed that most of agri-Manitoba was experiencing severe drought conditions (D2) with regions of extreme drought conditions (D3) in the south Interlake, central Manitoba and parts of southwestern Manitoba.
- Provincial water supply reservoirs are generally at or close to full supply levels and there are currently no major concerns over reservoir water supplies. Dugout water levels are generally classified as below normal for post-freshet. In some regions, the spring runoff in small intermittent streams has not been sufficient to meet the demand for licensed water allocations.
- On April 3, 2021, the Manitoba Wildfire Service advised that due to high wildfire danger levels, Level 2 travel restrictions would take effect immediately across the southwest and eastern regions of the province. Many municipalities have already proactively implemented burning restrictions this spring.

Manitoba
Agriculture and Resource Development

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.

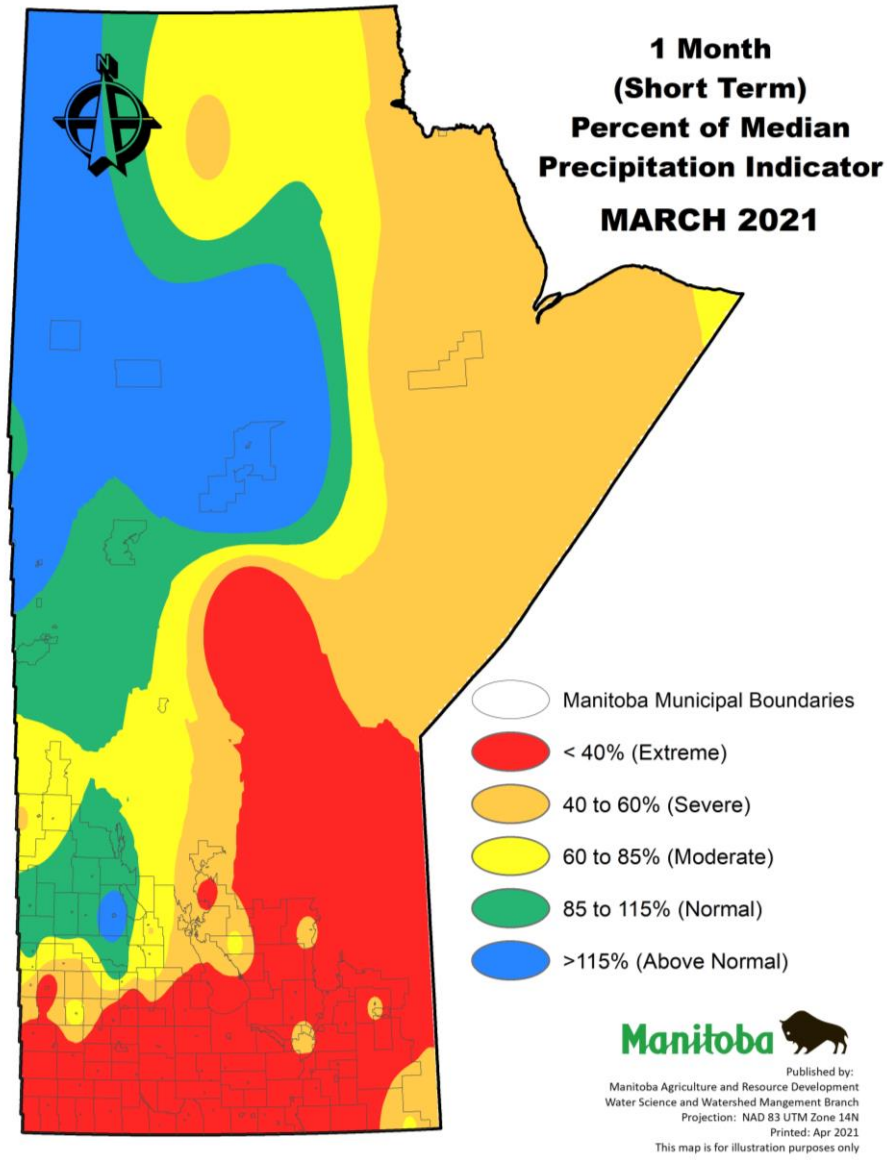

Figure 1: One month (short term) per cent of median precipitation indicator.

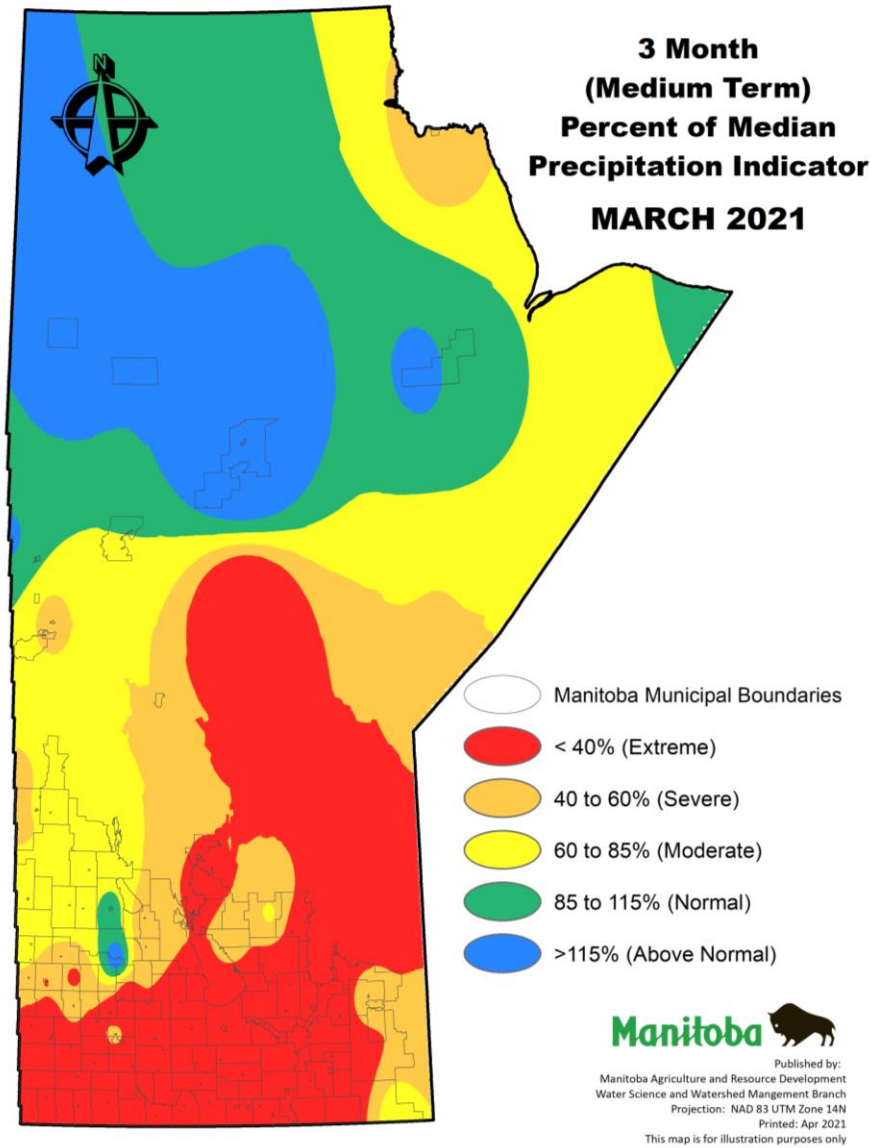

Figure 2: Three month (medium term) per cent of median precipitation indicator.

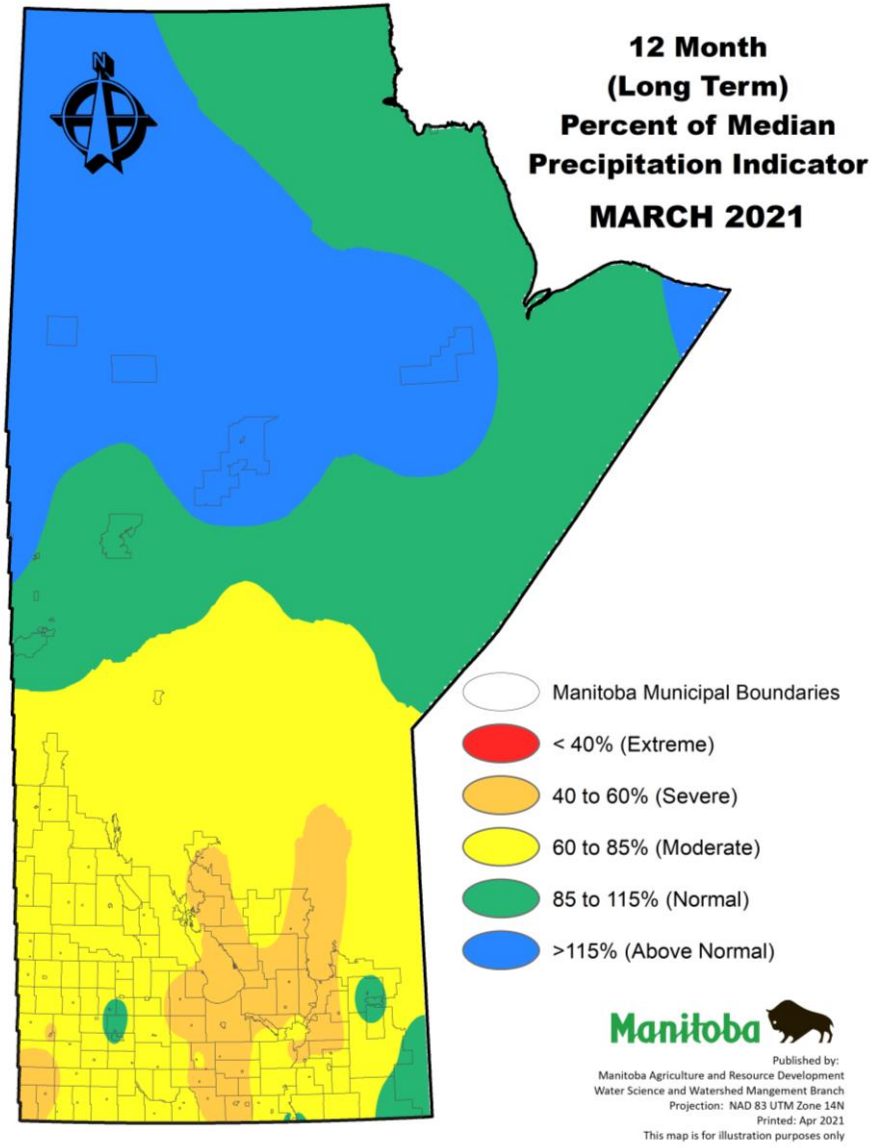

Figure 3: Twelve month (long term) per cent of median precipitation indicator.

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 March 30, 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.

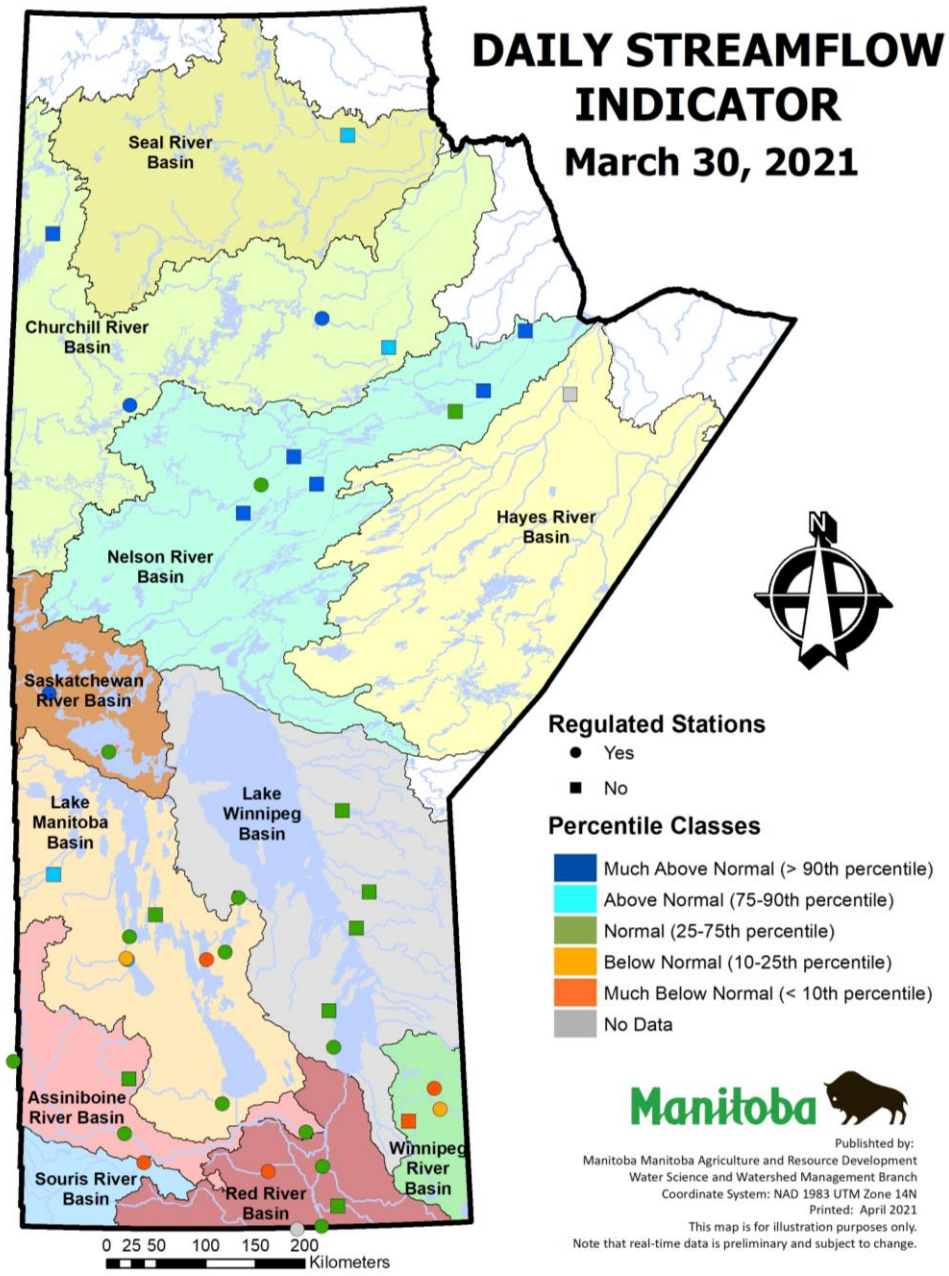

Figure 4: Daily streamflow and lake level indicator for March 30, 2021.

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.

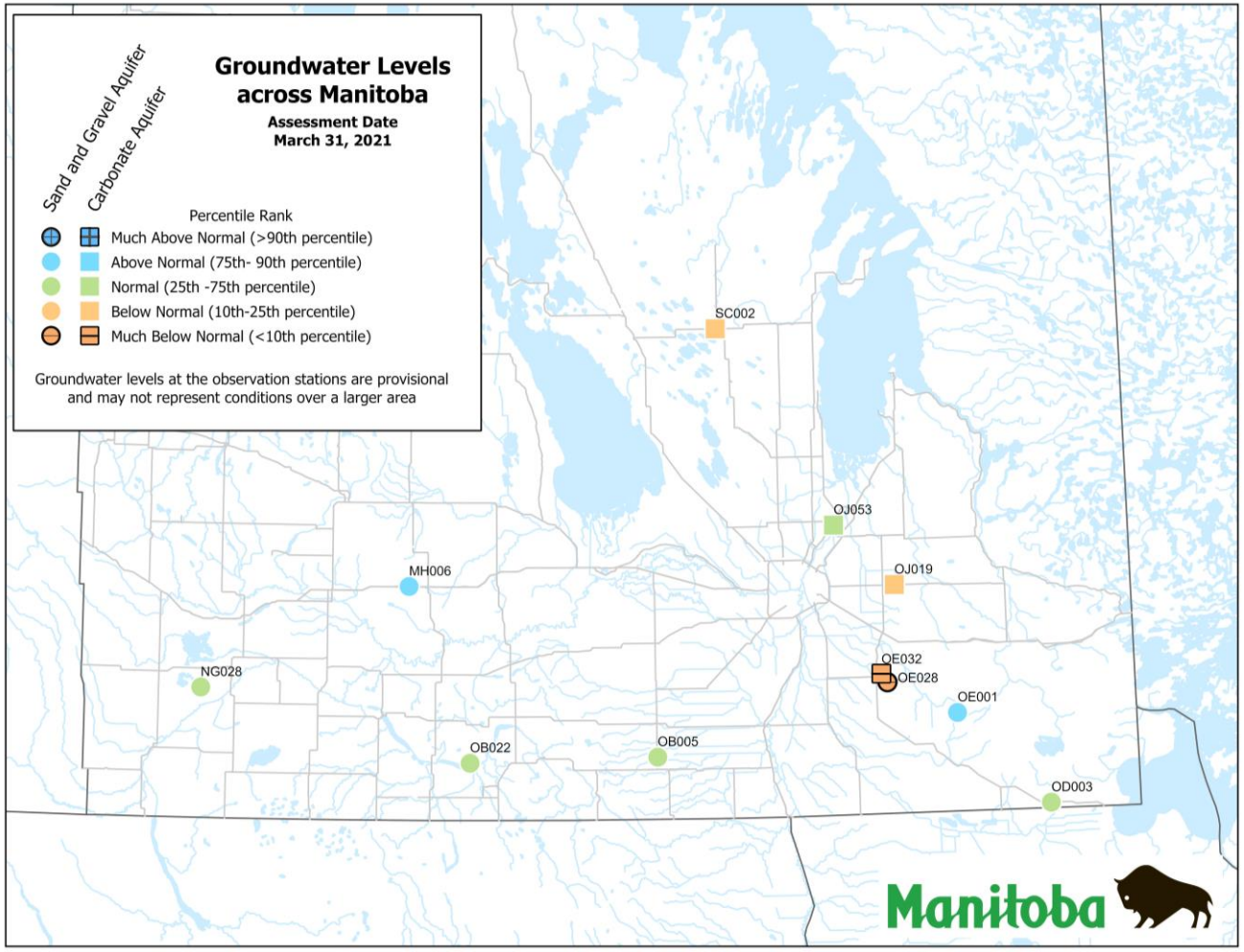

Figure 5: Groundwater indicator on March 31, 2021 for select groundwater monitoring sites.

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).

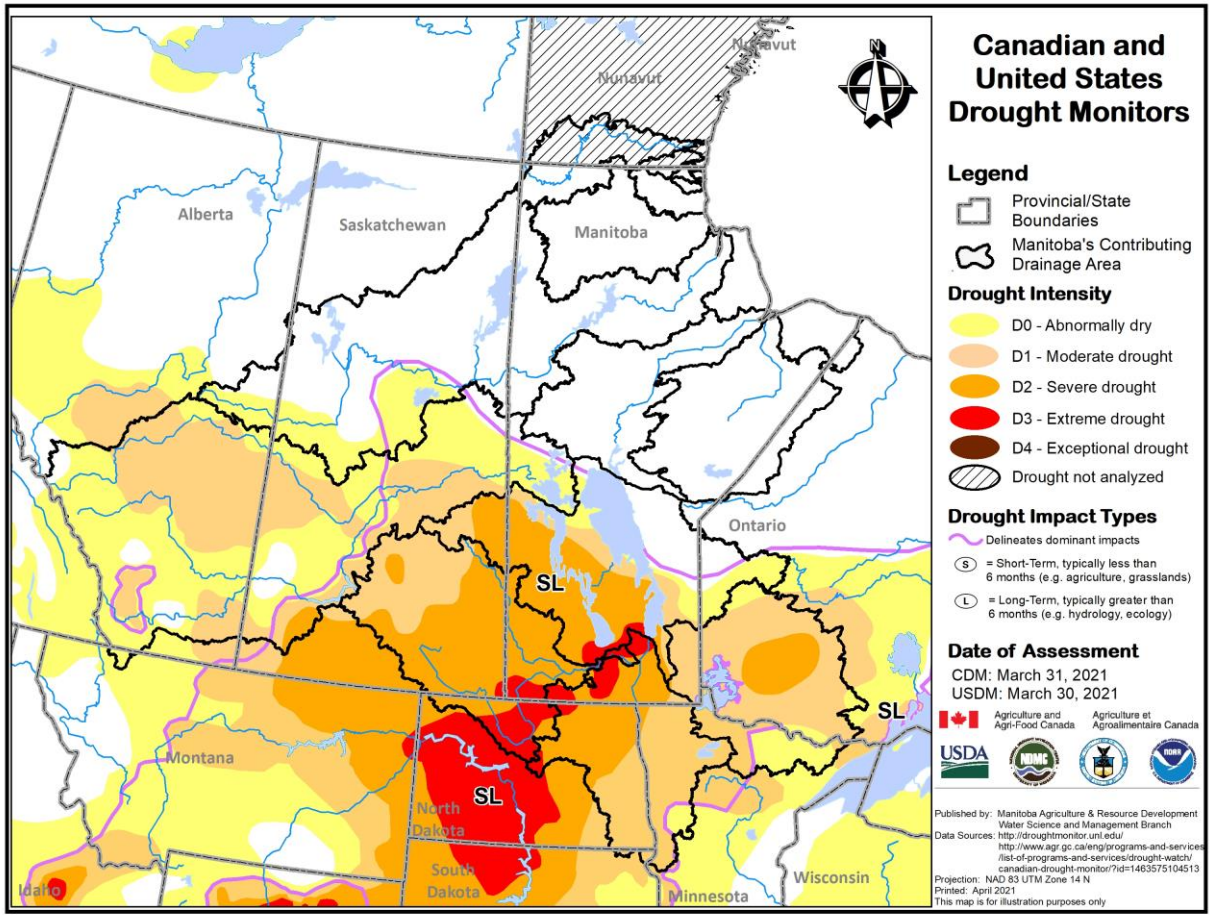

Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of March 31, 2021.

Water Availability

Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – March 29, 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]	1397.83	March 29, 2021	-4.67	300,000	242,528	81%
Lake Wahtopanah (Rivers)*	Rivers	1,536	1534.86	March 29, 2021	-1.14	24,500	23,251	95%
Minnewasta (Morden)*	Morden	1,082	1076.73	**February 16, 2021**	-5.27	3,150	2,349	75%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	972.26	March 29, 2021	0.26	3,810	3,931	103%
Vermilion*	Dauphin	1,274	1273.64	March 29, 2021	-0.36	2,600	2,506	96%
Goudney (Pilot Mound)*		1,482	1482.19	March 27, 2021	0.19	450	460	102%
Jackson Lake*		1,174	1171.70	March 29, 2021	-2.30	2,990	2,420	81%
Manitou (Mary Jane)*		1,537	1535.73	**February 16, 2021**	-1.27	1,150	1,038	90%
Turtlehead (Deloraine)*	Deloraine	1,772	1769.69	March 29, 2021	-2.31	1,400	1,259	90%
Lake Irwin*		1,178	1177.69	March 29, 2021	-0.31	3,800	3,612	95%
Minnedosa*		1,682	1682.04	March 29, 2021	0.04	1,688	1,698	101%
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.

Wildland Fires

In the first week of April, 2021, large grassfires occurred just west of Carberry, north of Vita, and near Zhoda.

On April 3, 2021, the Manitoba Wildfire Service advised that due to high wildfire danger levels, Level 2 travel restrictions would take effect immediately across the southwest and eastern regions of the province. The boundary of the restricted area is from PR 302 to PTH 12 to PR 317 to PTH 9 and PR 319 east to the Ontario border, and from the U.S. border north to Lake Winnipeg and the Winnipeg River including the Mars Hill Wildlife Management Area. Similar restrictions are in place for the Turtle Mountain and Spruce Woods provincial parks, Spruce Woods provincial forest and the surrounding Crown land. Also affected are Moose Lake, Birch Point, Marchand, Woodridge, Whiteshell, Whitemouth Falls, William Lake and Criddle/Vane Homestead provincial parks.

As a further wildfire prevention measure, provincial burn permits issued under the Wildfires Act within the same areas will be restricted to only essential agricultural, municipal or industrial operations.

Many municipalities have already proactively implemented burning restrictions this spring. Additional information is available though the local municipal offices or through the interactive Current Municipal Burning Restrictions map.

Impacts due to Dry Conditions

Some early spring hydrologic drought impacts are occurring. Well below normal winter precipitation has resulted in insufficient spring runoff to meet licensed allocations in some regions, particularly water supplies for irrigation.

Early reports of on-farm water supplies suggest that dugout levels are below normal for post-freshet. Due to the dry conditions and high winds, there have also reports of blowing soils.

Past reports, drought mapping and other information and resources are available on the Manitoba Drought Monitor website.

For further information, please contact:

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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/