

# Water Availability and Drought Conditions Report

AUGUST 2021

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## Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for August 2021. Although recent rains did help improve drought conditions slightly, continued above normal rainfall over the upcoming months is needed to fully alleviate the extensive dryness.
- For more information on conditions, indicators, and resources for those impacted by drought conditions, please visit the Manitoba Drought Monitor at [www.manitoba.ca/drought](http://www.manitoba.ca/drought).
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
  - During August, agri-Manitoba experienced above normal (>115 % of median) precipitation conditions. In northern Manitoba, conditions were generally moderately dry (60 – 85 %) to normal (85 – 115 %), with extremely dry (< 40 %) conditions occurring around The Pas.
  - Over the past three months (June, July, August), most of agri-Manitoba experienced normal to moderately dry conditions. Conditions in northern Manitoba were also normal to moderately dry.
  - Over the past 12 months, agri-Manitoba experienced moderately to severely (40 – 60 %) dry conditions. Conditions in northern Manitoba ranged from moderately dry to normal.
- As of August 30, 2021, flows in many rivers across southern Manitoba moved into the normal range (25 – 75<sup>th</sup> percentile), while others remained in the below normal (10 – 25<sup>th</sup> percentile) to much below normal (<10<sup>th</sup> percentile) category. Flows and levels in northern Manitoba generally ranged between normal to much above normal (>90<sup>th</sup> percentile).
- Groundwater levels have responded positively to recent rainfall in the southwest, southeast and in the Interlake. Even with some recharge, water levels still remain in the below normal or much below normal ranges in the Piney, Steinbach, Anola and Poplarfield areas. Monitoring on the Assiniboine Delta, Glenora and Winkler aquifers, and in the carbonate at Selkirk have shown little to no response to rainfall. The carbonate aquifer at Steinbach and Anola continues to experience new record low levels at the end of August. There are also reports that in some areas, especially the Interlake, wells that previously flowed now have levels below ground. Shallow sand aquifers of limited extent and water storage may not be able to meet current water requirements. Demand for new well drilling is high; a listing of currently licensed water well drillers is available [here](#).
- The August 31, 2021 Canadian Drought Monitor assessment showed that the rain helped improve conditions slightly, but drought conditions continue to persist with almost all of agri-Manitoba classified as D3 (extreme drought) or D4 (exceptional drought) conditions. Drought conditions extended northward, giving way to abnormally dry (D0) conditions near Thompson.
- Most provincial water supply reservoirs remain above 80 % of full supply level, except for Lake Minnewasta, Stephenfield Reservoir and Jackson Lake. Provincial water control structures are being operated to mitigate low water level conditions and balance the impacts on multiple stakeholders. Some municipalities continue to implement water conservation restrictions (either voluntary or mandatory) including the Pembina Valley Water Co-op and its member municipalities.
- Soil moisture has rapidly improved in nearly all areas of agri-Manitoba, with the top 30 cm of soil showing conditions as optimal to wet, based on field capacity. These trends are reflected at depth, where subsoil moisture has also improved slightly.

- Recent rains have somewhat helped to replenish on farm water supplies in certain regions. However, sufficient livestock water supply remains a concern. Livestock producers can apply for funding to support water source development under [Ag Action Manitoba](#) until October 1, 2021.
- Hay and pastureland have now greened up, and livestock producers are managing regrowth areas to support fall grazing.
- There is currently a severe shortage of forage throughout the province. More cereal crops are being cut for greenfeed (farmers must [contact MASC](#) prior to putting crops to alternate use). The [Manitoba Hay Listing Service](#) is active; producers with extra feed or looking for feed are encouraged to list their available supplies for sale. See the Manitoba ARD [Dry Conditions & Drought page](#) for resources on managing livestock, forage, and crops during drought; including available financial assistance such as the recently announced Agri-Recovery programming.
- Harvest completion across all regions of the province has reached 35 %. Significant rains were too late for cereals, canola, and flax. Some soybean, potato, corn, and sunflower crops could benefit. Cooler, wet and humid weather has delayed harvest operations, which will downgrade the quality of remaining unharvested cereal acres.
- The [Manitoba Farm, Rural & Northern Support Services](#) hotline is available 24/7 for farmers and ranchers dealing with crises and stressful situations at 1-866-367-3276.
- As of September 3, 2021, wildfire danger was low across Manitoba. Manitoba Wildfire Service reported 445 wildfires this year to date, burning a total area of 1,264,529 hectares. Due to the recent precipitation, all remaining fire and travel restrictions have been lifted across the Province.

# 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.

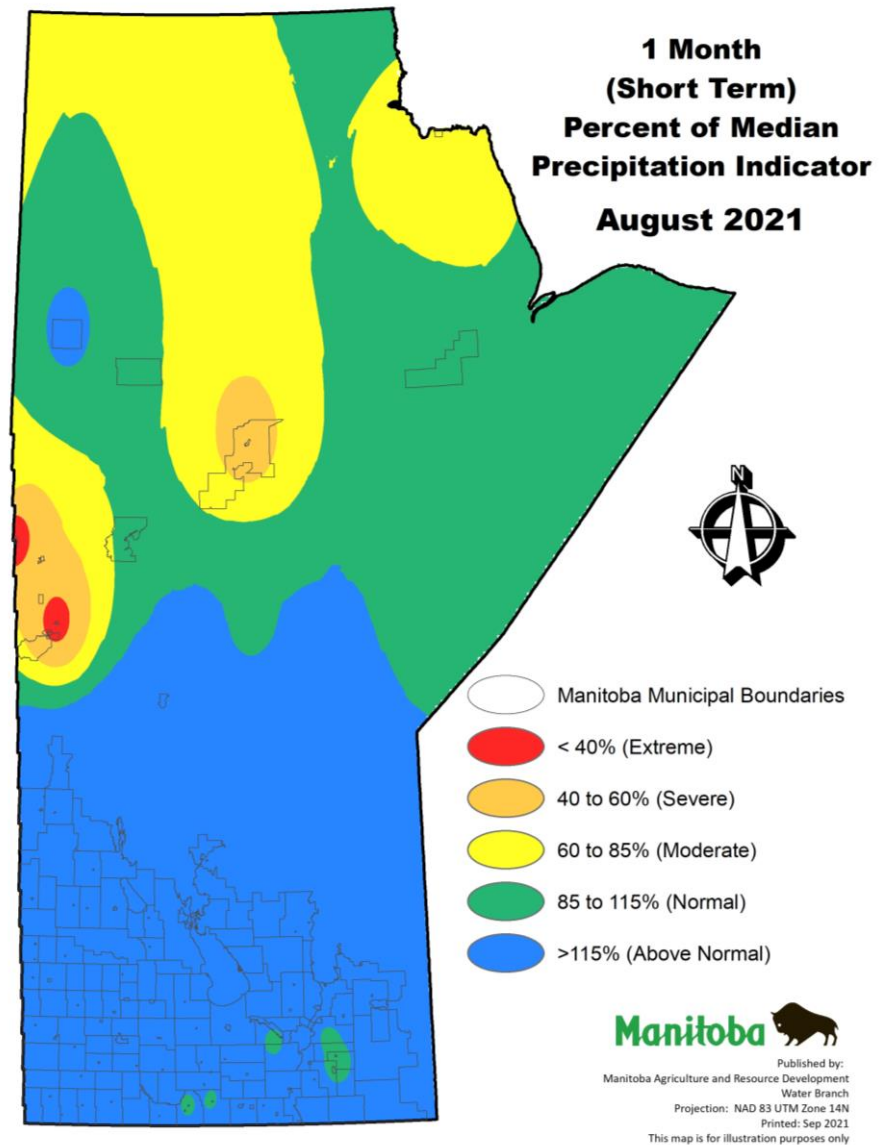


Figure 1: One month (short term) per cent of median precipitation indicator.

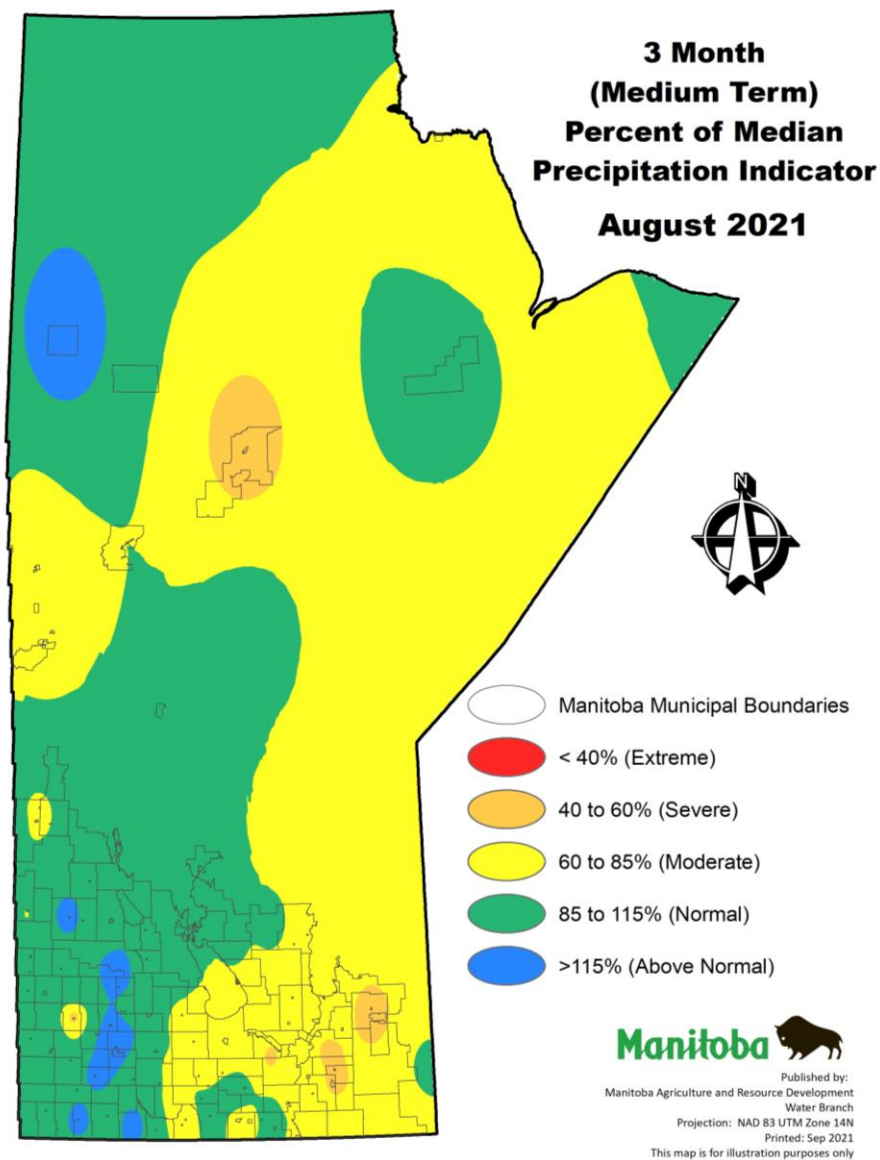


Figure 2: Three month (medium term) per cent of median precipitation indicator.

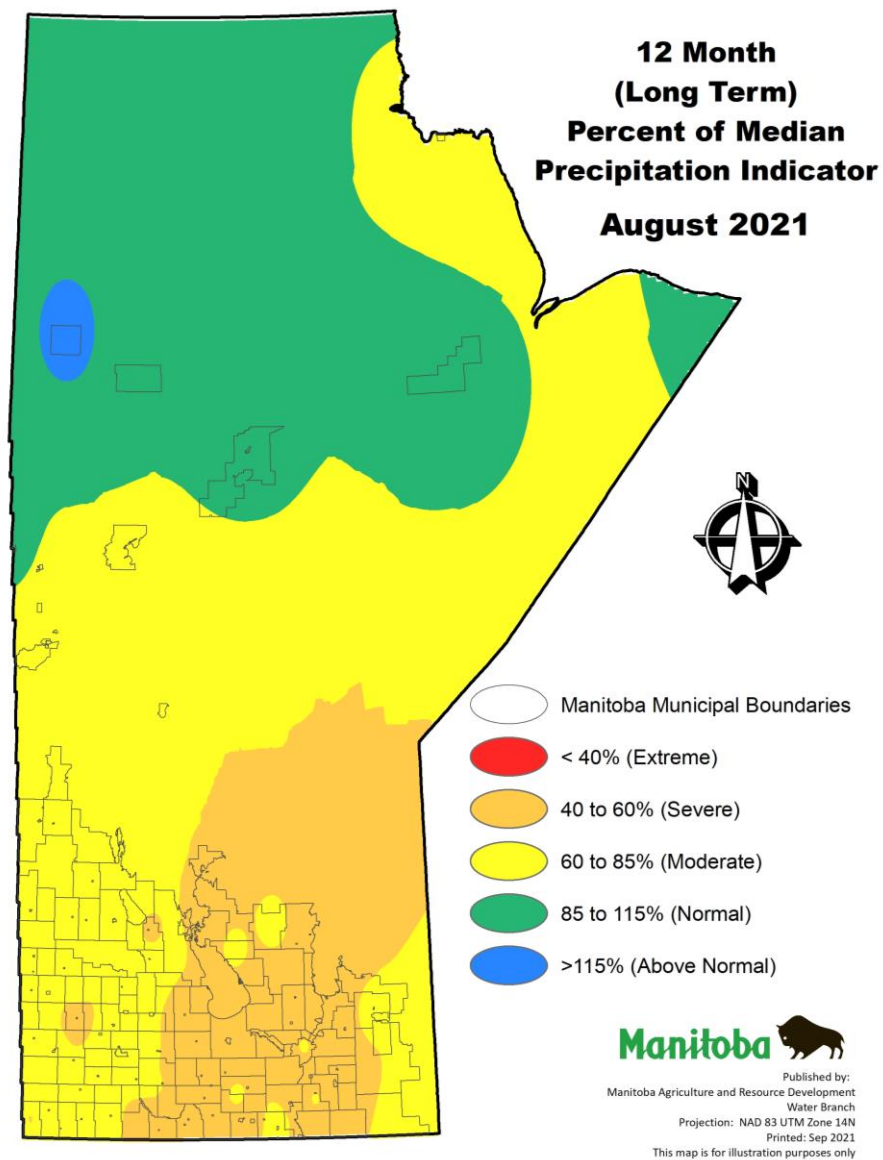


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

### 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 August 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.

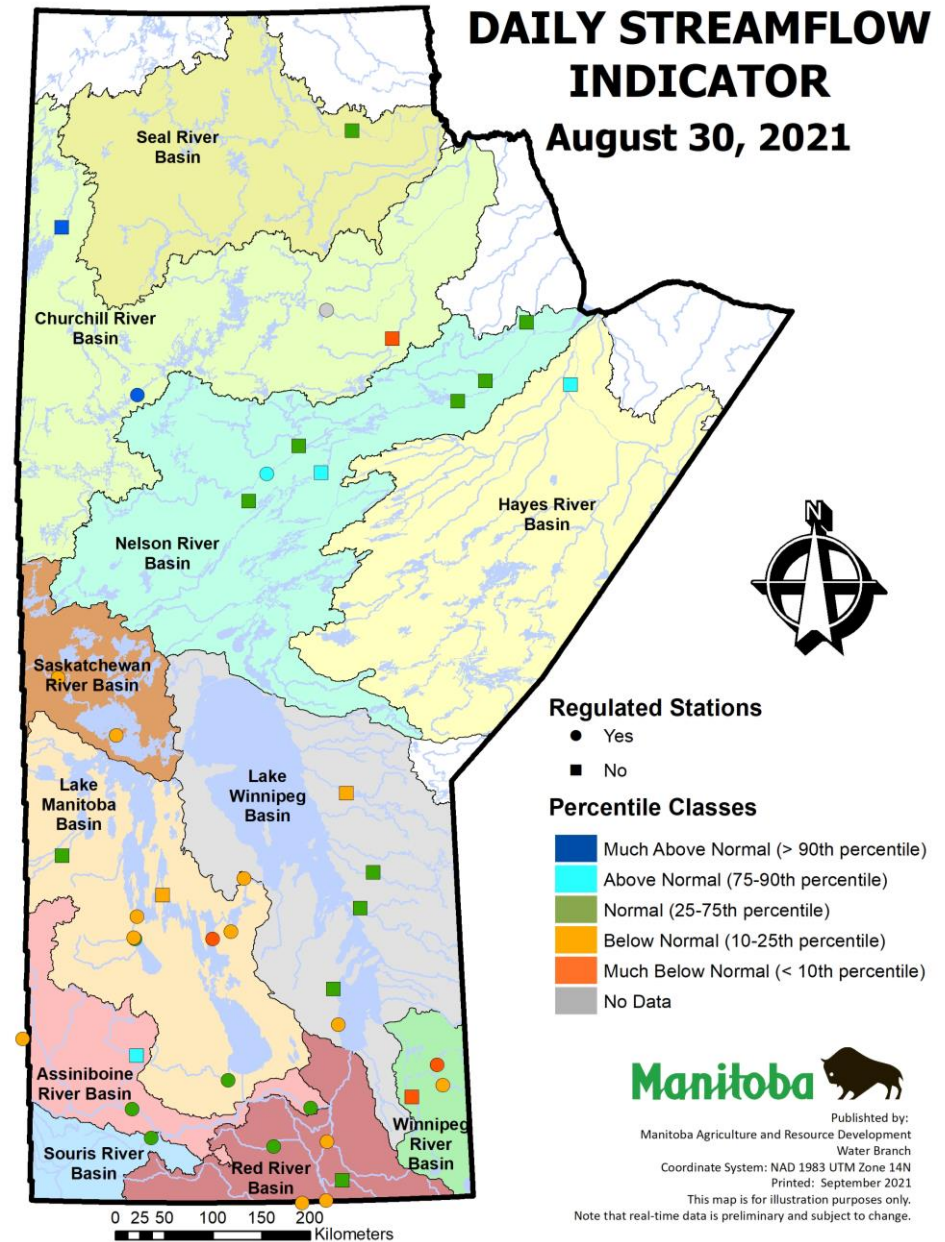


Figure 4: Daily streamflow and lake level indicator for August 30, 2021.

## 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. Even at low levels, most aquifers store large amounts of water and can continue to provide water during extended periods of dry weather. However, local conditions may vary from monitoring and in shallow aquifers with limited extent, may experience water levels declining below the pump and reported as dry or intermittently dry during pumping cycles. 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'.

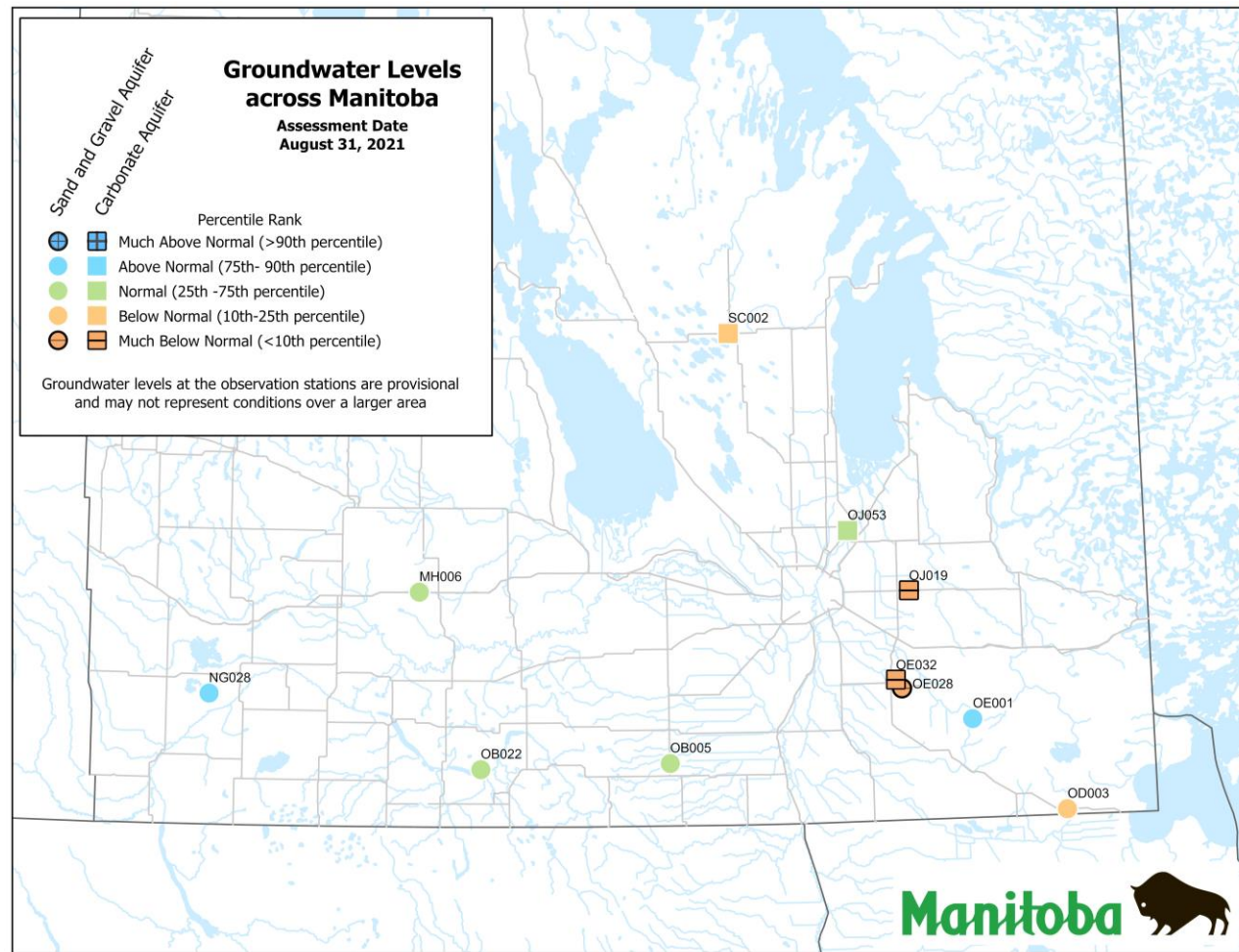


Figure 5: Groundwater indicator on August 31, 2021 for select groundwater monitoring sites.

## 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).

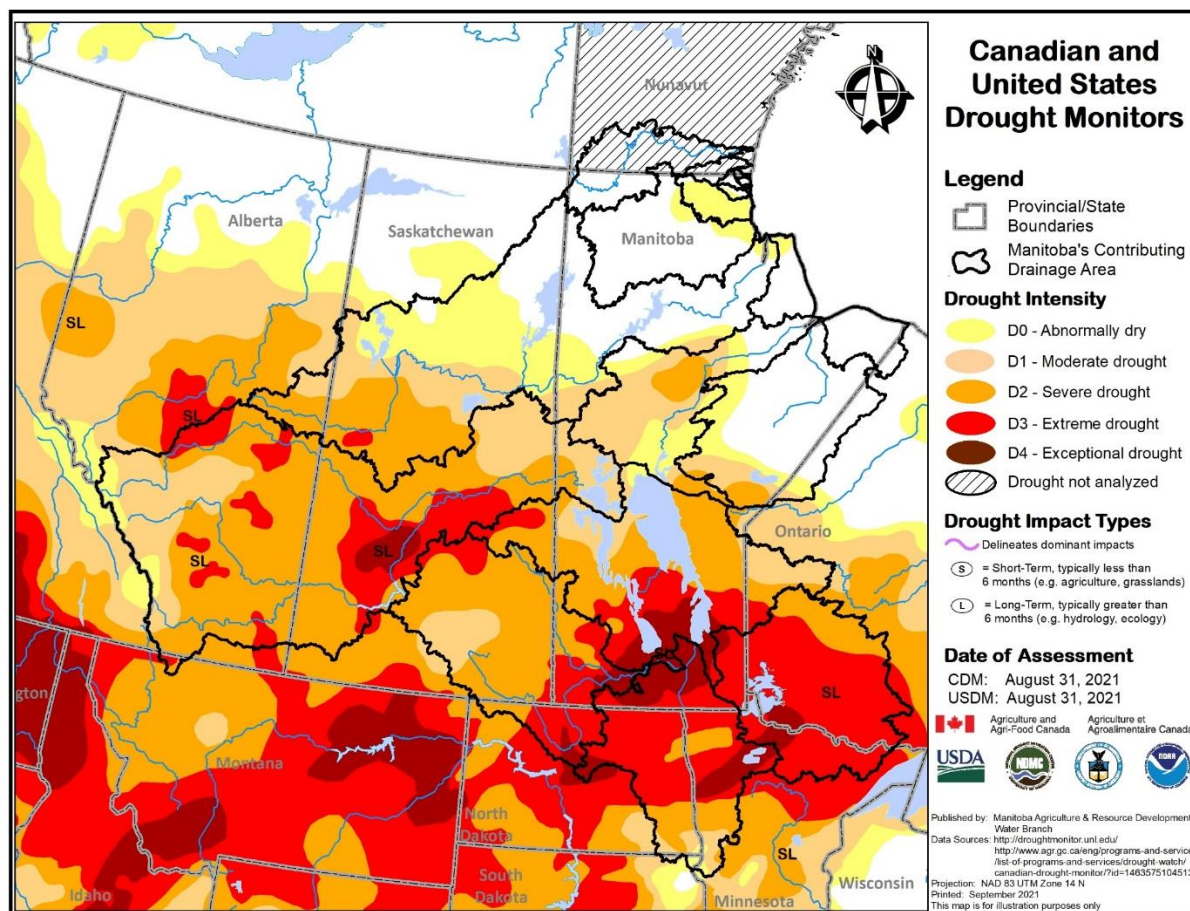


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of August 31, 2021.

# Water Availability

## Reservoir Conditions

Water Supply Reservoir Levels and Storages - August 31, 2021								
Lake or Reservoir	Community 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)* <sup>1</sup>	Brandon, Portage, Cartier Regional Water Co-op	1,402.5	1401.12	August 31, 2021	-1.38	300,000	283,075	94%
Lake Wahtopannah (Rivers)*	Rivers	1,536	1535.92	August 31, 2021	-0.08	24,500	24,413	100%
Minnewasta (Morden)*	Morden	1,082	1072.60	August 31, 2021	-9.40	3,150	1,788	57%
Stephenfield*	Carman, Pembina Valley Water Co-op	972	969.34	August 31, 2021	-2.66	3,810	2,721	71%
Vermillion*	Dauphin	1,274	1274.21	August 31, 2021	+0.21	2,600	2,650	102%
Goudney (Pilot Mound)*		1,482	1481.62	August 31, 2021	-0.38	450	424	94%
Jackson Lake*		1,174	1169.10	August 31, 2021	-4.90	2,990	1,817	61%
Manitou (Mary Jane)*		1,537	1536.25	August 8, 2021	-0.75	1,150	1,082	94%
Turtlehead (Deloraine)*	Deloraine	1,772	1768.63	August 31, 2021	-3.37	1,400	1,157	83%
Lake Irwin*		1,178	1177.23	August 31, 2021	-0.77	3,800	3,337	88%
Minnedosa*		1,682	1682.27	August 31, 2021	+0.27	1,688	1,761	104%
Boissevain*	Boissevain	1,697	1695.46	August 31, 2021	-1.54	505	396	78%
Kenton Reservoir		1,448	1446.75	August 4, 2021	-1.25	600	519	86%
Killarney Lake		1,615	1613.23	August 11, 2021	-1.77	7,360	6,546	89%
Elgin		1,532	1531.12	August 11, 2021	-0.88	520	458	88%
St. Malo		840	839.89	August 18, 2021	-0.11	1,770	1,752	99%

<sup>1</sup> 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 19 (published August 31, 2021) are provided in Table 1.

Table 1: On Farm Water Supply (Dugout) Conditions.

Region	General Dugout Condition
Eastern	Livestock water availability is rated as adequate because producers have implemented a variety of measures to deal with the situation.
Interlake	Water supplies have replenished somewhat.
Southwest	Recent rains have filled sloughs and some streams are running again, which will take pressure off the lack of water in some pastures. Dugouts are about 50 to 60 % of full capacity.
Central	Water availability is improved but surface supply and quality is still low.
Northwest	Sufficient livestock water supply remains a concern.

## Soil Moisture

A regional representation of soil moisture conditions for the top 120 cm relative to the field capacity is shown for August 29, 2021.

Soil moisture mapping is now displayed as relative to Field Capacity rather than Saturation. Mapping based on Field Capacity better depicts the differences in water availability based on soil texture under dry conditions.

Soil moisture maps are created by classifying current values that are less than 25 % of available water as Very Dry, between 25 % - 50 % as Dry, 50 % to field capacity as Optimal, field capacity to 75 % of saturation minus field capacity as Wet, and above this level as Very Wet.

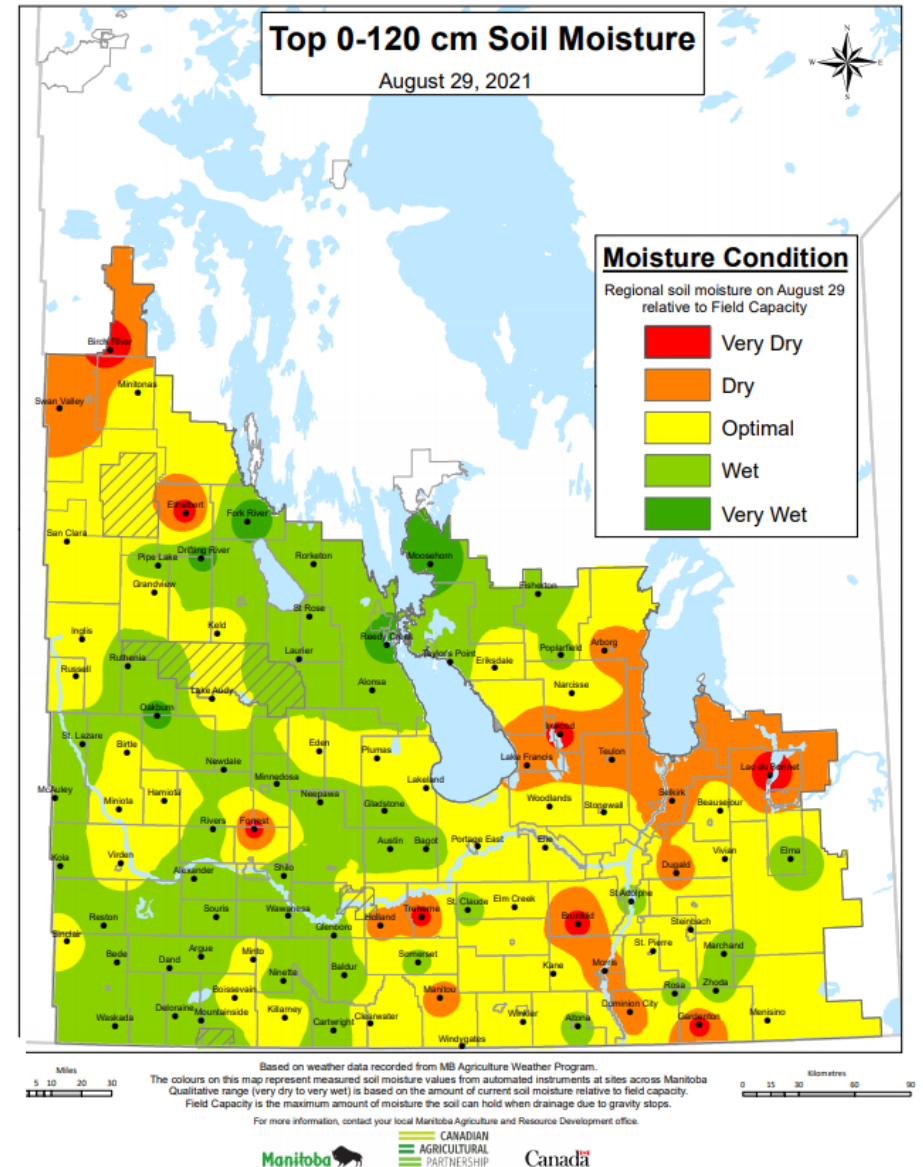


Figure 7: Manitoba Agriculture and Resource Development's August 29, 2021 mapping of soil moisture conditions in the top 0 – 120 cm.

## Wildland Fires

As of September 3, 2021, the Manitoba Wildfire Service reported 445 wildfires this year to date, burning a total area of 1,264,529 hectares. Most of the burned area occurred in the eastern region. The fire danger across the province was rated as low due to recent rains.

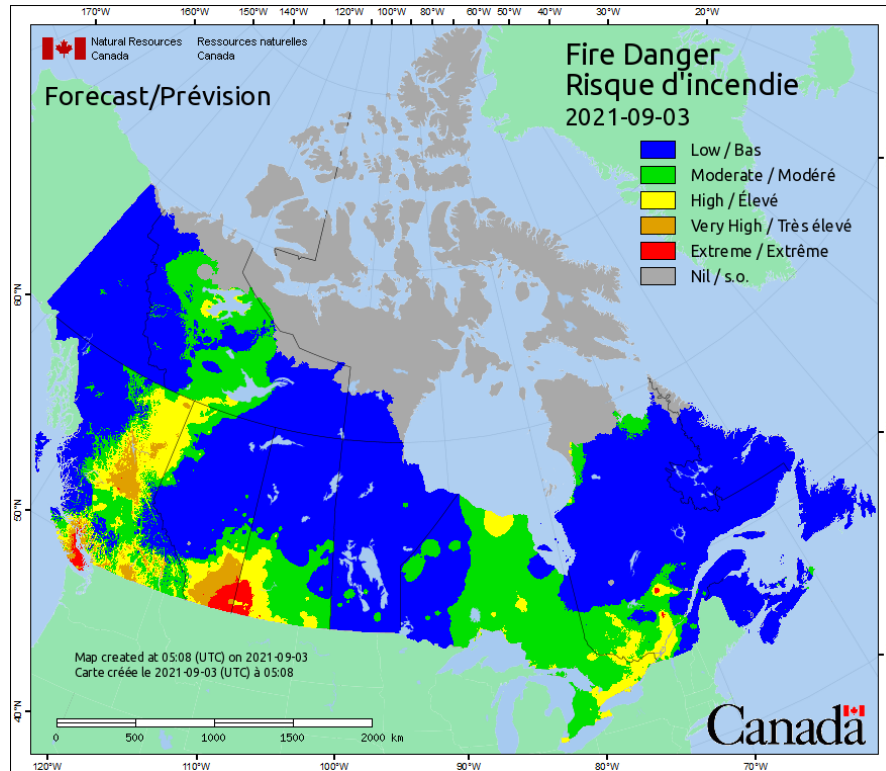


Figure 8: Fire Danger mapping by Natural Resources Canada.

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

## Drought Impacts

### Wildland Fires

The recent rainfall has assisted Manitoba fire crews to make good progress on all existing priority fires, as well as to begin action on those that were not an immediate threat. Action on four large fires in the Western Region, north of Flin Flon and Snow Lake will continue through September to protect forestry and other values in the region.

With the recent significant precipitation across most regions, the Manitoba Wildfire Service advises that the all remaining fire and travel restrictions have been lifted across the Province. Manitobans are reminded caution is required in some areas, in particular the northwest region which received considerably less rainfall.

### Crops & Forages

Harvest completion across all regions of the province has reached 35 %. Significant rains brought a month's worth of moisture to nearly all parts of agri-Manitoba. While the rainfall was too late for cereals, canola, and flax, some soybean, potato, corn, and sunflower crops could benefit. Cooler, wet and humid weather has delayed harvest operations, which will downgrade the quality of remaining unharvested cereal acres. Please see the weekly [Crop Reports](#) for information on harvest progress and crop yield and quality.

Substantial rains have meant that hay and pastureland has now greened up, and livestock producers are intensively managing regrowth areas to support fall grazing. There is currently a severe shortage of forage throughout the province. Farmers continue to make greenfeed and determine end use for damaged and drought-affected grain crops. Manitoba ARD reminds farmers that they must [contact MASC](#) prior to putting crops to [alternate use](#). The [Manitoba Hay Listing Service](#) is active; producers with extra feed or looking for feed are encouraged to list their available supplies for sale.

The [Manitoba Farm, Rural & Northern Support Services](#) hotline is available 24/7 for farmers and ranchers dealing with crises and stressful situations by calling 1-866-367-3276.

## Water Supplies

Recent rains have helped somewhat to replenish on farm water supplies in certain regions. However, sufficient livestock water supply remains a concern. Livestock producers who have been affected by dry conditions on pasture in Manitoba can apply for funding to support water source development under [Ag Action Manitoba](#) (BMP 503). Applications are being accepted until October 1, 2021.

Recent rains have provided some temporary increases in river flows and water levels. However, without additional rain, flows are expected to recede quickly, especially in areas that are still very dry – including the Red River Valley. Provincial water control structures are being operated to mitigate low water level conditions and balance the impacts on multiple stakeholders. Despite the low flow conditions and temporary restrictions, most water users will still receive their licensed volumes for 2021.

Several municipalities and water providers continue to implement mandatory conservation restrictions, including the Pembina Valley Water Co-op and its 14 member municipalities, due to low streamflows and/or groundwater levels. Some municipal water systems on surface water sources continue to use temporary pumps as water levels have dropped below intakes. There are some concerns over water levels and ice formation heading into winter.

Departments are tracking and actively managing several water supply “hot spots” including the Red River, Lake Minnewasta, Stephenfield Reservoir/Boyne River, Souris River, Jackson Lake, La Salle River, and Birch River. Manitoba, through multiple departments, is supporting municipalities and water providers by providing conditions updates, engineering, technical and planning support,

regulatory approvals and guidance, and in some cases, funding support through the Manitoba Water Services Board.

Tributary inflows in the Lake Winnipeg watershed have been below to well below normal since spring 2021. While recent rains have helped, overall reservoir storage and flows in the basins supplying Manitoba Hydro generation remain well below average for this time of year. Manitoba Hydro is planning its reservoir operations to ensure energy demands can be met, assuming drought conditions continue. Through summer, Manitoba Hydro has adjusted their operations to conserve water supplies, which has placed downward pressure on hydroelectric generation and revenues.

Other impacts that may be connected to lowered water levels and high temperatures include reports of fish kills and algal blooms in water bodies across southern Manitoba. Reports of reduced production of wild berries and challenges finding medicinal plants such as sage are also being received. Encounters with wildlife such as bears may also be increasing as food supplies are impacted by drought conditions.

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

This report was prepared with information from the following sources which are gratefully acknowledged:

**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](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/>