

Water Availability and Drought Conditions Report

SEPTEMBER 2023

Executive Summary

- This Water Availability and Drought Conditions Report provides an update on conditions throughout Manitoba for September 2023.
- Precipitation conditions over the past month, three month, and twelve month periods are as follows:
 - Highly variable precipitation amounts continued through September. Conditions generally ranged from moderately (60 – 85 % of median) to extremely (<40 %) dry across the province with regions of normal (85 – 115 %) or above normal (>115 %) precipitation in south central Manitoba and surrounding Thompson and Gillam in northern Manitoba.
 - Over the past three months (July, August, September), most of agri-Manitoba experienced moderately to severely dry conditions. In northern Manitoba, conditions ranged from severely dry to normal.
 - Over the past 12 months, agri-Manitoba observed moderately to severely dry precipitation conditions. In northern Manitoba, conditions ranged from severely dry to normal.
- As of October 2, 2023, most rivers and lakes were experiencing normal conditions (25th – 75th percentile), with below normal (10th – 25th percentile) or much below normal (<10th percentile) conditions in southeastern Manitoba and within some northern basins.
- As of September 28, 2023, most monitored aquifer levels remained in the normal range (25th – 75th percentile), except for three sand and gravel aquifers in southeastern Manitoba that reported below normal (10th – 25th percentile) to much below normal (<10th percentile) levels.
- The September 30, 2023 Canadian Drought Monitor assessment showed very little change since August 31, 2023. Moderate drought (D1) and severe drought (D2) conditions continued across southern Manitoba, with several small regions of extreme drought (D3) in central and southwest agri-Manitoba.
- As of September 20 2023, provincial water supply reservoirs were generally close to or above full supply, except for Lake Minnewasta and Jackson Lake (73 % of full supply), Stephenfield Reservoir (66 %), and Minnedosa Lake (49 %). The level on Minnedosa Lake was deliberately lowered in September to conduct maintenance work on the dam structure. Provincial water control structures are being operated to mitigate low water level conditions where possible.
- Livestock water supply is generally considered to be adequate. Some dugout levels have improved with recent rains, while others are reported as low. On-farm water supplies are of particular concern on pastures located in areas that have consistently missed rain events this summer.
- As of October 3, 2023, a total of 198,633 hectares have been burned during the 2023 wildfire season, primarily in north. The number of wildfires for this time of year continues to be lower than average. At the time this report was published, no provincial burning or travel restrictions were in place due to wildfire activity. However, nine communities or municipalities had burning restrictions in place.

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.

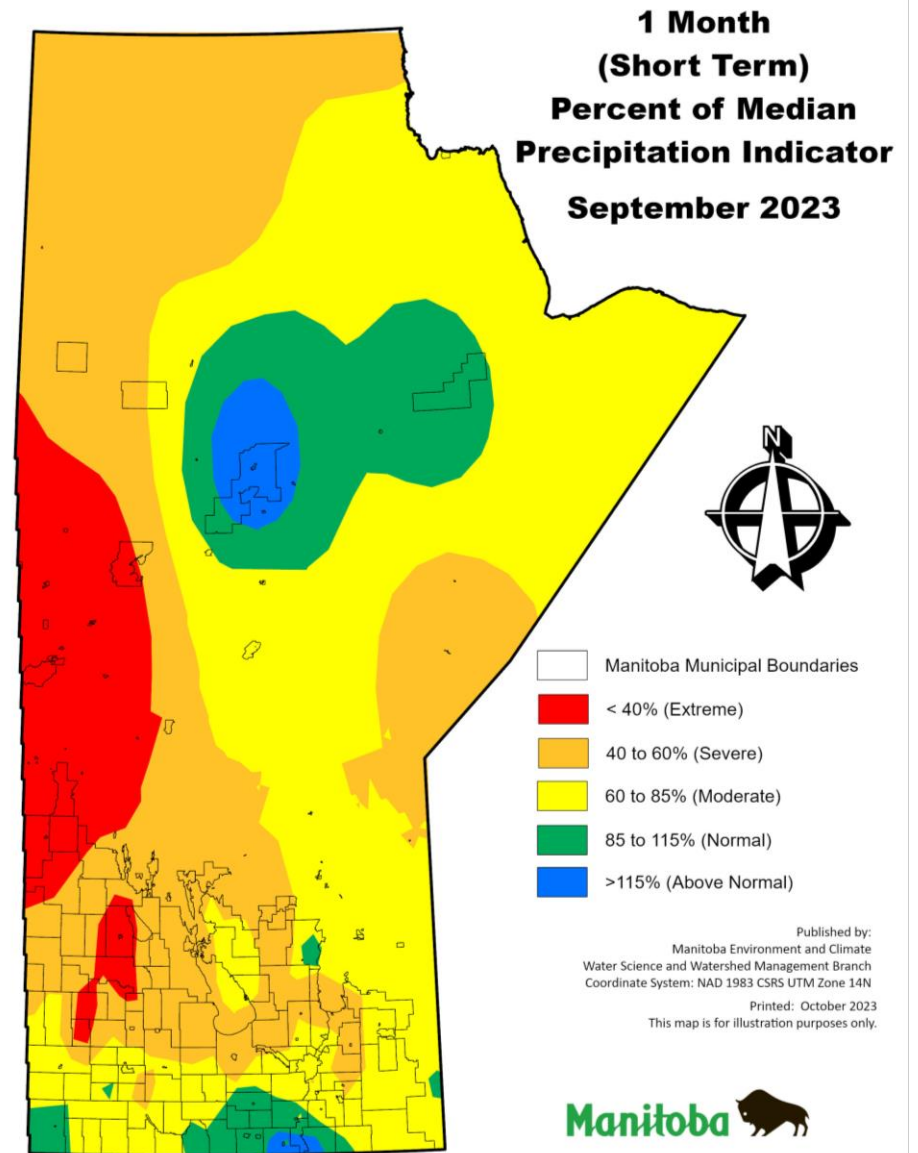


Figure 1: One month (short term) per cent of median precipitation indicator.

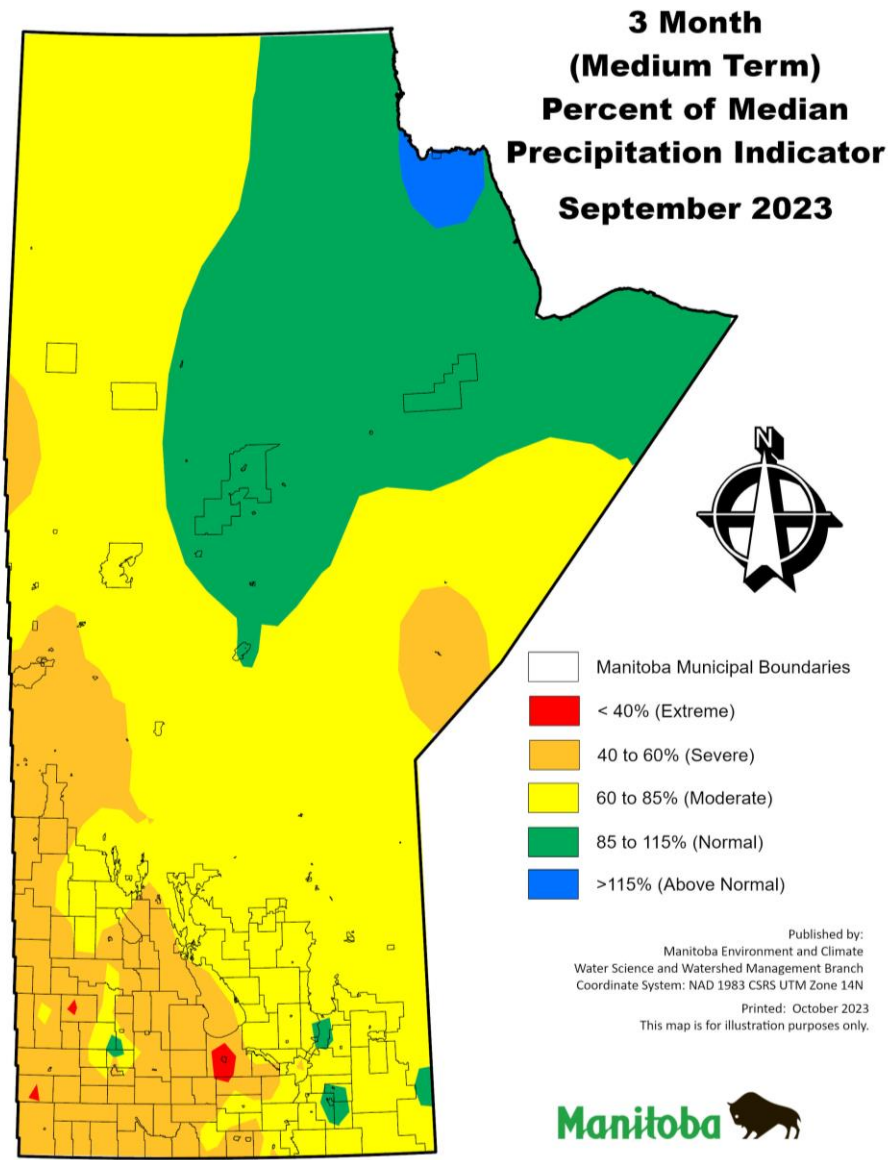


Figure 2: Three month (medium term) per cent of median precipitation indicator.

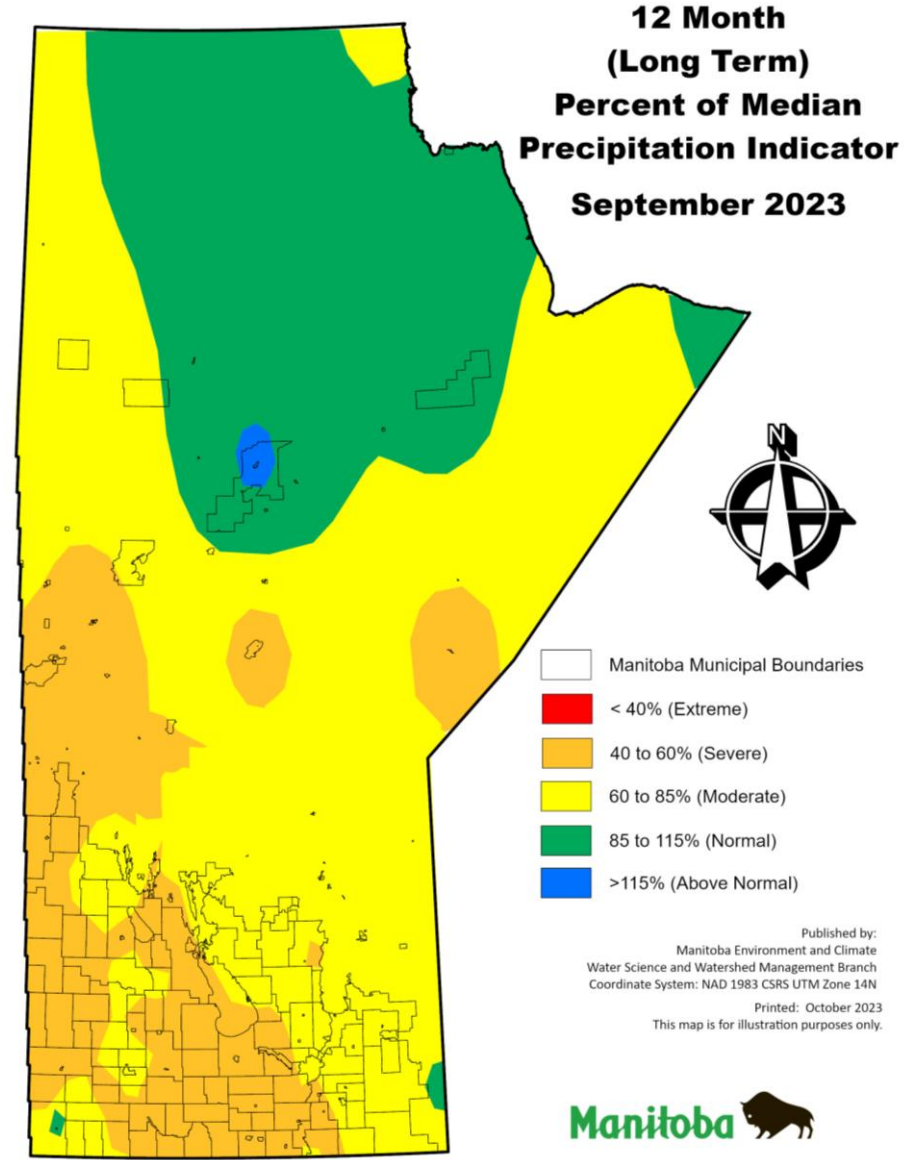


Figure 3: Twelve month (long term) per cent of median precipitation indicator.

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 October 2, 2023.

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.

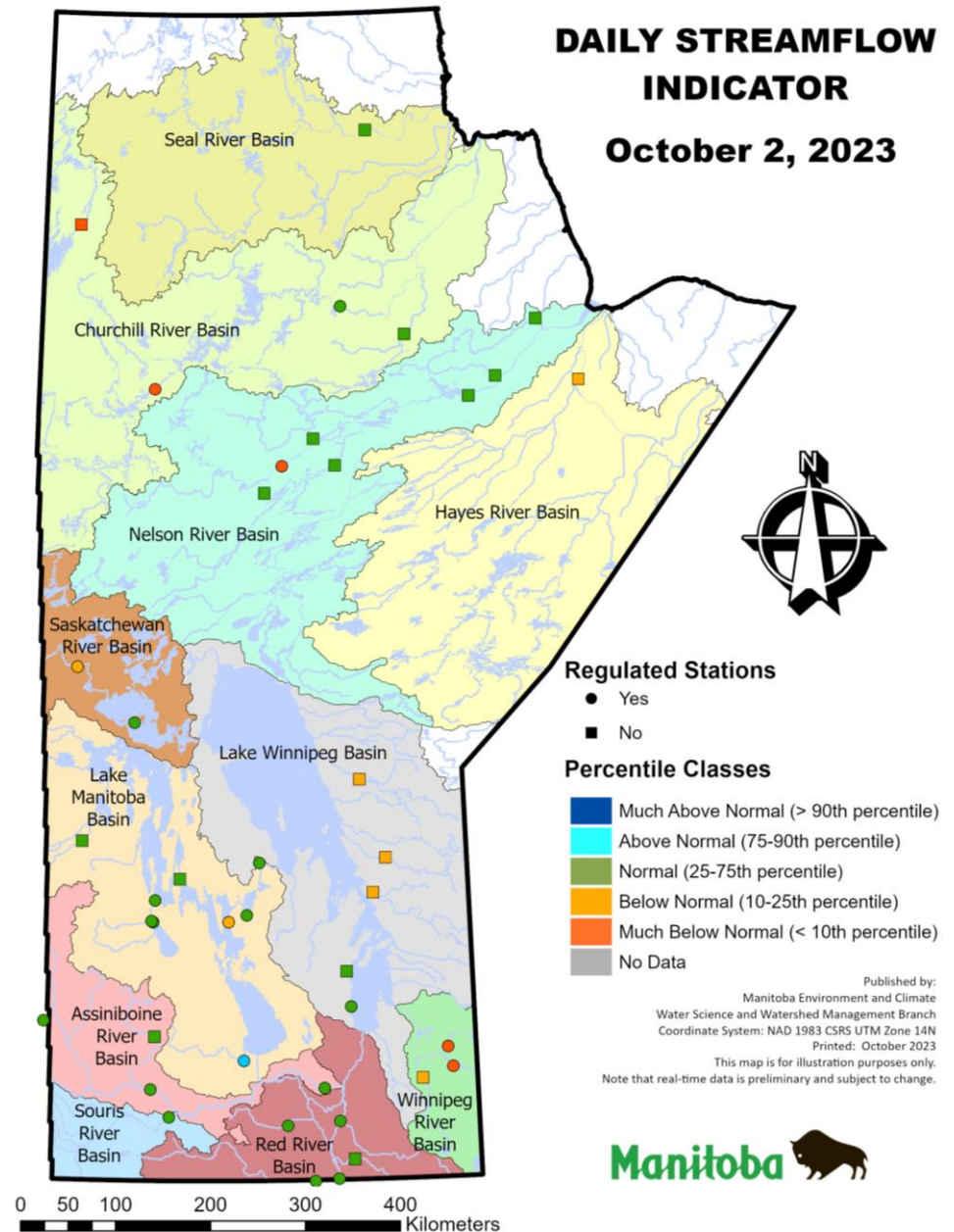


Figure 4: Daily streamflow and lake level indicator for October 2, 2023.

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 data and in shallow aquifers with limited extent, some may experience water levels declining below the pump and may be 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'.

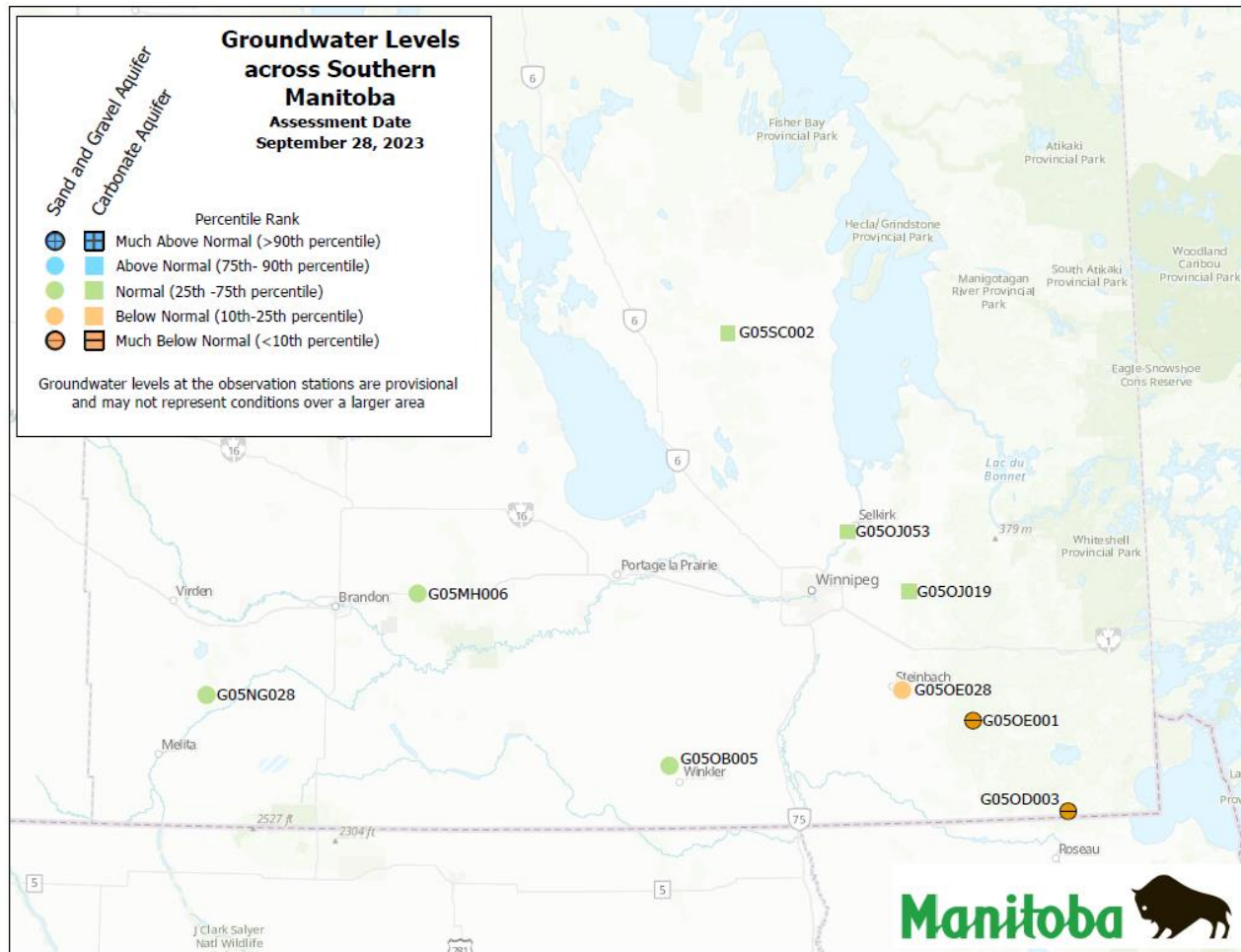


Figure 5: Groundwater indicator on September 28, 2023 for select groundwater monitoring sites.

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).

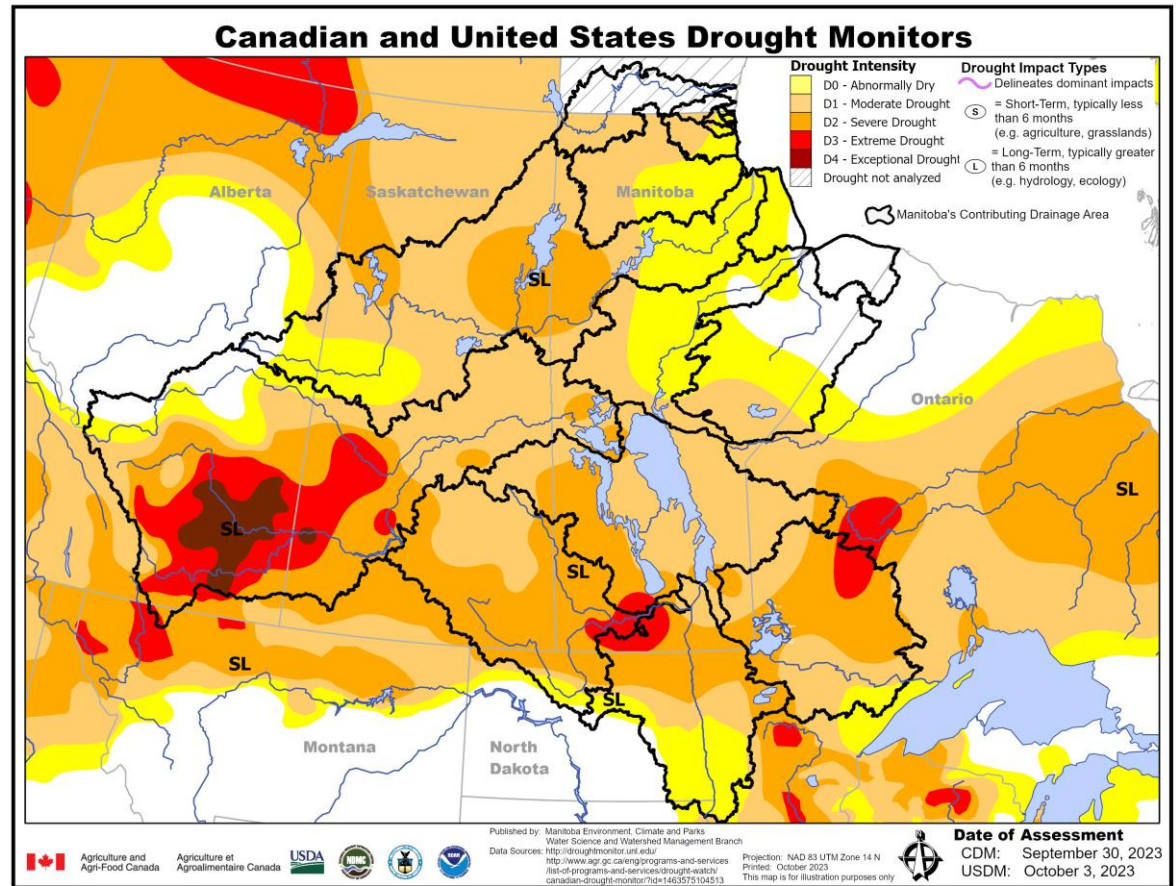


Figure 6: Canadian and United States Drought Monitors' classification of short-term (S) and long-term (L) drought conditions assessed as of September 30, 2023.

Water Availability

Reservoir Conditions

Table 1: Water Supply Reservoir Levels and Storages – September 30, 2023 (Southern and Western Manitoba).

Water Supply Reservoir Levels and Storages - September 30, 2023								
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)* ¹	Brandon, Portage, Cartier Regional Water Co-op	1,402.5	1401.58	September 30, 2023	-0.92	300,000	288,718	96%
Lake Wahtopanah (Rivers)*	Rivers	1,536.0	1534.82	September 30, 2023	-1.18	24,500	23,201	95%
Minnewasta (Morden)*	Morden	1,082.0	1076.35	September 30, 2023	-5.65	3,150	2,295	73%
Stephenfield*	Carman, Pembina Valley Water Co-op	972.0	968.73	September 30, 2023	-3.27	3,810	2,531	66%
Vermilion*	Dauphin	1,274.0	1274.21	September 30, 2023	+0.21	2,600	2,649	102%
Goudney (Pilot Mound)*		1,482.0	1481.91	September 30, 2023	-0.09	450	444	99%
Jackson Lake*		1,174.0	1170.70	September 30, 2023	-3.30	2,990	2,182	73%
Manitou (Mary Jane)*		1,537.0	1535.96	September 30, 2023	-1.04	1,150	1,057	92%
Turtlehead (Deloraine)*	Deloraine	1,772.0	1770.59	September 30, 2023	-1.41	1,400	1,325	95%
Lake Irwin*		1,178.0	1176.47	September 30, 2023	-1.53	3,800	2,989	79%
Minnedosa* ¹		1,681.5	1677.76	September 30, 2023	-3.74	1,558	768	49%
Boissevain*	Boissevain	1,697.0	1697.07	September 30, 2023	+0.07	505	513	102%
Elgin*		1,532.0	1530.60	September 30, 2023	-1.40	520	424	82%
St. Malo*		840.0	839.90	September 30, 2023	-0.10	1,770	1,754	99%
Kenton Reservoir		1,448.0	1446.83	September 25, 2023	-1.17	600	521	87%
Killarney Lake		1,615.0	1614.71	September 26, 2023	-0.29	7,360	7,225	98%

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

On Farm Water Supplies

Manitoba Agriculture's Crop Report Issue 21 (October 3, 2023) reported that livestock water supply is currently adequate. Some dugout levels have improved with recent rains, while others are reported as low. This is of particular concern on pastures located in areas that have consistently missed summer and fall rainfall events.

Soil Moisture

A regional representation of soil moisture conditions for the top 120 cm relative to the field capacity is shown on Figure 7 for October 2, 2023.

The colours on the map represent measured soil moisture values from automated instruments at sites across Manitoba. Qualitative range (very dry to very wet) is based on the amount of current soil moisture relative to field capacity. Field Capacity is defined as the maximum amount of moisture the soil can hold when drainage due to gravity stops.

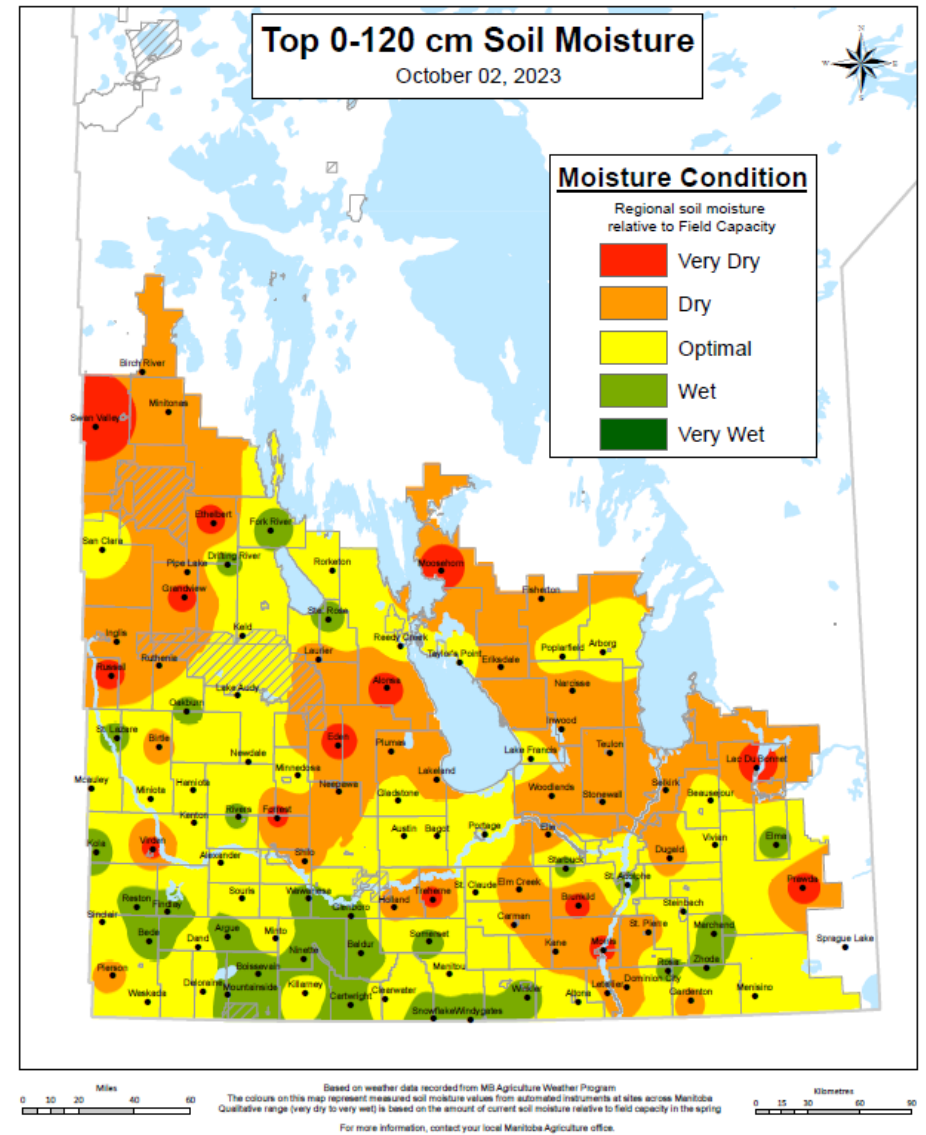


Figure 7: Manitoba Agriculture's October 2, 2023 mapping of soil moisture conditions in the top 0 – 120 cm.

Wildland Fires

As of October 3, 2023, 300 fires burned a total of 198,633 hectares, primarily in the northern region. The number of wildfires for this time of year is lower than the historical average of 404 wildfires. Wildfire danger was classified as low across Manitoba (Figure 8).

As of October 3, 2023, there were no provincial fire or travel restrictions in place. Nine communities or municipalities had burning restrictions implemented.

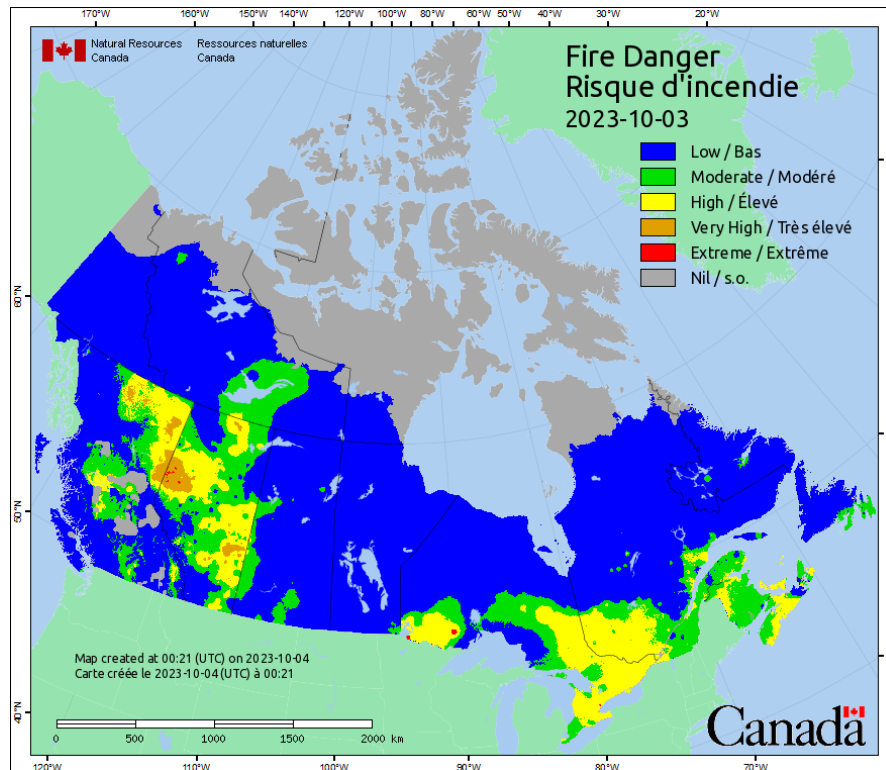


Figure 8: Fire Danger mapping by Natural Resources Canada.

Impacts due to Dry Conditions

Crops

Harvest progress was at 85 % complete as of October 3, 2023. Overall, crop conditions were generally classified as fair to mostly good. Crop yields and quality are variable and dependent on summer rainfall, which was highly variable. For specific information on yields, please refer to [Manitoba Agriculture's Crop Reports](#).

Forages

Most green feed harvest is complete. Producers are trying different mixes in addition to single crop green feed. Yields are good, and will help to supplement alfalfa and grass hay supplies. Hay yields have been extremely variable and are dependent on rains. Corn silage harvest is largely complete in eastern Manitoba and reports on yield have been very good.

The status of individual pastures remains highly dependent on soil type, moisture levels, and grazing management strategy exercised throughout the summer. Some producers are supplementing hay on pasture to ensure nutrient requirements of cattle are being met. Others are beginning to move cattle onto fenced hayfields or harvested cropland to graze available regrowth and/or stubble. Forage growth on hay and pasture is mostly finished due to dry conditions and nearing the end of the growing season. Pasture conditions are rated at 100 % fair.

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 Transportation and Infrastructure:

Reservoir level information:
gov.mb.ca/mti/floodinfo/index.html

Manitoba Wildfire Service:

gov.mb.ca/nrnd/wildfire_program/

Manitoba Agriculture:

Crop Reports:
gov.mb.ca/agriculture/crops/seasonal-reports/crop-report-archive/index.html

Topsoil moisture conditions and other weather reports:
gov.mb.ca/agriculture/weather/weather-conditions-and-reports.html

Environment and Climate Change Canada:

Flow and lake level information:
wateroffice.ec.gc.ca/index_e.html

Agriculture and Agri-Food Canada:

Canadian Drought Monitor:
agriculture.canada.ca/en/agricultural-production/weather/canadian-drought-monitor

United States Drought Monitor:

droughtmonitor.unl.edu/