

**WATER AVAILABILITY AND DROUGHT CONDITIONS REPORT
Manitoba**

June 19, 2012

Synopsis/Overview

As of June 18th, recent precipitation has alleviated drought concerns across most of Manitoba. Except in the Churchill area where moisture conditions are below normal, moisture conditions are normal or above normal across much of the province.

Over the past month, below normal precipitation has been received in the far north. Flows remain below normal in the Red River (upstream of Winnipeg), the Bloodvein River, the Whitemud River, and in the Winnipeg River basin. Flows are also below normal in the Cochrane, Deer and lower Churchill rivers in northern Manitoba.

A number of lakes in southeastern Manitoba are still experiencing low water levels including Big Whiteshell, Falcon and West Hawk lakes.

Most water supply reservoirs in southern and western Manitoba are at full or near supply levels. Reservoirs have sufficient water supplies for the balance of the year if they are properly managed.

Manitoba Agriculture, Food and Rural Initiatives reports that in most areas of Manitoba, on farm water supplies are adequate and dugouts are full or close to full. However, in the Rural Municipality of Pembina dugouts are reported to be only 30 to 40 % full.

Outlook

Environment Canada's seasonal forecast for the next three months (June, July and August 2012) for Manitoba is for above normal temperatures and below normal precipitation for the entire province except along the Hudson Bay coast line where normal temperatures and precipitation is forecast (Attachment 4).

Precipitation

Over the last 30 days, above average precipitation was received across much of Manitoba except for the Seal River and Churchill areas where precipitation was below normal.

Over the last 90 days, above normal precipitation has also been received across much of Manitoba except for the Churchill area where precipitation received was below to normal (Table 1 and Attachment 1).

Stream and River Flows

Flows in southern Manitoba are generally above median except for the Red River (upstream of Winnipeg), the Bloodvein River, the Whitemud River and in the Winnipeg

River basin where flows are generally below median.

Flows in the north are generally above median except for the Cochrane River, Deer River and the lower Churchill River where flows are generally below median (Table 1 and Attachment 2).

Lake/Reservoir Conditions

A number of lakes in southeastern Manitoba are still experiencing low water levels including Big Whiteshell, Falcon and West Hawk lakes.

(http://www.gov.mb.ca/mit/floodinfo/floodoutlook/lakes_information.html).

Most water supply reservoirs in southern and western Manitoba have risen to full supply levels. Reservoirs have sufficient water supplies for the balance of the year if they are properly managed (Attachment 3).

On Farm Water Supply

Manitoba Agriculture, Food and Rural Initiatives reports that in most areas of Manitoba, on farm water supplies are adequate and dugouts are full or close to full. However, in the Rural Municipality of Pembina dugouts are reported to be only 30 to 40 % full.

Aquifers

Groundwater levels in aquifers are generally very good due to significant recharge from last spring. Water level responses to seasonal or yearly 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 shallow sand aquifers and large-diameter wells constructed into these aquifers. Many of these areas are serviced by water supply pipelines.

Forest and Grassland Fires

Rainfall has been received throughout the province thereby lowering forest fire danger levels. More detailed information on fire conditions is available on the Manitoba Conservation and Water Stewardship under the Fire Program (website

<http://www.gov.mb.ca/conservation/fire/>).

Potential Impacts

Southeastern rivers and tributaries are still experiencing low flow conditions. Spring runoff was very low and with the prolonged dry conditions this spring, these streams are not responding to the recent precipitation. With the Environment Canada outlook for below normal precipitation with above normal temperatures, there are concerns about prolonged low flow conditions in southeastern Manitoba. There is also a risk of prolonged dry conditions in Churchill area.

Table 1: Detail by Major River Basin (Attachments: 1, 2 and 5)

Basin (in Manitoba)	Indicators		Major River Flow Conditions As of June 18, 2012
	1 month Precipitation As of June 18, 2012	3 months Precipitation As of June 18, 2012	
Red River	Above average	Above average	Below median except above median for Red River at Selkirk and Joubert Creek at St. Pierre-Jolys
Winnipeg River	Above average	Above average	Below median
Assiniboine River-Souris River	Above average	Above average	Above median
Lake Manitoba	Well above average	Above average	Above median except below median for Whitemud River
Lake Winnipeg	Above average	Above average	Below median except above median for Icelandic River
Saskatchewan River	Well above average	Above average	Above median
Nelson River	Above average	Above average	Above median
Hayes River	Above average	Above average	Not available
Churchill River	Above average except for town of Churchill area	Above average except for town of Churchill area	Above median except below median for Cochrane River and Churchill River below Fidler Lake.
Seal River	Below average	n/a	Above median except below median for Deer River

Note: Median is 50th percentile.

Acknowledgements

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

- Agriculture and Agri-food Canada (Drought watch); North America Drought Monitor:
<http://www4.agr.gc.ca/DW-GS/current-actuelles.aspx?lang=eng>
 - Regional site: [30 and 90 precipitation](#)
 - National Site: [Palmer Drought](#) and [Standard Precipitation Indices](#)
- Manitoba Infrastructure and Transportation: Flow and Lake information:
http://www.gov.mb.ca/mit/floodinfo/floodoutlook/river_conditions.html
http://www.gov.mb.ca/mit/floodinfo/floodoutlook/lakes_information.html
- Environment Canada: Flow and Lake information
http://www.wateroffice.ec.gc.ca/index_e.html
- Fire Hazard: <http://www.gov.mb.ca/conservation/fire/>
- Environment Canada 3 month climatic outlook:
http://weatheroffice.gc.ca/saisons/index_e.html
- Manitoba Agriculture, Food and Rural Initiatives
- Manitoba Conservation and Water Stewardship Fire Program

For further information, please contact: Abul Kashem, Surface Water Management Section, Manitoba Conservation and Water Stewardship, 945-6397

Definition of drought

Meteorological Drought is generally defined by comparing the rainfall in a particular place and at a particular time with the average rainfall for that place. Meteorological drought leads to a depletion of soil moisture and this almost always has an impact on agricultural production. Meteorological droughts only consider the reduction in rainfall amounts and do not take into account the effects of the lack of water on water reservoirs, human needs or on agriculture. A meteorological drought can occur without immediately impacting streamflow, groundwater, or human needs. If a meteorological drought continues, it will eventually begin to affect other water resources.

Agricultural Drought occurs when there is not enough water available for a particular crop to grow at a particular time. Agricultural drought depends not only on the amount of rainfall but also on the use of that water. Agricultural droughts are typically detected after meteorological drought but before a hydrological drought. If agricultural drought continues, plants will begin to protect themselves by reducing their water use, which can potentially reduce crop yields.

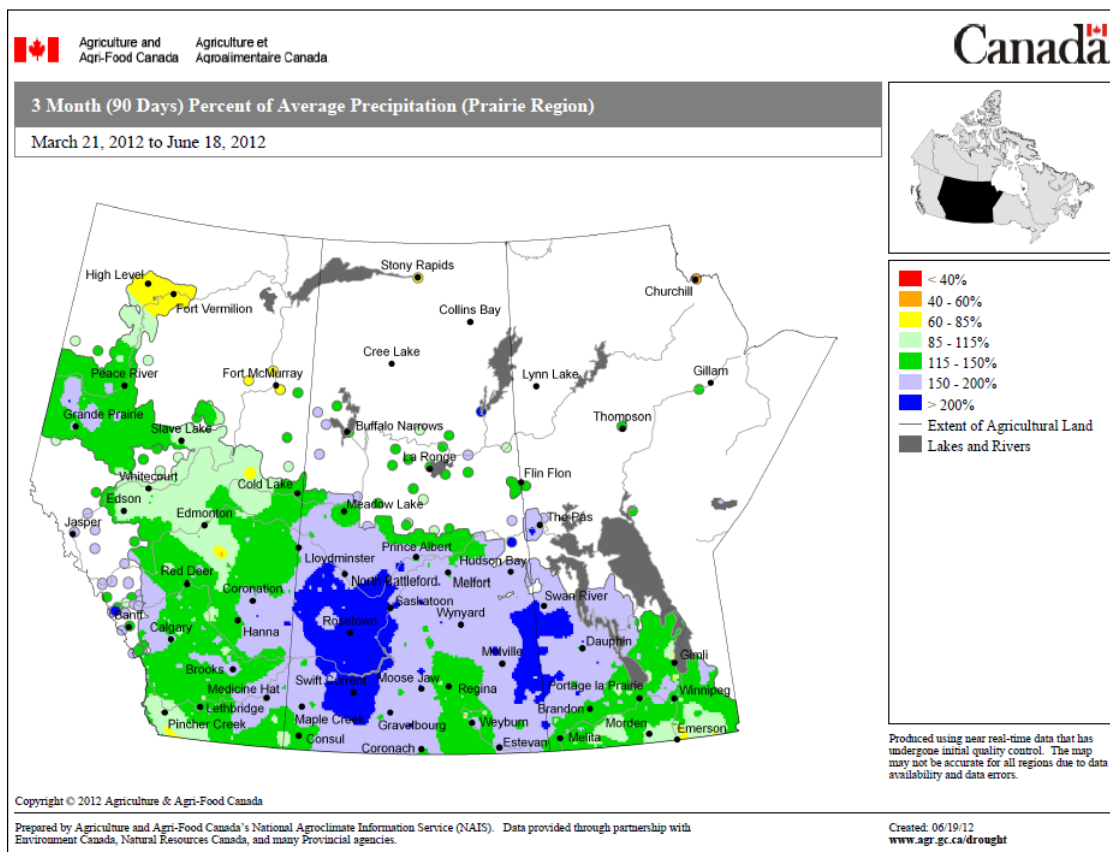
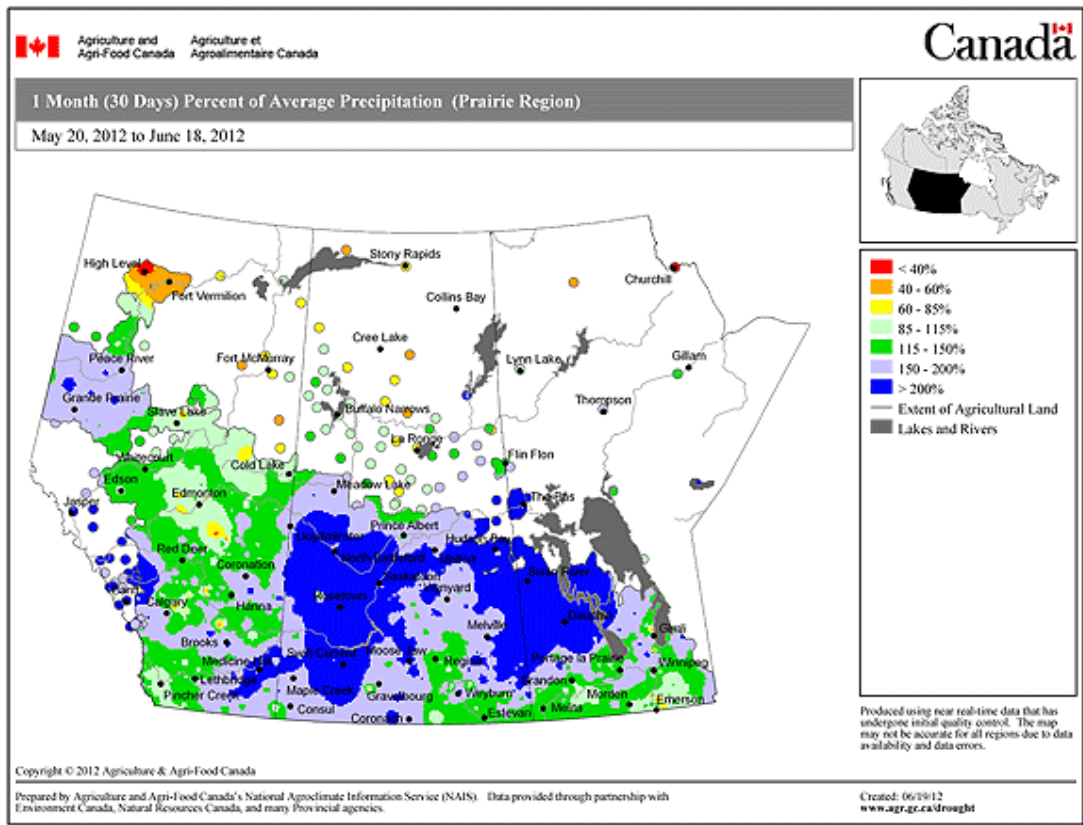
Hydrological Drought is associated with the effect of low rainfall on water levels in rivers, reservoirs, lakes, and aquifers. Hydrological droughts are usually noticed some time after meteorological droughts. First, precipitation decreases and after some time, water levels in rivers and lakes drop. Hydrological drought affects uses that depend on water levels. Changes in water levels affect ecosystems, hydroelectric power generation, and recreational, industrial and urban water use. A minor drought may affect small streams causing low streamflows or drying. A major drought could impact surface storage, lakes, and reservoirs thereby affecting water quality and causing municipal and agricultural water supply problems.

Rainfall also recharges groundwater aquifers through infiltration through the soil and run-off into streams and rivers. Once groundwater and surface waters are significantly impacted by lack of precipitation, a "hydrologic drought" occurs. Aquifer declines can range from a quick response (shallow sand) to impacts extending over multiple years. Impacts can include depletion of shallow depth wells, drying of farm dugouts, and changes to ground water quality.

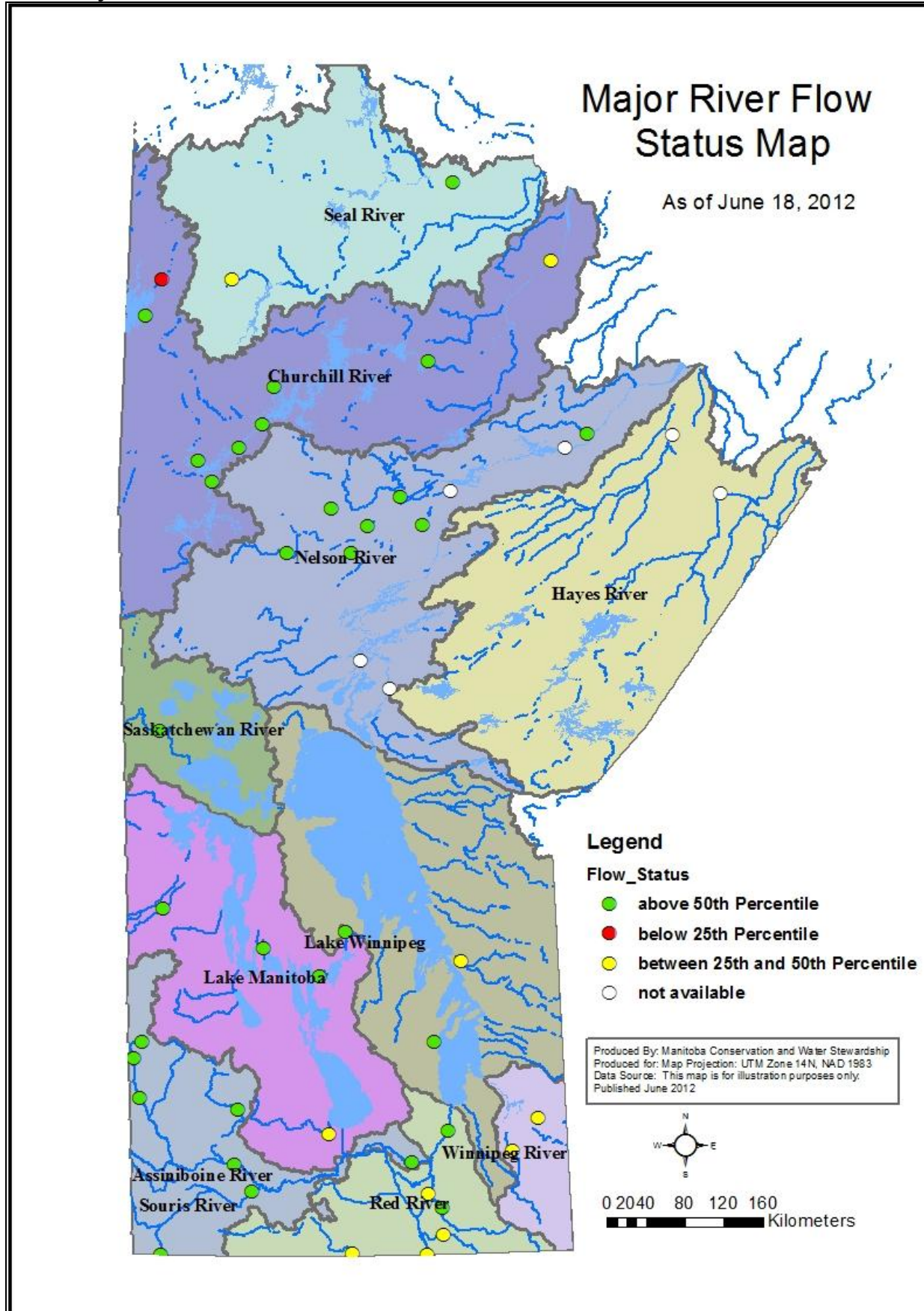
Socioeconomic Drought occurs when the supply fails to meet the demand for an economic good(s) such as domestic water supplies, hay/forage, food grains, fish, and hydroelectric power, due to weather related water supply shortages from one or both of natural or managed water systems. At any time during meteorological, hydrological, or agricultural droughts, a socioeconomic drought can occur.

Attachments

1. Precipitation (Percent of average: 30 days and 90 days)



2. Major River Flow Status

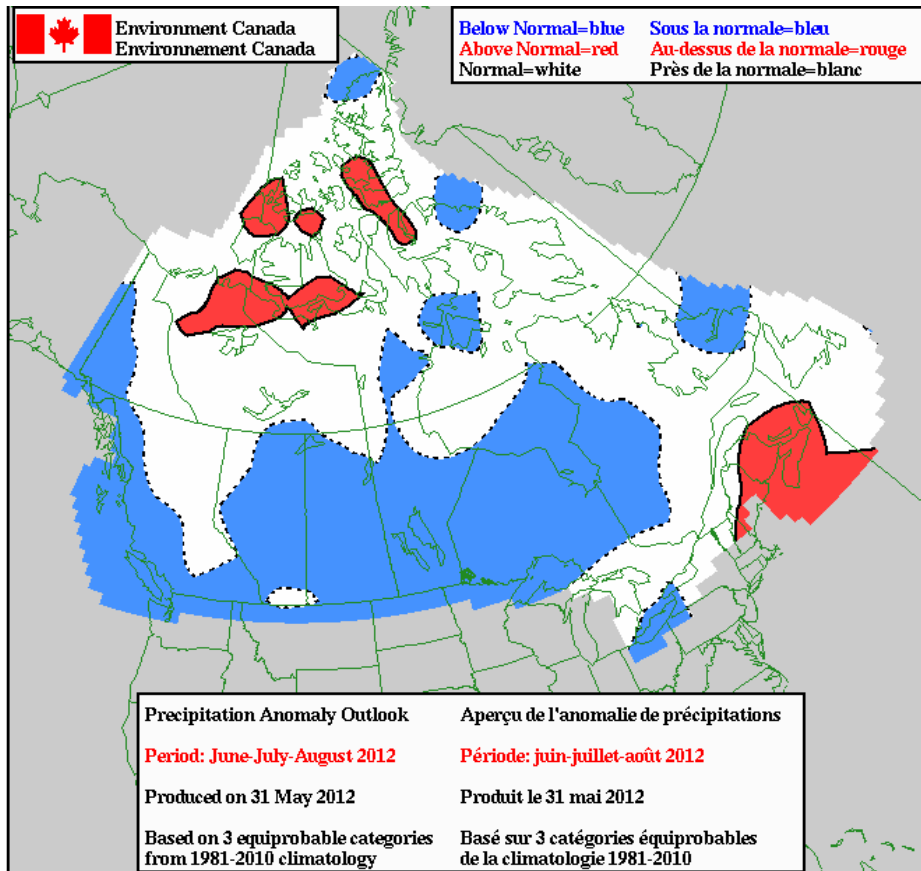
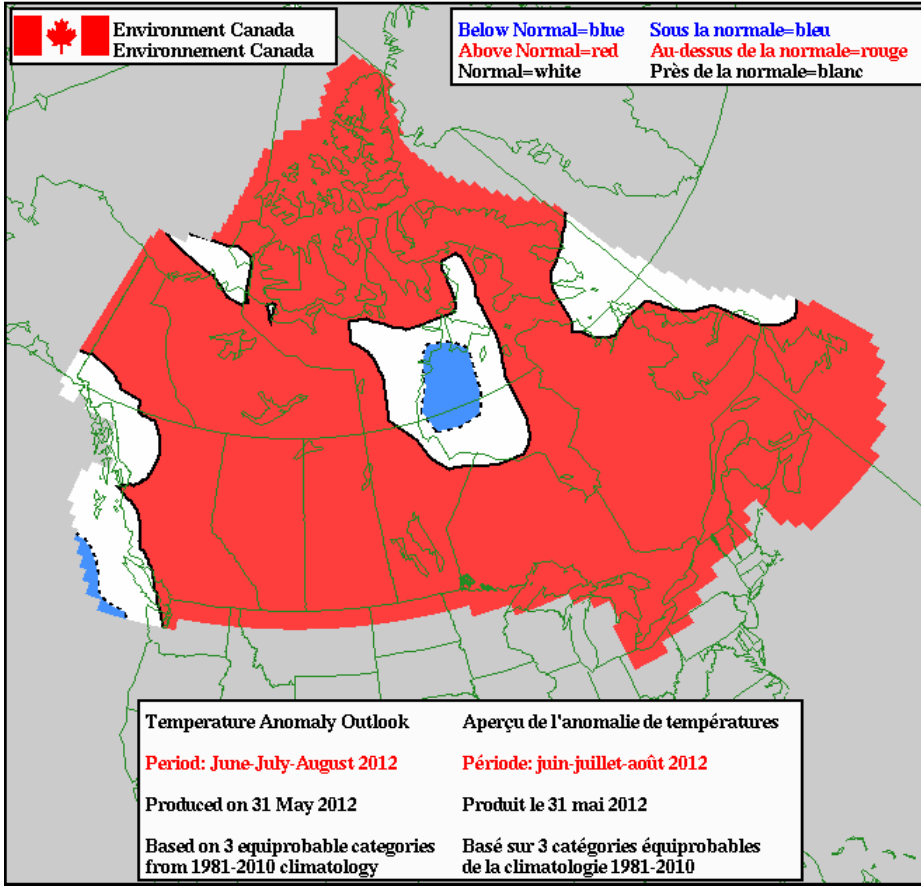


3. Water Supply Reservoir Status (Southern and Western)

Water Supply Reservoir Levels and Storages								
June 18, 2012								
Lake or Reservoir	Community	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) (%)
Elgin	Elgin	1532.00	1531.84	April 24, 2012	-0.2	520	509	98%
Goudney (Pilot Mound)	Pilot Mound	1482.00	1482.16	June 18, 2012	0.2	450	458	102%
Irwin		1178.00	1178.23	March 22, 2012	0.2	3,800	3,950	104%
Jackson		1174.00	1173.05	March 21, 2012	-1.0	2,870	2,750	96%
Kenton (Kenworth)	Kenton	1448.00	1447.85	April 25, 2012	-0.2	600	600	100%
Lake of the Prairies (Shellmouth)*	Brandon, Portage	1402.50	1411.60	June 18, 2012	9.1	300,000	438,582	146%
Killarney	Killarney	1615.00	1615.77	May 8, 2012	0.8	7,360	7,714	105%
Manitou (Mary Jane)	Manitou	1537.00	1537.49	June 11, 2012	0.5	1,150	1,165	101%
Minnewasta (Morden)	Morden	1082.00	1081.17	June 18, 2012	-0.8	3,040	3,012	99%
Rapid City	Rapid City	1573.50	1573.74	April 25, 2012	0.2	200	217	108%
Lake Wahtopanah (Rivers)	Rivers	1536.00	1536.95	June 18, 2012		24,500	26,638	109%
Stephenfield	Carman	972.00	972.41	June 18, 2012	0.4	3,810	4,003	105%
Turtlehead (Deloraine)	Deloraine	1772.00	1772.11	April 24, 2012	0.1	1,400	1,412	101%
Vermilion	Dauphin	1274.00	1274.76	June 17, 2012	0.8	2,600	2,650	102%

* Summer Target level and storage.

4. Environment Canada 3 Month Outlook



5. Major River Basin

