

# Water Supply Outlook for Alberta

December 2000



**Alberta**  
ENVIRONMENT

## Notes

Alberta Environment publishes the "**Water Supply Outlook for Alberta**" monthly, usually from February to August. These reports are prepared by the Water Sciences Branch, Hydrology/Forecasting Section of the Department's Water Management Division.

Alberta Environment is grateful for the assistance of Environment Canada's Climatological Services Unit and Water Resources Branch in providing weather, precipitation and streamflow data. Snow survey data are also provided by the United States, Soil Conservation Service of Montana and the British Columbia Ministry of Environment, Lands and Parks.

The assistance of a number of private citizens who diligently report observations of precipitation and other data is also appreciated.

Alberta Environment and the National Resources Conservation Service (NRCS) from Portland, Oregon are collaborating on the Water Supply Forecasts for the Milk and St. Mary Rivers. Water Supply forecasts for the Western United States are available through the NRCS web page: [http://www.wcc.nrcs.usda.gov/water/w\\_qnty.html](http://www.wcc.nrcs.usda.gov/water/w_qnty.html)

All data summarized in this publication are preliminary and subject to revision.

Data used in this report are available on request from: Alberta Environment, Water Sciences Branch, Hydrology/Forecasting Section, 10th Fl, Oxbridge Place, 9820 -106 Street, Edmonton, Alberta, T5K 2J6, **Fax: (780) 422-8606**

This report is also available through Alberta Environment's automated streamflow information/fax-on-demand service. To access this service toll-free, please call the Alberta Government RITE Operator at 310-0000, available 24 hours a day from anywhere in the province. At the prompt, enter the phone number **207-2718** for our streamflow information/fax on demand service.

### Historical Streamflow Information: Environment Canada, Calgary, (403) 292-5317

#### Equivalents of Measure

Parameter	Metric Unit	Conversion to Imperial Units
Snow depth	centimetres	2.54 cm = 1 inch
Water Equivalent	millimetres	25.4 mm = 1 inch
Elevation	metres	1 m = 3.2808 feet
Streamflow	cubic metres per second	1 cms = 35.3 cfs
Volume	cubic decametre (dam <sup>3</sup> )	1 dam <sup>3</sup> = 1000 m <sup>3</sup> = 0.8107 acre-feet

#### Explanation of Descriptions

Much-above-average	In the upper 15% of recorded values
Above-average	Between the upper 15% and 35% of recorded values
Below-average	Between the lower 15% and 35% of recorded values
Much-below-average	In the lower 15% of recorded values

## Overview

In November, precipitation was much-below-normal to below-normal throughout the province with an exception of the Lethbridge and Medicine Hat areas. As a result, mountain snowpack is below-average for this time of the year. Since the beginning of April, southern Alberta continues to be extremely dry as a result of a lack of precipitation. Current predictions from Environment Canada are for above-normal precipitation for southeastern areas of the province this winter (December to February), while NOAA is predicting normal precipitation across the province.

Water storage as of December 1, in the major irrigation and hydroelectric reservoirs in the Bow, Red Deer and North Saskatchewan River basins is normal for this time of the season. The exceptions are: Lake Abraham, which is above-normal and Spray Lake and Travers Reservoir, which are below-normal. In the Oldman River basin, reservoirs are below-normal except for Keho Lake, Lake McGregor, Lake Newell and Crawling Valley Reservoir, which are normal.

The Water Supply Outlook report will continue to be published monthly but will focus on the upcoming water year 2000-2001. Until February, the report will provide mid to long-term water supply forecasts and report on reservoir storage conditions, snow accumulation, and precipitation. The report is being published to continue monitoring the extremely dry conditions in southern Alberta.

## **November Climatic Conditions**

Below-normal precipitation amounts were recorded across the province in November (Figures 1 and 2) except in the Lethbridge and Medicine Hat areas, where normal precipitation occurred. Precipitation values ranged from 8 to 104 % of normal in the province during November. Precipitation in the foothills and mountain areas were below-normal in November, leading to much-below-average snowpacks for this time of the year. Temperatures in November were normal to slightly below-normal in southern areas and above-normal in the northern portion of the province.

Since the beginning of April, southern Alberta has received much-below-normal precipitation (Figures 3 and 4). The lack of precipitation combined with a low winter snowpack last year has created very dry conditions in southern Alberta.

## **Long-Lead Precipitation Outlook**

Currently, there is no strong discernible signal in the El Niño/La Niña pattern. Environment Canada is forecasting above-normal precipitation for southeastern areas of the province this winter (December to February), while NOAA is predicting normal precipitation across the province. Environment Canada predicts above-normal precipitation for next spring (March to May) in eastern Alberta while NOAA predicts above-normal precipitation in the southwest corner of the province. Preliminary forecasts by Environment Canada for the 2001 summer (June to August) are for above-normal precipitation in the southern two-thirds of Alberta, while NOAA is predicting normal precipitation across the province.

## **Milk River Basin**

Conditions remained dry in the headwaters of the Milk River basin as much-below-normal precipitation was recorded in November (Figures 1 and 2). Precipitation has been much-below-normal since April 1 (Figures 3 and 4).

## Oldman River Basin

Precipitation was much-below-normal in the headwaters of the Oldman River basin during November (Figures 1 and 2). As a result, mountain snowpack is below-average for this time of the year and snow accumulation is currently near that observed in 1999. Snow pillow information is available on our website at [www.gov.ab.ca/env/water/WSWaterReports/Index.html](http://www.gov.ab.ca/env/water/WSWaterReports/Index.html)

The lack of precipitation since April 1 and low spring runoff has resulted in extremely dry conditions in the basin. Water storage in the major irrigation reservoirs of the Oldman River basin is below-normal for this time of the season, except for Keho Lake which is normal (Table 1).

**Table 1 Status of Major Water Storage Reservoirs as of December 1, 2000 - Oldman River Basin**

Reservoirs	Current Live Storage			Remarks	December 1, 1999 Live Storage	
	Volume in dam <sup>3</sup>	Volume in acre-feet	Volume as % of Capacity		dam <sup>3</sup>	Acre-feet
Keho Lake	81,200	65,900	72	normal	78,400	63,600
Waterton Reservoir	74,500	60,400	44	below-normal	120,000	97,300
St. Mary Reservoir	40,800	33,100	10	below-normal	173,000	140,000
Ridge Reservoir	28,400	23,000	22	below-normal	107,000	86,700
<b>Total</b>	144,000	117,000	21	below-normal	400,000	324,000
Chin Reservoir	89,100	72,200	47	below-normal	180,000	146,000
Forty Mile Reservoir	42,800	34,700	50	below-normal	84,800	68,700
<b>Total</b>	132,000	107,000	48	below-normal	265,000	215,000
Oldman Reservoir	274,000	222,000	55	below-normal	420,000	340,000

## Bow River Basin

Precipitation during November was much-below-normal in the Bow River basin (Figures 1 and 2). Snow pillows indicate much-below-average mountain snowpack conditions ([www.gov.ab.ca/env/water/WSWaterReports/Index.html](http://www.gov.ab.ca/env/water/WSWaterReports/Index.html)). Precipitation since April 1 has been below-normal in the basin, with an exception of Calgary, which has recorded normal values (Figures 3 and 4).

Water storage in most of the major hydroelectric and irrigation reservoirs is normal for the season with the exception of Spray Lake and Travers Reservoir, which are below-normal (Table 2).

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**Table 2 Status of Major Water Storage Reservoirs as of December 1, 2000 - Bow River Basin**

Reservoirs	Current Live Storage			Remarks	December 1, 1999 Live Storage	
	Volume in dam <sup>3</sup>	Volume in acre-feet	Volume as a % of Capacity		dam <sup>3</sup>	Acre-feet
Lake Minnewanka	153,000	124,000	69	normal	181,000	147,000
Spray Lake	137,000	111,000	77	below-normal	149,000	121,000
Upper Kananaskis Lake	59,500	48,200	58	normal	73,600	59,700
Lower Kananaskis Lake	55,500	45,000	88	normal	56,600	45,900
<b>Total</b>	<b>405,000</b>	<b>328,000</b>	<b>71</b>	<b>normal</b>	<b>460,000</b>	<b>373,000</b>
Lake McGregor	309,000	250,000	85	normal	302,000	245,000
Travers Reservoir	54,200	44,000	52	below-normal	76,000	61,600
<b>Total</b>	<b>363,000</b>	<b>294,000</b>	<b>77</b>	<b>normal</b>	<b>378,000</b>	<b>306,000</b>
Lake Newell	159,000	129,000	89	normal	156,000	126,000
Crawling Valley Reservoir	102,000	82,400	90	normal	106,000	85,900
<b>Total</b>	<b>260,000</b>	<b>211,000</b>	<b>90</b>	<b>normal</b>	<b>262,000</b>	<b>212,000</b>

## Red Deer River Basin

The Red Deer River basin recorded much-below-normal to below-normal precipitation in November (Figures 1 and 2). Snow pillows indicate below-average mountain snowpack conditions in the headwaters of the Red Deer Basin ([www.gov.ab.ca/env/water/WSWaterReports/Index.html](http://www.gov.ab.ca/env/water/WSWaterReports/Index.html)). Precipitation has been near-normal in the basin since April 1 (Figures 3 and 4).

Water storage in Glennifer Lake is normal for this time of the season (Table 3).

**Table 3 Status of Major Water Storage Reservoirs as of December 1, 2000 – Red Deer River Basin**

Reservoirs	Current Live Storage			Remarks	December 1, 1999 Live Storage	
	Volume in dam <sup>3</sup>	Volume in acre-feet	Volume as a % of Capacity		dam <sup>3</sup>	acre-feet
Glennifer Lake	179,000	145,000	88	normal	192,000	156,000

## North Saskatchewan River Basin

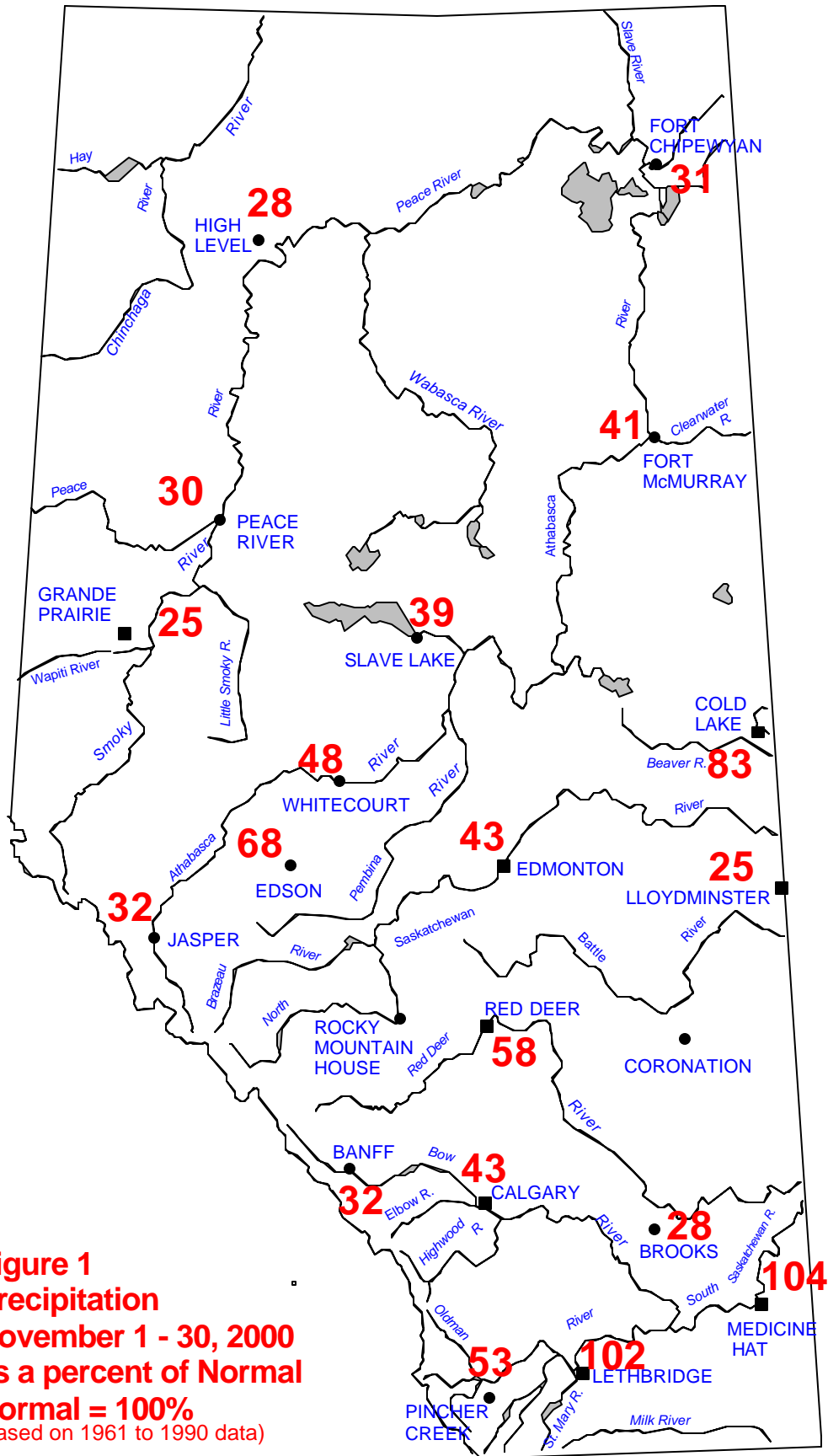
Precipitation during November was much below-normal in the North Saskatchewan River basin (Figures 1 and 2). Precipitation since April 1 has been below-normal for most areas in the basin.

Water storage in the North Saskatchewan major hydroelectric reservoirs is above-normal at Lake Abraham and normal at Brazeau Reservoir (Table 4).

**Table 4 Status of Major Water Storage Reservoirs as of December 1, 2000 – North Saskatchewan River Basin**

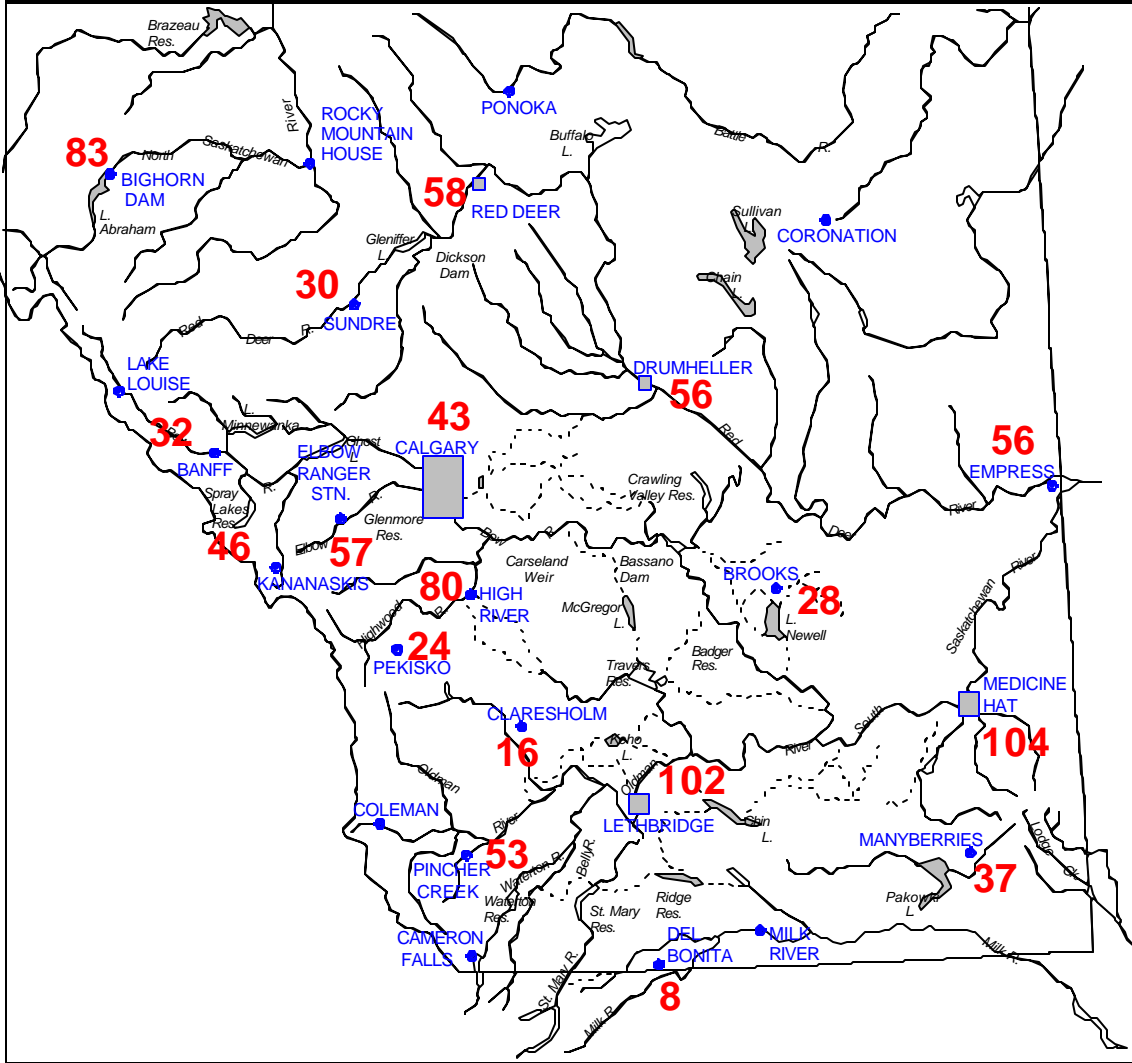
Reservoirs	Current Live Storage			Remarks	December 1, 1999 Live Storage	
	Volume in dam <sup>3</sup>	Volume in acre-feet	Volume as a % of Capacity		dam <sup>3</sup>	Acre-feet
Lake Abraham	1,048,000	850,000	74	above-normal	1,070,000	867,000
Brazeau Reservoir	412,000	334,000	85	normal	345,000	280,000
<b>Total</b>	<b>1,460,000</b>	<b>1,184,000</b>	<b>77</b>	<b>normal</b>	<b>1,415,000</b>	<b>1,147,000</b>

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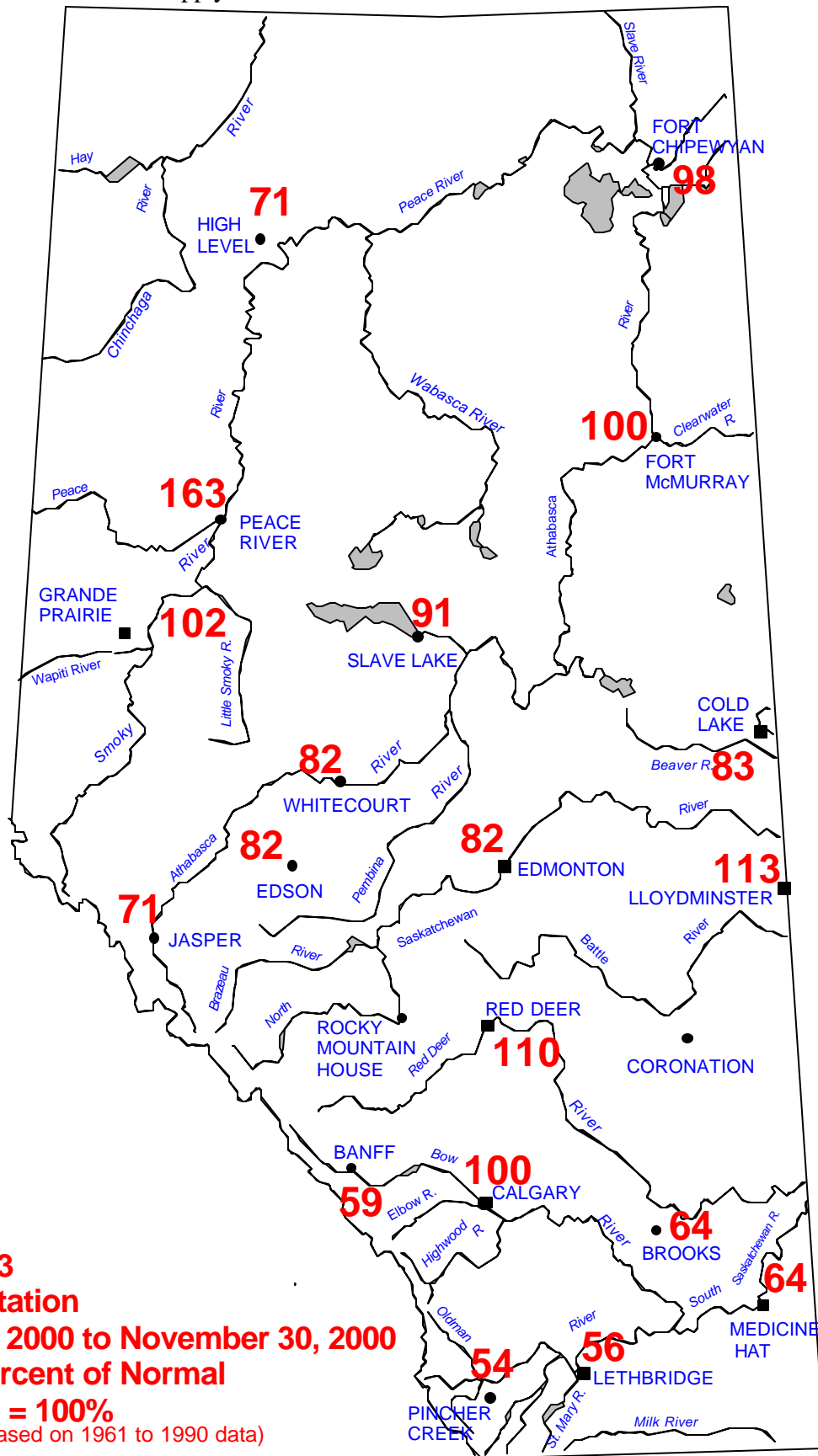
**Figure 1**  
**Precipitation**  
**November 1 - 30, 2000**  
**as a percent of Normal**  
**Normal = 100%**  
 (based on 1961 to 1990 data)





**Figure 2**  
**Southern Alberta**  
**Precipitation**  
**November 1 - 30, 2000**  
**as a percent of Normal**  
**Normal = 100%**  
 (based on 1961 to 1990 data)

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**Figure 3**  
**Precipitation**  
**April 1, 2000 to November 30, 2000**  
**as a percent of Normal**  
**Normal = 100%**  
 (based on 1961 to 1990 data)

