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Report to
THE INTERNATIONAL JOINT COMMISSION

on

**THE DIVISION OF THE WATERS OF
ST. MARY AND MILK RIVERS**

by

E. L. HENDRICKS
representing United States

and

J. D. McLEOD
representing Canada

1971

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Report to
THE INTERNATIONAL JOINT COMMISSION

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THE ST. MARY AND MILK RIVERS

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E. L. Hendricks,
representing United States

and

J. D. McLeod
representing Canada

International Joint Commission,
Washington, D.C. and Ottawa, Ontario.

Gentlemen:

In compliance with the provisions of Clause VIII (c) of your Order of October 4, 1921, directing the division of the waters of St. Mary and Milk Rivers between the United States and Canada, we are transmitting herewith a report on the operations during the irrigation season ended October 31, 1971.

Respectfully submitted,

E. L. Hendricks,
Accredited Officer of the United States

J. D. McLeod,
Accredited Officer of Her Majesty

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INTRODUCTION

Article VI of the Boundary Waters Treaty of 1909 between Great Britain and the United States governs the apportionment of the waters of the St. Mary and Milk Rivers. To comply with this Treaty, representatives of the United States and Canada collected and compiled, co-operatively, hydrometric data at forty-six international gauging stations. Canada operated another twelve non-international gauging stations, the data of which are used in the natural flow computations.

This report summarizes the natural flow computations during 1971, enlarges on the apportionment of the natural flow and explains any unusual occurrences throughout the year as well as any modifications which have been made or are contemplated for increasing the accuracy of the natural flow computations. Summarized natural flow tables are included in the report proper, whereas the detailed computations are included in Appendix A. The daily discharge data for 1971 are included in Appendix B.

Mr. E. L. Hendricks, Chief Hydrologist, United States Geological Survey, as Accredited Officer of the United States was represented in the field by Mr. G. M. Pike, District Chief, Helena, Montana. Mr. J. D. McLeod, Senior Engineer, Inland Waters Branch, acting in the capacity of Accredited Officer of Her Majesty, was represented in the field by Mr. R. D. May, District Engineer, Calgary, Alberta and Mr. D. A. Davis, District Engineer, Regina, Saskatchewan. This report has been prepared jointly by representatives of the United States and Canada under the supervision of Mr. G. M. Pike, Mr. R. D. May and Mr. D. A. Davis.

The natural flow of the St. Mary River was above average in 1971, whereas that of the Milk River was below average. During the 1971 irrigation season the collective natural flow of the Eastern Tributaries of the Milk River was significantly below average, being approximately 62 percent of the long term average natural flow. Minor flow deficits occurred within apportionment periods but no significant problems in the apportionment of flows for 1971 were encountered.

The annual conference between the staff of the field officers was held in Calgary, Alberta January 25 - 26, 1972. Streamflow records collected jointly by the United States and Canada were reviewed and approved. Mutual problems and changes in computational procedures were discussed and a schedule of field operations for 1972 was adopted.

ST. MARY RIVER

During the irrigation season, Canada's share of the natural flow of the St. Mary River at the International Boundary is, as stipulated by the 1921 Order, to be three-quarters of the natural flow up to a total flow of 666 cfs, with anything above that quantity to be divided equally between Canada and the United States. During the non-irrigation season (November 1 to March 31) the entire natural flow is to be divided equally between the two countries.

To comply with the above order, field engineers of both countries made semi-monthly computations of the daily natural flow of St. Mary River during the 1971 irrigation season. Regular interim reports of these computations were sent to all agencies involved in the water use and distribution of the flow of the St. Mary River in order to keep them informed as to the amount of water available as well as to ensure that any appropriation by the United States in excess of her share could be adjusted by a subsequent delivery of an equivalent amount at the earliest opportunity.

Tentative computations and interim reports are not made during the non-irrigation season as the only usage by the United States during this period is storage in Lake Sherburne. The average annual flow into this reservoir is only about one-quarter of the total natural flow at the International Boundary.

Lake Sherburne, the only storage reservoir in the St. Mary River Basin in the United States, is used to store excess flows for diversion to the Milk River. This water is later utilized by the United States, after passing through Canada, for irrigation in the lower Milk River valley. Storage in Lake Sherburne was 9,640 acre-feet on October 31, 1970, and had increased to

24,200 acre-feet just prior to the irrigation season on March 31, 1971. The storage reached a maximum of 66,400 acre-feet on July 22, and declined to 7,080 acre-feet by the end of the irrigation season on October 31.

Water was diverted from the St. Mary River to the North Milk River via the St. Mary Canal from May 10 to October 13. The total recorded flow past the gauging station on the St. Mary Canal at St. Mary Crossing was 165,000 acre-feet. Any seepage from the canal between the point of diversion and the crossing of the St. Mary River is assumed to return to the river and eventually become available to Canada.

The total natural flow of the St. Mary River at the International Boundary for the period November 1, 1970 to October 31, 1971 was 757,000 acre-feet, of which 690,000 acre-feet occurred during the irrigation season, April 1 to October 31, 1971. For the irrigation season the Canadian and United States shares were 405,000 acre-feet and 285,000 acre-feet respectively. The United States used 150,000 acre-feet or 53 percent of her share. No problems in the apportionment of the natural flow between the two countries were encountered. The natural flow during the irrigation season was 117 percent of the average of the previous sixty-eight years of record.

Table 1, which follows, summarizes the apportionment of the waters of the St. Mary River.

1971

Month	St. Mary River at Int'l. Boundary				Excess Received by Canada	Storage Lake Sherburne	Total Available for Diversion	St. Mary Canal at St. Mary Crossing	Milk* River at Eastern Crossing
	Recorded Runoff	Natural Flow	U. S. Share	Canada Share					
Apr.	24,726	34,309	10,784	23,524	1,202	9,582	1,202	0	32,030
May	152,670	178,733	79,116	99,617	53,053	12,466	66,650	13,597	38,130
June	191,467	218,980	99,568	119,413	72,055	12,595	86,973	14,918	24,270
July	87,685	139,876	59,685	80,191	7,494	8,803	50,882	43,389	44,870
Aug.	38,278	64,763	22,300	42,463	- 4,185	-16,602r	38,902	43,088	40,790
Sept.	24,516	26,607	6,726	19,881	4,635	-39,507r	46,233	41,598	41,480
Oct.	20,073	26,557	6,674	19,883	190	- 1,963r	8,637	8,448	18,370
Total Irrig. Season	539,415	689,825	284,853	404,972	134,444	-14,626r	299,479	165,038	239,940
For Yr. Nov. to Oct.	592,275	757,208	318,544	438,664					

October 31, 1971 = 7,080

Division Period at International Boundary	Natural Flow cfs days	Canada's Share cfs days	Received by Canada cfs days	Received by Canada	
				Above (+) Share cfs days	Below (-) Share cfs days
Apr. 1 - Apr. 15	4,320	3,239	3,444	205	
Apr. 16 - Apr. 30	12,977	8,621	9,022	401	
May 1 - May 15	41,445	23,223	31,040	7,817	
May 16 - May 31	48,665	27,000	45,930	18,930	
June 1 - June 15	60,848	32,925	61,990	29,065	
June 16 - June 30	49,553	27,278	34,540	7,262	
July 1 - July 15	37,032	21,018	22,470	1,452	
July 16 - July 31	33,488	19,411	21,737	2,326	
Aug. 1 - Aug. 15	21,199	13,102	11,245		1,857
Aug. 16 - Aug. 31	11,452	8,306	8,053		253
Sept. 1 - Sept. 15	8,112	6,046	6,729	683	
Sept. 16 - Sept. 30	5,302	3,977	5,631	1,654	
Oct. 1 - Oct. 15	6,445	4,816	4,858	42	
Oct. 16 - Oct. 31	6,944	5,208	5,262	54	

In order to provide advance information on the probable runoff in the St. Mary River Basin, the fiftieth annual international snow survey was conducted on April 28 and 29, 1971. The tabulated results of the forecasts and actual discharge or natural flow at three locations are given in Table 2.

TABLE 2
RESULTS OF THE 1971 ST. MARY RIVER BASIN SNOW SURVEY

Location	Period of Correlation	Forecast of 1971 Runoff		Measured Runoff	
		Acre-Feet	% of Average	Acre-Feet	% of Average
Swiftcurrent Creek at Many Glacier	1923-70	84,400 (May to July)	(1923-70) 122	84,200 (May to July)	(1923-70) 122
Natural Flow Swiftcurrent Creek at Sherburne	1922-70	144,000 (May to Sept.)	(1922-70) 124	145,400 (May to Sept.)	(1922-70) 126
Natural Flow St. Mary River at International Boundary	1922-70	652,000 (May to Sept.)	(1922-70) 128	629,000 (May to Sept.)	(1922-70) 123

MILK RIVER

The 1921 Order on the division of flow of the Milk River is the converse of that of the St. Mary River. That is, the United States is entitled to three-quarters of the flow up to a total discharge of 666 cfs, with any amount above this total to be divided equally between the two countries. During the non-irrigation season (November 1 to March 31) the entire flow is to be divided equally.

No actual apportionment of the Milk River at Eastern Crossing is made as, except for a few small unmeasured diversions above the eastern crossing of the International Boundary, the entire natural flow of the Milk River was delivered to the United States.

The computed natural flow of the Milk River at its eastern crossing of the International Boundary during the period March 1 to October 31, 1971, was 104,000 acre-feet. This is 88 percent of the average natural flow of the previous fifty-nine years of record. The United States and Canadian shares were 74,000 acre-feet and 30,000 acre-feet respectively. The natural flow computations of the Milk River at its eastern crossing are given in Table 12 in Appendix A.

The international gauging station on the South Fork Milk River near Babb, Montana was again operated in 1971 to study the utilization of water in the Milk River Basin within the Blackfeet Indian Reservation.

During 1971 a substantial flow was recorded in the Milk River at the western crossing of the International Boundary for the entire season. Consequently, there were no complaints by Canadian ranchers this year.

EASTERN TRIBUTARIES OF MILK RIVER

The waters of the eastern tributaries of the Milk River were divided in accordance with the Order of the International Joint Commission dated October 4, 1921, which stipulates under Rule III that "The natural flow of the eastern (otherwise known as the Saskatchewan or northern) tributaries of the Milk River at the points where they cross the International Boundary shall be divided equally between the two countries." This rule might well be interpreted as requiring that the division of water be made on a daily basis. It was recognized that a daily division was impracticable so compilation of the natural flows at the International Boundary are done by ten-day periods.

Prior to 1940, Canadian usage on the eastern tributaries consisted of a few private irrigators and the Canadian share of the natural flow was not fully utilized. The construction of three major reservoirs by the government of Canada on the Frenchman River during the late 1930's made a formal division of flow necessary in 1940. The acquisition and enlargement by the government of several private irrigation projects on Battle Creek during the 1950's made formal division of flow necessary in 1957. Construction of a major government reservoir and irrigation project on Lodge Creek in 1960 made a formal division of flow necessary in 1961. The remaining tributaries, Woodpile, East Fork Battle, Lyons, Whitewater, Rock and McEachern Creeks, are monitored but do not have sufficient usage in Canada to warrant a formal division of flow.

During the runoff season, March 1 to October 31, field engineers of both countries make ten-day computations of the natural flows of Lodge Creek, Battle Creek and Frenchman River to determine each country's share, so that any appropriation by Canada in excess of her share can be adjusted at the

earliest opportunity by a subsequent delivery to the United States of an equivalent amount. Regular interim reports on the progress of the division of the natural flows of Lodge Creek, Battle Creek and Frenchman River at the International Boundary were made to interested agencies throughout the runoff season. No division of flow is made during the winter period as there is usually very little flow and it is impracticable to obtain streamflow records during this period.

Although the total runoff of the eastern tributaries of the Milk River was well below average during 1971, no major problems were encountered in the division of the natural flow of these tributaries.

The total quantity of water delivered to the United States by the eastern tributaries of the Milk River during the period March 1 to October 31, 1971, was 68,500 acre-feet or 50 percent of 138,000 acre-feet, the average of the previous forty-four years. The quantities delivered to the United States by the various tributaries are listed in Table 3.

TABLE 3

MEASURED RUNOFF OF EASTERN TRIBUTARIES OF MILK RIVER AT INTERNATIONAL BOUNDARY

FOR PERIOD MARCH TO OCTOBER 1971

(quantities in acre-feet)

Month	Lodge Creek	Battle Creek	Wood- pile Coulee	East Fork Battle Creek	Lyons Creek	White- water Creek	Frenchman River	Rock Creek below Horse Creek	McEachern Creek
Mar.	12	568	0	0	0	8	475	39	0
Apr.	8,040	5,110	81	31	3	241	15,300	7,920	3,630
May	1,730	3,320	0	0	0	34	11,500	457	87
June	622	1,650	0	0	0	15	1,950	850	5
July	0	791	0	0	0	4	1,260	43	0
Aug.	23	680	0	0	0	0	883	1	0
Sept.	174	0	0	0	0	2	337	1	0
Oct.	0	390	0	0	0	12	208	47	0
Total	10,601	12,509	81	31	3	316	31,913	9,358	3,722

Estimated flows of a number of small diversions from the eastern tributaries of Milk River in Saskatchewan and Alberta were provided by the Water Resources Commission of the Province of Saskatchewan and the Water Resources Division of the Province of Alberta, and are based on reports from the individual licensed irrigators.

To include the minor diversion usages in the interim reports, a total usage for the year was estimated on the basis of the snow survey results. Thus, there is some discrepancy between the final and interim division computations. The reported minor diversions as supplied by the Provinces of Saskatchewan and Alberta are contained in Appendix B.

The nineteenth annual Cypress Hills snow survey in the basins of Lodge Creek, Battle Creek and Frenchman River was conducted by the Inland Waters Branch, Canada, during the period February 23 to March 2, 1971. Because of the great disparity between forecast and measured runoff in previous years, it was decided to discontinue the runoff forecast for the eastern tributaries of the Milk River. Table 4 now shows the summary of water equivalent of the snow, measured runoff and August to October precipitation for the past nineteen years of record. Although the 1971 water equivalent of the snowpack was well above normal, due to low precipitation during the periods August to October 1970 and March to May 1971, and the low rate of snowmelt during April 1971, the measured runoff was well below normal.

A change in the method of computing the natural flow of Battle Creek was made this year. A channel loss of 3 cfs per day has been applied to all diversions and releases from Cypress Lake, 2 cfs per day to the Richardson-McKinnon diversions and 1 cfs per day to the Nashlyn diversion. These channel losses were first found during the Battle Creek investigation made in 1923 and have since been verified by the three supplementary gauging stations operated on Battle Creek since 1964. It is proposed that Gaff Ditch be removed from the list of minor diversion estimates and be included as a major diversion in the Battle Creek natural flow computations in 1972.

HISTORICAL SUMMARY

MARCH 1st WATER EQUIVALENT OF CYPRESS HILLS SNOW SURVEY IN INCHES.

SPRING RUNOFF OF EASTERN TRIBUTARIES OF MILK RIVER IN ACRE FEET.

Year	Aug. - Oct. Precip.	Elkwater Course A	Wildhorse Course B	Lodge Creek March-April Natural Flow	Battle Creek March-April Natural Flow	Cypress Pk Course C	Pine Cree Pk Course E	Val Marie Course D	Pinto Butte Course F	Frenchman R March-May Natural Flow
1952	3.06									
1953	0.55	2.2	0.9	5,240	5,540	4.1		1.0		45,570
1954	10.69	1.7	0.1	7,800	13,920	3.0		0.1		61,680
1955	0.20	3.1	1.6	51,740	41,740	4.7		1.9		132,900
1956	2.11	2.9	2.9	10,920	13,330	5.1		2.5		37,770
1957	3.21	2.2	1.8	22,990	17,850	3.4		0.9		35,160
1958	1.20	1.3	1.3	38,900	25,040	1.8		0.5		61,720
1959	3.05	2.7	2.2	16,660	12,500	6.9		1.8		45,460
1960	2.34	2.0	1.6	24,270	20,580	4.8		1.0		73,510
1961	1.12	0.8	0.5	1,560	4,120	4.4		1.5		17,340
1962	1.41	0.8	0.4	5,430	5,030	2.2		1.4		31,340
1963	0.73	1.9	0.8	4,060	4,900	3.4		0		32,820
1964	1.21	1.9	1.2	4,860	3,340	4.4		0.1		15,850
1965	1.95	1.7	2.8	43,490	26,950	1.9	4.1	3.0	1.3	86,570
1966	2.20	1.8	2.3	33,240	26,320	4.2	3.0	1.9	1.2	63,540
1967	1.15	2.8	2.6	32,200	24,460	5.3	4.6	2.4	-	94,510
1968	4.87	1.6	0	3,050	8,700	3.8	1.9	0	0	33,900
1969	0.90	2.2	3.0	29,020	25,850	5.3	1.5	2.9	-	67,970
1970	0.73	2.9	1.3	16,350	12,990	6.6	3.1	1.5	1.1	92,880
1971		2.4	3.8	18,020	12,140	7.3	4.5	3.3	3.3	40,410
Mean	2.25	2.0	1.6	19,460	16,070	4.3	3.2	1.5	1.7	56,360

LODGE CREEK

The computed natural runoff of Lodge Creek at the International Boundary for the period March 1 to October 31, 1971 was 21,320 acre-feet or 61 percent of the average natural runoff of the previous twenty-one years of record. Each country was entitled to 10,660 acre-feet, which is fifty percent of the natural runoff. A total runoff of 10,600 acre-feet was recorded at the International Boundary which is 99.4 percent of the United States share.

Deficit deliveries were recorded in ten of the twenty-four division periods during the season. The major portion of the series of deficits which occurred during April and May were refunded by June 20, but a small portion remained until September 10. The small deficits in deliveries, amounting to 91 acre-feet, which occurred between September 21 and October 20, are of a technical nature due to anomalies in the computation of evaporation and storage of Middle Creek Reservoir.

The division of the Lodge Creek natural flow is summarized in Table 5. The detailed computation of the natural flow is given in Table 16 of Appendix A.

TABLE 5
SUMMARY OF LODGE CREEK DIVISION

1971

Division Period at International Boundary	Natural Flow cfs days	U. S. A. Share cfs days	Received by U. S. A. cfs days	Received by U. S. A.	
				Above Share cfs days	Below Share cfs days
Mar. 1 - Mar. 10	0	0	0		
Mar. 11 - Mar. 20	0	0	0		
Mar. 21 - Mar. 31	8	4	6	2	
Apr. 1 - Apr. 10	817	408	342		66
Apr. 11 - Apr. 20	4,541	2,270	1,831		439
Apr. 21 - Apr. 30	3,720	1,860	1,882	22	
May 1 - May 10	880	440	247		193
May 11 - May 20	209	104	541	437	
May 21 - May 31	122	61	82	21	
June 1 - June 10	114	57	25		32
June 11 - June 20	196	98	286	188	
June 21 - June 30	0	0	2	2	
July 1 - July 10	3	2	0		2
July 11 - July 20	15	8	0		8
July 21 - July 31	31	16	0		16
Aug. 1 - Aug. 10	0	0	0		
Aug. 11 - Aug. 20	0	0	0		
Aug. 21 - Aug. 31	0	0	12	12	
Sept. 1 - Sept. 10	0	0	88	88	
Sept. 11 - Sept. 20	0	0	0		
Sept. 21 - Sept. 30	64	32	0		32
Oct. 1 - Oct. 10	19	10	0		10
Oct. 11 - Oct. 20	9	4	0		4
Oct. 21 - Oct. 31	0	0	0		

BATTLE CREEK

The computed natural runoff of Battle Creek at the International Boundary for the period March 1 to October 31, 1971 was 19,280 acre-feet or 67 percent of the average natural runoff of the previous thirty-one years of record. Each country was entitled to 9,640 acre-feet, which is fifty percent of the natural runoff. A total runoff of 12,500 acre-feet was recorded at the International Boundary which is 130 percent of the United States share.

Deficit deliveries were recorded in two division periods during the season. All deficits were refunded with excess deliveries in following division periods.

The division of the Battle Creek natural flow is summarized in . Table 6. The detailed computation of the natural flow is given in Table 18 of Appendix A.

TABLE 6
SUMMARY OF BATTLE CREEK DIVISION
1971

Division Period at International Boundary	Natural Flow cfs days	U. S. A. Share cfs days	Received by U. S. A. cfs days	Received by U. S. A.	
				Above Share cfs days	Below Share cfs days
Mar. 1 - Mar. 14	117	58	106	48	
Mar. 15 - Mar. 25	121	60	110	50	
Mar. 26 - Apr. 4	128	64	116	52	
Apr. 5 - Apr. 14	1,218	609	910	301	
Apr. 15 - Apr. 24	2,416	1,208	753		455
Apr. 25 - May 4	2,122	1,061	1,188	127	
May 5 - May 14	784	392	675	283	
May 15 - May 25	573	286	459	173	
May 26 - June 4	144	72	380	308	
June 5 - June 14	871	436	234		202
June 15 - June 24	404	202	260	58	
June 25 - July 4	252	126	261	135	
July 5 - July 14	215	108	226	118	
July 15 - July 25	88	44	71	27	
July 26 - Aug. 4	0	0	84	84	
Aug. 5 - Aug. 14	18	9	246	237	
Aug. 15 - Aug. 25	31	16	28	12	
Aug. 26 - Sept. 4	0	0	0		
Sept. 5 - Sept. 14	0	0	0		
Sept. 15 - Sept. 24	0	0	0		
Sept. 25 - Oct. 4	0	0	0		
Oct. 5 - Oct. 14	10	5	9	4	
Oct. 15 - Oct. 25	139	70	126	56	
Oct. 26 - Oct. 31	68	34	62	28	

FRENCHMAN RIVER

The computed natural runoff of the Frenchman River at the International Boundary for the period March 1 to October 31, 1971 was 46,320 acre-feet or 60 percent of the average natural runoff of the previous thirty-one years of record. Each country was entitled to 23,160 acre-feet, which is fifty percent of the natural runoff.

A total runoff of 31,910 acre-feet, which is 138 percent of the United States share, was recorded at the International Boundary.

Deficit deliveries were recorded in four division periods during the season. The deficits recorded during April and July were refunded with excess deliveries in the next division periods. A total of 127 acre-feet in deficits were recorded in the last two division periods of the season.

The division of the Frenchman River natural flow is summarized in Table 7. The detailed computation of the natural flow is given in Table 20 of Appendix A.

TABLE 7
SUMMARY OF FRENCHMAN RIVER DIVISION
1971

Division Period at International Boundary	Natural Flow cfs days	U. S. A. Share cfs days	Received by U. S. A. cfs days	Received by U. S. A.	
				Above Share cfs days	Below Share cfs days
Mar. 1 - Mar. 10	14	7	61	54	
Mar. 11 - Mar. 20	77	38	74	36	
Mar. 21 - Mar. 31	168	84	104	20	
Apr. 1 - Apr. 10	2,266	1,133	1,719	586	
Apr. 11 - Apr. 20	4,929	2,464	2,838	374	
Apr. 21 - Apr. 30	6,799	3,400	3,164		236
May 1 - May 10	3,530	1,765	3,210	1,445	
May 11 - May 20	1,603	802	1,437	635	
May 21 - May 31	985	492	1,142	650	
June 1 - June 10	852	426	479	53	
June 11 - June 20	462	231	289	58	
June 21 - June 30	425	212	218	6	
July 1 - July 10	230	115	110		5
July 11 - July 20	106	53	160	107	
July 21 - July 31	276	138	364	226	
Aug. 1 - Aug. 10	227	114	244	130	
Aug. 11 - Aug. 20	108	54	158	104	
Aug. 21 - Aug. 31	0	0	43	43	
Sept. 1 - Sept. 10	0	0	62	62	
Sept. 11 - Sept. 20	0	0	44	44	
Sept. 21 - Sept. 30	25	12	64	52	
Oct. 1 - Oct. 10	0	0	33	33	
Oct. 11 - Oct. 20	115	58	13		45
Oct. 21 - Oct. 31	156	78	59		19

APPENDICES

Appendices A and B are submitted with this report under separate cover. Appendix A contains the natural flow computations for the St. Mary River, Milk River, Lodge Creek, Battle Creek and Frenchman River. It also contains historical summaries of the mean monthly natural flows, United States shares and Canadian shares of the St. Mary River and Milk River; and annual summaries of natural and recorded runoff of Lodge Creek, Battle Creek and Frenchman River.

Appendix B contains the daily discharge data for thirty-nine international gauging stations operated jointly by the United States and Canada, and three stations used in the natural flow computations which are operated by Canada. Also included are the month-end contents of seven international reservoir stations operated jointly by the United States and Canada, and nine reservoir stations used in the natural flow computations which are operated by Canada. The details of the minor diversions in Canada are also contained in Appendix B.

GAUGING STATIONS OPERATED JOINTLY
BY
CANADA AND UNITED STATES
IN THE
ST. MARY AND MILK RIVER DRAINAGE BASINS

- 1971 -

Map Index	Stream and Location	Remarks
<u>St. Mary River Basin</u>		
05AE027	St. Mary River at International Boundary	Int. a
05AE036	Lake Sherburne at Sherburne, Montana	Int. R ^a
05AE033	Swiftcurrent Creek at Sherburne, Montana	Int. a
05AE029	St. Mary Canal at St. Mary Crossing near Babb, Montana	Int. a
<u>Milk River Basin</u>		
11AA025	Milk River at Western Crossing of International Boundary	Int. a
11AA005	Milk River at Milk River	Int. a
11AA031	Milk River at Eastern Crossing of International Boundary	Int. a
11AA033	South Fork Milk River near Babb, Montana	Int. a
11AA032	North Fork Milk River above St. Mary Canal near Browning, Montana	Int. a
11AA001	North Milk River near International Boundary	Int. a
<u>Lodge Creek Tributary Basin</u>		
11AB089	Altawan Reservoir near Govenlock	Int. R ^a
11AB083	Lodge Creek below McRae Creek at International Boundary	Int. a
11AB086	Walburger Coulee below Diversions	Int. a
11AB060	Spangler Ditch near Govenlock	Int. a
11AB009	Middle Creek near Alberta Boundary	Int. a
11AB080	Middle Creek Reservoir	Int. R ^a
11AB087	Middle Creek near Battle Creek	Int. a

Map Index	Stream and Location	Remarks
<u>Battle Creek Tributary Basin</u>		
11AB027	Battle Creek at International Boundary	Int. a
11AB078	Cypress Lake West Inflow Canal	Int. a
11AB085	Cypress Lake West Inflow Canal Drain	Int. a
11AB077	Cypress Lake West Outflow Canal	Int. a
11AB084	Vidora Ditch near Consul	Int. a
11AB058	Richardson Ditch near Consul	Int. a
11AB044	McKinnon Ditch near Consul	Int. a
11AB018	Nashlyn Canal near Consul	Int. a
11AB105	Woodpile Coulee near International Boundary	Int. a
11AB107	East Fork Battle Creek near International Boundary	Int. a
11AB075	Lyons Creek at International Boundary	Int. a
<u>Whitewater Creek Tributary Basin</u>		
11AD001	Whitewater Creek near International Boundary	Int. a
<u>Frenchman River Tributary Basin</u>		
11AC055	Eastend Reservoir	Int. R ^a
11AC001	Frenchman River below Eastend Reservoir	Int. a
11AC057	Frenchman River below Eastend Irrigation Project	Int. a
11AC063	Val Marie West Reservoir	Int. R ^a
11AC056	Val Marie Reservoir	Int. R ^a
11AC051	Frenchman River below Val Marie	Int. a
11AC041	Frenchman River at International Boundary	Int. a
11AC060	Cypress Lake East Outflow Canal	Int. a
11AC037	Cypress Lake	Int. R ^a
11AC064	Belanger Creek Diversion to Cypress Lake	Int. a
11AC052	Eastend Canal	Int. a
11AC066	Val Marie West Pumping Canal	Int. a

Map Index	Stream and Location	Remarks
11AC065	Val Marie West Gravity Canal	Int. a
11AC054	Val Marie Main Canal	Int. a
11AC025	Denniel Creek near Val Marie	Int. a

Rock Creek Tributary Basin

11AE009	Rock Creek below Horse Creek near International Boundary	Int. a
11AE007	McEachern Creek at International Boundary	Int. a

St. Mary River Basin

5-0175	St. Mary River near Babb, Montana	U.S.A. c
05AE025	St. Mary Reservoir near Spring Coulee	Canada R c
05AE006	St. Mary River near Lethbridge	Canada c
5-0139	Grinnell Creek at Grinnell Glacier near Many Glacier, Montana	U.S.A. c
5-0140	Grinnell Creek near Many Glacier, Montana	U.S.A. c
05AE032	Swiftcurrent Creek at Many Glacier, Montana	U.S.A. c
05AE005	Rolph Creek near Kimball	Canada c
05AE002	Lee Creek at Cardston	Canada c
05AE026	Canadian St. Mary Canal near Spring Coulee	Canada c
05AE021	Magrath Irrigation District Canal near Spring Coulee	Canada c

Milk River Basin - Southern Tributaries

11AA029	Miners Coulee near International Boundary	Canada c
11AA028	Bear Creek near International Boundary	Canada c

Map Index	Stream and Location	Remarks
<u>Lodge Creek Tributary Basin</u>		
11AB082	Lodge Creek at Alberta Boundary	Canada ^c
11AB091	Michele Reservoir near Elkwater	Canada R ^a
11AB092	Greasewood Reservoir near Elkwater	Canada R ^a
11AB104	Massy Reservoir near Elkwater	Canada R ^a
11AB094	Bare Creek Reservoir near Elkwater	Canada R ^a
11AB097	Cressday Reservoir near Cressday	Canada R ^a
11AB098	Jaydot Reservoir near Jaydot	Canada R ^a
11AB099	Mitchell Reservoir near Elkwater	Canada R ^a
11AB108	Middle Creek near Govenlock	Canada ^c
11AB109	Buchanan Ditch near Govenlock	Canada ^c
11AB110	Stokke Ditch near Govenlock	Canada ^c
11AB008	Middle Creek above Lodge Creek	Canada ^c
11AB103	Squaw Coulee near Willow Creek	Canada ^a

Battle Creek Tributary Basin

11AB081	Battle Creek at Ranger Station	Canada ^c
11AB100	Battle Creek above Cypress Lake West Outflow Canal	Canada ^c
11AB096	Battle Creek near Consul	Canada ^c
11AB101	Battle Creek below Nashlyn Project	Canada ^c
11AB095	Adams Lake	Canada R ^a
11AB090	Reesor Reservoir	Canada R ^a
11AB102	Gaff Ditch near Merryflat	Canada ^c

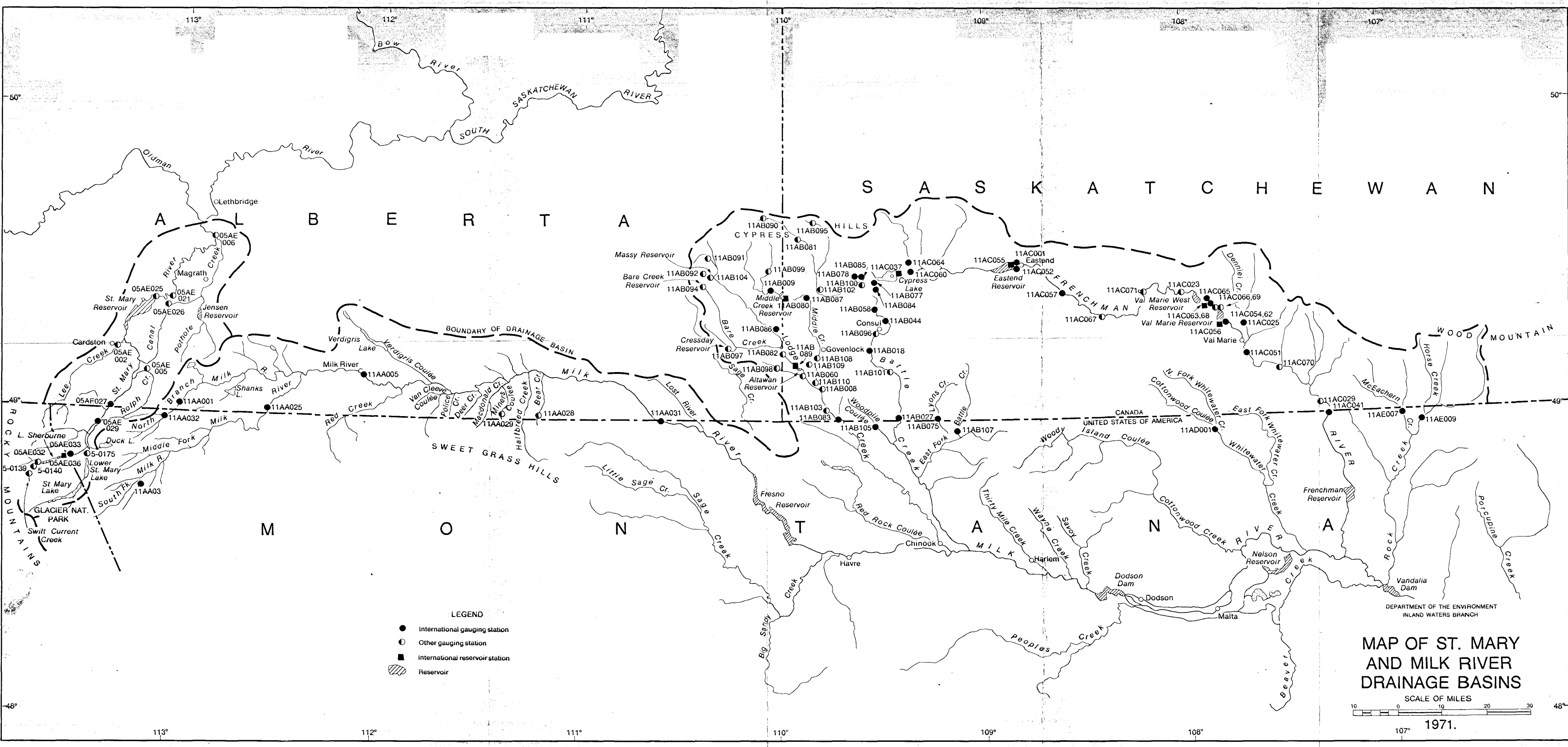
Map Index	Stream and Location	Remarks
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Frenchman River Tributary Basin

11AC062	Frenchman River below Val Marie Reservoir	Canada	c
11AC068	Val Marie Electric Pump No. 1	Canada	a
11AC069	Val Marie Electric Pump No. 2	Canada	a

Symbol Code

Int.	-	International Gauging Station
Int. R	-	International Station on Reservoir
U.S.A.	-	Operation by United States Geological Survey
Canada	-	Operation by Inland Waters Branch, Canada
a	-	Monthly and daily discharge data and stream measurements or month-end contents contained in Appendix B
c	-	Data not included in this report or appendices



**MAP OF ST. MARY
AND MILK RIVER
DRAINAGE BASINS**

SCALE OF MILES

1971.

DEPARTMENT OF THE ENVIRONMENT
INLAND WATERS BRANCH

HD
1694
.A2
R424
1971

Report to the International Joint
Commission on the division and use
of the waters of the St. Mary and
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