Report to

THE INTERNATIONAL JOINT COMMISSION

on

THE DIVISION AND USE MADE OF THE WATERS OF

ST. MARY AND MILK RIVERS

by

VICTOR MEEK
representing Canada

and

G. L. PARKER
representing the United States

1944

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The Honourable, The International Joint Commission,
Washington, D.C., and Ottawa, Canada.

Gentlemen:-

In compliance with the Provisions of Clause VIII (c) of your Order of the 4th of October, 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 31st, 1944.

Respectfully submitted,

Accredited Officer of His Majesty.

Accredited Officer of the United States.

April 3rd, 1945.

Introduction

The field work incidental to the division and administration of the waters of the St. Mary and Milk Rivers in Alberta, Saskatchewan and Montana was conducted, during the irrigation season of 1944, by the same group of engineers as in previous years.

Mr. Victor Meek, Controller, Dominion Water and Power Bureau, as accredited officer of His Majesty, was represented by Mr. O. H. Hoover, Acting District Engineer, Calgary, Alberta. The Chief Hydraulic Engineer, United States Geological Survey, Mr. G. L. Parker, as accredited officer of the United States, was represented in the field by Mr. A. H. Tuttle, District Engineer, Helena, Montana.

The water of the two rivers was divided between the two countries in accordance with the Order of the Commission dated in Ottawa, Canada, on the 4th day of October, 1921.

The hydrometric data on which this report is based were obtained from streams and ditches in Canada by engineers of the Dominion Water and Power Bureau, under the direction of Mr. Hoover; while those in Montana were collected by engineers of the United States Geological Survey under the supervision of Mr. Tuttle.

The joint international gauging stations were visited frequently by representatives of both countries and the data obtained were jointly approved by the field engineers.

The annual report was compiled and assembled by Mr. S. G. Dawson, Dominion Water and Power Bureau, Ottawa, Canada.

The run-off from the St. Mary River basin during the irrigation season of 1944 was 55 per cent of the average for the 41 years of record. As the natural flow in the river did not exceed the combined capacity of the irrigation facilities on the river except during the periods May 19-24 and June 1-3, the field engineers constantly kept themselves closely informed as to the natural flow of the river, the water stored or released from storage and the quantity diverted by each country. Any discrepancy in the division was therefore discovered and adjustments made to allow each country its proper share as set forth in the Order of the Commission dated October 4th, 1921. Statements showing the daily division of water were prepared and forwarded to the Superintendent, Lethbridge Section, Canadian Pacific Irrigation System; to the Project Manager, United States Bureau of Reclamation, Malta, Montana; and to the Controller, Dominion Water and Power Bureau, Ottawa, Canada.

Division of Water

Although the United States St. Mary Canal was in operation at the headgates from April 1st to the end of October, water was only delivered to the North Branch Milk River during the period April 24th to September 22nd, inclusive.

As the seepage from the canal between the intake and the crossing of the St. Mary River is assumed to return directly to the river and eventually become available to Canada, the discharge of 110,900 acre-feet passing in the canal at St. Mary Crossing during the period April 22nd to September 16th, is considered as the actual quantity diverted from the St. Mary River by the United States. A total of 109,800 acre-feet was delivered to the North Branch Milk River and made available for irrigation in Montana. The slight decrease of one per cent between the St. Mary River Crossing and the Hudson Bay Divide, the end of the canal, was probably due to evaporation and seepage.

On October 29th, 1943, 3,973 acre-feet of water remained in Sherburne Reservoir. By March 31st, 1944, 12,408 acre-feet of water were in storage. This was increased to 32,060 acre-feet by July 11th. From July 12th, to September 11th, water was released in varying amounts to supplement the flow of St. Mary River. On October 31, 1944, 11,452 acre-feet remained in storage.

As only a small quantity of water was diverted from Milk River in Canada, the natural flow of the river at Eastern Crossing is considered as being delivered to the United States. The natural flow of the river at Eastern Crossing for the open water period of 1944, March 1st to October 31st, is estimated as 23,000 acre-feet. The total measured diversion for irrigation from Milk River in Montana was 160,849 acre-feet.

The quantity delivered to the United States at the International Boundary from the Northern Tributaries of Milk River, during the open water period of 1944, was 67,150 acre-feet. This flow is one of the lowest on record and only 30 per cent of that recorded in 1943, and about 49 per cent of the average for the previous 17 years.

During the open water period of 1944, Canada diverted to Cypress Lake reservoir, 2,790 acre-feet of the flow of Battle Creek, but later returned 1,790 acre-feet, while 7,680 acre-feet was delivered to Montana at the International Boundary. In the Frenchman River Basin, Canada stored in Cypress Lake reservoir about 6,750 acre-feet of the flow from Davis, Belanger and Sucker Creeks, and 14,910 acre-feet from the main stream in the reservoirs at East End and Val Marie. From this storage

9,270 acre-feet was released to irrigate land in the Frenchman River valley in Canada, while 40,980 acre-feet of the natural flow of Frenchman River was delivered to Montana. The apportionment during the open water period is shown in Table 3.

The Canadian Pacific Railway canal at Kimball, Alberta, diverted 177,990 acre-feet from the St. Mary River during the period of operation from 6th of April to the 1st of November and applied 161,177 acre-feet of this diversion to land in Southern Alberta during the irrigation season.

The Dominion Water and Power Bureau is dependent to a large extent upon the irrigators themselves for records of the diversions in Canada from the Northern Tributaries of Milk River as, in the majority of cases, the diversions are too small to justify the expense of appointing and paying gauge observers. Consequently the records are believed to be incomplete and of doubtful value. The total diversions from these tributaries in Canada as reported and shown in Table 4 were: from Lodge Creek, no record; from Battle Creek, 2,855 acre-feet; from Frenchman River, 16,163 acre-feet.

Any question as to the proper share of St. Mary River being delivered to either country was decided in the following manner. Record of the daily flow was kept of

Swiftcurrent Creek at Many Glacier, but the flow from the other creeks entering Swiftcurrent Creek above the Sherburne dam were estimated. The total of these creeks gave the inflow into Sherburne reservoir. The losses by evaporation in the reservoir were considered when estimating the flow from the unrecorded small streams. A record of the outflow from the reservoir was kept at the gauging station just below the dam. The difference between the inflow and the outflow showed the quantity of water being stored or released from storage. A record of the daily flow in the United States St. Mary Canal at St. Mary crossing was kept to find the water diverted by the United States and a record of the daily flow in the St. Mary River at Kimball, near the International Boundary, was kept to determine the water being delivered to Canada.

If water was being stored in Sherburne reservoir the natural flow of St. Mary River at the Boundary was obtained by adding the quantity of water stored to that diverted by the St. Mary Canal and that delivered to Canada, a two-day lag was allowed for stored water to reach the Boundary. If water was being released, the quantity released was deducted from the combined flow of the St. Mary Canal and that in the river at Kimball to determine the natural flow.

The natural flow having been determined, the share to which each country was entitled was calculated on the following basis:-

(1) When the natural flow of the St. Mary River was 666 cubic-feet per second or less, Canada was entitled, by the ruling of the Commission, to three-fourths of that flow and the United States to one-fourth.

(2) When the natural flow of the St. Mary River was greater than 666 cubic-feet per second, Canada was entitled to 500 cubic-feet per second plus one-half of the increase over 666 cubic-feet per second and the United States was entitled to the remainder.

No actual division was made of the waters of Milk River or its Northern Tributaries except those of Frenchman River and Battle Creek.

Water Supply

The precipitation on the foothills and in the mountainous areas forming the headwaters of the St. Mary and Milk Rivers was fifty per cent of normal during the winter of 1943-44. On the prairies tributary to Milk River, the precipitation was considerably below normal during the winter months and only slightly in excess during June and July.

In the mountainous areas tributary to the St. Mary River Basin, as shown by the twenty-third annual international survey of the snow conditions on the headwaters of the Swiftcurrent Creek, an area considered typical of the headwaters of the St. Mary River, the snow cover of 25.9 inches was 50 per cent of the mean for the previous 22 years, while the water content, 11.6 inches, of this snow cover was 50 per cent of the mean. The run-off of 40,150 acre-feet from the area surveyed, during May, June and July, was 60 per cent of the average for the previous twenty-two years.

The natural flow of 318,100 acre-feet of St. Mary River at the Boundary during the irrigation season of 1944, from the first of April to the end of October, was 55 per cent of the average for 41 years of record and less than half of that in 1943.

The run-off from the prairies, as indicated by the Northern Tributaries of Milk River was about 50 per cent of the average for the last eighteen years.

Twenty-two gauging stations used in the determination of the natural flow of the streams in the St. Mary and Milk River Basins were operated jointly as international gauging stations. The gauging stations necessitated by the operation of reservoirs and the two irrigation districts in the Frenchman River valley

in Canada and established for the determination of the natural flow of the river and of Battle Creek were again maintained in 1944.

An appendix to this report gives the results of current meter measurements, the daily gauge heights and the discharge at all the gauging stations operated in the two drainage basins during 1944.

Discription of Tables

The tables following have been prepared to summarize the data on the division and use made of the waters in the St. Mary and Milk River Basins.

Table No. 1 shows the method used to determine the natural flow of St. Mary River during the irrigation season of 1944, the water available for use and used by the United States and by Canada. In this table there are four pages for each month from April to October, inclusive.

Page 1 (water stored or released from Sherburne reservoir) shows the daily inflow into and the outflow from Sherburne reservoir. The difference gives the quantity of water stored or released from storage. On this sheet the unrecorded inflow is determined by comparison with the recorded flows in Swiftcurrent Creek and with the use of the water levels of Sherburne reservoir to give the gain or loss in storage, after direct

application of the evaporation and seepage losses has been made. This estimate is put in the column headed "unrecorded inflow".

Page 2 (determination of natural flow of the St. Mary River) shows the actual flow of St. Mary River at Kimball near the International Boundary, the quantity of water diverted, stored or released from storage by the United States and the computed natural flow of St. Mary River, or that flow which would have crossed the Boundary had there been no interference. It has been determined that two days are required for stored water released from Sherburne reservoir to influence the flow at the International Boundary, consequently a two-day lag has been applied to the stored or released water.

Page 3 (water available for use and used by the United States) shows the water available for use and used by the United States under the ruling of the Order of October 4th, 1921, the water diverted and stored and the excess or deficit in the quantity used as compared with the share available.

Page 4 (water available for use and used by Canada) shows the natural flow of St. Mary River at the International Boundary, Canada's share by the ruling of the Commission, the actual discharge of St. Mary River at Kimball, which is the quantity available for use by Canada,

the quantity used by Canada and the excess or deficit of the quantity received by Canada as compared with the share.

Table 2 is a statement showing the quantity in acre-feet taken each month by each country and the quantity thereof which is applied to the land, the quantity diverted from the St. Mary River, the loss or waste from canals and the diversions from Milk River in the United States.

Table 3 shows the determination of the natural flow of Frenchman River at the International Boundary. This table consists of three pages; page 1 shows the quantity used by Canada in Cypress Lake Reservoir and at East End; page 2 shows the quantity used by Canada at Val Marie; and page 3 shows the total quantity used by Canada, the natural flow of Frenchman River at the Boundary and the quantity delivered to the United States.

Table 4 shows the available information on the diversions from the Northern Tributaries of Milk River in Canada.

Table 5 gives the measured diversions from the Northern Tributaries of Milk River in the United States. Smaller diversions have not been measured.

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR

APRIL - 1944

Day	Inflow to Sherburne Reservoir: Recorded Inflow: Swiftcurrent Creek	Un-recorded Inflow Est'd	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec-ft. Gross	Released from Reservoir Sec-ft. Net
1	14	31	45	0	45	--
2	16	16	32	0	32	--
3	19	17	36	0	36	--
4	27	18	45	0	45	--
5	45	46	91	0	91	--
6	70	34	104	0	104	--
7	76	22	98	0	98	--
8	72	20	92	0	92	--
9	65	15	80	0	80	--
10	63	15	78	0	78	--
11	63	6	69	0	69	--
12	68	41	109	0	109	--
13	63	50	113	0	113	--
14	61	34	95	0	95	--
15	56	30	86	0	86	--
16	52	30	82	0	82	--
17	49	75	124	124	--	--
18	45	29	74	59	15	--
19	44	57	101	59	42	--
20	42	13	55	59	--	4
21	42	18	60	59	1	--
22	45	309	354	553	--	199
23	54	173	227	547	--	320
24	74	61	135	530	--	395
25	98	27	125	595	--	470
26	105	35	140	592	--	452
27	118	24	142	559	--	417
28	144	7	151	571	--	420
29	180	46	226	592	--	366
30	218	66	284	577	--	293
Total sec-ft.	2088	1365	3453	5476	1313	3336
Mean	70	45	115	182	44	111
Ac-ft.	4140	2710	6850	10860	2600	6620

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER

APRIL - 1944

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec-ft.	Stored Water Released	Natural Flow St.Mary River
1	140	--	18	158	--	158
2	155	--	27	182	--	182
3	166	--	45	211	--	211
4	178	--	32	210	--	210
5	152	--	36	188	--	188
6	130	--	45	175	--	175
7	138	--	91	229	--	229
8	123	--	104	227	--	227
9	120	--	98	218	--	218
10	117	--	92	209	--	209
11	120	--	80	200	--	200
12	123	--	78	201	--	201
13	128	--	69	197	--	197
14	125	--	109	234	--	234
15	128	--	113	241	--	241
16	128	--	95	223	--	223
17	128	--	86	214	--	214
18	138	--	82	220	--	220
19	155	--	--	155	--	155
20	166	--	15	181	--	181
21	174	--	42	216	--	216
22	182	3	--	185	4	181
23	82	166	1	249	--	249
24	68	238	--	306	199	107
25	160	267	--	427	320	107
26	138	373	--	511	395	116
27	194	394	--	588	470	118
28	155	462	--	617	452	165
29	197	477	--	674	417	257
30	244	491	--	735	420	315
Total sec-ft.	4352	2871	1358	8581	2677	5904
Mean	145	319(22-30)	45	286	89	197
Ac-ft.	8630	5690	2690	17020	5310	11710

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.

APRIL - 1944

Day	Natural Flow St. Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage Net	Total Available	Diverted	USED BY U.S.A. Stored Gross	Total Used	Excess of Share	Deficit Used
1	158	40	--	40	--	18	18	--	22
2	182	46	--	46	--	27	27	--	19
3	211	53	--	53	--	45	45	--	8
4	210	52	--	52	--	32	32	--	20
5	188	47	--	47	--	36	36	--	11
6	175	44	--	44	--	45	45	1	--
7	229	57	--	57	--	91	91	34	--
8	227	57	--	57	--	104	104	47	--
9	218	54	--	54	--	98	98	44	--
10	209	52	--	52	--	92	92	40	--
11	200	50	--	50	--	80	80	30	--
12	201	50	--	50	--	78	78	28	--
13	197	49	--	49	--	69	69	20	--
14	234	58	--	58	--	109	109	51	--
15	241	60	--	60	--	113	113	53	--
16	223	56	--	56	--	95	95	39	--
17	214	54	--	54	--	86	86	32	--
18	220	55	--	55	--	82	82	27	--
19	155	39	--	39	--	--	--	--	39
20	181	45	--	45	--	15	15	--	30
21	216	54	--	54	--	42	42	--	12
22	181	45	4	49	3	--	3	--	46
23	249	62	--	62	166	1	167	105	--
24	107	27	199	226	238	--	238	12	--
25	107	27	320	347	267	--	267	--	80
26	116	29	395	424	373	--	373	--	51
27	118	30	470	500	394	--	394	--	106
28	165	41	452	493	462	--	462	--	31
29	257	64	417	481	477	--	477	--	4
30	315	79	420	499	491	--	491	--	8
Total sec-ft.	5904	1476	2677	4153	2871	1358	4229	563	487
Mean	197	49	89	138	319	45	141	19	16
Ac-ft.	11710	2930	5310	8240	5690	2690	8380	1120	970

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA

APRIL - 1944

Day	Natural Flow of St.Mary R. at Boundary	Canada's Share Available	St.Mary R. at Kimball Delivered	Diverted by Canada Used	Excess or Deficit of Share Delivered	
1	158	118	140	--	22	--
2	182	136	155	--	19	--
3	211	158	166	--	8	--
4	210	158	178	--	20	--
5	188	141	152	--	11	--
6	175	131	130	28	--	1
7	229	172	138	84	--	34
8	227	170	123	89	--	47
9	218	164	120	82	--	44
10	209	157	117	86	--	40
11	200	150	120	100	--	30
12	201	151	123	112	--	28
13	197	148	128	117	--	20
14	234	176	125	112	--	51
15	241	181	128	113	--	53
16	223	167	128	113	--	39
17	214	160	128	115	--	32
18	220	165	138	122	--	27
19	155	116	155	134	39	--
20	181	136	166	143	30	--
21	216	162	174	151	12	--
22	181	136	182	158	46	--
23	249	187	82	78	--	105
24	107	80	68	59	--	12
25	107	80	160	131	80	--
26	116	87	138	125	51	--
27	118	88	194	165	106	--
28	165	124	155	138	31	--
29	257	193	197	162	4	--
30	315	236	244	208	8	--
Total sec-ft.	5904	4428	4352	2925	487	563
Mean	197	148	145(6-30)	117	16	19
Ac-ft	11710	8780	8630	5800	970	1120

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR

MAY - 1944

Day	Inflow to Sherburne Reservoir: Recorded Inflow: Swiftcurrent Creek	Un-recorded Inflow Est'd	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec-ft. Gross	Released from Reservoir Sec-ft.
1	224	79	303	565	--	262
2	197	30	227	601	--	374
3	166	50	216	616	--	400
4	152	80	232	619	--	387
5	191	41	232	604	--	372
6	246	30	276	559	--	283
7	246	30	276	486	--	210
8	218	30	248	413	--	165
9	209	30	239	373	--	134
10	206	50	256	312	--	56
11	177	57	234	267	--	33
12	171	47	218	245	--	27
13	203	68	271	242	29	--
14	295	52	347	274	73	--
15	354	82	436	347	89	--
16	437	170	607	430	177	--
17	498	192	690	358	332	--
18	467	253	720	182	538	--
19	460	154	614	1	613	--
20	452	118	570	0	570	--
21	422	121	543	0	543	--
22	354	104	458	0	458	--
23	269	102	371	139	232	--
24	218	106	324	253	71	--
25	186	71	257	253	4	--
26	180	54	234	253	--	19
27	212	86	298	339	--	41
28	305	71	376	388	--	12
29	430	120	550	145	405	--
30	445	86	531	0	531	--
31	456	179	635	0	635	--
Total sec-ft.	9046	2743	11789	9264	5300	2775
Mean	292	88	380	299	171	90
Ac-ft.	17940	5440	23380	18380	10510	5510

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER

MAY - 1944

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec-ft.	Stored Water Released	Natural Flow St.Mary River
1	284	508	--	792	366	426
2	321	517	--	838	293	545
3	374	525	--	899	262	637
4	410	532	--	942	374	568
5	454	525	--	979	400	579
6	490	527	--	1017	387	630
7	512	529	--	1041	372	669
8	501	529	--	1030	283	747
9	535	514	--	1049	210	839
10	558	443	--	1001	165	836
11	570	382	--	952	134	818
12	564	357	--	921	56	865
13	636	278	--	914	33	881
14	667	275	--	942	27	915
15	721	292	29	1042	--	1042
16	796	374	73	1243	--	1243
17	967	457	89	1513	--	1513
18	1120	534	177	1831	--	1831
19	1260	542	332	2134	--	2134
20	1270	544	538	2352	--	2352
21	1260	546	613	2419	--	2419
22	1180	548	570	2298	--	2298
23	1100	544	543	2187	--	2187
24	1040	548	458	2046	--	2046
25	967	542	232	1741	--	1741
26	854	538	71	1463	--	1463
27	811	532	4	1347	--	1347
28	811	534	--	1345	19	1326
29	872	532	--	1404	41	1363
30	846	527	--	1373	12	1361
31	908	531	405	1844	--	1844
Total sec-ft.	23659	15106	4134	42899	3434	39465
Mean	763	487	133	1384	111	1273
Ac-ft.	46930	29960	8200	85090	6810	78280

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.

MAY - 1944

Day	Natural Flow St. Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage Net	Total Available	USED BY U.S.A. Diverted	Stored Gross	Total Used	Excess of Share	Deficit Used
1	426	106	366	472	508	--	508	36	--
2	545	136	293	429	517	--	517	88	--
3	637	159	262	421	525	--	525	104	--
4	568	142	374	516	532	--	532	16	--
5	579	145	400	545	525	--	525	--	20
6	630	158	387	545	527	--	527	--	18
7	669	168	372	540	529	--	529	--	11
8	747	207	283	490	529	--	529	39	--
9	839	253	210	463	514	--	514	51	--
10	836	251	165	416	443	--	443	27	--
11	818	242	134	376	382	--	382	6	--
12	865	266	56	322	357	--	357	35	--
13	881	274	33	307	278	--	278	--	29
14	915	291	27	318	275	--	275	--	43
15	1042	354	--	354	292	29	321	--	33
16	1243	455	--	455	374	73	447	--	8
17	1513	590	--	590	457	89	546	--	44
18	1831	749	--	749	534	177	711	--	38
19	2134	900	--	900	542	332	874	--	26
20	2352	1009	--	1009	544	538	1082	73	--
21	2419	1043	--	1043	546	613	1159	116	--
22	2298	982	--	982	548	570	1118	136	--
23	2187	927	--	927	544	543	1087	160	--
24	2046	856	--	856	548	458	1006	150	--
25	1741	704	--	704	542	232	774	70	--
26	1463	565	--	565	538	71	609	44	--
27	1347	507	--	507	532	4	536	29	--
28	1326	496	19	515	534	--	534	19	--
29	1363	515	41	556	532	--	532	--	24
30	1361	514	12	526	527	--	527	1	--
31	1844	755	--	755	531	405	936	181	--
Total sec-ft.	39465	14719	3434	18153	15106	4134	19240	1381	294
Mean	1273	475	111	586	487	133	620	45	9
Ac-ft.	78280	29190	6810	36000	29960	8200	38160	2740	580

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA

MAY - 1944

Day	Natural Flow of St.Mary R. at Boundary	Canada's Share Available	St.Mary R. at Kimball Delivered	Diverted by Canada Used	Excess or Deficit of Share Delivered	
1	426	320	284	250	--	36
2	545	409	321	288	--	88
3	637	478	374	338	--	104
4	568	426	410	378	--	16
5	579	434	454	417	20	--
6	630	472	490	449	18	--
7	669	501	512	473	11	--
8	747	540	501	469	--	39
9	839	586	535	486	--	51
10	836	585	558	518	--	27
11	818	576	570	534	--	6
12	865	599	564	520	--	35
13	881	607	636	593	29	--
14	915	624	667	617	43	--
15	1042	688	721	694	33	--
16	1243	788	796	734	8	--
17	1513	923	967	801	44	--
18	1831	1082	1120	810	38	--
19	2134	1234	1260	810	26	--
20	2352	1343	1270	801	--	73
21	2419	1376	1260	796	--	116
22	2298	1316	1180	796	--	136
23	2187	1260	1100	799	--	160
24	2046	1190	1040	793	--	150
25	1741	1037	967	793	--	70
26	1463	898	854	799	--	44
27	1347	840	811	766	--	29
28	1326	830	811	766	--	19
29	1363	848	872	815	24	--
30	1361	847	846	785	--	1
31	1844	1089	908	818	--	181
Total sec-ft.	39465	24746	23659	19706	294	1381
Mean	1273	798	763	636	9	45
Ac-ft.	78280	49080	46930	39090	580	2740

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR

JUNE - 1944

Day	Inflow to Sherburne Reservoir: Recorded Inflow: Swiftcurrent Creek	Un-recorded Inflow Est'd	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec-ft. Gross	Released from Reservoir Sec-ft. Net
1	445	80	525	0	525	--
2	393	66	459	0	459	--
3	332	96	428	0	428	--
4	278	111	389	0	389	--
5	236	100	336	180	156	--
6	212	59	271	333	--	62
7	218	87	305	245	60	--
8	312	97	409	213	196	--
9	400	114	514	102	412	--
10	360	64	424	103	321	--
11	302	80	382	106	276	--
12	312	89	401	152	249	--
13	295	85	380	217	163	--
14	252	55	307	219	88	--
15	224	57	281	219	62	--
16	206	75	281	169	112	--
17	203	97	300	47	253	--
18	203	96	299	0	299	--
19	200	76	276	0	276	--
20	200	63	263	0	263	--
21	215	86	301	0	301	--
22	194	68	262	0	262	--
23	180	21	201	0	201	--
24	183	125	308	0	308	--
25	188	51	239	0	239	--
26	188	77	265	0	265	--
27	221	152	373	0	373	--
28	246	38	284	0	284	--
29	240	161	401	0	401	--
30	230	79	309	0	309	--
Total sec-ft.	7668	2505	10173	2305	7930	62
Mean	256	83	339	77	264	2
Ac-ft.	15210	4970	20180	4570	15730	120

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER

JUNE - 1944

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec-ft.	Stored Water Released	Natural Flow St.Mary River
1	977	534	531	2042	--	2042
2	997	536	635	2168	--	2168
3	967	534	525	2026	--	2026
4	918	534	459	1911	--	1911
5	863	532	428	1823	--	1823
6	881	534	389	1804	--	1804
7	918	538	156	1612	--	1612
8	957	536	--	1493	62	1431
9	977	536	60	1573	--	1573
10	957	534	196	1687	--	1687
11	938	536	412	1886	--	1886
12	898	534	321	1753	--	1753
13	938	532	276	1746	--	1746
14	957	534	249	1740	--	1740
15	898	532	163	1593	--	1593
16	886	532	88	1506	--	1506
17	875	531	62	1468	--	1468
18	863	525	112	1500	--	1500
19	828	493	253	1574	--	1574
20	863	400	299	1562	--	1562
21	820	392	276	1488	--	1488
22	796	348	263	1407	--	1407
23	735	345	301	1381	--	1381
24	708	330	262	1300	--	1300
25	750	246	201	1197	--	1197
26	1040	66	308	1414	--	1414
27	1220	37	239	1496	--	1496
28	1040	295	265	1600	--	1600
29	997	354	373	1724	--	1724
30	957	354	284	1595	--	1595
Total sec-ft.	27419	13264	8386	49069	62	49007
Mean	914	442	280	1636	2	1634
Ac-ft.	54380	26310	16630	97320	120	97200

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.

JUNE - 1944

Day	Natural Flow St. Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage Net	Total Available	USED BY U.S.A. Diverted	Stored Gross	Total Used	Excess of Share	Deficit Used
1	2042	854	--	854	534	531	1065	211	--
2	2168	917	--	917	536	635	1171	254	--
3	2026	846	--	846	534	525	1059	213	--
4	1911	789	--	789	534	459	993	204	--
5	1823	745	--	745	532	428	960	215	--
6	1804	735	--	735	534	389	923	188	--
7	1612	639	--	639	538	156	694	55	--
8	1431	549	62	611	536	--	536	--	75
9	1573	620	--	620	536	60	596	--	24
10	1687	677	--	677	534	196	730	53	--
11	1886	776	--	776	536	412	948	172	--
12	1753	710	--	710	534	321	855	145	--
13	1746	706	--	706	532	276	808	102	--
14	1740	703	--	703	534	249	783	80	--
15	1593	630	--	630	532	163	695	65	--
16	1506	586	--	586	532	88	620	34	--
17	1468	567	--	567	531	62	593	26	--
18	1500	583	--	583	525	112	637	54	--
19	1574	620	--	620	493	253	746	126	--
20	1562	614	--	614	400	299	699	85	--
21	1488	577	--	577	392	276	668	91	--
22	1407	537	--	537	348	263	611	74	--
23	1381	524	--	524	345	301	646	122	--
24	1300	483	--	483	330	262	592	109	--
25	1197	432	--	432	246	201	447	15	--
26	1414	540	--	540	66	308	374	--	166
27	1496	581	--	581	37	239	276	--	305
28	1600	633	--	633	295	265	560	--	73
29	1724	695	--	695	354	373	727	32	--
30	1595	631	--	631	354	284	638	7	--
Total sec-ft.	49007	19499	62	19561	13264	8386	21650	2732	643
Mean	1634	650	2	650	422	280	722	91	21
Ac-ft.	97200	38680	120	38800	26310	16630	42940	5420	1280

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA

JUNE - 1944

Day	Natural Flow of St.Mary R. at Boundary	Canada's Share Available	St.Mary R. at Kimball Delivered	Diverted by Canada Used	Excess or Deficit of Share Delivered	
1	2042	1188	977	824	--	211
2	2168	1251	997	826	--	254
3	2026	1180	967	812	--	213
4	1911	1122	918	804	--	204
5	1823	1078	863	793	--	215
6	1804	1069	881	812	--	188
7	1612	973	918	821	--	55
8	1431	882	957	818	75	--
9	1573	953	977	818	24	--
10	1687	1010	957	824	--	53
11	1886	1110	948	818	--	172
12	1753	1043	898	810	--	145
13	1746	1040	938	734	--	102
14	1740	1037	957	761	--	80
15	1593	963	898	832	--	65
16	1506	920	886	826	--	34
17	1468	901	875	812	--	26
18	1500	917	863	782	--	54
19	1574	954	828	740	--	126
20	1562	948	863	780	--	85
21	1488	911	820	737	--	91
22	1407	870	796	732	--	74
23	1381	857	735	696	--	122
24	1300	817	708	667	--	109
25	1197	765	750	716	--	15
26	1414	874	1040	818	166	--
27	1496	915	1220	810	305	--
28	1600	967	1040	810	73	--
29	1724	1029	997	815	--	32
30	1595	964	957	879	--	7
Total sec-ft.	49007	29508	27419	23727	643	2732
Mean	1634	984	914	791	21	91
Ac-ft.	97200	58530	54380	47060	1280	5420

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR

JULY - 1944

Day	Inflow to Sherburne Reservoir: Recorded Inflow: Swiftcurrent Creek	Un-recorded Inflow Est'd	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec-ft. Gross	Released from Reservoir Sec-ft. Net
1	224	94	381	0	318	--
2	206	62	268	0	268	--
3	168	60	228	0	228	--
4	144	32	176	0	176	--
5	134	114	248	175	73	--
6	134	50	184	190	--	6
7	132	30	162	1	161	--
8	116	45	161	1	160	--
9	105	29	134	1	133	--
10	102	67	169	1	168	--
11	98	68	166	72	94	--
12	102	30	132	523	--	391
13	102	44	146	580	--	434
14	98	5	103	595	--	492
15	94	30	124	607	--	483
16	94	44	138	601	--	463
17	96	25	121	601	--	480
18	100	45	145	613	--	468
19	102	51	153	622	--	469
20	105	14	119	607	--	488
21	107	18	125	598	--	473
22	107	20	127	589	--	462
23	105	35	140	601	--	461
24	98	12	110	601	--	491
25	98	30	128	601	--	473
26	96	41	137	604	--	467
27	94	24	118	604	--	486
28	94	12	106	622	--	516
29	92	10	102	628	--	526
30	92	33	125	619	--	494
31	90	48	138	610	--	472
Total sec-ft.	3529	1222	4751	12467	1779	9495
Mean	114	39	153	402	57	306
Ac-ft.	7000	2420	9420	24730	3530	18840

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER

JULY - 1944

Day	St. Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec-ft.	Stored Water Released	Natural Flow St. Mary River
1	898	352	401	1651	--	1651
2	854	351	309	1514	--	1514
3	803	332	318	1453	--	1453
4	781	281	268	1330	--	1330
5	735	274	228	1237	--	1237
6	803	238	176	1217	--	1217
7	758	237	73	1068	--	1068
8	681	219	--	900	6	894
9	687	142	161	990	--	990
10	636	138	160	934	--	934
11	593	130	133	856	--	856
12	667	88	168	923	--	923
13	630	254	94	978	--	978
14	599	390	--	989	391	598
15	576	472	--	1048	434	614
16	518	546	--	1064	492	572
17	529	546	--	1075	483	592
18	512	563	--	1075	463	612
19	474	574	--	1048	480	568
20	480	584	--	1064	468	596
21	454	593	--	1047	469	578
22	443	597	--	1040	488	552
23	429	597	--	1026	473	553
24	429	599	--	1028	462	566
25	433	597	--	1030	461	569
26	424	595	--	1019	491	528
27	419	595	--	1014	473	541
28	405	595	--	1000	467	533
29	410	595	--	1005	486	519
30	400	593	--	993	516	477
31	400	593	--	993	526	467
Total sec-ft.	17860	13260	2489	33609	8529	25080
Mean	576	428	80	1084	275	809
Ac-ft.	35420	26300	4940	66660	16920	49740

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.

JULY - 1944

Day	Natural Flow St. Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage Net	Total Available	USED BY U.S.A. Diverted	Stored Gross	Total Used	Excess of Share	Deficit Used
1	1651	659	--	659	352	401	753	94	--
2	1514	590	--	590	351	309	660	70	--
3	1453	560	--	560	332	318	650	90	--
4	1330	498	--	498	281	268	549	51	--
5	1237	452	--	452	274	228	502	50	--
6	1217	442	--	442	238	176	414	--	28
7	1068	367	--	367	237	73	310	--	57
8	894	280	6	286	219	--	219	--	67
9	990	328	--	328	142	161	303	--	25
10	934	300	--	300	138	160	298	--	2
11	856	261	--	261	130	133	263	2	--
12	923	295	--	295	88	168	256	--	39
13	978	322	--	322	254	94	348	26	--
14	598	150	391	541	390	--	390	--	151
15	614	154	434	588	472	--	472	--	116
16	572	143	492	635	546	--	546	--	89
17	592	148	483	631	546	--	546	--	85
18	612	153	463	616	563	--	563	--	53
19	568	142	480	622	574	--	574	--	48
20	596	149	468	617	584	--	584	--	33
21	578	144	469	613	593	--	593	--	20
22	552	138	488	626	597	--	597	--	29
23	553	138	473	611	597	--	597	--	14
24	566	142	462	604	599	--	599	--	5
25	569	142	461	603	597	--	597	--	6
26	528	132	491	623	595	--	595	--	28
27	541	135	473	608	595	--	595	--	13
28	533	133	467	600	595	--	595	--	5
29	519	130	486	616	595	--	595	--	21
30	477	119	516	635	593	--	593	--	42
31	467	117	526	643	593	--	593	--	50
Total sec-ft	25080	7863	8529	16392	13260	2489	15749	383	1026
Mean	809	254	275	529	428	80	508	12	33
Ac-ft.	49740	15600	16920	32520	26300	4940	31240	760	2040

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA

JULY - 1944

Day	Natural Flow of St. Mary R. at Boundary	Canada's Share Available	St. Mary R. at Kimball Delivered	Diverted by Canada Used	Excess of Share Delivered	Deficit of Share Delivered
1	1651	992	898	856	--	94
2	1514	924	854	812	--	70
3	1453	893	803	753	--	90
4	1330	832	781	740	--	51
5	1237	785	735	684	--	50
6	1217	775	803	755	28	--
7	1068	701	758	714	57	--
8	894	614	681	638	67	--
9	990	662	687	648	25	--
10	934	634	636	600	2	--
11	856	595	593	569	--	2
12	923	628	667	615	39	--
13	978	656	630	593	--	26
14	598	448	599	558	151	--
15	614	460	576	534	116	--
16	572	429	518	477	89	--
17	592	444	529	492	85	--
18	612	459	512	469	53	--
19	568	426	474	453	48	--
20	596	447	480	453	33	--
21	578	434	454	433	20	--
22	552	414	443	419	29	--
23	553	415	429	411	14	--
24	566	424	429	409	5	--
25	569	427	433	411	6	--
26	528	396	424	400	28	--
27	541	406	419	394	13	--
28	533	400	405	387	5	--
29	519	389	410	389	21	--
30	477	358	400	378	42	--
31	467	350	400	376	50	--
Total sec-ft.	25080	17217	17860	16820	1026	383
Mean	809	555	576	543	33	12
Ac-ft.	49740	34140	35420	33360	2040	760

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR

AUGUST - 1944

Day	Inflow to Sherburne Reservoir: Recorded Inflow: Swiftcurrent Creek	Un-recorded Inflow Est'd	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec-ft. Gross	Released from Reservoir Sec-ft. Net
1	90	41	131	598	--	467
2	86	17	103	619	--	516
3	78	19	97	619	--	522
4	74	20	94	619	--	525
5	72	20	92	634	--	542
6	74	30	104	625	--	521
7	74	30	104	625	--	521
8	74	30	104	544	--	440
9	76	30	106	441	--	335
10	76	20	96	327	--	231
11	96	20	116	253	--	137
12	92	20	112	240	--	128
13	116	23	139	211	--	72
14	149	30	179	242	--	63
15	152	73	225	258	--	33
16	188	86	274	253	21	--
17	171	76	247	262	--	15
18	149	68	217	249	--	32
19	127	70	197	225	--	28
20	109	38	147	195	--	48
21	94	40	134	171	--	37
22	88	38	126	155	--	29
23	82	30	112	140	--	28
24	78	28	106	135	--	29
25	80	2	82	130	--	48
26	74	11	85	121	--	36
27	68	13	81	109	--	28
28	70	15	85	103	--	18
29	74	30	104	106	--	2
30	72	27	99	103	--	4
31	68	24	92	100	--	8
Total sec-ft.	2971	1019	3990	9412	21	5443
Mean	96	33	129	304	1	176
Ac-ft.	5890	2020	7910	18670	42	10800

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER

AUGUST - 1944

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec-ft.	Stored Water Released	Natural Flow St.Mary River
1	405	595	--	1000	494	506
2	400	593	--	993	472	521
3	391	593	--	984	467	517
4	382	593	--	975	516	459
5	374	591	--	965	522	443
6	370	591	--	961	525	436
7	357	591	--	948	542	406
8	785	200	--	985	521	464
9	450	430	--	880	521	359
10	318	502	--	820	440	380
11	382	351	--	733	335	398
12	340	326	--	666	231	435
13	382	277	--	659	137	522
14	424	278	--	702	128	574
15	429	277	--	706	72	634
16	433	277	--	710	63	647
17	459	278	--	737	33	704
18	485	271	21	777	--	777
19	529	226	--	755	15	740
20	512	224	--	736	32	704
21	480	221	--	701	28	673
22	448	220	--	668	48	620
23	419	220	--	639	37	602
24	396	212	--	608	29	579
25	419	175	--	594	28	566
26	391	172	--	563	29	534
27	361	168	--	529	48	481
28	387	131	--	518	36	482
29	387	126	--	513	28	485
30	374	125	--	499	18	481
31	365	124	--	489	2	487
Total sec-ft.	13034	9958	21	23013	6397	16616
Mean	420	321	1	742	206	536
Ac-ft.	25850	19750	40	45640	12680	32960

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.

AUGUST - 1944

Day	Natural Flow St. Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage Net	Total Available	USED BY U.S.A. Diverted	Stored Gross	Total Used	Excess of Share	Deficit Used
1	506	126	494	620	595	--	595	--	25
2	521	130	472	602	593	--	593	--	9
3	517	129	467	596	593	--	593	--	3
4	459	115	516	631	593	--	593	--	38
5	443	111	522	633	591	--	591	--	42
6	436	109	525	634	591	--	591	--	43
7	406	102	542	644	591	--	591	--	53
8	464	116	521	637	200	--	200	--	437
9	359	90	521	611	430	--	430	--	181
10	380	95	440	535	502	--	502	--	33
11	398	100	335	435	351	--	351	--	84
12	435	109	231	340	326	--	326	--	14
13	522	130	137	267	277	--	277	10	--
14	574	144	128	272	278	--	278	6	--
15	634	158	72	230	277	--	277	47	--
16	647	162	63	225	277	--	277	52	--
17	704	185	33	218	278	--	278	60	--
18	777	222	--	222	271	21	292	70	--
19	740	203	15	218	226	--	226	8	--
20	704	185	32	217	224	--	224	7	--
21	673	170	28	198	221	--	221	23	--
22	620	155	48	203	220	--	220	17	--
23	602	150	37	187	220	--	220	33	--
24	579	145	29	174	212	--	212	38	--
25	566	142	28	170	175	--	175	5	--
26	534	134	29	163	172	--	172	9	--
27	481	120	48	168	168	--	168	--	--
28	482	120	36	156	131	--	131	--	25
29	485	121	28	149	126	--	126	--	23
30	481	120	18	138	125	--	125	--	13
31	487	122	2	124	124	--	124	--	--
Total sec-ft.	16616	4220	6397	10617	9958	21	9979	385	1023
Mean	536	136	206	342	321	1	322	13	33
Ac-ft.	32960	8370	12680	21050	19750	40	19790	760	2050

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA

AUGUST - 1944

Day	Natural Flow of St.Mary R. at Boundary	Canada's Share Available	St.Mary R. at Kimball Delivered	Diverted by Canada Used	Excess of Share	Deficit Delivered
1	506	380	405	380	25	--
2	521	391	400	371	9	--
3	517	388	391	362	3	--
4	459	344	382	356	38	--
5	443	332	374	348	42	--
6	436	327	370	341	43	--
7	406	304	357	332	53	--
8	464	348	785	715	437	--
9	359	269	450	460	181	--
10	380	285	318	297	33	--
11	398	298	382	353	84	--
12	435	326	340	322	14	--
13	522	392	382	351	--	10
14	574	430	424	390	--	6
15	634	476	429	407	--	47
16	647	485	433	411	--	52
17	704	519	459	441	--	60
18	777	555	485	457	--	70
19	740	537	529	509	--	8
20	704	519	512	494	--	7
21	673	503	480	467	--	23
22	620	465	448	433	--	17
23	602	452	419	404	--	33
24	579	434	396	362	--	38
25	566	424	419	380	--	5
26	534	400	391	358	--	9
27	481	361	361	331	--	--
28	482	362	387	358	25	--
29	485	364	387	362	23	--
30	481	361	374	346	13	--
31	487	365	365	331	--	--
Total sec-ft.	16616	12396	13034	12229	1023	385
Mean	536	400	420	394	33	13
Ac-ft.	32960	24590	25850	24260	2030	760

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR

SEPTEMBER - 1944

Day	Inflow to Sherburne Reservoir: Recorded Inflow: Swiftcurrent Creek	Un-recorded Inflow Est'd	Total Inflow	Outflow Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec-ft. Gross	Released from Reservoir Sec-ft. Net
1	68	33	101	100	1	--
2	78	25	103	102	1	--
3	82	19	101	100	1	--
4	78	20	98	97	1	--
5	74	24	98	97	1	--
6	72	6	78	96	--	18
7	67	13	80	93	--	13
8	63	27	90	89	1	--
9	61	3	64	85	--	21
10	59	22	81	83	--	2
11	56	22	78	80	--	2
12	57	30	87	31	56	--
13	56	135	191	1	190	--
14	54	106	160	1	159	--
15	54	30	84	1	83	--
16	65	24	89	1	88	--
17	74	53	127	1	126	--
18	68	35	103	1	102	--
19	67	14	81	1	80	--
20	70	17	87	1	86	--
21	78	47	125	1	124	--
22	94	42	136	0	136	--
23	113	51	164	0	164	--
24	125	45	170	0	170	--
25	125	20	145	0	145	--
26	113	21	134	0	134	--
27	102	24	126	0	126	--
28	88	22	110	0	110	--
29	82	9	91	0	91	--
30	82	49	131	0	131	--
Total sec-ft.	2325	988	3313	1062	2307	56
Mean	77	33	110	35	77	2
Ac-ft.	4610	1960	6570	2110	4570	110

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER

SEPTEMBER - 1944

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec-ft.	Stored Water Released	Natural Flow St.Mary River
1	361	124	--	485	4	481
2	365	125	--	490	8	482
3	352	124	1	477	--	477
4	337	124	1	462	--	462
5	325	123	1	449	--	449
6	321	124	1	446	--	446
7	321	117	1	439	--	439
8	337	92	--	429	18	411
9	325	92	--	417	13	404
10	318	92	1	411	--	411
11	314	91	--	405	21	384
12	300	88	--	388	2	386
13	307	68	--	375	2	373
14	300	59	56	415	--	415
15	304	26	190	520	--	520
16	297	9	159	465	--	465
17	300	--	83	383	--	383
18	278	--	88	366	--	366
19	278	--	126	404	--	404
20	269	--	102	371	--	371
21	256	--	80	336	--	336
22	262	--	86	348	--	348
23	269	--	124	393	--	393
24	275	--	136	411	--	411
25	284	--	164	448	--	448
26	297	--	170	467	--	467
27	310	--	145	455	--	455
28	318	--	134	452	--	452
29	325	--	126	451	--	451
30	333	--	110	443	--	443
Total sec-ft.	9238	1478	2085	12801	68	12733
Mean	308(1-16)	92	70	427	2	424
Ac-ft.	18320	2930	4140	25390	130	25260

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.

SEPTEMBER - 1944

Day	Natural Flow St. Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Release Storage Net	Total Available	USED BY U.S.A. Diverted	Stored Gross	Total Used	Excess of Share	Deficit Used
1	481	120	4	124	124	--	124	--	--
2	482	120	8	128	125	--	125	--	3
3	477	119	--	119	124	1	125	6	--
4	462	116	--	116	124	1	125	9	--
5	449	112	--	112	123	1	124	12	--
6	446	112	--	112	124	1	125	13	--
7	439	110	--	110	117	1	118	8	--
8	411	103	18	121	92	--	92	--	29
9	404	101	13	114	92	--	92	--	22
10	411	103	--	103	92	1	93	--	10
11	384	96	21	117	91	--	91	--	26
12	386	96	2	98	88	--	88	--	10
13	373	93	2	95	68	--	68	--	27
14	415	104	--	104	59	56	115	11	--
15	520	130	--	130	26	190	216	86	--
16	465	116	--	116	9	159	168	52	--
17	383	96	--	96	--	83	83	--	13
18	366	92	--	92	--	88	88	--	4
19	404	101	--	101	--	126	126	25	--
20	371	93	--	93	--	102	102	9	--
21	336	84	--	84	--	80	80	--	4
22	348	87	--	87	--	86	86	--	1
23	393	98	--	98	--	124	124	26	--
24	411	103	--	103	--	136	136	33	--
25	448	112	--	112	--	164	164	52	--
26	467	117	--	117	--	170	170	53	--
27	455	114	--	114	--	145	145	31	--
28	452	113	--	113	--	134	134	21	--
29	451	113	--	113	--	126	126	13	--
30	443	111	--	111	--	110	110	--	1
Total sec-ft.	12733	3185	68	3253	1478	2085	3563	460	150
Mean	424	106	2	108	(1-16)92	70	119	16	5
Ac-ft.	25260	6320	130	6450	2930	4140	7070	910	290

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA

SEPTEMBER - 1944

Day	Natural Flow of St. Mary R. at Boundary	Canada's Share Available	St. Mary R. at Kimball Delivered	Diverted by Canada Used	Excess of Share Delivered	Deficit of Share Delivered
1	481	361	361	329	--	--
2	482	362	365	338	3	--
3	477	358	352	324	--	6
4	462	346	337	309	--	9
5	449	337	325	301	--	12
6	446	334	321	297	--	13
7	439	329	321	293	--	8
8	411	308	337	316	29	--
9	404	303	325	302	22	--
10	411	308	318	294	10	--
11	384	288	314	289	26	--
12	386	290	300	273	10	--
13	373	280	307	283	27	--
14	415	311	300	270	--	11
15	520	390	304	280	--	86
16	465	349	297	270	--	52
17	383	287	300	275	13	--
18	366	274	278	250	4	--
19	404	303	278	246	--	25
20	371	278	269	234	--	9
21	336	252	256	222	4	--
22	348	261	262	224	1	--
23	393	295	269	229	--	26
24	411	308	275	236	--	33
25	448	336	284	244	--	52
26	467	350	297	259	--	53
27	455	341	310	277	--	31
28	452	339	318	289	--	21
29	451	338	325	294	--	13
30	443	332	333	302	1	--
Total sec-ft.	12733	9548	9238	8349	150	460
Mean	424	318	308	278	5	16
Ac-ft.	25260	18940	18320	16560	290	910

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR

OCTOBER - 1944

Day	Inflow to Sherburne Reservoir: Recorded Inflow: Swiftcurrent Creek	Un-recorded Inflow Est'd	Total Inflow	Outflow: Swiftcurrent Creek at Sherburne	Stored in Reservoir Sec-ft. Gross	Released from Reservoir Sec-ft. Net
1	72	48	120	0	120	--
2	65	14	79	0	79	--
3	63	71	134	0	134	--
4	56	30	86	0	86	--
5	76	24	100	0	100	--
6	84	4	88	0	88	--
7	82	49	131	0	131	--
8	82	25	107	0	107	--
9	78	25	103	0	103	--
10	76	26	102	0	102	--
11	74	24	98	0	98	--
12	70	22	92	0	92	--
13	67	20	87	0	87	--
14	63	35	98	0	98	--
15	59	8	67	0	67	--
16	56	8	64	0	64	--
17	54	20	74	0	74	--
18	49	20	69	0	69	--
19	45	20	65	0	65	--
20	45	18	63	0	63	--
21	44	33	77	0	77	--
22	39	3	42	0	42	--
23	49	21	70	0	70	--
24	56	10	66	0	66	--
25	57	10	67	0	67	--
26	57	10	67	0	67	--
27	54	21	75	0	75	--
28	50	16	66	0	66	--
29	47	10	57	0	57	--
30	42	10	52	0	52	--
31	39	10	49	0	49	--
Total sec-ft.	1850	665	2515	0	2515	--
Mean	60	21	81	0	81	--
Ac-ft.	3670	1320	4990	0	4990	--

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER

OCTOBER - 1944

Day	St.Mary River at Kimball	Diverted by U.S.B.R.	Stored by U.S.B.R.	Total in Sec-ft.	Stored Water Released	Natural Flow St.Mary River
1	337	--	91	428	--	428
2	344	--	131	475	--	475
3	348	--	120	468	--	468
4	348	--	79	427	--	427
5	325	--	134	459	--	459
6	321	--	86	407	--	407
7	321	--	100	421	--	421
8	321	--	88	409	--	409
9	304	--	131	435	--	435
10	314	--	107	421	--	421
11	318	--	103	421	--	421
12	314	--	102	416	--	416
13	310	--	98	408	--	408
14	307	--	92	399	--	399
15	307	--	87	394	--	394
16	304	--	98	402	--	402
17	294	--	67	361	--	361
18	288	--	64	352	--	352
19	284	--	74	358	--	358
20	272	--	69	341	--	341
21	269	--	65	334	--	334
22	262	--	63	325	--	325
23	256	--	77	333	--	333
24	253	--	42	295	--	295
25	247	--	70	317	--	317
26	241	--	66	307	--	307
27	235	--	67	302	--	302
28	232	--	67	299	--	299
29	226	--	75	301	--	301
30	223	--	66	289	--	289
31	220	--	57	277	--	277
Total sec-ft.	8945	--	2636	11581	--	11581
Mean	289	--	85	374	--	374
Ac-ft.	17740	--	5230	22970	--	22970

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.

OCTOBER - 1944

Day	Natural Flow St. Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Release Storage Net	Total Available	USED BY U.S.A. Diverted	Stored Gross	Total Used	Excess of Share	Deficit Used
1	428	107	--	107	--	91	91	--	16
2	475	119	--	119	--	131	131	12	--
3	468	117	--	117	--	120	120	3	--
4	427	107	--	107	--	79	79	--	28
5	459	115	--	115	--	134	134	19	--
6	407	102	--	102	--	86	86	--	16
7	421	105	--	105	--	100	100	--	5
8	409	102	--	102	--	88	88	--	14
9	435	109	--	109	--	131	131	22	--
10	421	105	--	105	--	107	107	2	--
11	421	105	--	105	--	103	103	--	2
12	416	104	--	104	--	102	102	--	2
13	408	102	--	102	--	98	98	--	4
14	399	100	--	100	--	92	92	--	8
15	394	98	--	98	--	87	87	--	11
16	402	100	--	100	--	98	98	--	2
17	361	90	--	90	--	67	67	--	23
18	352	88	--	88	--	64	64	--	24
19	358	90	--	90	--	74	74	--	16
20	341	85	--	85	--	69	69	--	16
21	334	84	--	84	--	65	65	--	19
22	325	81	--	81	--	63	63	--	18
23	333	83	--	83	--	77	77	--	6
24	295	74	--	74	--	42	42	--	32
25	317	79	--	79	--	70	70	--	9
26	307	77	--	77	--	66	66	--	11
27	302	76	--	76	--	67	67	--	9
28	299	75	--	75	--	67	67	--	8
29	301	75	--	75	--	75	75	--	--
30	289	72	--	72	--	66	66	--	6
31	277	69	--	69	--	57	57	--	12
Total sec-ft.	11581	2895	--	2895	--	2636	2636	58	317
Mean	374	93	--	93	--	85	85	2	10
Ac-ft.	22970	5740	--	5740	--	5230	5230	120	630

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA

OCTOBER - 1944

Day	Natural Flow of St.Mary R. at Boundary	Canada's Share Available	St.Mary R. at Kimball Delivered	Diverted by Canada Used	Excess of Share Delivered	Deficit of Share Delivered
1	428	321	337	312	16	--
2	475	356	344	310	--	12
3	468	351	348	185	--	3
4	427	320	348	114	28	--
5	459	344	325	291	--	19
6	407	305	321	296	16	--
7	421	316	321	291	5	--
8	409	307	321	293	14	--
9	435	326	304	278	--	22
10	421	316	314	280	--	2
11	421	316	318	288	2	--
12	416	312	314	288	2	--
13	408	306	310	283	4	--
14	399	299	307	280	8	--
15	394	296	307	275	11	--
16	402	302	304	272	2	--
17	361	271	294	262	23	--
18	352	264	288	250	24	--
19	358	268	284	247	16	--
20	341	256	272	235	16	--
21	334	250	269	224	19	--
22	325	244	262	218	18	--
23	333	250	256	116	6	--
24	295	221	253	--	32	--
25	317	238	247	--	9	--
26	307	230	241	--	11	--
27	302	226	235	--	9	--
28	299	224	232	--	8	--
29	301	226	226	--	--	--
30	289	217	223	--	6	--
31	277	208	220	89	12	--
Total sec-ft.	11581	8686	8945	5977	317	58
Mean	374	280	289	186	10	2
Ac-ft.	22970	17230	17740	11860	630	120

DIVISION OF ST. MARY RIVER
CANADA
1944

Water Available in Acre-Feet

Month	St. Mary R. at Kimball	Rolph Creek	Lee Creek	Pothole Creek	Combined Flow
April	8630	418	1920	73	11041
May	46930	301	1800	--	49031
June	54380	325	3300	--	58005
July	35420	84	1580	--	37084
August	25850	80	514	--	26444
September	18320	65	372	--	18757
October	17740	73	420[e]	--	18233
Total	207270	1346	9906	73	218595[a]

DISPOSITION

Month	Canada's Share	Diverted by Canada	Unused by Canada	Gain or loss in Canal	Wasted from Canal	Applied to Land
April	8780	5800	2980	- 11	995	4794
May	49080	39090	9990	- 2676	549	35865
June	58530	47060	11470	- 2263	6553	38244
July	34150	33360	790	- 1271	569	31520
August	24590	24260	330	- 813	127	23320
September	18940	16560	2380	- 560	71	15929
October	17230	11860	5370	- 191	164	11505
Total	211300	177990[b]	33310[c]	- 7785[d]	9028[f]	161177[g]

a - Computed. b - Diverted by A.R. & I.Co. at Kimball.
c - Difference between Canada's share and quantity diverted.
d - Gain or loss in canal between Kimball and Magrath.
e - Estimated.
f - Wasted in Pinepound and Pothole Creeks.
g - Flow in canal at Magrath plus diversions by laterals.

DIVISION OF ST. MARY RIVER
UNITED STATES
1944

Water Available in Acre-Feet

Month	St. Mary River: U. S. Share	St. Mary River: Sherburne Res. Stored	St. Mary River: Sherburne Res. Released from Storage	St. Mary River: Total Available for Diversion	Diverted	Unused	Total Flow Milk River Eastern Crossing
April	2930	2690	5310	5550	5690	+ 140	9330
May	29190	8200	6810	27800	29960	+2160	29820
June	38680	16630	120	22170	26310	+4140	30510
July	15600	4940	16920	27580	26300	-1280	21820
August	8370	40	12690	21020	19750	-1270	24130
September	6320	4140	130	2310	2930	+ 620	5350
October	5740	5230	--	510	--	- 510	896
Total	106830	41870	41980	106940	110940	+4000	121856

In storage in Sherburne Reservoir on March 31, 12,408 acre-feet;
on October 31, 11,452 acre-feet.
In storage in Fresno Reservoir on March 31, 71,803 acre-feet;
on October 31, 46,616 acre-feet.
The water "stored" in Sherburne Reservoir includes the amount lost by evaporation.

DIVERSIONS FROM MILK RIVER
UNITED STATES
1944

Quantities in Acre-Feet

Month	Fort Belknap Canal	Paradise Canal	Harlem Canal	Harlem No.2	Agency Canal	Dodson North	Dodson South	Van-dalia Canal	Total
April	3168	----	1141	----	1148	----	2003	----	7460
May	10205	2266	3071	253	2400	2809	8602	4800	34406
June	4710	1523	915	158	1723	1442	10994	972	22437
July	5803	1533	719	190	816	3402	10590	3094	26147
August	8678	2788	2156	317	1982	2969	11270	5250	35410
September	6970	3000	1045	285	1527	2136	5381	3511	23855
October	2752	----	----	---	594	688	2063	3213	9310
November	396	----	----	---	----	----	1031	397	1824
Total	42682	11110	9047	1203	10190	13446	51934	21237	160849

In storage in Nelson Reservoir on March 31, 41,759 acre-feet;
on October 31, 42,506 acre-feet.

DETERMINATION OF NATURAL FLOW OF FRENCHMAN RIVER AT THE INTERNATIONAL BOUNDARY 1944

Water used by Canada at Cypress Lake and East End
Quantities in Second-Feet

Date at Intern'l Boundary	Used at Cypress: Stored	Used at Cypress: Released	Used at East End: Stored	Used at East End: Released	Used at East End: Diverted	Used at East End: Return Flow	Total used
March							
1 - 10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11 - 20	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21 - 31	58.0	0.0	0.0	11.0	0.0	0.0	+ 47.0
April							
1 - 10	398.0	0.0	258.0	0.0	0.0	0.0	+ 656.0
11 - 20	1623.6	0.0	378.0	0.0	0.0	0.0	+2001.0
21 - 30	67.1	0.0	169.0	0.0	0.0	0.0	+ 236.1
May							
1 - 10	20.1	1.0	0.0	40.0	0.0	0.0	- 20.9
11 - 20	24.2	10.0	0.0	2.0	0.0	0.0	+ 12.2
21 - 31	27.7	13.0	0.0	193.0	69.0	28.0	- 137.3
June							
1 - 10	34.4	20.9	0.0	19.0	239.4	72.0	+ 161.9
11 - 20	0.0	34.6	296.0	0.0	185.9	60.0	+ 387.3
21 - 30	0.0	0.5	75.0	0.0	229.3	66.0	+ 237.8
July							
1 - 10	0.0	74.7	0.0	141.0	228.8	66.0	- 52.9
11 - 20	0.0	108.0	141.0	0.0	229.2	70.0	+ 192.2
21 - 31	0.0	18.6	0.0	130.0	280.2	48.0	+ 83.6
August							
1 - 10	0.0	81.6	0.0	163.0	297.3	80.0	- 27.3
11 - 20	0.0	24.2	0.0	104.0	250.2	60.0	+ 62.0
21 - 31	0.0	3.1	0.0	17.0	120.4	55.0	+ 45.3
September							
1 - 10	0.0	126.7	521.0	0.0	110.8	40.0	+ 465.1
11 - 20	0.0	97.8	0.0	107.0	66.2	16.0	- 154.6
21 - 30	0.0	33.1	0.0	334.0	57.4	20.0	- 329.7
October							
1 - 10	0.0	0.0	0.0	203.0	27.1	12.0	- 187.9
11 - 20	0.0	0.0	0.0	77.0	0.0	0.0	- 77.0
21 - 31	0.0	0.0	86.0	0.0	0.0	0.0	+ 86.0
Total sec-ft.	2253.1	647.8	1924.0	1541.0	2391.2	693.0	+3686.5
Mean	9.2	2.6	7.9	6.3	17.6	4.9	15.0
Ac-ft.	4470	1280	3820	3060	4740	1370	7310

DETERMINATION OF NATURAL FLOW OF FRENCHMAN RIVER AT THE INTERNATIONAL BOUNDARY 1944

Water used by Canada at Val Marie
Quantities in Second-Feet

Upper Val Marie			Lower Val Marie				
Stored	Released	Diverted	Stored	Released	Diverted	Return Flow	Total used
March							
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56.0	0.0	0.0	0.0	0.0	0.0	0.0	+ 56.0
240.0	0.0	0.0	669.0	0.0	0.0	0.0	+ 909.0
April							
269.0	0.0	0.0	2202.0	0.0	0.0	0.0	+2471.0
0.0	112.0	0.0	763.0	0.0	0.0	0.0	+ 651.0
162.0	0.0	0.0	142.0	0.0	0.0	0.0	+ 304.0
May							
63.0	0.0	0.0	76.0	0.0	33.6	8.0	+ 164.6
0.0	191.0	0.0	0.0	89.0	47.8	11.0	- 243.2
17.0	0.0	0.0	1.0	0.0	230.5	90.0	+ 158.5
June							
4.0	0.0	0.0	0.0	214.0	361.1	140.0	+ 11.1
0.0	5.0	0.0	0.0	43.0	163.8	60.0	+ 55.8
4.0	0.0	0.0	17.0	0.0	111.8	55.0	+ 77.8
July							
9.0	0.0	0.0	19.0	0.0	61.5	25.0	+ 64.5
0.0	7.0	0.0	0.0	142.0	237.4	85.0	+ 3.4
5.0	0.0	0.0	0.0	441.0	335.6	110.0	- 210.4
August							
0.0	109.0	0.0	0.0	138.0	261.9	200.0	- 185.1
0.0	17.0	0.0	39.0	0.0	205.3	165.0	+ 62.3
0.0	298.0	0.0	53.0	0.0	115.2	50.0	- 179.8
September							
323.0	0.0	0.0	94.0	0.0	100.2	40.0	+ 477.2
0.0	75.0	0.0	26.0	0.0	105.6	40.0	+ 16.6
85.0	0.0	0.0	83.0	0.0	144.0	60.0	+ 252.0
October							
0.0	535.0	0.0	0.0	423.0	188.4	100.0	- 869.6
0.0	68.0	0.0	0.0	224.0	96.6	85.0	- 280.4
151.0	0.0	0.0	19.0	0.0	48.8	36.0	+ 182.8
1388.0	1417.0	0.0	4203.0	1714.0	2849.1	1360.0	+3949.1
5.7	5.8	0.0	17.1	7.0	15.3	7.4	16.1
2750	2810	0.0	8340	3400	5650	2700	7830

DETERMINATION OF NATURAL FLOW OF FRENCHMAN RIVER AT THE INTERNATIONAL BOUNDARY
1944

Quantities in Second-Feet

Date at Intern'l Boundary	CANADA Used at East End	CANADA Used at Val Marie	CANADA Total Used	Frenchman River Boundary	Frenchman River Natural Flow	UNITED STATES Share	UNITED STATES Received + or -
March							
1 - 10	0.0	0.0	0.0	74.9	74.9	37.4	+ 37.5
11 - 20	0.0	+ 56.0	56.0	149.8	205.8	102.9	+ 46.9
21 - 31	+ 47.0	+ 909.0	+ 956.0	2785.0	3741.0	1870.5	+ 914.5
April							
1 - 10	+ 656.0	+2471.0	+3127.0	7920.0	11047.0	5523.5	+2396.5
11 - 20	+2001.6	+ 651.0	+2652.6	4574.9	7227.5	3613.8	+ 961.1
21 - 30	+ 236.1	+ 304.0	+ 540.1	595.3	1135.4	567.7	+ 27.6
May							
1 - 10	- 20.9	+ 164.6	+ 143.7	578.5	722.2	361.1	+ 217.4
11 - 20	+ 12.2	- 243.2	- 231.0	535.7	304.7	152.4	+ 383.3
21 - 31	- 137.3	+ 158.5	+ 21.2	281.3	302.5	151.2	+ 130.1
June							
1 - 10	+ 161.9	+ 11.1	+ 173.0	289.6	462.6	231.3	+ 58.3
11 - 20	+ 387.3	+ 55.8	+ 443.1	170.1	613.2	306.6	- 136.5
21 - 30	+ 237.8	+ 77.8	+ 315.6	121.2	436.8	218.4	- 97.2
July							
1 - 10	- 52.9	+ 64.5	+ 11.6	252.9	264.5	132.2	+ 120.7
11 - 20	+ 192.2	+ 3.4	+ 195.6	62.3	257.9	129.0	- 66.7
21 - 31	+ 83.6	- 210.4	- 126.8	78.3	- 48.5	0.0	+ 78.3
August							
1 - 10	- 27.3	- 185.1	- 212.4	129.0	- 83.4	0.0	+ 129.0
11 - 20	+ 62.0	+ 62.3	+ 124.3	177.6	301.9	151.0	+ 26.6
21 - 31	+ 45.3	- 179.8	- 134.5	116.9	- 17.6	0.0	+ 116.9
September							
1 - 10	+ 465.1	+ 477.2	+ 942.3	73.5	1015.8	507.9	- 434.4
11 - 20	- 154.6	+ 16.6	- 138.0	66.9	- 71.1	0.0	+ 66.9
21 - 30	- 329.7	+ 252.0	- 77.7	157.0	79.3	39.6	+ 117.4
October							
1 - 10	- 187.9	- 869.6	-1057.5	893.9	- 163.6	0.0	+ 893.9
11 - 20	- 77.0	- 280.4	- 357.4	517.0	159.6	79.8	+ 437.2
21 - 31	+ 86.0	+ 182.8	+ 268.8	62.1	330.9	165.4	- 103.3
Total sec-ft.	3686.5	3949.1	7635.6	20663.7	28299.3	14341.7	+6322.0
Mean	15.0	16.1	31.1	84.3	115.5	58.5	25.8
Ac-ft.	7310	7830	15140	40990	56130	28450	12540

Table 4

ESTIMATED DIVERSION FROM THE NORTHERN TRIBUTARIES OF MILK RIVER IN CANADA 1944

Quantities in Acre-Feet

Irrigator	Source of Supply	Estimated Diversion
Lodge Creek Basin		
No report		
Total diverted from Lodge Creek		
Flow of Lodge Creek at Boundary		2680
Battle Creek Basin		
Lindner Bros.	Battle Creek	75
McKinnon, J.	Battle Creek	460
Stirling & Nash	Battle Creek	1170
Spangler, C.B.	Sixmile Coulee	100
Fondrick, G.	a Coulee	50
Battle Creek diversion to Cypress reservoir 2790 less return of 1790		1000
Total diverted from Battle Creek		2855
Flow of Battle Creek at Boundary		7680
Frenchman River Basin		
Gilchrist Bros.	Davis Creek	200
Hensman, S.	N.B. Frenchman River	90
Armstrong Bros.	Armstrong Creek	50
Bolingbroke, J.E.	Bolingbroke Creek	7
Beck, M.	a Coulee	7
Bate Bros.	Garden Creek	25
To Cypress Lake Reservoir		5464
East End Irrigation District		4740
Val Marie Irrigation District		5650
Total diverted from Frenchman River		16233
Flow of Frenchman River at Boundary		40980

Table 5

MEASURED DIVERSIONS FROM THE NORTHERN TRIBUTARIES

OF MILK RIVER IN THE UNITED STATES

1944

Quantities in Acre-Feet

Irrigator	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
				Lodge Creek					
North Chincok Canal	71	631	8	9	841	0	0	0	1560
				Battle Creek					
Matheson Canal	21	100	295	133	23	7	8	0	587
				Frenchman River					
Frenchman Canal	37	278	128	1150	558	398	0	115	#2849
Total	129	1009	431	1292	1422	405	8	115	#4996

Includes 185 acre-feet diverted by Frenchman Canal during November.