Report to

THE INTERNATIONAL JOINT COMMISSION

on

THE DIVISION AND USE MADE OF THE WATERS OF

ST. MARY AND MILK RIVERS

by

J. T. JOHNSTON
representing Canada

and

N. C. GROVER
representing the United States

1934

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

Gentlemen:-

In compliance with the Provisions of Clause 10 of your Order of the 4th 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 of 1934.

Respectfully submitted,

J. Y. Johnston

Accredited Officer of His Majesty,

N. E. Grover

Accredited Officer of the United States

April 2nd, 1935.

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 1934, by the same engineers as in previous years.

Mr. N. C. Grover, Chief Hydraulic Engineer, United States Geological Survey, as accredited officer for the United States was represented in the field by Mr. W. A. Lamb, District Engineer, Helena, Montana. Mr. J.T. Johnston, Director, Dominion Water Power and Hydrometric Bureau, as accredited officer of His Majesty, was represented by Mr. S. G. Dawson, Ottawa, Ontario.

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 in Montana, by engineers of the United States Geological Survey under the personal supervision of Mr. Lamb; while those from streams and ditches in Canada were collected by Mr. W. T. McFarlane, Dominion Water Power and Hydrometric Bureau, Calgary, Alberta. The joint international stations were visited frequently by representatives of both countries.

When the natural flow of St. Mary river fell below the combined capacity of the two canals diverting therefrom, and when the demand for water in each country was equivalent to or in excess of its share of the natural flow of St. Mary river, which occurred early in July and continued until the closing of the season, the field engineers kept 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 Director, Dominion Water Power and Hydrometric Bureau.

Division of Water

The United States St. Mary canal was opened on April 23rd and kept in continuous operation until September 8th, water being first delivered to the North Branch Milk River on April 25th. During the period between September 8th and the end of October, while a small flow was diverted through the head gates, no water passed the St.

Mary crossing nor was delivered to Milk River. As the loss in the canal between the intake and the crossing of the St. Mary River, which this year was about 14% of the water diverted at the headgates, is assumed to return directly to the river and eventually become available to Canada, the discharge of 165,000 acre-feet passing in the canal at the St. Mary River crossing is therefore considered as the actual quantity diverted from the St. Mary River by the United States. Of this quantity, 163,000 acre-feet were delivered to the North Branch Milk River and made available for irrigation in Montana. The slight loss in the canal between St. Mary River crossing and Hudson Bay Divide, the end of the canal, was due to evaporation and seepage.

On November 1, 1933, a total of 20,120 acre-feet of water remained in storage in Sherburne reservoir. Practically the same amount of water was in storage on April 1, 1934. The maximum storage reached during the season was 53,400 acre-feet on May 28. On October 31 2,700 acre-feet remained in storage.

As only 50 acre-feet is reported as being diverted in Canada from Milk River, the natural flow of the river is considered as being delivered to the United States at Eastern Crossing. The total diversion for irrigation

from Milk River in Montana was 223,666 acre-feet.

The total recorded flow delivered to the United States at the International Boundary from the Northern tributaries of Milk River during the year 1934 was 62,900 acre-feet, which is 86% of the flow recorded in 1933 and about 33% of the average for the years of record.

The Canadian Pacific Railway canal at Kimball, Alberta, diverted 164,000 acre-feet from the 22nd of April to the 31st of October, 153,000 acre-feet being used to irrigate lands in Southern Alberta.

The Dominion Water Power and Hydrometric Bureau is largely dependent 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 and do not show the total diversion. However, the diversions reported from the Northern tributaries in Canada and shown in Table 3 are; from Lodge creek - 450 acre-feet; from Battle creek - 860 acre-feet; from Frenchman river - 1505 acre-feet. There were no diversions from the other tributaries.

Any question as to the proper share of the 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 and of Canyon creek near Many Glacier, but the flow of the other creeks entering Swiftcurrent creek above the Sherburne dam were estimated. The total flow 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 measurement of the United States' St. Mary canal at St. Mary crossing was made to find the water being diverted by the United States, and a measurement of the St. Mary River at Kimball, near the International Boundary, to determine the water being delivered to Canada.

If the 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 stored 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 and its Northern tributaries.

Water Supply

The precipitation in the drainage basins of St. Mary and Milk Rivers, during the winter of 1933-34, was about normal, but for the full year was considerably below normal.

In the mountainous areas tributary to the St. Mary River basin, as shown by the thirteenth annual international survey of the snow conditions on the headwaters of Swiftcurrent creek, an area considered typical of the headwaters of St. Mary River, the snow cover was 80% of the mean of the twelve years of record while the water content of this snow cover was 110% of the mean. The run-off of 30,500 acre-feet from the area surveyed, during May, June and July was about 17% in excess of the average for the twelve year period.

The natural flow of 629,000 acre-feet of St. Mary River at the boundary during the irrigation season of 1934, from the 1st of April to the end of October, was 4% in excess of the average for the thirty-two years of record.

On the prairies, forming the major portion of the drainage basin of Milk River and its tributaries in Canada and Montana, while the winter precipitation was about normal, during the irrigation season there was a deficiency of rainfall in all months except June.

The run-off from the prairies, as indicated by the Northern tributaries of Milk River, was about 33% of the average for the years of record.

The twenty-three international gauging stations

previously used in the determination of the daily natural flow of the streams in the St. Mary and Milk River basins were maintained and operated under the joint supervision of the field engineers. Several stations previously maintained by Canada on international streams and canals diverting therefrom were abandoned.

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 1934.

Description 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 the St. Mary River during the irrigation season of 1934, the water available for use and used by United States and 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 and Canyon creeks 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 the 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 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 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 over the quantity 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 the statement showing the quantity in acre-feet taken each month by each country and the quantity thereof applied to the land, the quantity diverted from St. Mary River, the loss or waste from the canals and the diversions from Milk River in the United States.

Table 3 shows the available information on the diversions from the Northern tributaries of Milk River in Canada.

Table 4 gives the diversions from the Northern tributaries of Milk River in the United States.

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
APRIL - 1934

Day	Inflow to Sherburne Reservoir: Recorded inflow: Swift-current Creek	Canyon 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						--	60
2						80	--
3						30	--
4						--	268
5						--	126
6						--	172
7						--	136
8						--	54
9						--	100
10	210	No records available	199	409	131	278	--
11	213		356	569	131	438	--
12	213		352	565	131	434	--
13	259		170	429	131	298	--
14	294		105	399	131	268	--
15	259		100	359	131	228	--
16	236		100	336	131	205	--
17	246		150	396	131	265	--
18	297		157	454	129	325	--
19	322		302	624	129	495	--
20	407		223	630	131	499	--
21	530		282	812	134	678	--
22	617		298	915	137	778	--
23	686		238	924	140	784	--
24	686		165	851	143	708	--
25	667		188	855	143	712	--
26	640		206	846	144	702	--
27	644		293	937	146	791	--
28	714		206	920	147	773	--
29	691		240	931	146	785	--
30	517		191	708	146	562	--
Total Sec-ft	9348	--	4521	13869	2863	11116	916
Mean	445	(10-30)	215	660	136	371	32
Ac-ft	18500		8950	27500	5670	22100	1900

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
APRIL - 1934

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	478	--	8	486	--	486
2	478	--	5	483	--	483
3	503	--	--	503	60	443
4	519	--	80	599	--	599
5	567	--	30	597	--	597
6	608	--	--	608	268	340
7	693	--	--	693	126	567
8	798	--	--	798	172	626
9	848	--	--	848	136	712
10	892	--	--	892	54	838
11	928	--	--	928	100	828
12	1000	--	278	1278	--	1278
13	1100	--	438	1538	--	1538
14	1170	--	434	1604	--	1604
15	1200	--	298	1498	--	1498
16	1220	--	268	1488	--	1488
17	1290	--	228	1518	--	1518
18	1340	--	205	1545	--	1545
19	1420	--	265	1685	--	1685
20	1530	--	325	1855	--	1855
21	1700	--	495	2195	--	2195
22	1870	--	499	2369	--	2369
23	2080	--	678	2758	--	2758
24	2020	292	778	3090	--	3090
25	2080	405	784	3269	--	3269
26	2210	433	708	3351	--	3351
27	2310	473	712	3495	--	3495
28	2390	526	702	3618	--	3618
29	2400	568	791	3759	--	3759
30	2260	564	773	3597	--	3597
Total Sec-ft	39902	3261 (24-30)	9782	52945	916	52029
Mean	1330	466	326	1760	31	1730
Ac-ft	79100	6470	19400	105000	1900	103200

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.
APRIL - 1934

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. Divert-ed	Stored Gross	Total used	Excess Of share used	Deficit
1	486	122	--	122	--	8	8		114
2	483	121	--	121	--	5	5		116
3	443	111	60	171	--	--	--		171
4	599	150	--	150	--	80	80		70
5	597	149	--	149	--	30	30		119
6	340	85	268	353	--	--	--		353
7	567	142	126	268	--	--	--		268
8	626	156	172	328	--	--	--		328
9	712	189	136	325	--	--	--		325
10	838	252	54	306	--	--	--		306
11	828	247	100	347	--	--	--		347
12	1278	472	--	472	--	278	278		194
13	1538	602	--	602	--	438	438		164
14	1604	635	--	635	--	434	434		201
15	1498	582	--	582	--	298	298		284
16	1488	577	--	577	--	268	268		309
17	1518	592	--	592	--	228	228	No excess used	364
18	1545	606	--	606	--	205	205		401
19	1685	676	--	676	--	265	265		411
20	1855	761	--	761	--	325	325		436
21	2195	931	--	931	--	495	495		436
22	2369	1018	--	1018	--	499	499		519
23	2758	1212	--	1212	--	678	678		534
24	3090	1378	--	1378	292	778	1070		308
25	3269	1468	--	1468	405	784	1189		279
26	3351	1509	--	1509	433	708	1141		368
27	3495	1581	--	1581	473	712	1185		396
28	3618	1642	--	1642	526	702	1228		414
29	3759	1713	--	1713	568	791	1359		354
30	3597	1632	--	1632	564	773	1337	--	295
Total Sec-ft	52029	21311	916	22227	3261 (24-30)	9782	13043	--	9184
Mean	1730	710	31	741	466	326	435	--	306
Ac-ft	103200	42400	1900	44300	6470	19400	25900	--	18200

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
APRIL - 1934

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	486	364	478	--	114
2	483	362	478	--	116
3	443	332	503	--	171
4	599	449	519	--	70
5	597	448	567	--	119
6	340	255	608	--	353
7	567	425	693	--	268
8	626	470	798	--	328
9	712	523	848	--	325
10	838	586	892	--	306
11	828	581	928	--	347
12	1278	806	1000	--	194
13	1538	936	1100	--	164
14	1604	969	1170	--	201
15	1498	916	1200	--	284
16	1488	911	1220	--	309
17	1518	926	1290	--	364
18	1545	939	1340	--	401
19	1685	1009	1420	--	411
20	1855	1094	1530	--	436
21	2195	1264	1700	--	436
22	2369	1351	1870	37	519
23	2758	1546	2080	107	534
24	3090	1712	2020	117	308
25	3269	1801	2080	168	279
26	3351	1842	2210	246	368
27	3495	1914	2310	283	396
28	3618	1976	2390	276	414
29	3759	2046	2400	276	354
30	3597	1965	2260	282	295
Total Sec.Ft.	52029	30718	39902	1792 (22-30)	9184
Mean	1730	1024	1330	199	306
Ac.Ft.	103200	60900	79100	3550	18200

No deficit in April

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
MAY - 1934

Day	Inflow to Sherburne Reservoir: Recorded inflow: Swift-current Creak	Canyon 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	407		203	610	146	464	--
2	366		179	545	146	399	--
3	373		186	559	146	413	--
4	373		217	590	144	446	--
5	743		521	1264	148	1116	--
6	974		388	1362	147	1215	--
7	748	113	170	1036	147	889	--
8	876	131	167	1174	329	845	--
9	866	115	172	1153	563	590	--
10	631	85	154	870	710	160	--
11	534	88	189	811	832	--	21
12	551	85	170	806	864	--	58
13	476	89	171	736	856	--	120
14	509	111	152	772	796	--	24
15	686	128	155	969	808	161	--
16	866	135	132	1133	990	143	--
17	811	125	133	1069	1110	--	41
18	681	111	113	905	1010	--	105
19	578	98	140	816	904	--	88
20	496	86	153	735	742	--	7
21	411	74	145	630	574	56	--
22	362	70	153	585	626	--	41
23	347	72	107	526	520	6	--
24	400	83	114	597	417	180	--
25	538	99	123	760	527	233	--
26	654	111	143	908	816	92	--
27	696	113	132	941	917	24	--
28	767	118	124	1009	986	23	--
29	772	121	122	1015	1020	--	5
30	762	113	129	1004	1010	--	6
31	631	99	82	812	836	--	24
Total Sec-ft	18885	2578 (7-31)	5239	26690	19787	7455	540
Mean	609	103	169	861	638	240	17.4
Ac-ft	37400	5110	10400	52900	39200	14800	1070

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
MAY - 1934

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	2070	581	785	3436	--	3436
2	1930	606	562	3098	--	3098
3	1760	614	464	2838	--	2838
4	1610	616	399	2625	--	2625
5	1730	618	413	2761	--	2761
6	2110	624	446	3180	--	3180
7	2350	626	1116	4092	--	4092
8	2560	628	1215	4403	--	4403
9	2870	618	889	4377	--	4377
10	3030	620	845	4495	--	4495
11	2980	624	590	4194	--	4194
12	3010	624	160	3794	--	3794
13	2840	622	--	3462	21	3441
14	2720	620	--	3340	58	3282
15	2720	634	--	3354	120	3234
16	2870	644	--	3514	24	3490
17	3190	658	161	4009	--	4009
18	3320	658	143	4121	--	4121
19	3190	662	--	3852	41	3811
20	2980	664	--	3644	105	3539
21	2580	658	--	3238	88	3150
22	2310	664	--	2974	7	2967
23	2110	666	56	2832	--	2832
24	1920	668	--	2588	41	2547
25	1870	668	6	2544	--	2544
26	2020	675	180	2875	--	2875
27	2340	681	233	3254	--	3254
28	2600	685	92	3377	--	3377
29	2800	692	24	3516	--	3516
30	2980	698	23	3701	--	3701
31	3000	696	--	3696	5	3691
Total Sec-ft	78370	20012	8802	107184	510	106674
Mean	2530	646	284	3458	16.5	3441
Ac-ft	156000	39700	17500	213000	1010	212000

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.
MAY - 1934

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 used	Deficit
1	3436	1551	--	1551	581	785	1366	--	185
2	3098	1382	--	1382	606	562	1168		214
3	2838	1252	--	1252	614	464	1078		174
4	2625	1146	--	1146	616	399	1015		131
5	2761	1214	--	1214	618	413	1031		183
6	3180	1423	--	1423	624	446	1070		353
7	4092	1879	--	1879	626	1116	1742		137
8	4403	2035	--	2035	628	1215	1843		192
9	4377	2022	--	2022	618	889	1507		515
10	4495	2081	--	2081	620	845	1465		616
11	4194	1930	--	1930	624	590	1214		716
12	3794	1730	--	1730	624	160	784		946
13	3441	1554	21	1575	622	--	622		953
14	3282	1474	58	1532	620	--	620		912
15	3234	1450	120	1570	634	--	634		936
16	3490	1578	24	1602	644	--	644		958
17	4009	1838	--	1838	658	161	819		1019
18	4121	1894	--	1894	658	143	801		1093
19	3811	1739	41	1780	662	--	662		1118
20	3539	1603	105	1708	664	--	664		1044
21	3150	1408	88	1496	658	--	658		838
22	2967	1317	7	1324	664	--	664		660
23	2832	1249	--	1249	666	56	722		527
24	2547	1107	41	1148	668	--	668		480
25	2544	1105	--	1105	668	6	674		431
26	2875	1271	--	1271	675	180	855		416
27	3254	1460	--	1460	681	233	914		546
28	3377	1522	--	1522	685	92	777		745
29	3516	1591	--	1591	692	24	716		875
30	3701	1684	--	1684	698	23	721		963
31	3691	1679	5	1684	696	--	696		988
Total Sc-ft	106674	48168	510	48678	20012	8802	28814	--	19864
Mean	3441	1554	16.5	1570	646	284	930		641
Ac-ft	212000	95600	1010	96500	39700	17500	57200		39400

No Excess used in May.

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
MAY - 1934

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	3436	1885	2070	316	185
2	3098	1716	1930	319	214
3	2838	1586	1760	373	174
4	2625	1479	1610	377	131
5	2761	1547	1730	422	183
6	3180	1757	2110	497	353
7	4092	2213	2350	516	137
8	4403	2368	2560	519	192
9	4377	2355	2870	527	515
10	4495	2414	3030	538	616
11	4194	2264	2980	552	716
12	3794	2064	3010	545	946
13	3441	1887	2840	552	953
14	3282	1808	2720	577	912
15	3234	1784	2720	660	936
16	3490	1912	2870	703	958
17	4009	2171	3190	751	1019
18	4121	2227	3320	770	1093
19	3811	2072	3190	800	1118
20	3539	1936	2980	788	1044
21	3150	1742	2580	818	838
22	2967	1650	2310	816	660
23	2832	1583	2110	820	527
24	2547	1440	1920	843	480
25	2544	1439	1870	860	431
26	2875	1604	2020	922	416
27	3254	1794	2340	924	546
28	3377	1855	2600	903	745
29	3516	1925	2800	924	875
30	3701	2017	2980	955	963
31	3691	2012	3000	945	988
Total Sec.Ft.	106674	58506	78370	20832	19864
Mean	3441	1887	2528	672	641
Ac.Ft.	212000	116000	156000	41300	39400

No deficit in May

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
JUNE - 1934

Day	Inflow to Sherburne reservoir: Recorded inflow: Swift-current Creek	Canyon 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	447	89	97	633	581	52	--
2	333	84	124	541	630	--	89
3	256	80	128	464	645	--	181
4	276	86	172	534	567	--	33
5	326	96	89	511	495	16	--
6	336	100	222	658	495	163	--
7	943	184	253	1380	1070	310	--
8	1010	200	270	1480	1310	170	--
9	663	113	221	997	1140	--	143
10	613	129	152	894	804	90	--
11	672	124	160	956	968	--	12
12	658	109	144	911	1060	--	149
13	560	86	145	791	982	--	191
14	467	76	144	687	753	--	66
15	407	70	113	590	570	20	--
16	388	69	91	548	534	14	--
17	351	60	93	504	506	--	2
18	333	58	91	482	441	41	--
19	318	55	68	441	484	--	43
20	290	51	52	393	368	25	--
21	276	50	69	395	339	56	--
22	262	50	65	377	373	4	--
23	239	42	38	319	305	14	--
24	255	36	21	312	252	60	--
25	271	36	20	327	252	75	--
26	287	43	50	380	305	75	--
27	304	52	46	402	378	24	--
28	297	51	51	399	383	16	--
29	283	48	47	378	392	--	14
30	280	47	56	383	341	42	--
Total Sec-ft	12401	2374	3292	18067	17723	1267	923
Mean	413	79	110	602	591	42	31
Ac-ft	24600	4700	6540	35800	35200	2500	1850

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
JUNE - 1934

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	2650	694	--	3344	6	3338
2	2340	692	--	3032	24	3008
3	2100	685	52	2837	--	2837
4	2130	664	--	2794	89	2705
5	1940	634	--	2574	181	2393
6	1860	636	--	2496	33	2463
7	3470	624	16	4110	--	4110
8	4790	433	163	5386	--	5386
9	4670	396	310	5376	--	5376
10	4210	491	170	4871	--	4871
11	4000	501	--	4501	143	4358
12	3880	507	90	4477	--	4477
13	3580	532	--	4112	12	4100
14	3360	534	--	3894	149	3745
15	2910	534	--	3444	191	3253
16	2500	558	--	3058	66	2992
17	2260	558	20	2838	--	2838
18	2000	583	14	2597	--	2597
19	1790	596	--	2386	2	2384
20	1640	648	41	2329	--	2329
21	1460	652	--	2112	43	2069
22	1380	644	25	2049	--	2049
23	1270	644	56	1970	--	1970
24	1110	644	4	1758	--	1758
25	982	660	14	1656	--	1658
26	973	666	60	1699	--	1699
27	1190	612	75	1877	--	1877
28	1070	660	75	1805	--	1805
29	1040	685	24	1749	--	1749
30	982	687	16	1685	--	1685
Total Sec-ft	69537	18054	1225	88816	939	87877
Mean	2318	602	41	2961	31	2929
Ac-ft	138000	35800	2440	176000	1840	174000

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.
JUNE - 1934

Day	Natural flow St. Mary River	AVAILABLE FOR USE BY U.S.A. U.S. Share	Released Storage Net	Total Avail-	USED BY U.S.A. Divert-ed	Stored Gross	Total used	Excess Of share used	Deficit
1	3338	1502	6	1508	694	--	694	--	814
2	3008	1337	24	1361	692	--	692		669
3	2837	1252	--	1252	685	52	737		515
4	2705	1186	89	1275	664	--	664		611
5	2393	1030	181	1211	634	--	634		577
6	2463	1065	33	1098	636	--	636		462
7	4110	1888	--	1888	624	16	640		1248
8	5386	2526	--	2526	433	163	596		1930
9	5376	2521	--	2521	396	310	706		1815
10	4871	2269	--	2269	491	170	661		1608
11	4358	2012	143	2155	501	--	501		1654
12	4477	2072	--	2072	507	90	597		1475
13	4100	1883	12	1895	532	--	532		1363
14	3745	1706	149	1855	534	--	534		1321
15	3253	1460	191	1651	534	--	534		1117
16	2992	1329	66	1395	558	--	558		837
17	2838	1252	--	1252	558	20	578		674
18	2597	1132	--	1132	583	14	597		535
19	2384	1025	2	1027	596	--	596		431
20	2329	998	--	998	648	41	689		309
21	2069	868	43	911	652	--	652		259
22	2049	858	--	858	644	25	669		189
23	1970	818	--	818	644	56	700		118
24	1758	712	--	712	644	4	648	--	64
25	1656	661	--	661	660	14	674	13	--
26	1699	683	--	683	666	60	726	43	--
27	1877	772	--	772	612	75	687	--	85
28	1805	736	--	736	660	75	735	--	1
29	1749	708	--	708	685	24	709	1	--
30	1685	676	--	676	687	16	703	27	--
Total Sc-ft	87877	38937	939	39876	18054	1225	19285	84	20681
Mean	2929	1298	31	1329	602	41	643	2.8	689
Ac-ft	174000	77200	1840	79100	35800	2440	38200	167	41000

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
JUNE - 1934

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	3338	1836	2650	916	814	--
2	3008	1671	2340	924	669	--
3	2837	1585	2100	906	515	--
4	2705	1519	2130	838	611	--
5	2393	1363	1940	530	577	--
6	2463	1398	1860	588	462	--
7	4110	2222	3470	469	1248	--
8	5386	2860	4790	322	1930	--
9	5376	2855	4670	348	1815	--
10	4871	2602	4210	384	1608	--
11	4358	2346	4000	397	1654	--
12	4477	2405	3880	445	1475	--
13	4100	2217	3580	440	1363	--
14	3745	2039	3360	395	1321	--
15	3253	1793	2910	442	1117	--
16	2992	1663	2500	489	837	--
17	2838	1586	2260	471	674	--
18	2597	1465	2000	459	535	--
19	2384	1359	1790	499	431	--
20	2329	1331	1640	471	309	--
21	2069	1201	1460	485	259	--
22	2049	1191	1380	485	189	--
23	1970	1152	1270	465	118	--
24	1758	1046	1110	471	64	--
25	1656	995	982	491	--	13
26	1699	1016	973	451	--	43
27	1877	1105	1190	463	85	--
28	1805	1069	1070	471	1	--
29	1749	1041	1040	495	--	1
30	1685	1009	982	499	--	27
Total Sec.Ft.	87877	48940	69537	15509	20681	84
Mean	2929	1631	2318	517	689	2.8
Ac.Ft.	174000	97000	138000	30800	41000	167

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
JULY - 1934

Day	Inflow to Sherburne Reservoir: Recorded inflow: Swift-current Creek	Canyon 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	280	48	52	380	307	73	---
2	286	49	39	374	392	--	18
3	266	42	42	350	450	--	100
4	226	37	77	340	478	--	138
5	223	37	66	326	467	--	141
6	210	36	47	293	464	--	171
7	220	38	62	320	492	--	172
8	210	36	56	302	502	--	200
9	197	35	52	284	502	--	218
10	206	37	66	309	516	--	207
11	210	36	70	316	538	--	222
12	194	33	79	306	592	--	286
13	176	32	36	244	600	--	356
14	165	30	76	271	604	--	333
15	156	29	61	246	589	--	343
16	165	31	72	268	592	--	324
17	188	37	90	315	600	--	285
18	197	39	54	290	600	--	310
19	185	33	37	255	607	--	352
20	170	30	62	262	596	--	334
21	167	29	48	244	600	--	356
22	159	27	67	253	607	--	354
23	140	24	55	219	604	--	385
24	125	22	79	226	619	--	393
25	120	22	48	190	657	--	467
26	122	22	65	209	664	--	455
27	135	25	60	220	660	--	440
28	151	28	52	231	672	--	441
29	162	29	65	256	699	--	443
30	159	29	33	221	718	--	497
31	153	28	34	215	722	--	507
Total Sec-ft	5723	1010	1802	8535	17710	73	9248
Mean	185	33	58	276	571	2.4	298
Ac-ft	11400	2000	3570	17000	35100	147	18300

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
JULY - 1934

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	892	689	--	1581	14	1567
2	857	692	42	1591	--	1591
3	866	700	73	1639	--	1639
4	884	702	--	1586	18	1568
5	910	706	--	1616	100	1516
6	910	706	--	1616	138	1478
7	866	704	--	1570	141	1429
8	857	704	--	1561	171	1390
9	814	704	--	1518	172	1346
10	790	704	--	1494	200	1294
11	758	702	--	1460	218	1242
12	750	702	--	1452	207	1245
13	742	698	--	1440	222	1218
14	742	698	--	1440	286	1154
15	728	698	--	1426	356	1070
16	707	698	--	1405	333	1072
17	758	698	--	1456	343	1113
18	686	698	--	1384	324	1060
19	686	698	--	1384	285	1099
20	686	700	--	1386	310	1076
21	653	698	--	1351	352	999
22	640	696	--	1336	334	1002
23	608	694	--	1302	356	946
24	573	692	--	1265	354	911
25	562	694	--	1256	385	871
26	562	694	--	1256	393	863
27	556	696	--	1252	467	785
28	550	696	--	1246	455	791
29	550	696	--	1246	440	806
30	567	698	--	1265	441	824
31	585	698	--	1283	443	840
Total Sec-ft	22295	21653	115	44063	8258	35805
Mean	719	698	3.7	1421	266	1155
Ac-ft	44200	42900	227	87400	16400	71000

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.
JULY - 1934

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 used	Deficit
1	1567	617	14	631	689	--	689	58	--
2	1591	629	--	629	692	42	734	105	--
3	1639	653	--	653	700	73	773	120	--
4	1568	617	18	635	702	--	702	67	--
5	1516	591	100	691	706	--	706	15	--
6	1478	572	138	710	706	--	706	--	4
7	1429	548	141	689	704	--	704	15	--
8	1390	528	171	699	704	--	704	5	--
9	1346	506	172	678	704	--	704	26	--
10	1294	480	200	680	704	--	704	24	--
11	1242	454	218	672	702	--	702	30	--
12	1245	456	207	663	702	--	702	39	--
13	1218	442	222	664	698	--	698	34	--
14	1154	410	286	695	698	--	696	2	--
15	1070	368	356	724	698	--	698	--	26
16	1072	369	333	702	698	--	698	--	4
17	1113	390	343	733	698	--	698	--	35
18	1060	363	324	687	698	--	698	11	--
19	1099	383	285	668	698	--	698	30	--
20	1076	371	310	681	700	--	700	19	--
21	999	333	352	685	698	--	698	13	--
22	1002	334	334	668	696	--	696	28	--
23	946	306	356	662	694	--	694	32	--
24	911	289	354	643	692	--	692	49	--
25	871	269	385	654	694	--	694	40	--
26	863	265	393	658	694	--	694	36	--
27	785	226	467	693	696	--	696	3	--
28	791	229	455	684	696	--	696	12	--
29	806	236	440	676	696	--	696	20	--
30	824	245	441	686	698	--	698	12	--
31	840	253	443	696	698	--	698	2	--
Total Sc-ft	35805	12732	8258	20990	21653	115	21768	847	69
Mean	1155	411	266	677	698	3.7	702	27.3	2.3
Ac-ft	71000	25300	16400	41600	42900	227	43100	1680	141

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
JULY - 1934

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	1567	950	892	467	--	58
2	1591	962	857	487	--	105
3	1639	986	866	510	--	120
4	1568	951	884	523	--	67
5	1516	925	910	523	--	15
6	1478	906	910	516	4	--
7	1429	881	866	523	--	15
8	1390	862	857	514	--	5
9	1346	840	814	588	--	26
10	1294	814	790	588	--	24
11	1242	788	758	565	--	30
12	1245	789	750	541	--	39
13	1218	776	742	504	--	34
14	1154	744	742	510	--	2
15	1070	702	728	516	26	--
16	1072	703	707	538	4	--
17	1113	723	758	552	35	--
18	1060	697	686	552	--	11
19	1099	716	686	552	--	30
20	1076	705	686	554	--	19
21	999	666	653	577	--	13
22	1002	668	640	588	--	28
23	946	640	608	586	--	32
24	911	622	573	563	--	49
25	871	602	562	558	--	40
26	863	598	562	554	--	36
27	785	559	556	545	--	3
28	791	562	550	538	--	12
29	806	570	550	543	--	20
30	824	579	567	556	--	12
31	840	587	585	568	--	2
Total Sec.Ft.	35805	23073	22295	16799	69	847
Mean	1155	744	719	542	2.3	27.3
Ac.Ft.	71000	45700	44200	33300	141	1680

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
AUGUST -- 1934

Day	Inflow to Sherburne Reservoir: Recorded inflow: Swift-current Creek	Canyon 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	140	25	115	280	738	--	458
2	130	22	47	199	734	--	535
3	128	22	35	185	722	--	537
4	120	22	50	192	726	--	534
5	118	20	55	193	730	--	537
6	115	20	77	212	726	--	514
7	106	19	40	165	730	--	565
8	106	18	91	215	749	--	534
9	102	17	62	181	765	--	584
10	99	16	18	133	757	--	624
11	95	15	61	171	746	--	575
12	95	15	102	212	734	--	522
13	93	15	57	165	738	--	573
14	93	15	90	198	742	--	544
15	93	15	20	128	734	--	606
16	95	15	10	120	738	--	618
17	97	16	30	143	726	--	583
18	104	16	50	170	718	--	548
19	102	15	16	133	714	--	581
20	93	14	36	143	687	--	544
21	89	14	15	118	657	--	539
22	84	13	10	107	649	--	542
23	78	12	10	100	634	--	534
24	72	12	33	117	615	--	498
25	68	11	23	102	512	--	410
26	66	11	10	87	484	--	397
27	68	11	62	141	488	--	347
28	66	12	56	134	467	--	333
29	70	12	41	123	392	--	269
30	72	12	25	109	226	--	117
31	72	12	20	104	185	--	81
Total Sec-ft	2929	484	1367	4780	19963	--	15183
Mean	94	15.6	44.1	154	644	--	490
Ac-ft	5780	959	2710	9450	39600	--	30100

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
AUGUST - 1934

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	591	698	--	1289	497	792
2	591	698	--	1289	507	782
3	579	698	--	1277	458	819
4	567	694	--	1261	535	726
5	545	692	--	1237	537	700
6	529	689	--	1218	534	684
7	508	687	--	1195	537	658
8	488	685	--	1173	514	659
9	473	683	--	1156	565	591
10	468	683	--	1151	534	617
11	458	681	--	1139	584	555
12	448	681	--	1129	624	505
13	434	681	--	1115	575	540
14	419	683	--	1102	522	580
15	400	685	--	1085	573	512
16	391	689	--	1080	544	536
17	378	689	--	1067	606	461
18	369	687	--	1056	618	438
19	369	689	--	1058	583	475
20	352	683	--	1035	548	487
21	424	618	--	1042	581	461
22	405	606	--	1011	544	467
23	378	606	--	984	539	445
24	365	602	--	967	542	425
25	352	579	--	931	534	397
26	374	509	--	883	498	385
27	332	503	--	835	410	425
28	324	478	--	802	397	405
29	348	428	--	776	347	429
30	360	367	--	727	333	394
31	488	184	--	672	269	403
Total Sec-ft	13507	19233	--	32742	15989	16753
Mean	436	620	--	1056	516	540
Ac-ft	26800	38100	--	64900	31700	33200

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.
AUGUST - 1934

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	792	229	497	726	698	--	698	--	28
2	782	224	507	731	698	--	698	--	33
3	819	243	458	701	698	--	698	--	3
4	726	196	535	731	694	--	694	--	37
5	700	183	537	720	692	--	692	--	28
6	684	175	534	709	689	--	689	--	20
7	658	164	537	701	687	--	687	--	14
8	659	164	514	678	685	--	685	7	--
9	591	148	565	713	683	--	683	--	30
10	617	154	534	688	683	--	683	--	5
11	555	139	584	723	681	--	681	--	42
12	505	126	624	750	681	--	681	--	69
13	540	135	575	710	681	--	681	--	29
14	580	145	522	667	683	--	683	16	--
15	512	128	573	701	685	--	685	--	16
16	536	134	544	678	689	--	689	11	--
17	461	115	606	721	689	--	689	--	32
18	438	110	618	728	687	--	687	--	41
19	475	119	583	702	689	--	689	--	13
20	487	122	548	670	683	--	683	13	--
21	461	115	581	696	618	--	618	--	78
22	467	117	544	661	606	--	606	--	55
23	445	111	539	650	606	--	606	--	44
24	425	106	542	648	602	--	602	--	46
25	397	99	534	633	579	--	579	--	54
26	385	96	498	594	509	--	509	--	85
27	425	106	410	516	503	--	503	--	13
28	405	101	397	498	478	--	478	--	20
29	429	107	347	454	428	--	428	--	26
30	394	98	333	431	367	--	367	--	64
31	403	101	269	370	184	--	184	--	186
Total Sc-ft	16753	4310	15989	20299	19235	--	19235	47	1111
Mean	540	139	516	655	620	--	620	1.5	35.8
Ac-ft	33200	8550	31700	40300	38100	--	38100	92	2200

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
AUGUST - 1934

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	792	563	591	556	28	--
2	782	558	591	558	33	--
3	819	576	579	545	3	--
4	726	530	567	536	37	--
5	700	517	545	512	28	--
6	684	509	529	497	20	--
7	658	494	508	479	14	--
8	659	495	488	467	--	7
9	591	443	473	451	30	--
10	617	463	468	453	5	--
11	555	416	458	445	42	--
12	505	379	448	434	69	--
13	540	405	434	422	29	--
14	580	435	419	411	--	16
15	512	384	400	395	16	--
16	536	402	391	382	--	11
17	461	346	378	372	32	--
18	438	328	369	357	41	--
19	475	356	369	359	13	--
20	487	365	352	341	--	13
21	461	346	424	406	78	--
22	467	350	405	381	55	--
23	445	334	378	361	44	--
24	425	319	365	348	46	--
25	397	298	352	338	54	--
26	385	289	374	359	85	--
27	425	319	332	314	13	--
28	405	304	324	305	20	--
29	429	322	348	327	26	--
30	394	296	360	338	64	--
31	403	302	488	463	186	--
Total Sec.Ft.	16753	12443	13507	12912	1111	47
Mean	540	401	436	417	35.8	1.5
Ac.Ft.	33200	24700	26800	25600	2200	92

DETERMINATION OF NATURAL FLOW OF ST. MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
SEPTEMBER -- 1934

Day	Inflow to Sherburne Reservoir: Recorded inflow: Swift-current Creek	Canyon 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	65	11	15	91	177	--	86
2	61	11	38	110	172	--	62
3	59	11	50	120	164	--	44
4	61	10	35	106	159	--	53
5	61	10	20	91	116	--	25
6	61	10	10	81	75	6	--
7	59	10	10	79	67	12	--
8	61	11	18	90	65	25	--
9	59	11	27	97	65	32	--
10	53	10	6	69	63	6	--
11	47	9	6	62	62	--	--
12	44	9	8	61	61	--	--
13	44	9	8	61	61	--	--
14	43	9	8	60	60	--	--
15	38	5	16	59	59	--	--
16	35	4	17	56	56	--	--
17	35	3	18	56	56	--	--
18	33	6	25	64	89	--	25
19	37	8	30	75	170	--	95
20	37	8	28	73	160	--	87
21	35	4	25	64	143	--	79
22	38	3	20	61	130	--	69
23	33	3	15	51	115	--	64
24	31	3	10	44	104	--	60
25	28	7	10	45	91	--	46
26	25	6	10	41	85	--	44
27	23	3	10	36	81	--	45
28	23	2	10	35	78	--	43
29	23	2	10	35	71	--	36
30	23	3	10	36	91	--	55
Total Sec-ft	1275	211	523	2009	2946	81	1018
Mean	42.5	7.0	17.4	67	98	2.7	33.9
Ac-ft	2530	420	1040	3990	5830	161	2020

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
SEPTEMBER - 1934

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	448	146	--	594	117	477
2	387	166	--	553	81	472
3	360	156	--	516	86	430
4	328	152	--	480	62	418
5	352	119	--	471	44	427
6	414	35	--	449	53	396
7	396	13	--	409	25	384
8	391	--	6	397	--	397
9	374	--	12	386	--	386
10	352	--	25	377	--	377
11	336	--	32	368	--	368
12	316	--	6	322	--	322
13	309	--	--	309	--	309
14	305	--	--	305	--	305
15	294	--	--	294	--	294
16	284	--	--	284	--	284
17	273	--	--	273	--	273
18	264	--	--	264	--	264
19	273	--	--	273	--	273
20	302	--	--	302	25	277
21	316	--	--	316	95	221
22	336	--	--	336	87	249
23	340	--	--	340	79	261
24	324	--	--	324	69	255
25	324	--	--	324	64	260
26	336	--	--	336	60	276
27	330	--	--	330	46	284
28	304	--	--	304	44	260
29	290	--	--	290	45	245
30	277	--	--	277	43	234
Total Sec-ft	9935	787 (1-7)	81	10803	1125	9678
Mean	331	112	2.7	360	37.5	323
Ac-ft	19700	1560	161	21400	2230	19200

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.
SEPTEMBER - 1934

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 used	Deficit
1	477	119	117	236	146	--	146		90
2	472	118	81	199	166	--	166		33
3	430	108	86	194	156	--	156		38
4	418	104	62	166	152	--	152		14
5	427	107	44	151	119	--	119		32
6	396	99	53	152	35	--	35		117
7	384	96	25	121	13	--	13		108
8	397	99	--	99	--	6	6		93
9	386	96	--	96	--	12	12		84
10	377	94	--	94	--	25	25		69
11	368	92	--	92	--	32	32		60
12	322	80	--	80	--	6	6		74
13	309	77	--	77	--	--	--		77
14	305	76	--	76	--	--	--		76
15	294	74	--	74	--	--	--		74
16	284	71	--	71	--	--	--		71
17	273	68	--	68	--	--	--		68
18	264	66	--	66	--	--	--		66
19	273	68	--	68	--	--	--		68
20	277	69	25	94	--	--	--		94
21	221	55	95	150	--	--	--		150
22	249	62	87	149	--	--	--		149
23	261	65	79	144	--	--	--		144
24	255	64	69	133	--	--	--		133
25	260	65	64	129	--	--	--		129
26	276	69	60	129	--	--	--		129
27	284	71	46	117	--	--	--		117
28	260	65	44	109	--	--	--	No excess used in September	109
29	245	61	45	106	--	--	--		106
30	234	58	43	101	--	--	--		101
Total Sc-ft	9678	2416	1125	3541	787 (1-7)	81	868		2673
		80.5							
Mean	323	81	37.5	118	112	2.7	28.9		89
Ac-ft	19200	4820	2230	7020	1560	161	1720		5300

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
SEPTEMBER - 1934

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	477	358	448	422	90
2	472	354	387	366	33
3	430	322	360	345	38
4	418	314	328	316	14
5	427	320	352	326	32
6	396	297	414	393	117
7	384	288	396	357	108
8	397	298	391	370	93
9	386	290	374	357	84
10	377	283	352	338	69
11	368	276	336	314	60
12	322	242	316	305	74
13	309	232	309	298	77
14	305	229	305	298	76
15	294	220	294	290	74
16	284	213	284	278	71
17	273	205	273	263	68
18	264	198	264	254	66
19	273	205	273	261	68
20	277	208	302	290	94
21	221	166	316	307	150
22	249	187	336	326	149
23	261	196	340	324	144
24	255	191	324	314	133
25	260	195	324	304	129
26	276	207	336	304	129
27	284	213	330	302	117
28	260	195	304	287	109
29	245	184	290	264	106
30	234	176	277	242	101
Total Sec.Ft.	9678	7262	9935	9415	2673
Mean	323	242	331	314	89
Ac.Ft.	19200	14400	19700	18700	5300

No deficit in September

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
WATER STORED OR RELEASED FROM SHERBURNE RESERVOIR
OCTOBER - 1934

Day	Inflow to Sherburne Reservoir: Recorded inflow: Swift-current Creek	Canyon 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	24	8	10	42	104	--	62
2	27	9	20	56	96	--	40
3	28	9	33	70	74	--	4
4	32	9	29	70	70	--	--
5	24	5	25	54	54	--	--
6	25	3	19	47	47	--	--
7	26	3	11	40	40	--	--
8	28	6	22	56	56	--	--
9	29	8	10	47	47	--	--
10	37	9	10	56	35	21	--
11	47	9	10	66	40	26	--
12	50	9	19	78	30	48	--
13	56	9	50	115	17	98	--
14	54	9	45	108	17	91	--
15	50	9	25	84	17	67	--
16	49	9	20	78	17	61	--
17	43	9	15	67	17	50	--
18	39	9	12	60	17	43	--
19	36	9	10	55	17	38	--
20	33	9	10	52	17	35	--
21	39	9	10	58	17	41	--
22	47	10	10	67	17	50	--
23	46	9	10	65	17	48	--
24	41	9	95	145	138	7	--
25	66	14	15	95	144	--	49
26	95	12	10	117	78	39	--
27	74	10	8	92	57	35	--
28	63	10	10	83	50	33	--
29	63	10	10	83	86	--	3
30	61	10	10	81	113	--	32
31	57	10	10	77	113	--	36
Total Sec-ft	1389	272	603	2264	1659	831	226
Mean	44.8	8.8	19.4	73	54	26.8	7.3
Ac-ft	2750	540	1190	4490	3320	1650	449

DETERMINATION OF NATURAL FLOW OF ST.MARY RIVER
OCTOBER - 1934

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. Maryriver
1	264	--	--	264	36	228
2	254	--	--	254	55	199
3	250		--	250	62	188
4	277		--	277	40	237
5	235		--	235	4	231
6	223		--	223	--	223
7	214		--	214	--	214
8	220		--	220	--	220
9	223		--	223	--	223
10	206		--	206	--	206
11	198		--	198	--	198
12	198		21	219	--	219
13	260		26	286	--	286
14	244		48	292	--	292
15	241		98	339	--	339
16	244		91	335	--	335
17	238		67	305	--	305
18	235		61	296	--	296
19	244		50	294	--	294
20	238		43	281	--	281
21	238		38	276	--	276
22	257		35	292	--	292
23	229		41	270	--	270
24	223		50	273	--	273
25	209		48	257	--	257
26	235		7	242	--	242
27	328		--	328	49	279
28	324		39	363	--	363
29	320		35	355	--	355
30	332		33	365	--	365
31	344		--	344	3	341
Total Sec-ft	7745	--	831	8576	249	8327
Mean	250	--	26.8	277	8.0	269
Ac-ft	15400	--	1650	17000	492	16500

DIVISION OF WATER OF ST. MARY RIVER
WATER AVAILABLE FOR USE AND USED BY U.S.A.
OCTOBER - 1934

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	228	57	36	93	--	--	--	--	93
2	199	50	55	105	--	--	--	--	105
3	188	47	62	109	--	--	--	--	109
4	237	59	40	99	--	--	--	--	99
5	231	58	4	62	--	--	--	--	62
6	223	56	--	56	--	--	--	--	56
7	214	54	--	54	--	--	--	--	54
8	220	55	--	55	--	--	--	--	55
9	223	56	--	56	--	--	--	--	56
10	206	52	--	52	--	--	--	--	52
11	198	50	--	50	--	--	--	--	50
12	219	55	--	50	--	21	21	--	34
13	286	72	--	72	--	26	26	--	46
14	292	73	--	73	--	48	48	--	25
15	339	85	--	85	--	98	98	13	--
16	335	84	--	84	--	91	91	7	--
17	305	76	--	76	--	67	67	--	9
18	296	74	--	74	--	61	61	--	13
19	294	74	--	74	--	50	50	--	24
20	281	70	--	70	--	43	43	--	27
21	276	69	--	69	--	38	38	--	31
22	292	73	--	73	--	35	35	--	38
23	270	68	--	68	--	41	41	--	27
24	273	68	--	68	--	50	50	--	18
25	257	64	--	64	--	48	48	--	16
26	242	60	--	60	--	7	7	--	53
27	279	70	49	119	--	--	--	--	119
28	363	91	--	91	--	39	39	--	52
29	355	89	--	89	--	35	35	--	54
30	365	91	--	91	--	33	33	--	58
31	341	85	3	88	--	--	--	--	88
Total Sc-ft	8327	2085	249	2334	--	831	831	20	1523
Mean	269	67.3	8.0	75	--	26.8	26.8	0.6	49
Ac-ft	16500	4120	492	4610	--	1650	1650	40	3020

DIVISION OF WATER OF ST.MARY RIVER
WATER AVAILABLE FOR USE AND USED BY CANADA
OCTOBER - 1934

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	228	171	264	238	93	--
2	199	149	254	234	105	--
3	188	141	250	237	109	--
4	237	178	277	227	99	--
5	231	173	235	218	62	--
6	223	167	223	207	56	--
7	214	160	214	199	54	--
8	220	165	220	199	55	--
9	223	167	223	209	56	--
10	206	154	206	190	52	--
11	198	148	198	183	50	--
12	219	164	198	180	34	--
13	286	214	260	243	46	--
14	292	219	244	230	25	--
15	339	254	241	226	--	13
16	335	251	244	229	--	7
17	305	229	238	221	9	--
18	296	222	235	218	13	--
19	294	220	244	229	24	--
20	281	211	238	220	27	--
21	276	207	238	220	31	--
22	292	219	257	195	38	--
23	270	202	229	50	27	--
24	273	205	223	65	18	--
25	257	193	209	71	16	--
26	242	182	235	50	53	--
27	279	209	328	76	119	--
28	363	272	324	69	52	--
29	355	266	320	57	54	--
30	365	274	332	58	58	--
31	341	256	344	63	88	--
Total Sec.Ft.	8327	6242	7745	5311	1523	20
Mean	269	~~202~~ 201	250	171	49	0.6
Ac.Ft.	16500	12400	15400	10500	3020	40

Table 2.

DIVISION OF ST.MARY RIVER

CANADA

WATER AVAILABLE IN ACRE-FEET.

1934

Month	St.Mary R. at Kimball	Rolph Creek	Lee Creek	Pothole Creek	Combined Flow
April	79,100	-	7,620	173	86,893
May	156,000		5,960	---	161,960
June	138,000		12,400	184	150,584
July	44,200		2,630	---	46,830
August	26,800		387	---	27,187
September	19,700		589	---	20,289
October	15,400	-		---	
Total	479,200	No record			a

DISPOSITION

Month	Diverted by A.R.& I.Co.	Gain or Loss	Wasted by A.R.&I Co	Applied to land	St. Mary R. Lethbridge
April	3,550	1,137	2,860	2,000	84,500
May	41,300	900	4,613	37,587	129,000
June	30,800	2,484	7,376	26,092	139,000
July	33,300	2,859	2,939	33,220	18,400
August	25,600	754	234	26,120	1,480
September	18,700	1,290	292	19,698	2,750
October	10,500	528	2,619	8,409	
Total	b 164,000	c 9,452	d 20,933	f 153,126	x

a - Computed b - Diverted by A.R. & I. Co. at Kimball
c - Gain between Kimball and Magrath
d - Wasted in Pinepound and Pothole Creeks
f - Flow in canal at Magrath plus diversions by Laterals
x - Below all points of diversion

DIVISION OF ST. MARY RIVER

UNITED STATES

Water available in Acre-Feet

1 9 3 3

Month	St. Mary River U.S. Share	St. Mary River Sherburne Res. Stored	St. Mary River Sherburne Res. Released	St. Mary River Total Available for Diversion	Diverted	Unused	Total Flow Milk River Eastern Crossing
April	42,400	17,500		24,900	6,470	18,430	22,620
May	95,600	16,490		79,110	39,700	39,410	51,290
June	77,200	600		76,600	35,800	40,800	56,490
July	25,300		16,173	41,473	42,900	1,427	45,120
Aug.	8,550		31,700	40,250	38,100	2,150	39,130
Sept.	4,820		2,069	6,889	1,560	5,329	9,600
Oct.	4,120	1,158		2,962		2,962	3,650
Total	257,990	35,748	49,942	272,184	164,530	107,654	227,900

Note: Water stored in Sherburne Reservoir April 1 = 20,100 acre-feet
" " " " Oct. 31 = 2,700 "

DIVERSIONS FROM MILK RIVER IN THE UNITED STATES

(Quantities in Acre-feet)

Month	Ft. Belknap	Paradise Canal	Harlem Canal	Agency Canal	Dodson North Canal	Dodson South Canal	Van-dalia Canal	Total
March						4,861		4,861
April	3,104	1,021		2,317		16,276		22,718
May	10,124	4,484	2,654	5,419	3,814	14,310	6,288	47,093
June	5,463	2,081	1,388	4,996	2,779	21,703	3,927	42,337
July	10,655	4,913	3,734	3,215	4,625	12,450	4,977	44,569
Aug.	9,433	4,570	3,128	1,348	3,997	12,212	5,226	39,914
Sept.	4,576	1,341	843		1,511	3,124	4,052	15,447
Oct.	1,658				359		3,074	5,091
Nov.	817						819	1,636
Total	45,830	18,410	11,747	17,295	17,085	84,936	28,363	223,666

Table 3.

DISPOSITION OF THE WATERS OF THE NORTHERN TRIBUTARIES OF MILK RIVER IN CANADA

1934

Quantities in Acre-feet

Irrigator	Source of Supply	Estimated Diversion
Lodge Creek drainage Basin		
R. L. Roth	Lodge Creek	60
G. A. Legge	Grant creek	40
C. B. Spangler	Lodge creek	350
	Total from Lodge creek basin	450
Battle Creek drainage Basin		
J. M. Spangler	Sixmile coulee	200
Lindner Bros.	Battle creek	175
W. G. Patterson	Battle creek	40
J. A. Gaff	Battle creek	75
Shepherd Bros.	Halfway coulee	70
Stirling & Nash	Battle creek	300
	Total from Battle creek basin	860
Frenchman river drainage basin		
D. J. Wylie	Oxarart creek	640
Gilchrist Bros.	Davis creek	60
Gilchrist Bros.	Belanger creek	350
Armstrong	Armstrong creek	40
S. A. Hensman	N. B. Frenchman river	100
S. Pearse	Concrete coulee	80
J. E. Bolingbroke	Bolingbroke coulee	8
W. E. Caton	Fairwell creek	200
A. E. Bate	Bate creek	23
A. E. Bate	Garden creek	4
	Total from Frenchman river	1505

Table 4

DIVERSIONS FROM THE NORTHERN TRIBUTARIES

1 9 3 4

Irrigator	Feb.	March	April	May	June	July	Aug.	Sept.	Total
				Lodge Creek					
N. Chinook Canal	214	2880	1380	42	440				4960
				Battle Creek					
Matheson Canal		56	285	254	80	3			678
				Frenchman River					
Frenchman Canal			257	944	695	126			2020