

P.F.R.A. Hydrology Division,
Motherwell Building,
Regina, Saskatchewan,
28 February 1964.

Chairman and Members,
Prairie Provinces Water Board.

Gentlemen:

Recently you received P.P.W.B. Report No. 7 entitled "Compilation and Reconstruction of Monthly Streamflow Records for the Qu'Appelle-Assiniboine Study." This report was discussed at informal meetings on November 4 and November 6, 1963 in conjunction with P.P.W.B. meetings being held at that time. At those meetings it was requested that a supplement to the report be prepared. The supplement was to contain:

- (a) recorded and reconstructed flows for the Swan River Basin;
- (b) an index table and map showing lake and reservoir gauges in the Assiniboine, Souris and Qu'Appelle River Basins.

I hope that the material herein meets the requirements expressed above.



E.F. Durrant,
Engineering Secretary,
Prairie Provinces Water Board.

TABLE OF CONTENTS

	Page
<u>TEXT</u>	1 & 2

TABLES

No.	
1	Summary of gauging stations in the Swan Lake and Dauphin Lake basins.
2	Summary of gauging stations at lakes and reservoirs in the Assiniboine-Souris-Qu'Appelle watershed.
3	Monthly streamflow records of Stations 5LE ₁ , Swan River @ Swan River, and 5LE ₆ near Minitonas.

FIGURES

No.	
1	Key map of Swan Lake and Dauphin Lake basins showing the location of hydrometric stations.
2	Key map of Assiniboine-Souris-Qu'Appelle watershed showing the location of gauging stations at lakes and reservoirs.

FLOWS IN SWAN LAKE AND DAUPHIN LAKE BASINS

Table 1 summarizes the available streamflow records in these basins. Fig. 1 shows where these records were obtained. This information was compiled from the (1961) provisional list provided by the Water Resources Branch of the Department of Northern Affairs and National Resources (Canada).

One station in the Swan River basin was reconstructed for the entire period 1937-49, namely, Swan River near Minitonas (5LE₆), which was moved there from Swan River (5LE₁) in October 1960. Summer and winter flows at this station were estimated from graphical correlations with station (5MD₂), Shell River at Roblin. Total annual flows were estimated from correlation of annual run-offs. Monthly flows estimated from correlations of monthly run-off were adjusted so as to obtain a total annual flow in agreement with the first correlation. The correlations are not good; therefore, the reconstructed streamflows at this station can be used only for secondary purposes.

There were not sufficient records at other Swan River stations to permit reconstructions of useful accuracy.

INDEX OF LAKE AND RESERVOIR GAUGES

Table 2 summarizes the available lake and reservoir records in the Assiniboine, Souris, and Qu'Appelle watersheds. Fig. 2 shows the locations at which these records were obtained.

Several agencies have operated and are operating these gauges, but the records for the Canadian stations are published by the Water Resources Branch, Department of Northern Affairs and National Resources (Canada).

ADDITIONAL STREAMFLOW GAUGING STATIONS

The Conservation and Development Branch of the Saskatchewan Department of Agriculture began to operate two hydrometric stations in the Upper Assiniboine district prior to 1961 (see Fig. 2):

Station 31-103 Spirit Creek near Buchanan

Station 31-101 Crooked Hill Creek near Canora

During 1962 the Branch established station 31-106 Willow Brook Creek at Willow Brook, in the Upper Assiniboine area.

TABLE I
GAUGING STATIONS IN THE SWAN LAKE
AND DAUPHIN LAKE BASINS

HYDROMETRIC STATIONS	INDEX NUMBER	PERIOD OF RECORD	DRAINAGE AREA (FROM WATER RESOURCES PAPER)
Swan River near Minitonas	5LE ₆	1912 - 36, 1950**	1,520 sq.mi.***
Roaring River near Minitonas	5LE ₅	1959 -	327 sq.mi.
Woody River near Bowsman	5LE ₄	1915 - 19, 1954 -	821 sq.mi.
Birch River at Birch River	5LE ₃	1954 -	61 sq.mi.
* Turtle River near Laurier	5LJ ₇	1922 - 28, 1948 -	418 sq.mi.***
* McKinnon Creek near McCreary	5LJ ₂₇	1959 -	30 sq.mi.
* Scott Creek near Laurier	5LJ ₂₆	1959 -	26 sq.mi.
Ochre River at Ochre River	5LJ ₅	1913 - 30, 1948 -	202 sq.mi.***
Vermilion River near Dauphin	5LJ ₁₂	1948 -	261 sq.mi.***
Edwards Creek near Dauphin	5LJ ₂₂	1957 -	69 sq.mi.
Wilson River near Dauphin	5LJ ₁₁	1948 -	357 sq.mi.***
Valley River at Timberton	5LJ ₂₄	1957 -	295 sq.mi.
Valley River near Grandview	5LJ ₂₁	1956 -	706 sq.mi.
Valley River near Dauphin	5LJ ₁₀	1958 -	1,150 sq.mi.***
Drifting River near Ashville	5LJ ₁₇	1954 -	66 sq.mi.
Mink River near Ethelbert	5LJ ₁₉	1954 -	82 sq.mi.

- * Not shown on Key Map.
- ** Prior to 1960: At Swan River, 5LE₁, (Drainage Area = 1,470 sq.mi.)
- *** For these stations dry and wet drainage areas have been computed and are on file in the Hydrology Division.

TABLE 2

GAUGING STATIONS AT LAKES AND RESERVOIRS IN THE ASSINIBOINE-QU'APPELLE-SOURIS WATERSHED

(Stations maintained by Water Resources Branch Department of Northern Affairs and National Resources unless otherwise noted.)

Station	INDEX NUMBER	PERIOD OF RECORD	REMARKS	LOCATION
Plum Lake near Oak Lake	5 NG 13	1954 —	Prior to 1961: Near Findlay, 5 NG 9	Lat. 49°38' 33" Long 100°43' 58"
Oak Lake at Oak Lake Resort	8 NG 8	1954-1955, 1958-	—	Lat. 49°41' 40" Long 100°42' 30"
Moosomin Reservoir near Moosomin	5 NE 2	1955 —	—	NE ¼ Sec. 29 — Tp. 12 — Rge. 31 — W. 1 st.
Moose Mountain Lake near Corning	5 NC 2	1959 —	—	SE ¼ Sec. 9 — Tp. 11 — Rge. 8 — W. 2 nd.
Maxim Lake Reservoir near Maxim	5 NA 7	1960 —	—	NE ¼ Sec. 21 — Tp. 4 — Rge. 15 — W. 2 nd.
Larsen Dam Reservoir near Radville	5 NA 6	1960 —	—	NW ¼ Sec. 18 — Tp. 6 — Rge. 17 — W. 3 rd.
Boundary Reservoir near Estevan	5 NB 12	1958 —	—	SE ¼ Sec. 4 — Tp. 2 — Rge. 8 — W. 2 nd.
Dead Lake Reservoir near Midale	5 NB 22	1959 —	Intermittent Observations	SE ¼ Sec. 17 — Tp. 11 — Rge. 4 — W. 2 nd.
Roughbark Reservoir near Weyburn	5 NB 16	1959 —	—	NE ¼ Sec. 29 — Tp. 6 — Rge. 13 — W. 2 nd.
Weyburn Reservoir near Weyburn	5 NB 20	1959 —	—	NE ¼ Sec. 24 — Tp. 7 — Rge. 14 — W. 2 nd.
Clear Lake at Wasagaming	5 MF 19	1960 —	—	NE ¼ Sec. 25 — Tp. 19 — Rge. 19 — W. 1 st.
Rivers Reservoir near Rivers	5 MF 20	1960 —	—	Sec. 19 — Tp. 12 — Rge. 20 — W. 1 st.
Last Mountain Lake at Regina Beach	5 J H 2	1944 —	Poor records prior to 1944	SW ¼ Sec. 22 — Tp. 21 — Rge. 22 — W. 2 nd.
Buffalo Pound Lake at Pumping Station	5 J G 9	1955 —	—	NE ¼ Sec. 3 — Tp. 19 — Rge. 25 — W. 2 nd.
Buffalo Pound Lake near Tuxford	5 J G 5	1944 —	—	NE ¼ Sec. 35 — Tp. 18 — Rge. 25 — W. 2 nd.
Echo Lake near Fort Qu'Appelle	5 J K 5	1944 —	—	NW ¼ Sec. 7 — Tp. 21 — Rge. 13 — W. 2 nd.
Katepwa Lake at Katepwa Beach	5 J L 4	1944 —	Prior to 1956: Near Lebret	NW ¼ Sec. 4 — Tp. 20 — Rge. 12 — W. 2 nd.
Crooked Lake near Grayson	5 J M 6	1944 —	Maintained by the P. F. R. A.	SE ¼ Sec. 8 — Tp. 19 — Rge. 5 — W. 2 nd.
Round Lake near Whitewood	5 J M 7	1944 —	Maintained by the P. F. R. A.	NW ¼ Sec. 14 — Tp. 18 — Rge. 3 — W. 2 nd.
Waskana Lake at Regina	5 J F 2	1924-31, 33-36, 38-	Maintained by Gov. of Sask., Dept. of Public Works	Lat. 50°26' 10" Long 104° 37' 00"
Little Manitou Lake at Manitou Beach	5 J I 1	1918-22, 29-30, 57-	Prior to 1957: Near Watrous	NW ¼ Sec. 2 — Tp. 32 — Rge. 25 — W. 2 nd.
Lake Darling near Foxholm N.D.	5-1155	1936 —	Maintained by the U.S. Geological Survey	NE ¼ Sec. 1 — Tp. 157N — Rge. 85W
Lake Metigoshe near Bottineau N.D.	5-1230	1953 —	Maintained by the U.S. Geological Survey	SW ¼ Sec. 35 — Tp. 164N — Rge. 75W
Upper Souris Refuge, Dams 87 and 96			Maintained by U. S. Fish and Wildlife Service	See Fig. 2
Des Lacs Refuge, Units 1 to 8			Maintained by U. S. Fish and Wildlife Service	Not shown on Fig. 2
Lower Souris Refuge, Dams 320, 326, 332, 341, 357			Maintained by U. S. Fish and Wildlife Service	See Fig. 2

TABLE 3

16-36-27-W1

Drainage Area: 1,470

HYDROMETRIC SUMMARY

30

Swan River (River, canal, lake)		Swan River (Location)													
		51E1													
(Recorded or Natural)		Station Index No.												Monthly Units (c.f.s.m., g.m.s.l.)	
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	TOTAL Ac.Ft	cfam Year	
1911	16	16	26	410	370	790	255	150	210	295	240	22	173,000		
1912	26	20	26	320	1,150	900	370	120	825	945	400	100	314,900		
1913	70	50	50	2,250	1,050	480	1,830	539	251	169	100	50	417,200		
1914	40	40	30	1,200	1,570	229	51	22	32	50	40	20	201,200		
1915	0	0	11	100	81	96	202	74	39	60	40	10	61,300		
1916	17	13	11	520	519	1,710	564	130	87	130	75	18	228,700		
1917	6	3	4	555	1,450	403	643	87	66	48	57	34	204,200		
1918	13	4	200	456	289	822	1,010	242	124	118	71	21	204,500		
1919	13	10	9	707	422	147	165	103	185	247	78	11	126,700		
1920	8	5	7	1,650	2,330	560	162	54	47	100	45	25	302,400		
1921	15	10	8	1,110	959	770	400	567	487	526	350	100	320,600		
1922	50	30	25	2,620	3,590	501	207	290	189	168	172	35	477,200		
1923	20	15	50	2,160	1,930	1,650	1,050	293	102	110	46	38	451,000		
1924	32	24	21	505	452	208	86	358	79	101	52	30	118,000		
1925	16	5	29	2,910	520	1,090	681	141	127	104	62	27.5	343,000		
1926	13	6.7	21.8	1,710	381	383	90	17.3	28.2	114	127	34	175,400		
1927	19.7	10.7	20.6	1,690	2,020	1,200	618	250	423	332	174	58	412,100		
1928	25.7	11.4	235	348	417	186	454	99	57	48.3	25	8	116,500		
1929	0.6	0.2	8	250	218	126	111	23.6	21	22.8	15	10	48,800		
1930	7	5	6	311	283	330	304	39.3	47.7	39.5	20	15	85,100		
1931	8	4	5	342	97	44.3	47.3	19.9	54	106	50	30	48,700		
1932	25	10	7	740	181	97	228	45.2	42	48.5	20	15	87,300		
1933	9	7	9	843	617	690	390	59	80	93	5	10	169,600		
1934	7	6	25	1,080	1,400	396	227	47	37.8	53	25	10	200,700		
1935	9	10	15	520	310	815	341	56	37.5	60	30	15	133,600		
1936	15	12	10	1,035	778	385	175	26.3	16	30	15	10	151,200		
1937	7	6	4	360	220	130	10	6	6	10	7	4	48,200		
1938	6	9	110	830	160	130	70	40	20	34	35	9	86,100		
1939	9	8	25	320	245	155	120	35	20	45	30	11	61,800		
1940	4	3	2	90	75	60	5	12	10	23	10	6	18,100		
1941	8	9	7	610	210	90	10	7	9	15	6	6	59,200		
1942	5	4	30	1,550	230	130	90	115	100	65	30	10	141,400		
1943	6	5	1	1,060	510	130	120	60	30	40	20	10	138,700		
1944	3	2	1	110	165	110	42	20	30	30	21	6	34,400		
1945	4	5	161	450	370	265	200	70	51	90	10	9	103,800		
1946	5	5	77	915	235	175	170	36	21	62	37	9	105,200		
1947	7	7	9	1,250	1,275	1,095	1,165	190	165	185	110	20	332,800		
1948	29	23	20	940	2,155	470	762	335	93	80	59	24	303,600		
1949	8	4	5	260	240	205	76	54	20	27	55	6	53,100		
1950	5	4	3	178	470	310	230	288	64	65	98	34.5	106,300		
1951	22.4	20.6	22.4	814	1,550	479	259	184	557	620	327	72	298,500		
1952	32.9	23.3	26.2	1,580	672	301	203	125	91	68	52	22.6	192,500		
1953	29.1	19.2	20.9	1,110	752	921	1,700	644	657	208	191	75	383,200		
1954	40.6	40	37.6	827	1,800	2,700	634	125	359	252	163	76	425,500		
1955	26	33	34	1,736	1,830	309	142	27	17	40.5	37.6	24.6	257,400		
1956	21	20	24.2	554	2,310	537	516	137	98	46	40	25	263,600		
TOTAL	750	578	1,499	42,246	38,888	23,990	17,235	6402	6113	6125	3683	1221	8,986,300		
AVER- AGE:	16	13	33	918	845	522	375	139	133	133	80	27	195,400		

RECORDED ESTIMATED

TABLE 3

Drainage Area: 1470

Basin No. 30

HYDROMETRIC SUMMARY

SWAN RIVER @ SWAN RIVER
(Stream, Canal, Lake)

Sec. 16, Tp. 36, Rge. 27, W1
(Location)

5LE₁

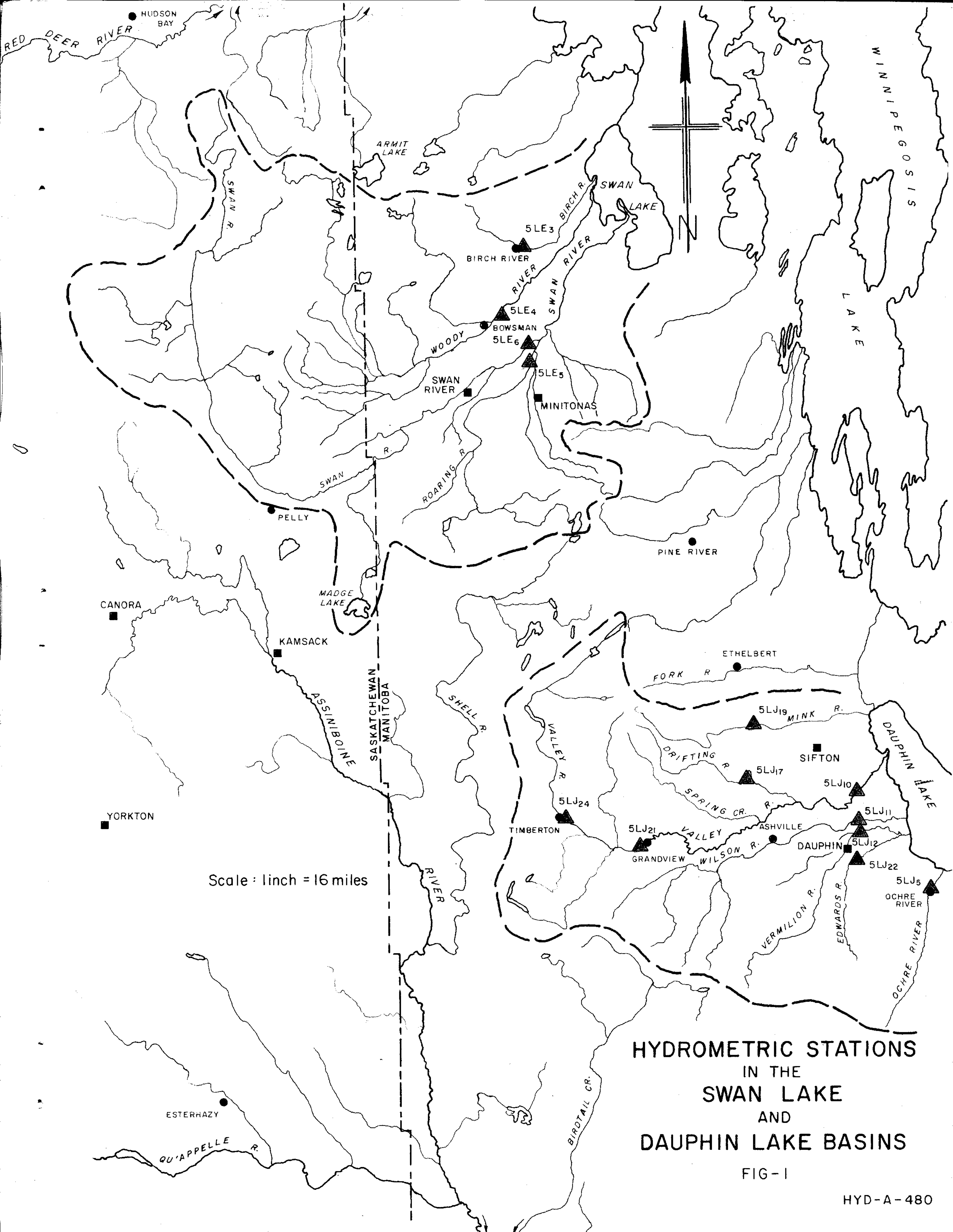
(Recorded or Natural)

(Station Index No.)

(Monthly Units (c.f.s.))

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL Ac-ft
1957	17.8	13.0	12.2	1780	1320	269	126	43.1	53	52	42.5	22.1	226,286
1958	17.4	11.1	26.8	246	93	71	110	22	7.6	58	33.5	15.2	41,193
1959	4.7	0	16.1	354	231	133	176	28.8	127	198	130	43.9	87,218
1960	24.1	19.4	18.2	1580	728	451	97.3	44	12.6	17.8*	20.3	12.9	181,860
1961	8.9	5.4	4.0	30.5	53.8	25.3	3.1	4.7	0.3				

* Station moved to Sec. 24, Tp. 37, Rge. 26, W1 near Minitonas.
 Drainage area = 1520m².
 Index number: 5LE₆



Scale : 1 inch = 16 miles

**HYDROMETRIC STATIONS
IN THE
SWAN LAKE
AND
DAUPHIN LAKE BASINS**

FIG-1