

STREAMS TRIBUTARY TO LAKE SUPERIOR

04010500 PIGEON RIVER AT MIDDLE FALLS, NEAR GRAND PORTAGE, MN
(International gaging station)

LOCATION.--Lat 48°00'44", long 89°36'58", in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 24, T.64 N., R.6 E., Cook County, Hydrologic Unit 04010101, on the Grand Portage Indian Reservation, on right bank 400 ft upstream from Middle Falls, 2.5 mi upstream from Grand Portage Port of Entry, 3.5 mi upstream from mouth, and 4.7 mi northeast of city of Grand Portage.

DRAINAGE AREA.--609 mi².

PERIOD OF RECORD.--June to October 1921, April to November 1922, March 1923 to current year. Published as "at International Bridge" April 1924 to September 1940; as "below International Bridge" October 1940 to September 1965. Monthly discharge only for some periods, published in WSP 1307.

REVISED RECORDS.--WSP 744:1927-28. WSP 804: 1934(M). WSP 974: Drainage area. WSP 1337:1924(M), 1925, 1926-28(M), 1931(M), 1938(M), 1941(M), 1945-46(M), 1947, 1948(M), 1950(M).

GAGE.--Water-stage recorder. Datum of gage is 787.58 ft above sea level. Prior to Sept. 30, 1940, nonrecording gage at International Bridge, 5.8 mi upstream at datum 102.24 ft higher. Oct. 1, 1940 to Dec. 31, 1975, at present site at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Satellite telemeter at station.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft³/s (revised) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct 17	0900	*4,690	9.58	Apr 13	1730	(ice jam)	*9.61
Nov 11	--	a,e3,200	(unknown)	Apr 16	2200	3,870	8.93

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	406	977	e390	e237	e209	e400	1620	841	391	499	279
2	40	376	917	e380	e233	e209	e460	1520	831	383	477	268
3	39	345	852	e375	e231	e209	e520	1430	797	374	450	262
4	38	314	831	e365	e230	e209	e590	1350	747	409	431	264
5	45	295	907	e360	e228	e208	e690	1280	718	1580	414	276
6	175	287	1160	e350	e227	e207	e770	1280	703	2330	398	277
7	225	273	991	e345	e225	e207	901	2110	688	1820	404	282
8	233	262	825	e335	e224	e208	1120	2230	712	1220	409	377
9	194	258	e740	e325	e224	e209	1500	1870	705	1300	408	401
10	159	e1450	e720	e320	e223	e210	e1640	1610	666	1690	431	402
11	135	e3200	e650	e315	e223	e210	e1720	1430	647	1510	416	385
12	129	2120	e620	e305	e221	e210	e1890	1310	654	1230	451	374
13	126	1410	e590	e300	e220	e210	e2180	1220	642	1080	701	359
14	119	1190	e550	e295	e218	e210	2600	1140	606	1050	696	347
15	113	1090	e540	e290	e217	e210	3390	1070	572	1000	612	337
16	462	967	e524	e285	e216	e210	3740	1020	535	992	745	324
17	3560	847	e510	e283	e214	e210	3710	1000	503	962	741	306
18	4210	771	e505	e280	e214	e210	3200	1040	476	903	673	288
19	4320	1090	e500	e278	e214	e211	2750	1030	450	826	579	283
20	3130	1050	e490	e274	e213	e212	2530	1210	428	762	506	296
21	1920	930	e480	e270	e213	e213	2370	1590	409	717	458	297
22	1370	931	e470	e265	e212	e215	2310	1400	394	685	421	289
23	1110	955	e460	e262	e211	e218	2210	1440	401	675	395	279
24	927	974	e450	e260	e210	e219	2090	1570	443	670	380	267
25	788	944	e440	e257	e210	e223	2040	1450	445	654	363	257
26	695	958	e435	e253	e210	e228	2090	1310	411	628	355	277
27	622	881	e430	e250	e209	e240	2110	1170	407	595	330	363
28	557	821	e420	e247	e209	e265	2020	1060	421	602	313	408
29	509	797	e415	e245	---	e295	1890	962	422	587	299	393
30	471	908	e405	e240	---	e325	1740	884	407	562	287	372
31	434	---	e400	e240	---	e360	---	857	---	533	293	---
TOTAL	26898	27100	19204	9239	6136	6989	57171	41463	17081	28720	14335	9589
MEAN	868	903	619	298	219	225	1906	1338	569	926	462	320
MAX	4320	3200	1160	390	237	360	3740	2230	841	2330	745	408
MIN	38	258	400	240	209	207	400	857	394	374	287	257
AC-FT	53350	53750	38090	18330	12170	13860	113400	82240	33880	56970	28430	19020
CFSM	1.42	1.48	1.02	.49	.36	.37	3.13	2.20	.93	1.52	.76	.52
IN.	1.64	1.66	1.17	.56	.37	.43	3.49	2.53	1.04	1.75	.88	.59

a Daily-mean discharge, backwater from ice.

e Estimated

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1999, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	364	355	208	152	126	175	1196	1614	842	422	241	292
MAX	2095	1461	720	431	300	1169	2701	4016	2801	1127	1029	2985
(WY)	1978	1971	1978	1975	1969	1945	1976	1950	1947	1968	1950	1977
MIN	17.4	11.4	2.85	2.18	8.02	60.0	290	138	125	78.0	46.5	40.2
(WY)	1977	1977	1977	1977	1977	1941	1977	1977	1977	1958	1998	1976

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1921 - 1999
ANNUAL TOTAL	142903	263925	
ANNUAL MEAN	392	723	502
HIGHEST ANNUAL MEAN			840
LOWEST ANNUAL MEAN			158
HIGHEST DAILY MEAN	4320	4320	10700
LOWEST DAILY MEAN	33	38	1.0 ^a
ANNUAL SEVEN-DAY MINIMUM	36	86	1.0
INSTANTANEOUS PEAK FLOW		4690	11000
INSTANTANEOUS PEAK STAGE		9.61 ^b	7.60 ^c
INSTANTANEOUS LOW FLOW		36	1.0
ANNUAL RUNOFF (AC-FT)	283400	523500	363600
ANNUAL RUNOFF (CFSM)	.64	1.19	.82
ANNUAL RUNOFF (INCHES)	8.73	16.12	11.20
10 PERCENT EXCEEDS	1000	1600	1290
50 PERCENT EXCEEDS	157	435	223
90 PERCENT EXCEEDS	44	211	84

a Minimum observed.
b Backwater from ice.
c Site and datum then in use.

