Water-Data Report 2013

05030500 OTTER TAIL RIVER NEAR ELIZABETH, MN

Upper Red Basin
Otter Tail Subbasin

LOCATION.--Lat 46°22′10″, long 96°01′02″ referenced to North American Datum of 1927, in SW ¼ SE ¼ sec.31, T.134 N., R.42 W., Otter Tail County, MN, Hydrologic Unit 09020103, on right bank at County Highway 10, 2.5 miles below Taplin Gorge Dam, 5.0 miles above the Diversion Dam, 5.7 miles east of Elizabeth and 6.6 miles northeast of Fergus Falls.

DRAINAGE AREA.--1,230 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--May 1904 to September 1917, monthly discharge only, published as "at German Church near Fergus Falls" in WSP 1308. July 1992 to current year.

REVISED RECORDS.--1904(M). WDR MN-03-1: Minimum discharge, 2000 and 2001 water years. Unpublished, 2009: 1994(M).

GAGE.--Water-stage recorder. Elevation of gage is 1,250 ft above sea level (from topographic map). Non-recording gage at same site November 1913 to September 1917 at elevation 1,265 ft (from topographic map).

REMARKS.--Records good except for estimated daily discharges, which are fair to poor and the period June 21 to Oct. 29, which are fair, due to debris. Flow regulated by power plant upstream.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	92	82	80	114	e118	e218	e252	468	1,050	1,020	677	266
2	91	81	81	109	e122	e218	e258	455	1,040	1,010	659	177
3	90	81	83	116	e125	222	e261	453	1,070	1,000	640	227
4	88	81	83	109	e126	215	262	459	1,070	991	623	185
5	85	80	131	109	e127	216	259	473	1,090	976	600	188
6	86	80	66	109	e129	221	248	500	1,110	963	585	192
7	87	80	81	109	e131	e212	245	577	1,100	953	575	242
8	86	80	92	110	e132	212	256	583	1,100	941	535	153
9	86	80	98	111	165	215	241	566	1,100	945	533	262
10	85	80	57	120	e164	226	248	580	1,100	937	528	257
11	86	80	66	156	e163	e222	253	593	1,130	930	519	253
12	85	80	66	e155	e135	225	256	614	1,120	915	498	246
13	87	80	67	e109	e165	e222	259	651	1,110	916	500	279
14	85	80	70	e103	e190	e225	259	717	1,110	918	513	252
15	85	80	112	119	e192	e229	259	714	1,100	927	462	254
16	85	80	128	e124	210	234	262	712	1,080	920	437	350
17	83	80	77	136	204	e233	273	711	1,070	919	446	277
18	82	80	78	133	e208	e235	287	736	1,080	917	442	255
19	81	80	85	e133	e215	e238	312	780	1,090	901	404	271
20	81	79	108	e134	e216	e238	321	876	1,100	887	357	276
21	82	80	106	e136	e217	e240	321	931	1,150	861	396	278
22	81	80	106	e137	e217	e240	333	933	1,110	813	375	277
23	81	79	106	e137	e216	e240	345	946	1,090	857	281	277
24	82	79	106	e135	e216	e241	355	963	1,080	834	328	275
25	82	79	92	e135	220	248	365	979	1,070	783	339	272
26	82	78	87	e130	208	e245	383	980	1,070	777	322	272
27	82	79	88	e125	e208	e246	400	980	1,050	762	266	190
28	82	80	90	e118	216	248	411	994	1,040	742	230	216
29	82	73	90	e114	---	246	432	980	1,030	688	274	254
30	82	76	95	e113	---	248	461	1,030	1,020	692	280	250
31	82	---	110	e116	---	248	---	1,060	---	689	276	---
Total	2,616	2,387	2,785	3,814	4,955	7,166	9,077	22,994	32,530	27,384	13,900	7,423
Mean	84.4	79.6	89.8	123	177	231	303	742	1,084	883	448	247
Max	92	82	131	156	220	248	461	1,060	1,150	1,020	677	350
Min	81	73	57	103	118	212	241	453	1,020	688	230	153
Ac-ft	5,190	4,730	5,520	7,570	9,830	14,210	18,000	45,610	64,520	54,320	27,570	14,720
Cfsm	0.07	0.06	0.07	0.10	0.14	0.19	0.25	0.60	0.88	0.72	0.36	0.20
In.	0.08	0.07	0.08	0.12	0.15	0.22	0.27	0.70	0.98	0.83	0.42	0.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	305	334	331	314	328	375	566	744	719	591	423	334
Max	1,028	1,032	832	649	630	669	1,095	1,303	1,235	957	801	944
(WY)	(2011)	(2011)	(2011)	(2011)	(2011)	(2011)	(2009)	(2011)	(2011)	(2011)	(2010)	(2010)
Min	66.6	63.4	69.2	61.9	81.3	159	251	286	429	341	191	97.8
(WY)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2004)	(2002)	(2004)	(2006)	(2003)

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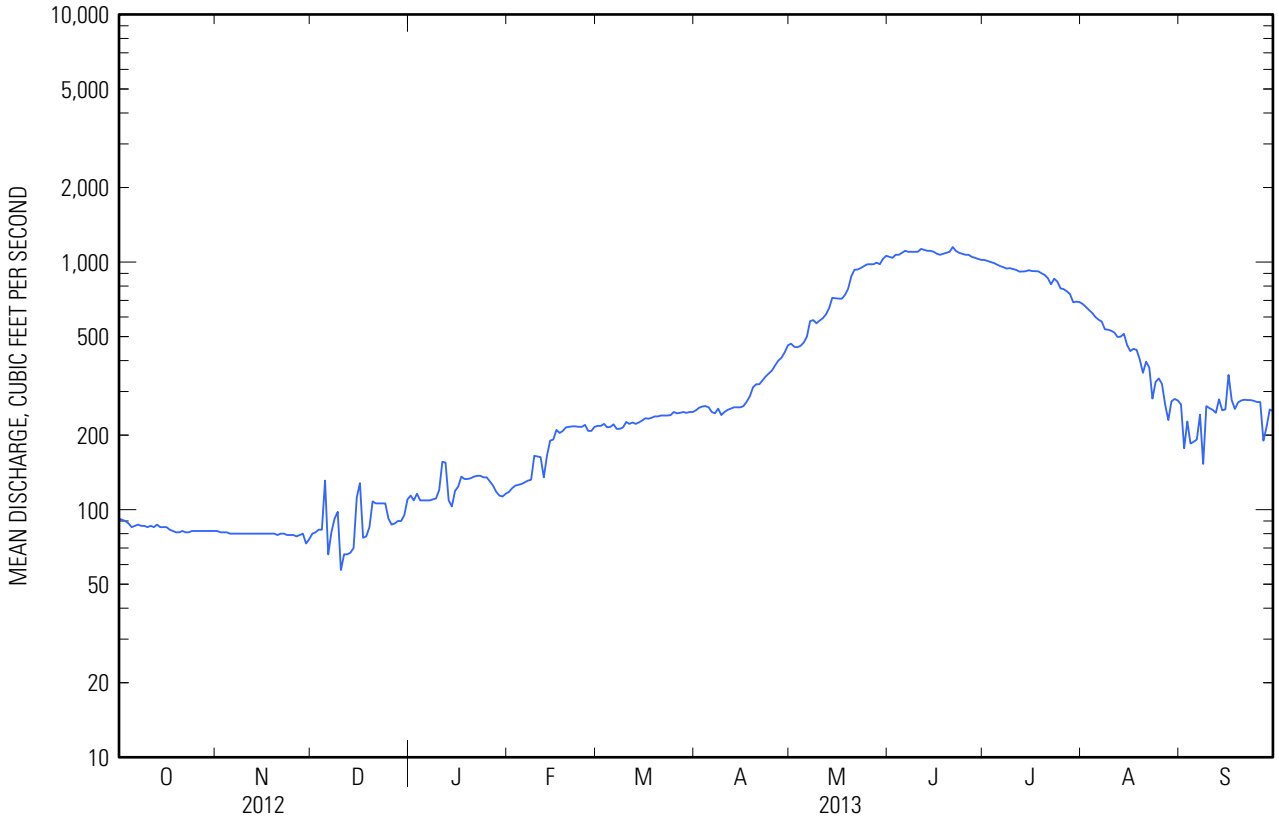
SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1992 - 2013	
Annual total	127,815		137,031			
Annual mean	349		375		449	
Highest annual mean					881	2011
Lowest annual mean					195	2004
Highest daily mean	762	May 31	[a]1,150	Jun 21	[a]1,360	Jun 2, 2011
Lowest daily mean	57	Dec 10	[a]57	Dec 10	[b]48	Jan 30, 2004
Annual seven-day minimum	74	Dec 8	74	Dec 8	50	Jan 29, 2004
Maximum peak flow			[c]1,180	Jun 21	[d]1,360	Jun 1, 2011
Maximum peak stage			[f]8.94	Jun 24	[g]9.96	Dec 14, 2010
Instantaneous low flow			[h]38	Nov 29	[h]8.8	Mar 25, 2004
Annual runoff (ac-ft)	253,500		271,800		325,100	
Annual runoff (cfsm)	0.284		0.305		0.365	
Annual runoff (inches)	3.87		4.14		4.96	
10 percent exceeds	713		992		798	
50 percent exceeds	324		240		400	
90 percent exceeds	81		81		176	

[a] Affected by regulation.
[b] Result of regulation, estimated daily-mean, backwater from ice.
[c] Affected by regulation, Gage height 8.78 ft.
[d] Affected by regulation. Gage height 9.69 ft.
[f] Affected by regulation, backwater from debris.
[g] Backwater from ice.
[h] Result of regulation.