

Water-Data Report 2009

05046000 OTTER TAIL RIVER BELOW ORWELL DAM, NEAR FERGUS FALLS, MN

Upper Red Basin
Otter Tail Subbasin

LOCATION.--Lat 46°12'35", long 96°11'05" referenced to North American Datum of 1927, in NE ¼ NE ¼ sec.34, T.132 N., R.44 W., Otter Tail County, MN, Hydrologic Unit 09020103, on left bank 0.7 mi downstream from Orwell Dam on County Highway 15, 6.1 mi downstream from Dayton Hollow Dam, 8 mi southwest of Fergus Falls, and 11.1 mi downstream from Pelican River.

DRAINAGE AREA.--1,740 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1930 to current year. Prior to October 1952, published as "Otter Tail River below Pelican River, near Fergus Falls". Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 785: 1934(M). WSP 1208: 1947(M). WSP 1308: 1931(M).

GAGE.--Water-stage recorder. Datum of gage is 1,029.65 ft above sea level ((NGVD of 1912, levels by U.S. Army Corps of Engineers). Oct. 11, 1930 to Nov. 17, 1933, at same site at datum 2.00 ft higher; Nov. 18, 1933 to Mar. 21, 1953, at site 6.1 mi upstream at datum 40.30 ft higher.

REMARKS.--Records good. Flow regulated at Orwell Lake (station 05045950) beginning Mar. 21, 1953, and by power plants upstream.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	300	629	745	e360	573	591	1,460	1,950	1,600	1,250	780	559
2	300	627	760	e360	593	642	1,460	1,950	1,520	1,160	780	591
3	300	627	758	e360	586	694	1,510	1,950	1,310	1,150	780	603
4	300	676	725	e360	579	741	1,580	1,950	1,340	1,150	780	598
5	300	699	676	e360	626	748	1,580	1,950	1,380	1,150	772	597
6	300	696	656	e533	668	740	1,570	1,940	1,410	1,150	750	594
7	300	647	651	648	656	736	1,600	1,900	1,410	1,140	739	591
8	300	617	602	747	650	729	1,650	1,880	1,450	1,130	758	523
9	323	621	512	744	547	750	1,680	1,890	1,490	1,090	748	462
10	369	621	460	746	501	762	1,680	1,890	1,510	1,040	692	423
11	467	621	460	742	595	757	1,690	1,890	1,500	1,010	658	424
12	469	681	460	748	712	760	1,700	1,900	1,430	1,000	658	447
13	473	742	467	754	727	741	1,770	1,910	1,370	955	634	448
14	527	760	473	756	727	703	1,950	1,970	1,370	910	621	489
15	636	759	473	751	727	690	1,960	2,010	1,370	1,030	622	511
16	640	754	473	749	720	735	1,960	2,000	1,330	1,120	623	511
17	614	724	473	736	715	949	1,950	1,980	1,400	1,120	621	531
18	627	696	473	730	682	1,110	1,950	1,920	1,520	1,110	627	568
19	621	663	473	730	640	1,100	1,950	1,840	1,360	1,100	627	563
20	531	645	473	723	627	1,090	1,950	1,830	1,200	1,050	645	558
21	473	603	473	718	627	1,260	1,950	1,830	1,220	1,020	692	519
22	473	571	473	709	627	1,230	1,950	1,830	1,460	1,010	708	413
23	473	568	473	693	627	1,050	1,980	1,810	1,560	944	705	354
24	477	568	473	688	602	1,430	1,990	1,800	1,550	895	701	354
25	480	529	473	684	586	1,710	1,980	1,790	1,470	895	696	356
26	485	497	609	683	588	1,630	1,950	1,740	1,430	893	624	360
27	529	505	813	686	591	1,630	1,960	1,710	1,430	864	531	363
28	556	642	811	682	591	1,630	1,950	1,720	1,430	768	477	387
29	557	714	813	682	---	1,550	1,950	1,720	1,430	731	460	417
30	649	714	e620	645	---	1,460	1,950	1,700	1,370	763	460	428
31	661	---	e540	573	---	1,460	---	1,680	---	784	508	---
Total	14,510	19,416	17,814	20,080	17,690	31,808	54,210	57,830	42,620	31,382	20,477	14,542
Mean	468	647	575	648	632	1,026	1,807	1,865	1,421	1,012	661	485
Max	661	760	813	756	727	1,710	1,990	2,010	1,600	1,250	780	603
Min	300	497	460	360	501	591	1,460	1,680	1,200	731	460	354
Ac-ft	28,780	38,510	35,330	39,830	35,090	63,090	107,500	114,700	84,540	62,250	40,620	28,840
Cfs/m	0.27	0.37	0.33	0.37	0.36	0.59	1.04	1.07	0.82	0.58	0.38	0.28
In.	0.31	0.42	0.38	0.43	0.38	0.68	1.16	1.24	0.91	0.67	0.44	0.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	272	285	277	274	274	365	543	652	641	481	322	272
Max	973	841	747	825	742	1,026	1,807	1,865	1,544	1,246	1,080	1,026
(WY)	(1994)	(2005)	(2006)	(2006)	(1999)	(2009)	(2009)	(2009)	(2007)	(1953)	(1985)	(1993)
Min	9.15	8.42	8.10	15.1	10.8	23.5	39.5	14.1	14.2	12.8	11.5	7.99
(WY)	(1977)	(1977)	(1977)	(1937)	(1935)	(1937)	(1934)	(1977)	(1934)	(1936)	(1934)	(1934)

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SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1931 - 2009	
Annual total	222,338		342,379			
Annual mean	607		938		389	
Highest annual mean					938	2009
Lowest annual mean					20.4	1934
Highest daily mean	1,190	Jun 18	^a 2,010	May 15	^a 2,010	May 15, 2009
Lowest daily mean	275	Jan 29	^b 300	Oct 1	^c 1.6	Feb 7, 1937
Annual seven-day minimum	294	Jan 26	300	Oct 1	5.9	Sep 15, 1934
Maximum peak flow			^a 2,020	Apr 23	2,040	May 29, 2001
Maximum peak stage			^a 5.25	Apr 23	5.60	Jun 17, 1953
Instantaneous low flow			^d 300	Oct 1	^e 0.70	Aug 5, 1970
Annual runoff (ac-ft)	441,000		679,100		281,500	
Annual runoff (cfsm)	0.349		0.539		0.223	
Annual runoff (inches)	4.75		7.32		3.03	
10 percent exceeds	1,100		1,830		827	
50 percent exceeds	508		725		324	
90 percent exceeds	340		468		43	

^a Affected by regulation.

^b Due in part to regulation. Occured Oct 1 - Oct 8.

^c Due in part to regulation.

^d Due to regulation. From event starting Sept 26, 2008.

^e Due to regulation.

