Water-Data Report 2013

04111000 GRAND RIVER NEAR EATON RAPIDS, MI

Southeastern Lake Michigan Basin
Upper Grand Subbasin

LOCATION.--Lat 42°32′05″, long 84°37′23″ referenced to North American Datum of 1927, in NE ¼ sec.26, T.2 N., R.3 W., Eaton County, MI, Hydrologic Unit 04050004, on right bank 400 ft upstream from bridge on Petrieville Highway, 2 mi northeast of Eaton Rapids, 2.5 mi downstream from Spring Brook, 25 mi upstream from Red Cedar River, and at mile 178.

DRAINAGE AREA.--661 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1950 to September 1982, October 1995 to current year. Gage-height records collected in this vicinity 1905-28 (flood seasons only) are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1707: 1951 (m).

GAGE.--Water-stage recorder. Datum of gage is 852.68 ft above NGVD 29 (levels by Michigan Department of Natural Resources).

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by powerplant at Smithville Dam and mills at Eaton Rapids. Gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 4, 1950, reached a stage of 8.15 ft, discharge, 3,860 ft^3/s.

Suggested citation: U.S. Geological Survey, 2014, Water-resources data for the United States, Water Year 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 04111000, accessed at http://wdr.water.usgs.gov/wy2013/pdfs/04111000.2013.pdf

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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	103	275	184	e268	974	461	479	1,790	439	516	205	393
2	105	291	199	e253	e830	448	460	1,640	428	506	199	332
3	112	289	203	e188	e740	431	444	1,470	422	486	194	321
4	113	259	235	e222	710	444	409	1,350	422	461	187	287
5	119	225	368	e237	e700	439	394	1,200	394	426	181	260
6	105	230	345	244	e685	414	439	1,090	375	397	178	237
7	118	189	355	e231	696	339	350	981	344	371	192	223
8	119	201	315	e227	e650	322	396	923	326	363	198	210
9	112	189	362	226	e620	436	413	881	308	348	200	218
10	120	187	386	238	e590	491	451	848	335	349	205	247
11	118	190	336	281	592	687	671	818	339	331	188	294
12	129	205	365	359	612	e884	951	788	362	321	228	316
13	138	214	270	483	609	e950	1,080	757	786	307	286	340
14	188	220	255	532	603	e915	1,130	724	769	288	389	337
15	204	210	254	504	594	e860	1,140	692	735	274	377	277
16	210	202	251	455	584	789	1,070	661	741	262	358	245
17	201	200	255	487	e556	764	1,040	621	696	288	324	241
18	215	198	249	474	e538	757	1,330	600	609	276	303	228
19	214	195	242	462	552	745	2,050	582	535	255	273	216
20	230	196	267	441	542	718	2,580	573	492	257	239	214
21	228	197	309	e339	544	687	2,740	543	449	248	231	209
22	217	197	369	e296	e479	663	2,390	552	407	267	211	223
23	247	193	338	e323	461	651	1,940	520	392	248	202	215
24	255	192	305	e352	436	629	1,910	501	370	238	213	211
25	262	192	276	e397	402	611	1,890	465	374	224	204	200
26	248	187	e274	e405	398	595	1,860	419	379	219	187	191
27	232	185	e258	e385	420	583	1,760	390	368	198	189	186
28	219	190	238	e445	442	566	1,640	444	494	198	347	183
29	211	183	265	498	---	541	1,580	530	570	200	399	176
30	213	185	e255	932	---	518	1,640	495	521	202	422	174
31	237	---	e243	1,110	---	494	---	455	---	204	428	---
Total	5,542	6,266	8,826	12,294	16,559	18,832	36,627	24,303	14,181	9,528	7,937	7,404
Mean	179	209	285	397	591	607	1,221	784	473	307	256	247
Max	262	291	386	1,110	974	950	2,740	1,790	786	516	428	393
Min	103	183	184	188	398	322	350	390	308	198	178	174
Cfsm	0.27	0.32	0.43	0.60	0.89	0.92	1.85	1.19	0.72	0.46	0.39	0.37
In.	0.31	0.35	0.50	0.69	0.93	1.06	2.06	1.37	0.80	0.54	0.45	0.42

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	265	359	472	526	618	954	931	706	470	292	221	217
Max	875	744	1,457	1,406	1,489	1,932	1,582	1,848	1,380	1,234	855	1,084
(WY)	(1955)	(2002)	(2012)	(1952)	(2001)	(1974)	(2009)	(1956)	(2010)	(1968)	(2011)	(2008)
Min	64.6	94.7	86.0	96.5	111	223	378	200	138	94.7	78.8	64.6
(WY)	(1964)	(1964)	(1964)	(1963)	(1964)	(1964)	(1964)	(1958)	(1964)	(1965)	(1963)	(1963)

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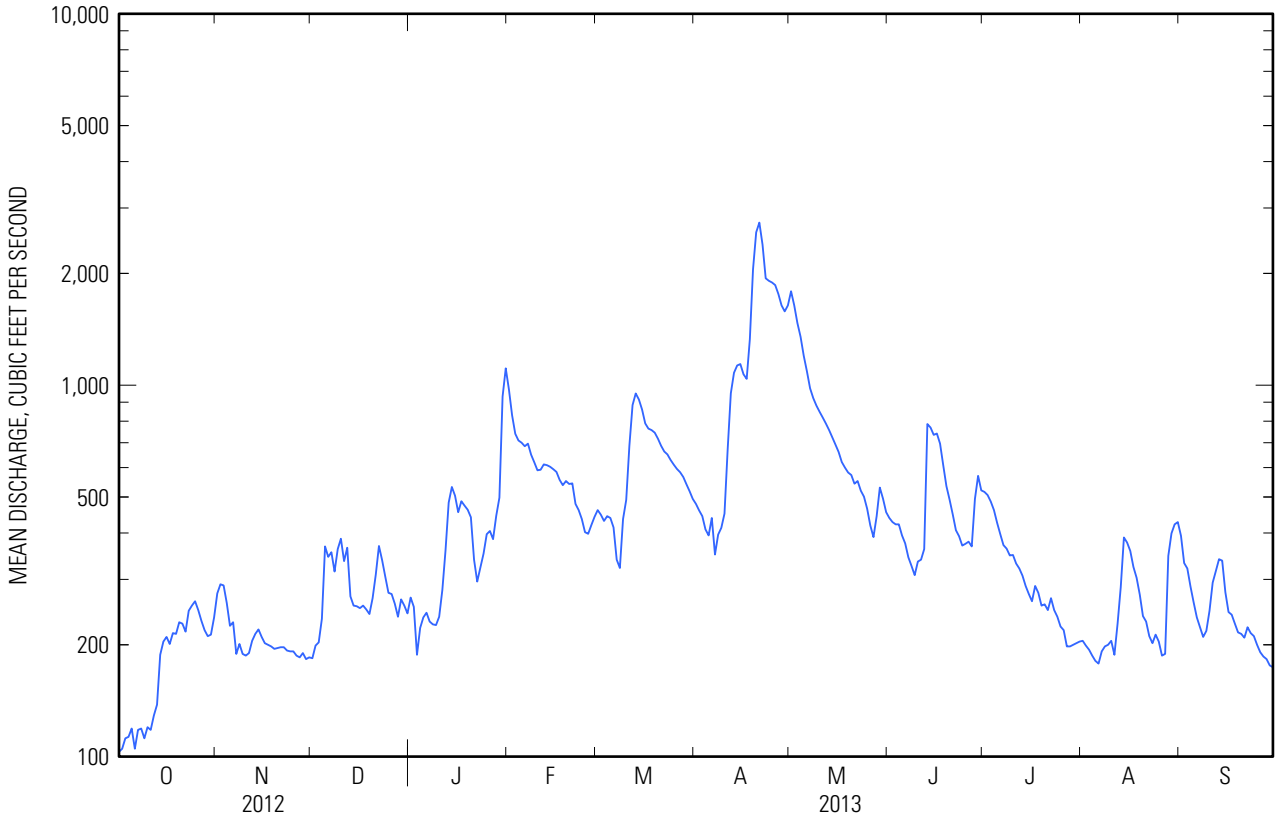
SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1951 - 2013	
Annual total	173,018		168,299			
Annual mean	473		461		502	
Highest annual mean					847	2009
Lowest annual mean					147	1964
Highest daily mean	1,690	Mar 3	2,740	Apr 21	3,510	Sep 16, 2008
Lowest daily mean	88	Aug 2	103	Oct 1	21	Oct 12, 1963
Annual seven-day minimum	92	Aug 2	111	Oct 1	52	Oct 10, 1963
Maximum peak flow			2,790	Apr 21	[a]3,590	Sep 16, 2008
Maximum peak stage			6.97	Apr 21	8.19	Jun 28, 1968
Instantaneous low flow			92	Oct 1[b]	14	Dec 20, 1962[c]
Annual runoff (cfsm)	0.715		0.698		0.759	
Annual runoff (inches)	9.74		9.47		10.31	
10 percent exceeds	1,110		837		1,070	
50 percent exceeds	255		348		361	
90 percent exceeds	108		192		127	

[a] Gage height 8.17 ft.
[b] Also occurred Oct. 2.
[c] Also occurred Oct. 14, 1966.