04156000 TITTABAWASSEE RIVER AT MIDLAND, MI

Saginaw Basin
Tittabawassee Subbasin

LOCATION.--Lat 43°35′43″, long 84°14′08″ referenced to North American Datum of 1927, in NW ¼ NE ¼ sec.28, T.14 N., R.2 E., Midland County, MI, Hydrologic Unit 04080201, on right bank 2,000 ft downstream from dam at Dow Chemical Co. in Midland, 0.7 mi upstream from Bullock Creek, 1.4 mi downstream from Chippewa River, and 23 mi upstream from mouth.

DRAINAGE AREA.--2,400 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1936 to current year. Gage-height records for flood seasons collected in this vicinity 1910-26, 1928, are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 1045: 1945. WSP 1144: 1948.

GAGE.--Water-stage recorder. Datum of gage is 580.08 ft above sea level (levels by Wade-Trim Assoc.). Prior to Sept. 30, 1955, at datum 10.20 ft higher, Oct. 1, 1955 to Sept. 30, 1993, at datum 0.20 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor. Prior to 1992 water year, diversion was used in computing annual mean discharge and runoff figures, extremes and daily discharge were not adjusted for diversion. Prior to May 20, 1970, discharge below 4,000 ft^3/s regulated by dam 2,000 ft upstream from station; fixed crest dam since. Gage-height telemeter at station.

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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	729	716	1,240	7,360	e1,030	e12,100	4,240	11,900	1,690	996	514	947
2	751	663	1,430	6,580	e1,110	e10,100	3,880	12,700	1,940	1,040	474	1,020
3	722	990	1,370	5,760	e1,250	e8,510	5,700	8,470	1,610	959	521	829
4	605	1,380	1,260	4,090	e1,480	e7,140	11,200	6,080	1,180	792	658	931
5	591	1,030	846	3,350	e1,380	e5,370	8,850	4,830	1,160	756	723	632
6	706	1,090	926	e2,710	e1,110	3,520	5,760	3,760	902	1,020	767	587
7	662	946	821	e2,810	1,650	5,540	4,670	3,340	867	1,010	535	507
8	865	1,040	1,040	e2,810	1,890	10,400	3,940	2,850	1,630	787	867	456
9	1,100	756	1,320	e2,170	3,310	14,900	3,640	2,740	3,820	696	1,500	689
10	906	1,040	1,330	e2,220	4,650	16,200	2,950	2,540	4,710	583	1,590	877
11	680	905	e1,350	e1,720	7,700	15,200	2,520	2,530	3,570	584	1,530	608
12	649	904	e1,510	e1,950	12,400	12,200	2,150	2,700	2,720	566	1,490	503
13	771	1,210	e1,420	e1,920	16,900	7,860	2,200	2,580	2,130	557	1,440	456
14	971	1,190	782	e1,700	14,400	5,710	2,300	3,220	1,370	558	977	451
15	788	1,270	1,670	e1,300	9,630	5,070	2,270	4,700	1,410	642	689	586
16	781	875	2,610	e1,380	e6,860	4,730	2,060	3,960	1,400	652	639	605
17	690	983	e3,870	e1,800	e5,000	4,510	1,800	2,330	1,790	549	813	594
18	596	1,100	e3,290	e1,480	e3,790	4,380	1,740	2,860	2,000	511	824	518
19	581	1,460	e2,820	e1,800	e3,510	4,170	1,710	2,400	1,650	524	811	449
20	715	1,210	e2,950	e2,090	e2,980	3,960	1,850	2,610	3,520	506	830	447
21	823	760	e2,390	e2,040	e2,680	3,750	2,520	1,880	3,100	628	859	453
22	1,020	817	e2,080	e1,670	e2,540	3,310	2,740	1,680	2,290	690	621	800
23	932	667	e2,180	e1,530	e2,450	3,190	2,650	1,480	1,790	683	585	695
24	668	959	e2,330	e1,230	e2,410	3,010	2,520	1,510	1,470	771	726	742
25	676	982	e2,390	e1,110	e2,410	2,430	2,240	1,140	1,390	602	716	760
26	696	1,210	e2,370	e1,480	2,380	2,560	9,000	1,460	1,230	612	743	593
27	1,060	779	e3,100	e2,190	5,260	2,580	16,300	1,580	787	745	744	504
28	1,370	899	7,410	e2,270	e10,700	2,440	14,000	2,500	819	925	749	795
29	1,210	1,220	12,300	e1,450	---	3,080	10,600	2,800	909	1,150	894	1,060
30	1,180	821	12,900	e1,450	---	5,980	8,120	2,000	1,020	899	682	912
31	796	---	10,100	e1,430	---	5,240	---	1,370	---	737	822	---
Total	25,290	29,872	93,405	74,850	132,860	199,140	146,120	108,500	55,874	22,730	26,333	20,006
Mean	816	996	3,013	2,415	4,745	6,424	4,871	3,500	1,862	733	849	667
Max	1,370	1,460	12,900	7,360	16,900	16,200	16,300	12,700	4,710	1,150	1,590	1,060
Min	581	663	782	1,110	1,030	2,430	1,710	1,140	787	506	474	447
Cfsm	0.34	0.41	1.26	1.01	1.98	2.68	2.03	1.46	0.78	0.31	0.35	0.28
In.	0.39	0.46	1.45	1.16	2.06	3.09	2.26	1.68	0.87	0.35	0.41	0.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	1,034	1,427	1,584	1,505	1,850	3,937	3,643	2,278	1,430	736	605	874
Max	6,318	6,097	4,911	5,564	6,455	10,660	8,096	8,080	5,270	4,492	2,236	10,300
(WY)	(1987)	(1986)	(2007)	(1973)	(1938)	(1976)	(1967)	(2004)	(1945)	(1957)	(1972)	(1986)
Min	344	493	462	388	466	1,027	969	567	355	234	217	250
(WY)	(1949)	(1950)	(1964)	(1945)	(1963)	(1964)	(1945)	(1977)	(1964)	(1941)	(1936)	(1948)

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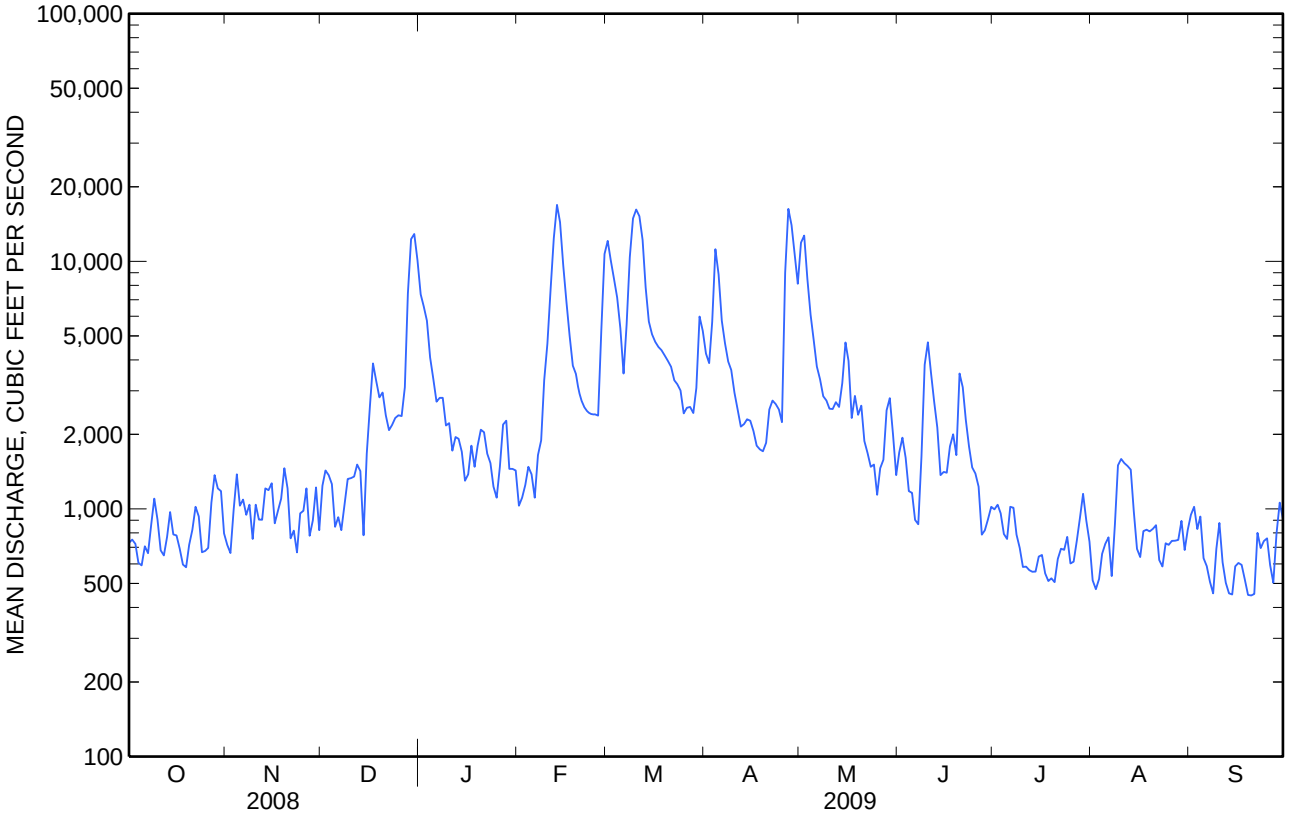
SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1936 - 2009	
Annual total	731,687		934,980			
Annual mean	1,999		2,562		1,746	
Highest annual mean					3,318	1986
Lowest annual mean					699	1964
Highest daily mean	15,300	Apr 12	16,900	Feb 13	36,200	Sep 13, 1986
Lowest daily mean	369	Aug 23	447	Sep 20	111	Aug 21, 1949
Annual seven-day minimum	439	Aug 17	521	Sep 14	126	Aug 11, 1936
Maximum peak flow			17,400	Feb 13	38,700	Sep 13, 1986
Maximum peak stage			24.01	Feb 13	[a]33.89	Sep 13, 1986
Instantaneous low flow					39	Oct 1, 1942
Annual runoff (cfsm)	0.833		1.07		0.728	
Annual runoff (inches)	11.34		14.49		9.89	
10 percent exceeds	3,940		5,760		3,960	
50 percent exceeds	1,320		1,420		984	
90 percent exceeds	595		617		388	

[a] From floodmark.