Water-Data Report 2013

05483600 Middle Raccoon River at Panora, IA

Des Moines Basin
South Raccoon Subbasin

LOCATION.--Lat 41°41′14″, long 94°22′15″ referenced to North American Datum of 1927, in NW ¼ NE ¼ NW ¼ sec.5, T.79 N., R.30 W., Guthrie County, IA, Hydrologic Unit 07100007, on right bank 10 ft upstream from bridge on Soldier Trail, at southwestern edge of Panora, 1.5 mi upstream from Andy's Branch, 1.6 mi downstream from Lake Panorama, 18.2 mi upstream from mouth, 66.1 mi upstream from mouth of Raccoon River, and 267.2 mi upstream from mouth of Des Moines River.

DRAINAGE AREA.--440 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--Discharge records from June 1958 to current year.

REVISED RECORDS.--WDR IA-74-1: 1973 (P).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 991.20 ft above National Geodetic Vertical Datum of 1929. Prior to September 9, 2009, at site 25 ft downstream at same datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Panora Water Department diverts approximately 100 acre-ft/yr upstream of station. Flow regulated by dam on Lake Panorama since August 1970. U.S. Geological Survey data collection platform with satellite telemetry at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, reached a stage of 14.3 ft, from high-water mark, discharge about 14,000 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 05483600, accessed at http://wdr.water.usgs.gov/wy2013/pdfs/05483600.2013.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	17	31	33	e23	e36	39	119	192	1,680	377	77	55
2	18	29	36	e27	e30	37	111	610	1,090	347	73	52
3	17	30	39	e29	e30	36	103	1,150	830	312	67	46
4	18	30	37	e24	e28	37	98	1,160	721	292	64	42
5	18	31	34	e26	e30	39	91	1,360	800	289	61	39
6	20	32	33	e30	e32	37	90	1,280	641	266	62	35
7	18	28	34	32	e32	36	85	830	553	253	62	32
8	16	25	33	32	e34	43	e83	626	525	247	57	33
9	16	26	36	31	e35	386	164	1,880	744	234	57	32
10	15	28	32	e29	46	742	385	1,040	970	216	54	32
11	16	36	28	e31	47	253	435	739	713	188	52	48
12	15	32	28	e28	47	63	394	569	588	172	55	45
13	17	27	29	e26	48	87	311	453	564	173	51	39
14	22	26	29	e29	50	129	244	397	714	169	49	30
15	16	27	42	e31	47	161	240	393	5,890	152	51	27
16	22	26	47	e34	44	367	237	365	5,920	139	50	23
17	27	27	44	e32	46	298	461	345	2,760	135	48	31
18	28	28	44	e36	49	245	1,150	291	1,650	124	46	58
19	20	30	43	e34	43	162	984	390	1,220	120	43	86
20	19	31	e32	e32	35	123	637	332	822	118	38	85
21	20	31	e27	e27	35	104	369	283	694	115	38	53
22	28	32	e28	e30	39	94	481	296	681	100	38	44
23	26	33	e33	e31	38	99	383	262	546	107	38	38
24	26	25	e30	32	36	100	457	244	1,010	103	36	35
25	28	27	e25	31	37	98	389	306	1,380	97	35	35
26	19	29	e28	30	41	89	281	943	794	84	33	35
27	23	26	28	32	42	87	257	3,020	583	75	31	34
28	27	26	29	35	41	86	252	4,600	553	73	26	34
29	28	28	e29	40	---	91	241	3,110	421	69	25	32
30	30	30	e28	e34	---	102	228	3,190	381	75	27	30
31	30	---	e25	e32	---	118	---	2,490	---	79	27	---
Total	660	867	1,023	950	1,098	4,388	9,760	33,146	36,438	5,300	1,471	1,240
Mean	21.3	28.9	33.0	30.6	39.2	142	325	1,069	1,215	171	47.5	41.3
Max	30	36	47	40	50	742	1,150	4,600	5,920	377	77	86
Min	15	25	25	23	28	36	83	192	381	69	25	23
Ac-ft	1,310	1,720	2,030	1,880	2,180	8,700	19,360	65,750	72,270	10,510	2,920	2,460
Cfsm	0.05	0.07	0.07	0.07	0.09	0.32	0.74	2.43	2.76	0.39	0.11	0.09
In.	0.06	0.07	0.09	0.08	0.09	0.37	0.83	2.80	3.08	0.45	0.12	0.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	133	136	117	101	198	366	380	530	555	374	167	130
Max	670	588	356	439	838	1,479	1,222	1,458	2,034	2,731	745	528
(WY)	(1987)	(1973)	(1993)	(1973)	(1971)	(1979)	(1984)	(1974)	(2008)	(1993)	(2010)	(1973)
Min	19.5	12.8	7.60	6.95	27.8	20.2	26.4	20.0	9.40	5.56	22.2	19.3
(WY)	(1981)	(1971)	(1971)	(1971)	(1972)	(1981)	(1977)	(1977)	(1977)	(1977)	(1971)	(1980)

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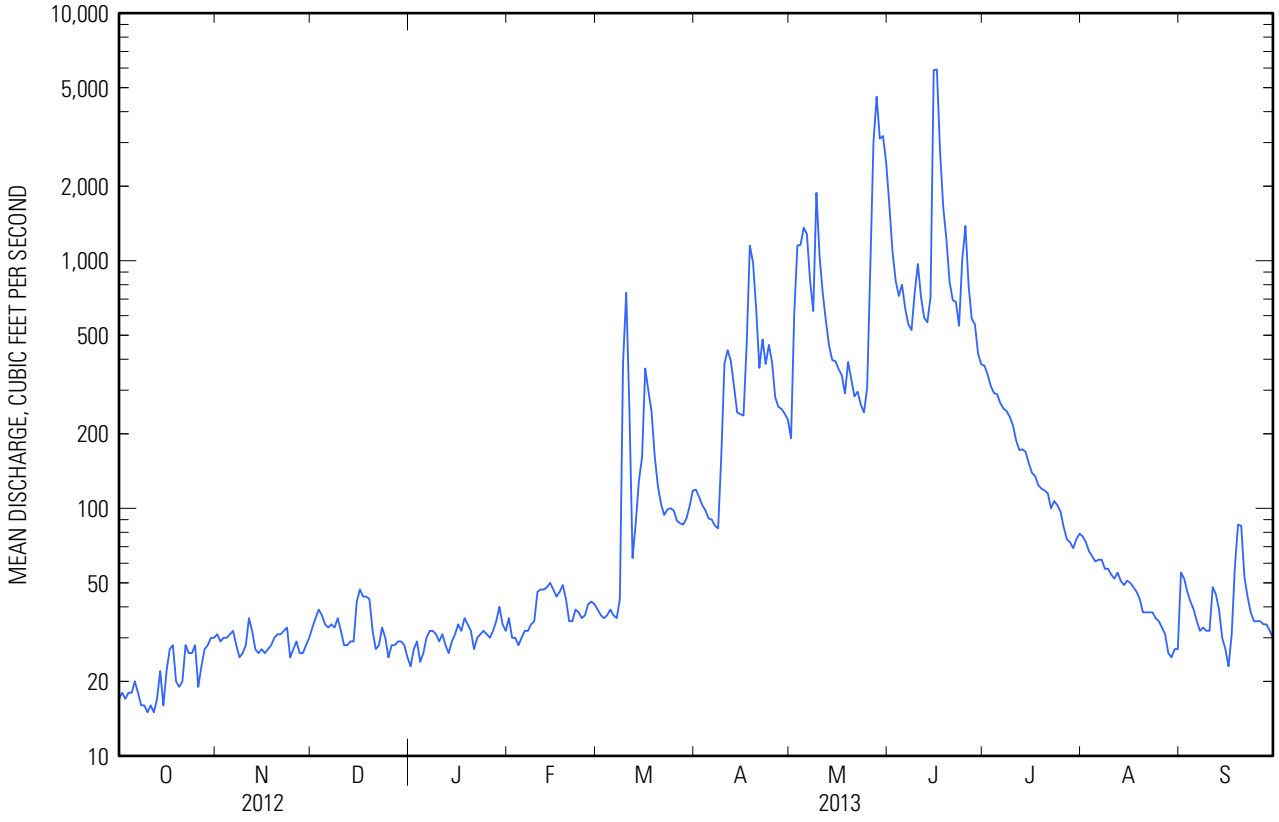
SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1971 - 2013[a]	
Annual total	21,774		96,341			
Annual mean	59.5		264		266	
Highest annual mean					701	1973
Lowest annual mean					38.6	1977
Highest daily mean	597	May 6	5,920	Jun 16	17,500	Jul 10, 1993
Lowest daily mean	12	Sep 9	15	Oct 10[b]	0.00	Jun 9, 1977[c]
Annual seven-day minimum	16	Sep 5	16	Oct 7	3.1	Jul 8, 1977
Maximum peak flow			7,490	Jun 16	22,400	Jul 9, 1993
Maximum peak stage			11.62	Jun 16	20.04	Jul 9, 1993
Instantaneous low flow			10	Oct 26		
Annual runoff (ac-ft)	43,190		191,100		192,500	
Annual runoff (cfsm)	0.135		0.600		0.604	
Annual runoff (inches)	1.84		8.15		8.20	
10 percent exceeds	122		686		581	
50 percent exceeds	41		44		112	
90 percent exceeds	19		26		31	

[a] Post regulation.
[b] Also Oct 12.
[c] Also Jun 10, 1977, result of gate operation at Lake Panorama.



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 2010.

PERIOD OF DAILY RECORD.--

NITRATE + NITRITE: May 2010 to current year, records fragmentary.

SPECIFIC CONDUCTANCE: Daily instantaneous values collected in conjunction with suspended-sediment samples, March 1979 to September 1985, records fragmentary.

WATER TEMPERATURE: Daily instantaneous values collected in conjunction with suspended-sediment samples, March 1979 to September 1985, records fragmentary. Daily mean, March 2012 to current year.

SUSPENDED-SEDIMENT CONCENTRATION AND DISCHARGE: March 1979 to September 1985.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE (for period March 2012 to current year): Maximum daily mean, 30.6°C, July 7 and 24, 2012; minimum daily mean, December 21, 2012, January 2, 2013.

SUSPENDED-SEDIMENT CONCENTRATION: Maximum daily mean, 1,690 mg/L, April 20, 1979; minimum daily mean, 3 mg/L, December 10, 1983, March 15, 1984.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 0.43 tons/day, July 12, 1985; minimum daily, 6,300 tons/day, June 15, 1984.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE (for period March 2012 to current year): Maximum daily mean, 28.7°C, July 20 and August 31, 2013; minimum daily mean, 0.7°C, December 21, 2012, January 2, 2013.

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NITRATE PLUS NITRITE, WATER, IN SITU, MILLIGRAMS PER LITER AS NITROGEN
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES

[<, less than; >, greater than]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	<0.50	<0.50	---	0.65	0.53	0.65	1.57	14.9	14.1	17.0	17.5	11.9
2	<0.50	<0.50	---	0.66	0.53	0.67	1.57	16.4	14.5	17.0	17.4	12.0
3	<0.50	<0.50	---	0.73	0.57	0.65	1.55	18.7	15.3	17.3	17.4	11.7
4	<0.50	<0.50	0.83	0.72	0.64	0.65	1.47	19.4	15.9	17.1	17.3	11.6
5	<0.50	<0.50	0.83	0.65	0.66	0.56	1.39	17.8	16.2	17.5	17.1	11.5
6	<0.50	<0.50	0.84	0.54	0.66	0.59	1.46	18.0	17.2	18.0	16.9	11.5
7	<0.50	<0.50	0.73	<0.50	0.61	0.63	1.43	19.8	17.7	18.2	16.8	11.3
8	<0.50	<0.50	0.73	<0.50	0.65	0.62	1.46	21.6	19.2	18.4	16.6	10.8
9	<0.50	<0.50	0.64	<0.50	0.63	0.63	1.54	>23.0	19.8	19.0	16.5	10.8
10	<0.50	<0.50	0.59	<0.50	0.57	0.54	1.64	>23.0	20.4	19.3	16.4	10.6
11	<0.50	<0.50	0.71	<0.50	<0.50	0.67	1.88	>23.0	20.7	19.8	16.3	10.3
12	<0.50	<0.50	0.73	<0.50	0.59	0.79	2.00	>23.0	21.4	19.6	16.2	10.4
13	<0.50	<0.50	0.73	<0.50	0.64	0.72	2.17	22.5	21.8	19.5	16.2	10.3
14	<0.50	---	0.77	<0.50	0.59	0.64	2.13	22.6	21.3	19.6	15.8	10.1
15	<0.50	---	0.74	<0.50	0.61	0.66	2.11	22.4	18.1	19.7	15.5	9.84
16	<0.50	---	0.75	<0.50	0.70	0.64	2.19	22.3	8.21	19.6	15.3	9.56
17	<0.50	---	0.71	<0.50	0.66	0.71	2.22	22.2	7.75	19.6	15.3	9.28
18	<0.50	---	0.66	<0.50	0.58	0.69	3.12	22.1	9.89	19.6	15.3	9.22
19	<0.50	---	0.73	<0.50	0.51	0.67	6.20	22.3	10.7	19.5	15.2	9.16
20	<0.50	---	<0.50	<0.50	0.65	1.15	6.44	22.0	11.7	19.3	14.8	9.07
21	<0.50	---	0.57	<0.50	0.67	1.46	5.92	22.1	12.5	19.2	14.4	9.10
22	<0.50	---	0.55	<0.50	0.59	1.63	7.06	22.1	13.1	19.1	14.1	9.00
23	<0.50	---	0.64	<0.50	0.63	1.45	9.46	22.4	14.1	18.9	14.2	8.79
24	<0.50	---	0.74	<0.50	0.67	1.44	10.2	22.3	---	18.8	14.1	8.52
25	<0.50	---	0.57	<0.50	0.67	1.49	10.6	22.2	---	18.6	13.7	8.38
26	<0.50	---	0.55	<0.50	0.64	1.55	11.4	22.0	---	18.5	13.2	8.29
27	<0.50	---	0.61	<0.50	0.57	1.60	10.9	21.5	18.0	18.2	13.2	7.95
28	<0.50	---	0.73	<0.50	0.59	1.45	11.3	15.5	18.2	18.0	13.0	7.40
29	<0.50	---	0.76	0.53	---	1.49	12.9	11.7	17.5	17.8	12.8	7.38
30	<0.50	---	0.64	<0.50	---	1.48	14.1	13.9	17.2	17.7	12.6	7.40
31	<0.50	---	0.75	0.50	---	1.40	---	14.4	---	17.6	12.3	---
Mean	0.50	---	---	0.53	0.61	0.97	4.98	20.2	---	18.6	15.3	9.77
Max	0.50	---	---	0.73	0.70	1.63	14.1	23.0	---	19.8	17.5	12.0
Min	0.50	---	---	0.50	0.50	0.54	1.39	11.7	---	17.0	12.3	7.38

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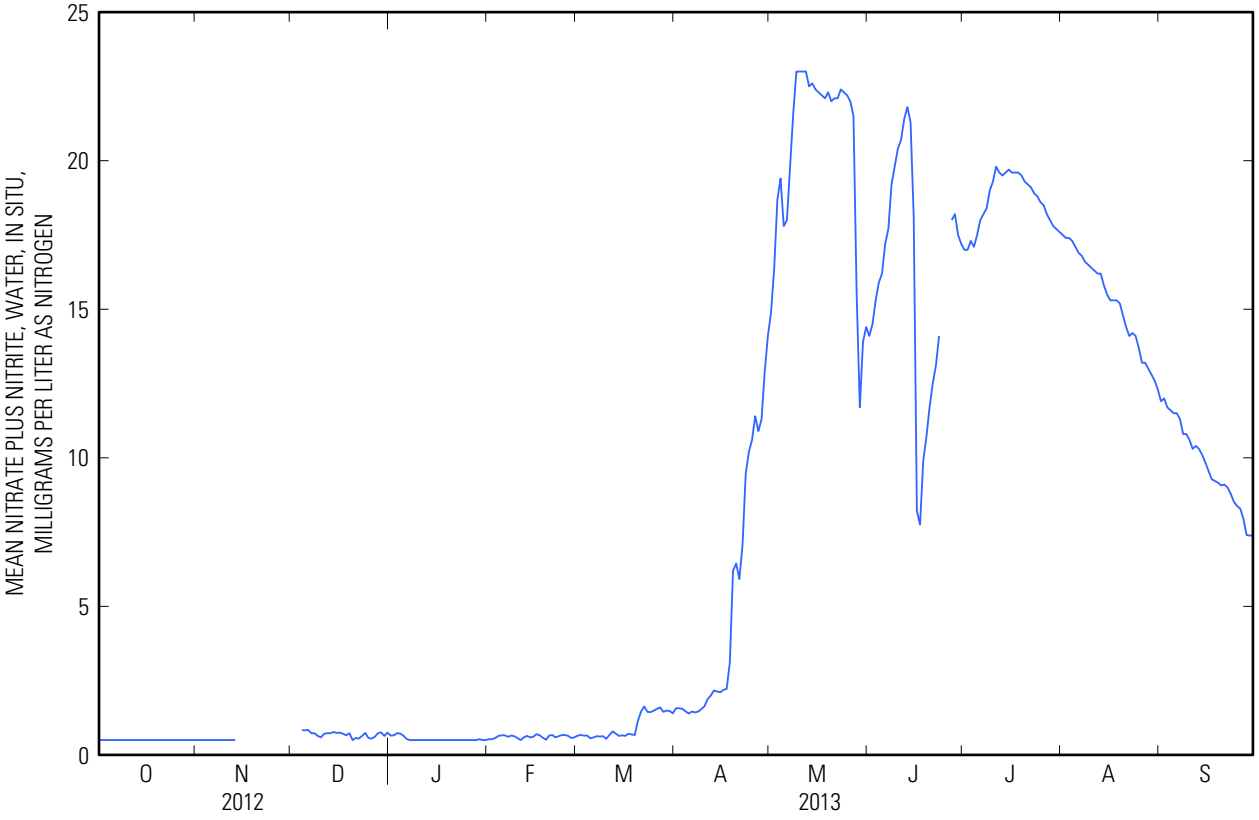

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TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	18.4	10.3	4.9	0.9	1.0	2.2	5.4	13.3	18.4	23.7	25.9	27.7
2	18.4	10.2	6.2	0.7	0.9	2.4	5.4	10.9	18.4	24.0	25.6	26.4
3	17.9	9.6	7.1	0.9	1.1	2.8	6.0	10.7	18.4	24.1	25.9	26.0
4	17.1	9.7	6.6	1.0	1.1	3.0	6.4	9.9	18.3	23.7	25.6	26.4
5	14.8	9.7	5.3	1.1	1.3	2.7	7.5	9.8	18.5	23.9	25.0	26.9
6	12.2	9.4	5.4	1.3	1.9	2.0	8.0	10.2	18.8	24.5	25.7	27.1
7	11.5	9.7	5.7	1.3	2.1	2.8	8.3	9.7	18.9	25.0	26.4	26.8
8	12.0	9.2	5.0	1.8	1.7	3.2	---	9.4	18.2	25.9	25.9	26.6
9	12.4	9.4	4.3	2.2	1.9	2.8	---	11.8	18.0	26.4	26.0	27.5
10	12.0	10.8	2.6	2.2	2.5	2.5	8.3	13.6	18.5	27.5	25.9	27.1
11	12.0	11.0	2.8	2.5	2.0	2.6	8.1	13.9	19.4	27.1	26.0	26.7
12	11.9	6.6	3.1	2.3	2.5	2.7	7.7	13.9	20.1	26.5	26.3	26.1
13	13.4	6.4	3.0	1.4	3.2	2.6	8.0	13.5	20.7	26.0	25.9	24.8
14	15.0	7.4	3.4	1.8	3.5	3.2	8.0	14.4	20.7	26.2	25.3	23.6
15	14.6	8.1	4.1	2.1	2.5	3.0	7.8	16.6	19.7	26.6	24.3	22.5
16	14.5	8.0	4.1	2.3	2.8	2.9	8.3	17.6	19.5	27.3	24.0	21.4
17	14.5	7.5	3.3	2.9	2.8	3.1	8.2	18.1	20.8	28.2	24.3	20.7
18	12.3	8.0	3.0	2.8	2.8	3.2	7.7	19.0	22.5	28.2	24.4	22.4
19	10.7	8.6	2.7	3.5	1.2	3.3	7.4	19.3	22.8	28.0	24.6	23.0
20	11.5	8.5	1.0	2.5	2.0	2.9	7.5	19.4	22.9	28.7	25.6	21.7
21	12.9	8.2	0.7	1.8	1.5	2.9	7.8	19.8	23.2	28.3	25.9	21.4
22	14.6	9.1	1.0	1.5	0.9	2.8	7.9	19.6	24.1	28.5	25.5	21.8
23	15.1	7.0	1.3	1.5	1.5	2.9	7.5	19.6	24.3	27.5	25.6	21.4
24	15.5	4.8	1.2	1.1	1.8	2.3	7.7	19.3	24.4	27.7	26.5	20.4
25	13.7	4.9	0.9	1.3	2.3	2.6	8.2	18.6	24.5	27.4	26.7	20.7
26	10.6	5.2	0.8	1.7	1.9	3.0	8.6	18.0	25.4	26.6	27.3	21.7
27	9.8	3.9	0.9	1.7	1.3	3.5	9.6	17.3	25.5	25.5	27.3	22.1
28	10	3.7	0.8	2.0	1.7	4.3	10.2	16.2	25.2	25.2	27.9	21.3
29	10.1	4.1	0.9	2.3	---	5.2	11.5	16.7	24.1	24.6	28.1	19.4
30	9.6	4.5	0.9	1.5	---	5.3	11.7	17.8	23.6	24.2	28.6	19.6
31	9.7	---	1.0	1.3	---	5.5	---	18.2	---	25.2	28.7	---
Mean	13.2	7.8	3.0	1.8	1.9	3.1	---	15.4	21.3	26.2	26.0	23.7
Max	18.4	11.0	7.1	3.5	3.5	5.5	---	19.8	25.5	28.7	28.7	27.7
Min	9.6	3.7	0.7	0.7	0.9	2.0	---	9.4	18.0	23.7	24.0	19.4