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NISHNABOTNA RIVER BASIN

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION.--Lat 41°23'24",long 95°22'17",in NW¹/₄ NE¹/₄ sec.18, T.76 N., R.39 W., Pottawattamie County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on county highway G30, 0.6 mi west of Hancock school, 3.0 mi downstream from Jim Creek, 59.6 mi upstream from confluence with East Nishnabotna River, and at mile 75.1 mi upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--609 mi².

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,085.83 ft above NGVD of 1929. Prior to Sept. 15, 1980, on downstream end of right pier at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and data collection platform with satellite telemetry at station. Precipitation records are available online at the U.S. Army Corps of Engineers website: www2.mvr.usace.army.mil/WaterControl/datamining2.cfm.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	55	e75	e53	e46	e1,050	506	307	1,290	436	235	135
2	56	58	84	e54	e45	e536	462	299	1,110	444	232	130
3	58	74	83	e45	e37	e306	424	292	1,020	528	244	126
4	57	133	82	e35	e37	e270	398	286	946	539	748	122
5	55	112	74	e24	e38	e522	380	277	897	459	402	125
6	54	81	70	e25	e38	e1,150	364	269	869	434	280	156
7	54	70	70	e28	e36	662	350	260	810	412	246	136
8	55	65	74	e39	e35	507	332	257	755	394	228	120
9	54	62	73	e33	e44	440	313	966	715	697	216	116
10	54	69	e51	e33	e54	394	302	504	690	582	205	114
11	59	69	e28	e42	e58	359	291	394	692	460	199	112
12	62	64	e23	e40	e51	318	286	360	650	488	195	108
13	64	60	e31	e40	e51	312	281	391	849	408	193	105
14	75	60	e45	e38	e47	298	276	386	1,610	380	188	104
15	81	62	e49	e35	e43	294	270	347	1,030	361	183	105
16	67	62	e46	e45	e59	283	264	335	867	363	178	101
17	61	73	e42	e41	e60	289	256	334	748	345	174	98
18	62	131	e61	e32	e69	283	253	714	699	325	173	112
19	60	100	e54	e30	e76	305	248	466	673	316	171	108
20	59	81	e55	e37	e75	383	261	418	632	308	166	e97
21	56	71	e71	e48	e75	366	317	391	641	302	162	e92
22	56	67	e68	e33	e110	316	276	555	733	313	157	e89
23	56	e65	e63	e55	e217	301	262	7,490	611	291	153	92
24	56	e61	e60	e47	e204	290	266	3,240	570	281	162	96
25	56	e71	e68	e47	e152	278	401	7,650	545	281	165	93
26	55	e70	e78	e43	e129	268	437	2,080	517	271	173	90
27	56	e71	e90	e38	e279	380	379	1,610	503	263	162	90
28	59	e67	e81	e33	e590	1,200	359	1,350	495	255	149	90
29	58	e69	e67	e33	e1,540	918	337	1,200	471	253	143	89
30	58	e76	e60	e35	---	681	317	2,250	449	250	140	89
31	54	---	e51	e40	---	569	---	1,490	---	243	140	---
TOTAL	1,822	2,229	1,927	1,201	4,295	14,528	9,868	37,168	23,087	11,682	6,562	3,240
MEAN	58.8	74.3	62.2	38.7	148	469	329	1,199	770	377	212	108
MAX	81	133	90	55	1,540	1,200	506	7,650	1,610	697	748	156
MIN	54	55	23	24	35	268	248	257	449	243	140	89
AC-FT	3,610	4,420	3,820	2,380	8,520	28,820	19,570	73,720	45,790	23,170	13,020	6,430
CFSM	0.10	0.12	0.10	0.06	0.24	0.77	0.54	1.97	1.26	0.62	0.35	0.18
IN.	0.11	0.14	0.12	0.07	0.26	0.89	0.60	2.27	1.41	0.71	0.40	0.20

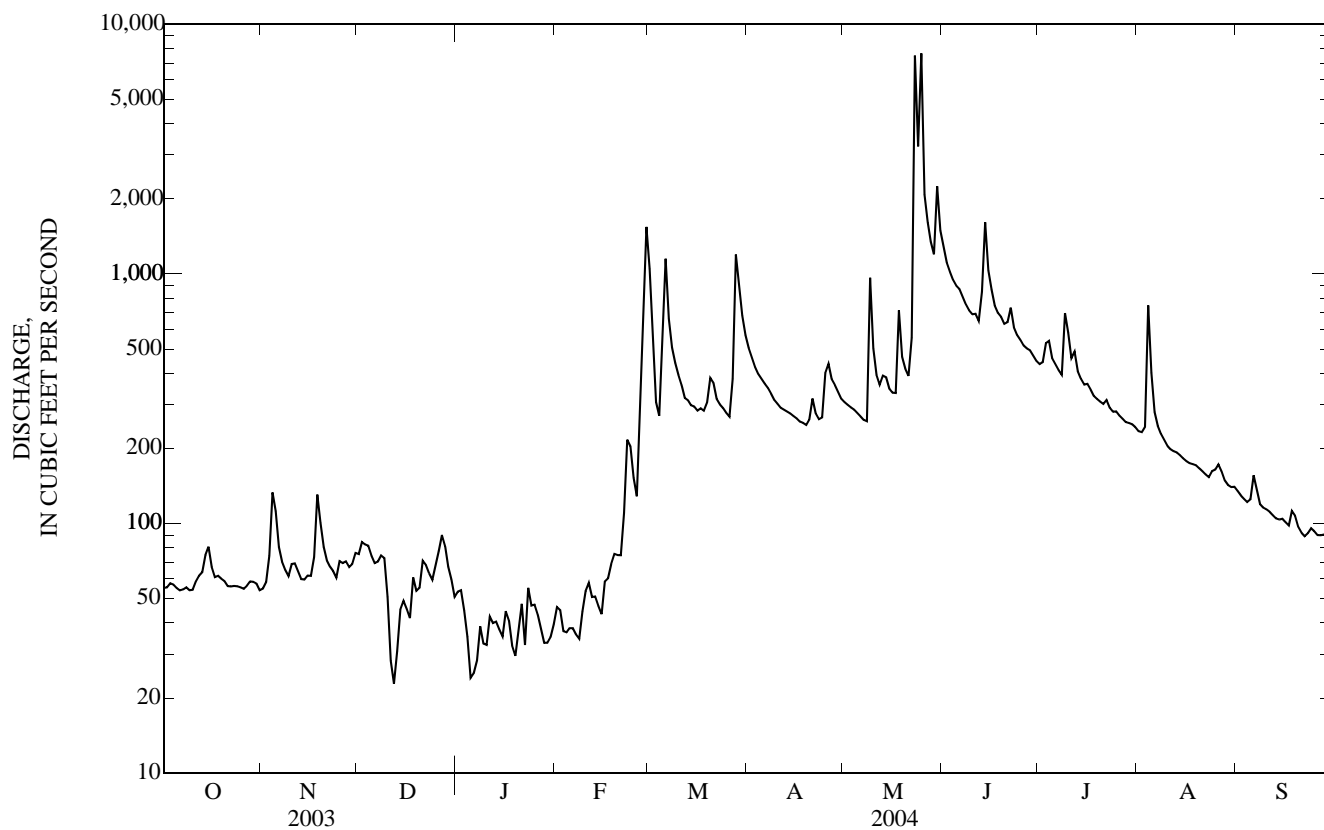
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2004, BY WATER YEAR (WY)

MEAN	185	175	151	119	265	507	417	523	596	416	239	279
MAX	998	910	628	625	993	1,946	1,295	1,586	2,228	2,925	1,073	2,412
(WY)	(1987)	(1973)	(1973)	(1973)	(1983)	(1979)	(1983)	(1973)	(1998)	(1993)	(1996)	(1972)
MIN	30.2	32.1	17.9	4.58	27.2	40.3	45.6	30.1	26.7	38.4	26.4	14.7
(WY)	(2001)	(1971)	(1971)	(1971)	(1967)	(1968)	(1968)	(1967)	(1977)	(1970)	(1968)	(1971)

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1960 - 2004	
ANNUAL TOTAL	69,075		117,609			
ANNUAL MEAN	189		321		323	
HIGHEST ANNUAL MEAN					966	1993
LOWEST ANNUAL MEAN					42.4	1968
HIGHEST DAILY MEAN	2,940	May 5	7,650	May 25	23,300	Sep 12, 1972
LOWEST DAILY MEAN	23	Dec 12	23	Dec 12 a	2.2	Feb 8, 1971 b
ANNUAL SEVEN-DAY MINIMUM	38	Dec 11	31	Jan 4 a	2.5	Feb 4, 1971
MAXIMUM PEAK FLOW			14,400	May 25	30,100	Jul 10, 1993
MAXIMUM PEAK STAGE			17.19	May 25	23.52	Jul 10, 1993
ANNUAL RUNOFF (AC-FT)	137,000		233,300		233,700	
ANNUAL RUNOFF (CFSM)	0.311		0.528		0.530	
ANNUAL RUNOFF (INCHES)	4.22		7.18		7.20	
10 PERCENT EXCEEDS	392		684		712	
50 PERCENT EXCEEDS	85		160		158	
90 PERCENT EXCEEDS	55		45		36	

a Ice affected.
 b Also Feb. 9, 1971.
 e Estimated.



06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA

LOCATION.--Lat 40°52'23", long 95°34'48", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.17, T.70 N., R.41 W., Fremont County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on State Highway 184, 0.3 mi downstream from Deer Creek, 0.5 mi west of Randolph, and 16.0 mi upstream from confluence with East Nishnabotna River, and at mile 31.5 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--1,326 mi².

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WDR IA-74-1: 1973 (M). WDR IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 932.99 ft above NGVD of 1929, unadjusted. Prior to Aug. 26, 1955, nonrecording gage with supplementary water-stage recorder operating above 8.4 ft. June 30, 1949 to Aug. 25, 1955 at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey rain gage and data collection platform with satellite and telephone modem telemetry at station. Precipitation records are not published, but are available.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 24 ft, discharge not determined, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	99	135	e110	e93	e1,600	1,090	655	2,680	974	680	413
2	94	128	144	e109	e90	e1,090	986	634	2,360	984	663	402
3	93	154	156	e100	e82	e709	908	622	2,130	1,240	648	388
4	90	208	152	e90	e84	e551	845	613	1,980	1,190	3,420	377
5	91	245	144	e77	e85	e694	806	605	1,860	1,170	1,750	378
6	88	213	139	e77	e86	e1,510	778	592	1,800	1,020	1,060	435
7	88	163	129	e79	e82	e1,100	744	575	1,720	962	844	423
8	86	140	128	e89	e81	918	704	564	1,600	960	754	383
9	87	132	e107	e82	e90	731	671	1,230	1,510	3,860	702	357
10	86	126	e90	e81	e101	637	646	1,610	1,470	2,310	656	344
11	93	124	e80	e91	e104	587	624	1,020	1,420	1,480	629	335
12	106	127	e76	e88	e98	544	613	865	1,420	1,290	609	327
13	106	120	e85	e89	e95	511	600	1,040	2,020	1,260	590	319
14	111	117	e101	e87	e94	496	590	1,050	1,800	1,120	570	309
15	110	115	e104	e84	e91	496	581	942	2,530	1,040	551	308
16	121	114	e100	e92	e106	514	577	870	1,760	1,120	535	302
17	120	126	e97	e89	e106	493	572	848	1,550	1,000	524	295
18	109	191	e116	e81	e116	492	557	1,010	1,420	912	515	290
19	103	264	e109	e78	e125	493	549	1,290	1,370	868	499	291
20	100	208	e111	e86	e124	526	543	1,040	1,320	836	485	294
21	96	162	e127	e95	e120	598	575	948	1,680	813	478	277
22	92	144	e124	e81	e167	586	609	903	1,480	1,220	465	269
23	94	137	e119	e104	e273	532	572	6,340	1,380	1,290	455	269
24	95	112	e116	e95	e260	520	573	6,540	1,230	890	475	273
25	94	116	e124	e96	e209	514	709	10,500	1,190	830	610	270
26	93	124	e133	e92	e215	497	806	4,930	1,140	796	691	266
27	97	120	e146	e85	e573	600	817	3,190	1,100	761	641	261
28	100	125	e136	e82	e1,090	1,680	745	2,580	1,070	734	512	257
29	102	102	e122	e82	e1,860	2,070	707	2,320	1,040	727	457	254
30	103	127	e116	e83	---	1,550	676	5,520	1,000	717	439	254
31	99	---	e107	e88	---	1,250	---	3,900	---	729	423	---
TOTAL	3,043	4,383	3,673	2,742	6,700	25,089	20,773	65,346	48,030	35,103	22,330	9,620
MEAN	98.2	146	118	88.5	231	809	692	2,108	1,601	1,132	720	321
MAX	121	264	156	110	1,860	2,070	1,090	10,500	2,680	3,860	3,420	435
MIN	86	99	76	77	81	492	543	564	1,000	717	423	254
AC-FT	6,040	8,690	7,290	5,440	13,290	49,760	41,200	129,600	95,270	69,630	44,290	19,080
CFSM	0.07	0.11	0.09	0.07	0.17	0.61	0.52	1.59	1.21	0.85	0.54	0.24
IN.	0.09	0.12	0.10	0.08	0.19	0.70	0.58	1.83	1.35	0.98	0.63	0.27

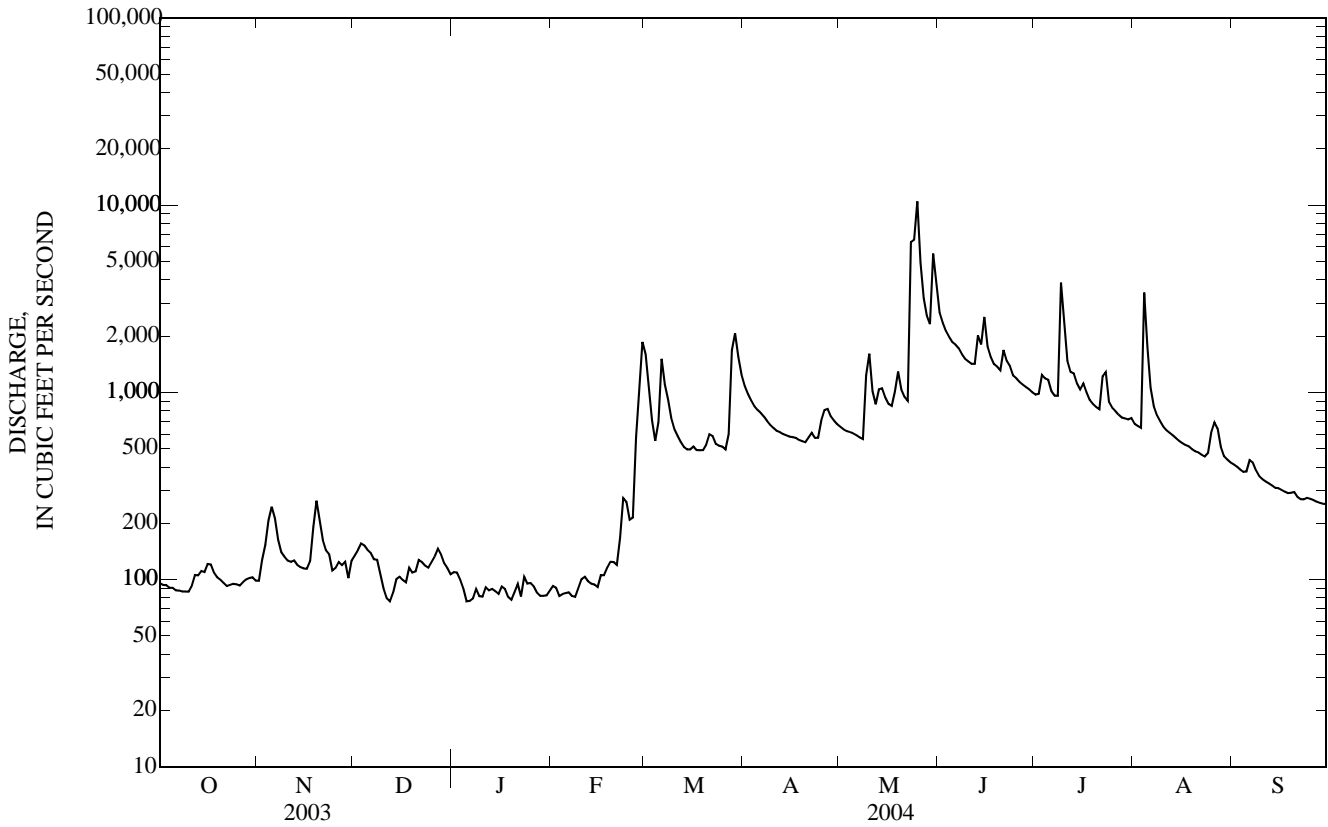
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2004, BY WATER YEAR (WY)

MEAN	372	344	296	262	527	935	793	1,069	1,249	879	586	512
MAX	2,002	1,277	1,140	1,201	1,777	3,877	2,867	3,227	5,031	6,357	2,610	2,531
(WY)	(1987)	(1973)	(1973)	(1973)	(1973)	(1979)	(1973)	(1973)	(1998)	(1993)	(1993)	(1972)
MIN	27.1	33.6	20.6	17.4	19.4	67.8	42.7	97.3	65.6	71.2	30.1	41.0
(WY)	(1956)	(1956)	(1956)	(1956)	(1956)	(1956)	(1956)	(1967)	(1956)	(1954)	(1955)	(1955)

06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1949 - 2004	
ANNUAL TOTAL	119,558		246,832			
ANNUAL MEAN	328		674		652	
HIGHEST ANNUAL MEAN					1,985	1993
LOWEST ANNUAL MEAN					111	1968
HIGHEST DAILY MEAN	3,980	May 5	10,500	May 25	25,800	Jun 15, 1998
LOWEST DAILY MEAN	76	Dec 12	76	Dec 12	10	Dec 17, 1955 a
ANNUAL SEVEN-DAY MINIMUM	88	Oct 4	82	Jan 4 b	11	Dec 16, 1955
MAXIMUM PEAK FLOW			16,600	May 25	40,800	May 26, 1987
MAXIMUM PEAK STAGE			20.93	May 25	24.80	Mar 5, 1949 c
INSTANTANEOUS LOW FLOW			51	Nov 29		
ANNUAL RUNOFF (AC-FT)	237,100		489,600		472,400	
ANNUAL RUNOFF (CFSM)	0.247		0.509		0.492	
ANNUAL RUNOFF (INCHES)	3.35		6.92		6.68	
10 PERCENT EXCEEDS	692		1,480		1,410	
50 PERCENT EXCEEDS	180		461		340	
90 PERCENT EXCEEDS	102		90		92	

- a Also Dec. 18-21, 1955.
- b Ice affected.
- c From graph based on gage readings, backwater from ice.
- e Estimated.



06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA

LOCATION.--Lat 41°20'46", long 95°04'36", in NW¹/₄ NW¹/₄ sec.35, T.76 N., R.37 W., Cass County, Hydrologic Unit 10240003, on left bank at downstream side of bridge on county highway, 1.6 mi upstream from Turkey Creek, 5.2 mi southwest of junction of U.S. Highway 6 and State Highway 83 in Atlantic, 69.1 mi upstream from confluence with West Nishnabotna River, and at mile 84.6 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--436 mi².

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,105.83 ft above NGVD of 1929. Prior to Oct. 1, 1970, at site 2.2 mi upstream at datum 5.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and data collection platform with satellite telemetry at station. Precipitation records are available online at the U.S. Army Corps of Engineers website: www2.mvr.usace.army.mil/WaterControl/datamining2.cfm.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 2, 1958 reached a stage of 22.49 ft, from floodmark, discharge, 34,200 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	20	36	47	e41	599	312	193	971	351	151	95
2	22	22	33	48	e40	432	278	179	833	361	153	93
3	23	44	37	46	e29	272	246	164	765	431	152	90
4	22	121	36	25	e31	223	224	159	717	428	1,820	88
5	22	93	33	e22	e31	484	212	148	683	351	562	93
6	21	52	33	e22	e33	591	199	142	662	357	336	141
7	21	40	30	e25	e27	333	185	136	616	317	255	116
8	21	34	33	e35	e25	251	172	133	566	301	214	97
9	21	33	33	e29	e31	220	158	2,130	533	1,580	188	92
10	20	33	33	e28	e34	195	149	779	527	827	165	86
11	22	33	e22	e39	e26	180	141	522	544	645	152	69
12	23	31	e16	e37	e23	155	139	428	503	909	149	67
13	25	28	e18	e37	e26	157	132	459	739	488	147	66
14	28	29	e29	e33	e23	147	128	507	1,650	391	139	64
15	27	29	e32	e31	e21	146	121	427	1,330	318	132	64
16	25	28	e22	e41	e43	137	119	380	963	316	126	63
17	24	32	e19	e38	e44	156	114	382	714	289	122	62
18	24	54	e38	e29	e54	148	113	1,310	630	268	121	68
19	23	66	e31	e26	e62	184	110	611	596	257	120	66
20	22	47	e33	e34	e61	304	119	512	558	241	116	61
21	21	38	e48	e44	e62	260	189	456	554	244	111	59
22	21	35	e45	e30	e95	222	179	588	562	243	105	57
23	21	35	e40	e52	e205	207	188	12,600	483	213	102	53
24	20	30	e37	e43	e189	181	176	3,380	455	197	107	52
25	20	34	e46	e44	e142	164	311	6,870	429	189	121	51
26	21	36	e47	e40	e113	153	354	2,030	407	181	130	51
27	21	34	e51	e34	e249	200	258	1,410	394	171	136	51
28	21	32	52	e30	937	851	239	1,100	404	162	123	51
29	21	33	67	e30	698	650	217	949	378	198	106	51
30	21	35	60	e32	---	466	199	2,020	365	166	102	48
31	20	---	47	e37	---	362	---	1,240	---	152	100	---
TOTAL	687	1,211	1,137	1,088	3,395	9,030	5,681	42,344	19,531	11,542	6,563	2,165
MEAN	22.2	40.4	36.7	35.1	117	291	189	1,366	651	372	212	72.2
MAX	28	121	67	52	937	851	354	12,600	1,650	1,580	1,820	141
MIN	20	20	16	22	21	137	110	133	365	152	100	48
AC-FT	1,360	2,400	2,260	2,160	6,730	17,910	11,270	83,990	38,740	22,890	13,020	4,290
CFSM	0.05	0.09	0.08	0.08	0.27	0.67	0.43	3.13	1.49	0.85	0.49	0.17
IN.	0.06	0.10	0.10	0.09	0.29	0.77	0.48	3.61	1.67	0.98	0.56	0.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2004, BY WATER YEAR (WY)

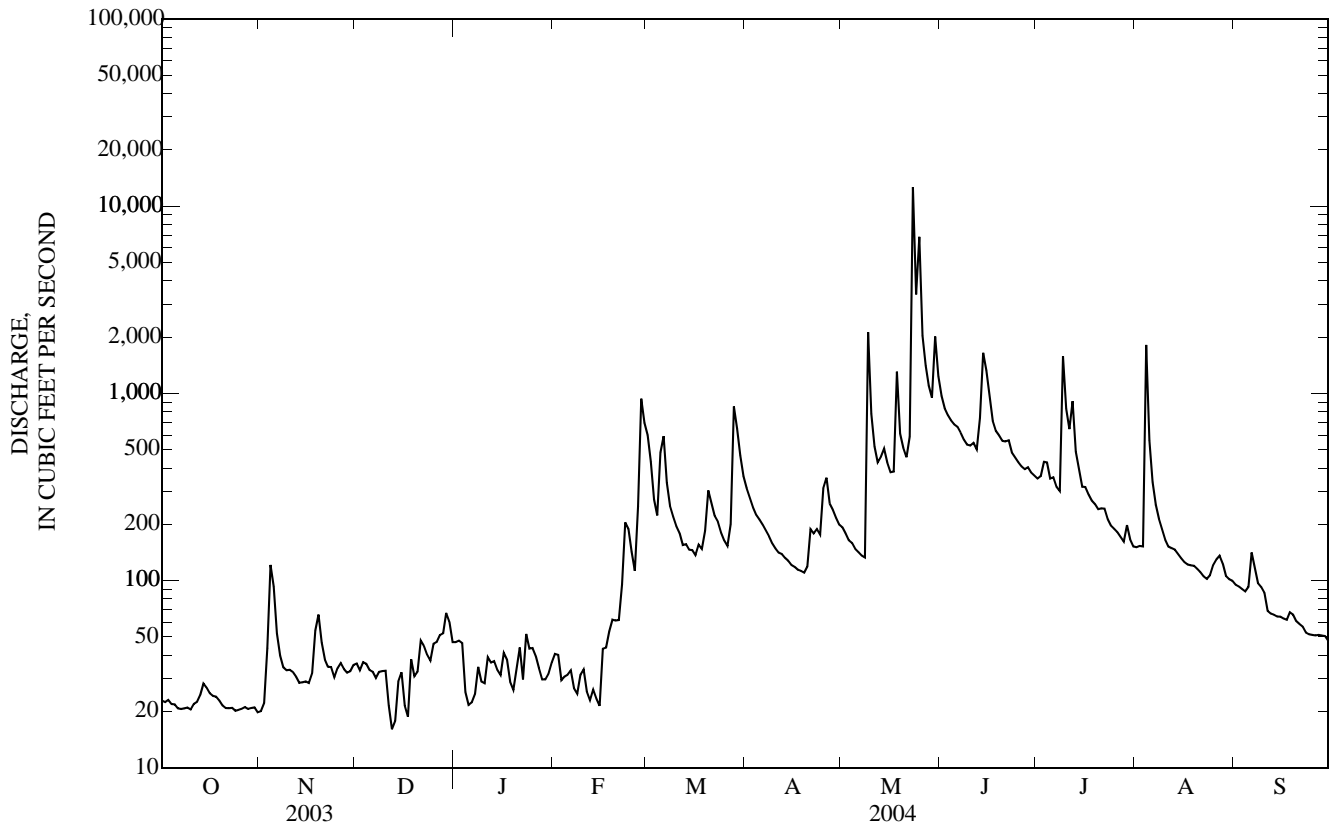
MEAN	134	129	105	87.3	194	393	357	442	504	340	174	199
MAX	1,069	757	529	529	812	1,378	1,138	1,366	3,125	2,747	1,394	1,855
(WY)	(1987)	(1973)	(1993)	(1973)	(1971)	(1965)	(1973)	(2004)	(1998)	(1993)	(1993)	(1972)
MIN	21.0	20.3	10.6	7.68	18.7	28.4	27.9	15.0	23.4	15.6	13.4	14.8
(WY)	(1967)	(1969)	(1964)	(1971)	(1968)	(1968)	(1981)	(1967)	(1977)	(1968)	(1968)	(1971)

06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1961 - 2004	
ANNUAL TOTAL	46,493		104,374			
ANNUAL MEAN	127		285		255	
HIGHEST ANNUAL MEAN					842	1993
LOWEST ANNUAL MEAN					23.7	1968
HIGHEST DAILY MEAN	3,160	May 5	12,600	May 23	32,300	Jun 15, 1998
LOWEST DAILY MEAN	16	Dec 12	16	Dec 12 ^a	2.5	Jul 10, 1977
ANNUAL SEVEN-DAY MINIMUM	21	Oct 21	21	Oct 21	7.0	Dec 17, 1963
MAXIMUM PEAK FLOW			17,600	May 23	41,400	Jun 15, 1998
MAXIMUM PEAK STAGE			17.10	May 23	22.81	Sep 12, 1972
ANNUAL RUNOFF (AC-FT)	92,220		207,000		184,600	
ANNUAL RUNOFF (CFSM)	0.292		0.654		0.585	
ANNUAL RUNOFF (INCHES)	3.97		8.91		7.94	
10 PERCENT EXCEEDS	261		597		564	
50 PERCENT EXCEEDS	52		115		101	
90 PERCENT EXCEEDS	22		23		24	

a Ice affected.

e Estimated.



06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA

LOCATION.--Lat 41°00'31", long 95°14'29", in NW¼ SE¼ sec.29, T.72 N., R.38 W., Montgomery County, Hydrologic Unit 10240003, on downstream side of Coolbaugh Street bridge in Red Oak, 0.2 mi upstream from Red Oak Creek, 38.0 mi upstream from confluence with West Nishnabotna River, and at mile 53.6 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--894 mi².

PERIOD OF RECORD.--May 1918 to November 1924, February 1925 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,005.45 ft above NGVD of 1929. Prior to July 5, 1925, nonrecording gage at present site at datum 4.60 ft higher. May 29, 1936 to Nov. 13, 1952, nonrecording gage with supplementary water-stage recorder in operation above 3.2 ft gage height. July 30, 1939 to Nov. 13, 1952, and Nov. 14, 1952 to June 13, 1966, water-stage recorder, all at site 0.5 mi upstream at datum 5.00 ft higher. June 14, 1966 to Sept. 30, 1969, at present site at datum 5.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and data collection platform with satellite telemetry at station. Precipitation records are available online at the U.S. Army Corps of Engineers website: www2.mvr.usace.army.mil/WaterControl/datamining2.cfm.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	49	69	84	e60	e1,350	684	392	1,970	512	301	168
2	51	60	69	81	e60	925	617	378	1,610	510	285	157
3	51	83	70	e76	e49	597	562	366	1,420	598	304	155
4	51	117	70	e54	e49	472	520	359	1,290	627	1,620	149
5	50	187	69	e42	e52	537	487	347	1,200	601	1,480	159
6	50	134	66	e40	e53	1,100	470	327	1,140	519	641	166
7	49	92	64	e42	e48	686	451	309	1,060	516	487	199
8	48	73	64	e54	e46	523	429	301	971	490	425	170
9	47	67	e53	e47	e59	448	407	1,830	893	827	391	151
10	47	64	e41	e47	e69	412	390	1,670	856	2,060	366	145
11	49	66	e38	e58	e70	377	374	882	856	904	350	145
12	50	63	e34	e55	e64	353	366	701	825	1,200	336	136
13	51	60	e43	e55	e65	322	361	683	995	885	321	134
14	54	58	e58	e52	e61	313	351	853	1,280	688	304	131
15	56	59	e61	e50	e56	307	344	709	2,390	600	284	127
16	57	58	e57	e59	e70	313	338	639	1,840	577	266	128
17	55	59	e55	e55	e74	304	325	636	1,180	540	257	125
18	53	67	e73	e47	e83	354	309	1,260	1,010	495	251	123
19	52	113	e67	e44	e90	355	300	1,380	926	474	242	129
20	52	110	e68	e52	e90	444	305	881	848	454	230	126
21	51	84	e84	e62	e88	554	351	762	855	430	220	121
22	50	73	e82	e47	e122	435	406	696	837	485	208	117
23	50	69	e75	e71	e234	403	378	10,200	748	472	197	119
24	50	62	e73	e61	e221	391	376	6,940	680	404	205	120
25	50	67	e76	e62	e169	387	438	8,980	643	382	314	120
26	48	67	e76	e58	e146	374	595	3,470	612	370	299	119
27	48	66	81	e53	e226	425	505	2,540	583	359	255	117
28	50	68	87	e48	e767	1,200	458	2,030	566	348	233	116
29	49	55	91	e49	e1,540	1,570	438	1,710	561	345	198	114
30	50	64	101	e51	---	1,010	411	2,930	526	363	178	115
31	49	---	90	e57	---	791	---	3,180	---	332	171	---
TOTAL	1,571	2,314	2,105	1,713	4,781	18,032	12,746	58,341	31,171	18,367	11,619	4,101
MEAN	50.7	77.1	67.9	55.3	165	582	425	1,882	1,039	592	375	137
MAX	57	187	101	84	1,540	1,570	684	10,200	2,390	2,060	1,620	199
MIN	47	49	34	40	46	304	300	301	526	332	171	114
AC-FT	3,120	4,590	4,180	3,400	9,480	35,770	25,280	115,700	61,830	36,430	23,050	8,130
CFSM	0.06	0.09	0.08	0.06	0.18	0.65	0.48	2.11	1.16	0.66	0.42	0.15
IN.	0.07	0.10	0.09	0.07	0.20	0.75	0.53	2.43	1.30	0.76	0.48	0.17

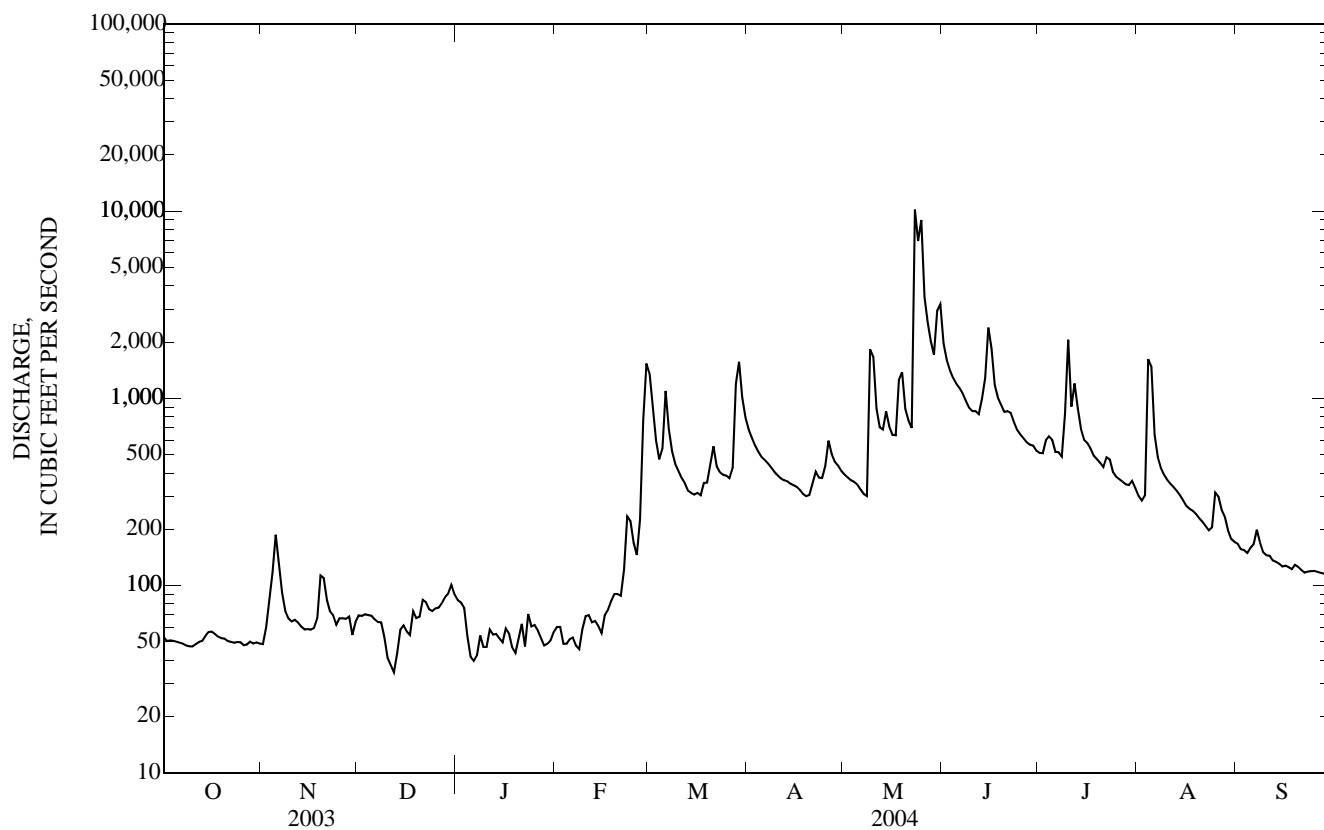
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2004, BY WATER YEAR (WY)

MEAN	221	210	166	155	356	669	572	743	905	562	353	348
MAX	1,816	1,335	1,038	1,078	1,438	2,596	2,194	2,538	5,330	6,971	2,821	3,074
(WY)	(1987)	(1973)	(1993)	(1973)	(1973)	(1965)	(1973)	(1999)	(1998)	(1993)	(1993)	(1972)
MIN	16.5	19.9	14.6	12.3	17.2	32.3	30.4	35.2	40.5	24.5	17.0	14.9
(WY)	(1938)	(1940)	(1938)	(1940)	(1940)	(1938)	(1956)	(1939)	(1968)	(1936)	(1936)	(1937)

06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1919 - 2004	
ANNUAL TOTAL	78,988		166,861		442	
ANNUAL MEAN	216		456		54.9	
HIGHEST ANNUAL MEAN					1,842	1993
LOWEST ANNUAL MEAN					54.9	1968
HIGHEST DAILY MEAN	3,340	May 5	10,200	May 23	45,100	Jun 15, 1998
LOWEST DAILY MEAN	31	Jan 10	34	Dec 12 a	6.0	Aug 18, 1936
ANNUAL SEVEN-DAY MINIMUM	41	Feb 6	47	Jan 4 a	8.1	Dec 15, 1937
MAXIMUM PEAK FLOW			16,600	May 23	60,500	Jun 15, 1998
MAXIMUM PEAK STAGE			19.99	May 23	29.39	Jun 15, 1998
ANNUAL RUNOFF (AC-FT)	156,700		331,000		320,200	
ANNUAL RUNOFF (CFSM)	0.242		0.510		0.494	
ANNUAL RUNOFF (INCHES)	3.29		6.94		6.72	
10 PERCENT EXCEEDS	491		978		964	
50 PERCENT EXCEEDS	87		214		180	
90 PERCENT EXCEEDS	50		50		44	

a Ice affected.
e Estimated.



NISHNABOTNA RIVER BASIN

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA

LOCATION.--Lat 40°37'57", long 95°37'32", in SW¹/₄ SE¹/₄ sec.11, T.67 N., R.42 W., Fremont County, Hydrologic Unit 10240004, on left bank 1.7 mi downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, 2 mi northeast of Hamburg, and at mile 13.8.

DRAINAGE AREA.--2,806 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1922 to September 1923, October 1928 to current year. Monthly discharge only for some periods published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1923, 1929-37, 1938-40 (M), 1943 (M). WSP 1440: Drainage area. WDR IA-74-1: 1973.

GAGE.--Water-stage recorder. Datum of gage is 894.17 ft above NGVD of 1929. See WSP 1730 for history of changes prior to Nov. 16, 1950.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and data collection platform with satellite telemetry at station. Precipitation records are available online at the U.S. Army Corps of Engineers website: www2.mvr.usace.army.mil/WaterControl/dataming2.cfm.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	166	144	237	319	e208	e3,210	2,490	1,120	6,460	1,810	1,170	759
2	158	172	252	323	e196	e2,550	2,220	1,070	5,320	1,800	1,110	732
3	156	285	281	291	e178	e1,830	2,040	1,040	4,640	2,150	1,080	684
4	155	551	284	183	e182	e1,450	1,880	1,020	4,210	2,150	3,380	650
5	156	516	266	e166	e186	1,680	1,750	1,010	3,900	2,200	4,540	666
6	157	507	257	e162	e187	2,460	1,660	983	3,750	2,020	2,780	986
7	156	397	248	e168	e173	3,060	1,580	952	3,580	1,760	1,960	820
8	153	306	251	e193	e166	1,920	1,490	924	3,310	1,770	1,650	730
9	156	260	e215	e175	e191	1,500	1,410	1,260	3,050	4,150	1,480	657
10	153	244	e185	e175	e210	1,290	1,340	3,710	2,910	5,390	1,360	576
11	152	241	e174	e194	e216	1,170	1,260	2,700	2,800	3,650	1,270	540
12	164	234	e163	e184	e199	1,080	1,220	1,950	2,760	2,700	1,210	513
13	165	217	e182	e183	e190	1,020	1,180	2,000	3,830	2,910	1,170	491
14	176	216	e208	e179	e188	964	1,150	2,160	3,660	2,420	1,130	463
15	180	210	e211	e177	e183	961	1,120	2,120	4,520	2,160	1,090	471
16	184	204	e207	e190	e202	990	1,100	1,880	4,320	2,280	1,030	481
17	192	220	e197	e183	e198	965	1,070	1,750	3,840	2,120	982	462
18	184	241	e238	e169	e214	939	1,040	2,340	3,050	1,830	961	450
19	181	377	e218	e163	e229	963	999	3,170	2,820	1,680	934	440
20	183	421	e218	e181	e231	971	982	2,780	2,670	1,590	906	444
21	175	364	e247	e191	e226	1,130	990	2,240	3,130	1,540	890	436
22	174	294	e230	e168	e319	1,270	1,040	2,040	3,210	1,620	867	413
23	161	260	e224	e199	e527	1,110	1,080	6,290	2,680	2,460	848	411
24	140	209	e224	e197	e501	1,050	1,040	16,600	2,430	1,740	889	412
25	141	198	e226	e208	e405	1,020	1,200	19,700	2,260	1,520	1,100	412
26	140	229	e252	e196	e384	1,010	1,340	18,100	2,170	1,400	1,670	411
27	144	228	e332	e188	e827	1,080	1,520	7,810	2,090	1,320	1,410	409
28	148	208	e359	e177	e1,750	2,400	1,360	6,340	2,020	1,260	1,090	400
29	149	201	e328	e176	e3,520	3,980	1,250	5,080	1,950	1,230	933	387
30	149	214	320	e182	---	3,770	1,180	11,100	1,900	1,210	861	382
31	141	---	323	e198	---	2,910	---	9,870	---	1,250	809	---
TOTAL	4,989	8,368	7,557	6,038	12,386	51,703	40,981	141,109	99,240	65,090	42,560	16,088
MEAN	161	279	244	195	427	1,668	1,366	4,552	3,308	2,100	1,373	536
MAX	192	551	359	323	3,520	3,980	2,490	19,700	6,460	5,390	4,540	986
MIN	140	144	163	162	166	939	982	924	1,900	1,210	809	382
AC-FT	9,900	16,600	14,990	11,980	24,570	102,600	81,290	279,900	196,800	129,100	84,420	31,910
CFSM	0.06	0.10	0.09	0.07	0.15	0.59	0.49	1.62	1.18	0.75	0.49	0.19
IN.	0.07	0.11	0.10	0.08	0.16	0.69	0.54	1.87	1.32	0.86	0.56	0.21

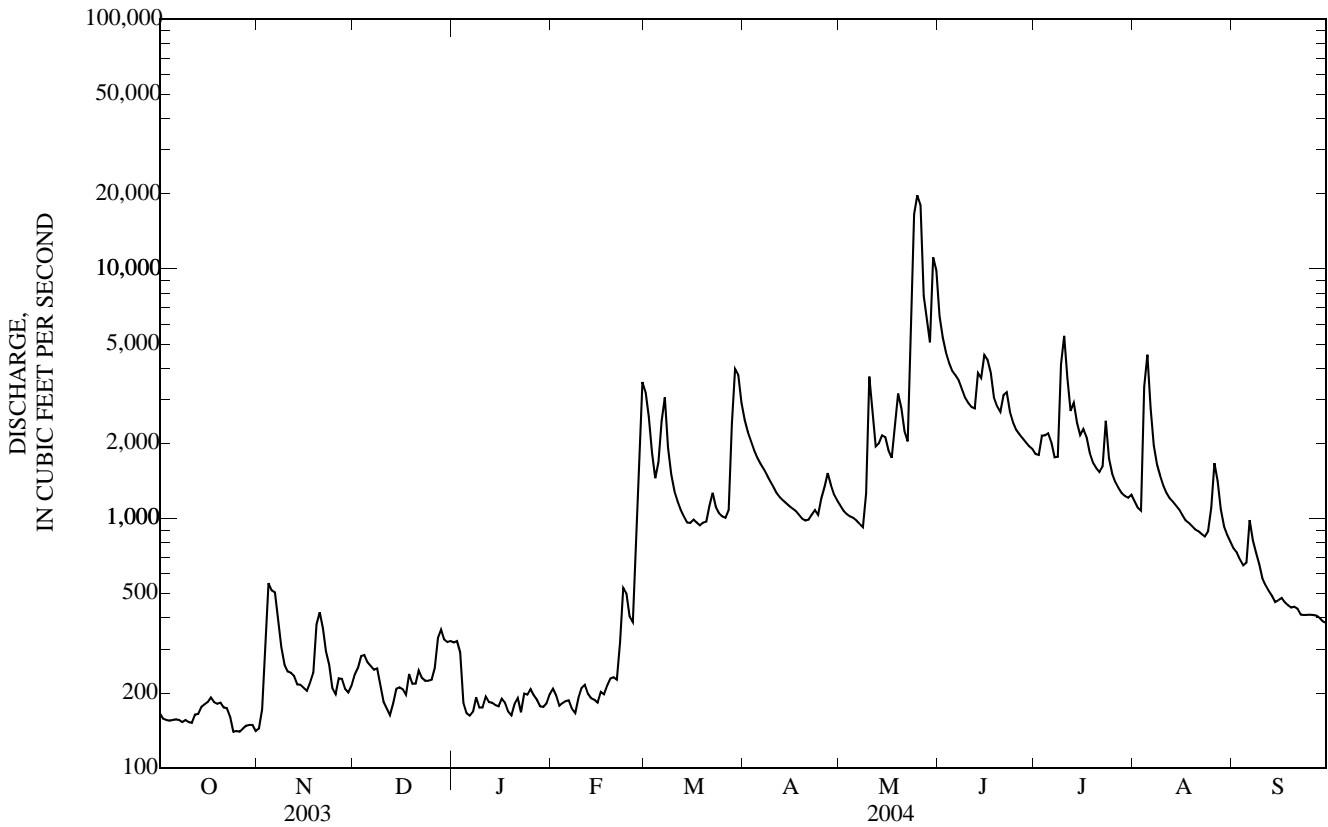
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2004, BY WATER YEAR (WY)

MEAN	659	659	551	550	1,016	1,802	1,497	1,948	2,569	1,679	1,091	975
MAX	5,004	3,083	2,557	3,585	4,720	7,229	5,866	6,621	16,430	17,780	6,266	7,385
(WY)	(1987)	(1973)	(1973)	(1973)	(1973)	(1979)	(1973)	(1995)	(1947)	(1993)	(1993)	(1993)
MIN	39.5	42.9	27.1	21.3	30.3	115	89.7	68.2	151	52.8	16.8	44.1
(WY)	(1938)	(1938)	(1938)	(1940)	(1940)	(1931)	(1956)	(1934)	(1956)	(1936)	(1934)	(1937)

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1922 - 2004	
ANNUAL TOTAL	222,506		496,109			
ANNUAL MEAN	610		1,355		1,252	
HIGHEST ANNUAL MEAN					5,062	1993
LOWEST ANNUAL MEAN					170	1934
HIGHEST DAILY MEAN	6,150	May 6	19,700	May 25	53,700	Jun 17, 1998
LOWEST DAILY MEAN	140	Oct 24	140	Oct 24 a	4.5	Aug 30, 1934
ANNUAL SEVEN-DAY MINIMUM	144	Oct 24	144	Oct 24	9.9	Aug 24, 1934
MAXIMUM PEAK FLOW			26,500	May 26	65,100	Jun 17, 1998
MAXIMUM PEAK STAGE			28.04	May 26	33.18	Jun 17, 1998
INSTANTANEOUS LOW FLOW			131	Oct 31		
ANNUAL RUNOFF (AC-FT)	441,300		984,000		907,300	
ANNUAL RUNOFF (CFSM)	0.217		0.483		0.446	
ANNUAL RUNOFF (INCHES)	2.95		6.58		6.06	
10 PERCENT EXCEEDS	1,350		3,050		2,880	
50 PERCENT EXCEEDS	331		878		589	
90 PERCENT EXCEEDS	175		175		124	

a Also Oct. 26.
e Estimated.



06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA—Continued

(Large river mass contaminants station)

WATER QUALITY RECORDS

PERIOD OF RECORD.--October 2003 to September 30, 2004.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

Date	Time	Instantaneous discharge, cfs (00061)	Stream width, feet (00004)	Turbidity, wat unflab, Hach 2100AN NTU (99872)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incm. titr., field, mg/L (00453)	Chloride, water, fltrd, mg/L (00940)
MAR													
11...	1030	1,180	225	200	744	11.9	96	8.3	490	5.2	172	210	16.9
29...	1230	4,180	260	E1,100	740	8.2	78	7.7	440	12.0	151	184	18.3
APR													
12...	1300	1,210	235	63	--	11.3	--	8.2	533	10.3	174	213	17.5
MAY													
10...	1230	4,630	260	E4,200	737	3.5	40	7.5	387	20.6	121	147	11.2
25...	1045	15,800	310	2,300	732	5.3	58	7.2	238	17.5	80	97	6.35
JUN													
07...	1245	3,580	250	200	733	7.6	89	8.0	510	21.3	176	214	13.8
JUL													
12...	1230	2,670	240	520	741	7.4	92	7.9	454	24.4	148	181	11.8
AUG													
09...	1230	1,480	210	58	742	8.2	97	8.1	502	22.0	194	236	14.9
SEP													
07...	1230	823	200	93	743	8.6	99	8.3	542	21.2	198	242	15.1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Particulate nitrogen, susp, water, mg/L (49570)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, wat flt by analysis, mg/L (62854)	Total nitrogen, wat unfltrd by analysis, mg/L (62855)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)
MAR													
11...	14.0	31.7	.18	7.85	.025	.70	.177	.192	.72	8.55	8.76	7.1	<.1
29...	12.7	27.8	.18	7.37	.063	4.03	.158	.190	3.09	7.93	11.7	47.2	.2
APR													
12...	11.4	30.4	<.04	7.75	.011	.32	.155	.176	.37	8.15	8.61	2.7	<.1
MAY													
10...	8.9	21.1	.22	6.45	.164	15.1	.101	.123	9.41	6.98	16.9	145	8.1
25...	9.2	12.9	.16	5.89	.071	.72	.076	.101	6.02	6.39	10.4	7.1	.2
JUN													
07...	16.2	27.0	<.04	11.5	.024	.98	.157	.162	.76	11.5	6.61	9.6	.2
JUL													
12...	14.2	21.8	<.04	8.01	.038	2.81	.154	.172	1.16	8.24	10.1	27.6	.4
AUG													
09...	16.5	28.4	<.04	7.24	.011	.85	.206	.22	.63	7.64	8.38	8.2	<.1
SEP													
07...	13.5	28.8	<.04	4.30	.016	.53	.180	.17	.42	4.59	5.02	4.1	<.1

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Organic carbon, suspdnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	2,6-Diethyl-aniline water fltrd, 0.7u GF ug/L (82660)	CIAT, water, fltrd, ug/L (04040)	Acetochlor, water, fltrd, ug/L (49260)	Alachlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	Atrazine, water, fltrd, ug/L (39632)	Azinphosmethyl, water, fltrd, 0.7u GF ug/L (82686)	Benfluralin, water, fltrd, 0.7u GF ug/L (82673)	Butylate, water, fltrd, ug/L (04028)
MAR 11...	7.0	3.3	3.8	4.7	<.006	E.024	.009	<.005	<.005	.078	<.050	<.010	<.004
MAR 29...	47.0	6.0	26.2	24.6	<.006	E.028	.026	<.005	<.005	.160	<.050	<.010	<.004
APR 12...	2.7	2.2	2.5	6.2	<.006	E.023	.017	<.005	<.005	.070	<.050	<.010	<.004
MAY 10...	137	5.1	6.6	3.2	<.006	E.441	2.28	.240	<.005	E41.7	<.050	<.010	<.004
MAY 25...	6.9	5.4	18.2	8.8	<.006	E.469	.884	.051	<.005	8.69	<.050	<.010	<.004
JUN 07...	9.4	3.5	3.1	2.5	<.006	E.076	.051	.006	<.005	.781	<.050	<.010	<.004
JUL 12...	27.2	3.2	5.7	3.9	<.006	E.068	.032	<.005	<.005	.681	<.050	<.010	<.004
AUG 09...	8.1	2.4	5.5	10.9	<.006	E.036	.015	<.005	<.005	.239	<.050	<.010	<.004
SEP 07...	4.1	2.7	9.4	13.6	<.006	E.025	.025	<.005	<.005	.273	<.050	<.010	<.004

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Carbaryl, water, fltrd, 0.7u GF ug/L (82680)	Carbofuran, water, fltrd, 0.7u GF ug/L (82674)	Chlorpyrifos water, fltrd, ug/L (38933)	cis-Permethrin water, fltrd, 0.7u GF ug/L (82687)	Cyanazine, water, fltrd, ug/L (04041)	DCPA, water, fltrd, 0.7u GF ug/L (82682)	Desulf-inyl fipronil, water, fltrd, ug/L (62170)	Diazinon, water, fltrd, ug/L (39572)	Dieldrin, water, fltrd, ug/L (39381)	Disulfoton, water, fltrd, 0.7u GF ug/L (82677)	EPTC, water, fltrd, 0.7u GF ug/L (82668)	Ethalfuralin, water, fltrd, 0.7u GF ug/L (82663)	Ethoprop, water, fltrd, 0.7u GF ug/L (82672)
MAR 11...	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	<.009	<.02	<.004	<.009	<.005
MAR 29...	<.041	<.020	.006	<.006	E.012	<.003	<.012	<.005	<.009	<.02	<.004	<.009	<.005
APR 12...	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	<.009	<.02	<.004	<.009	<.005
MAY 10...	E.007	<.020	.008	<.006	.019	<.003	<.012	<.005	E.006	<.02	<.004	<.009	<.005
MAY 25...	E.007	<.020	.027	<.006	.516	<.003	<.012	<.005	<.009	<.02	<.004	<.009	<.005
JUN 07...	<.041	<.020	<.005	<.006	E.008	<.003	<.012	<.005	E.003	<.02	<.004	<.009	<.005
JUL 12...	<.041	<.020	<.005	<.006	<.018	<.003	<.012	<.005	<.009	<.02	<.004	<.009	<.005
AUG 09...	<.041	<.020	E.004	<.006	<.018	<.003	<.012	<.005	<.009	<.02	<.004	<.009	<.005
SEP 07...	<.041	<.020	<.005	<.006	E.016	<.003	<.012	<.005	<.009	<.02	<.004	<.009	<.005

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	Desulf-inyl-fipronil amide, wat flt ug/L (62169)	Fipronil sulfide water, fltrd, ug/L (62167)	Fipronil sulfone water, fltrd, ug/L (62168)	Fipronil, water, fltrd, ug/L (62166)	Fonofos water, fltrd, ug/L (04095)	Lindane water, fltrd, ug/L (39341)	Linuron water, fltrd, 0.7u GF ug/L (82666)	Malathion, water, fltrd, ug/L (39532)	Methylparathion, water, fltrd, 0.7u GF ug/L (82667)	Metolachlor, water, fltrd, ug/L (39415)	Metribuzin, water, fltrd, ug/L (82630)	Molinate, water, fltrd, 0.7u GF ug/L (82671)	Napropamide, water, fltrd, 0.7u GF ug/L (82684)
MAR 11...	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.027	<.006	<.003	<.007
MAR 29...	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.066	<.006	<.003	<.007
APR 12...	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.032	<.006	<.003	<.007
MAY 10...	<.029	<.013	E.006	E.009	<.003	<.004	<.035	<.027	<.015	.925	.053	<.003	<.007
MAY 25...	<.029	<.013	E.008	E.031	.024	<.004	<.035	<.027	<.015	3.06	.075	<.003	<.007
JUN 07...	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.131	.006	<.003	<.007
JUL 12...	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.121	E.005	<.003	<.007
AUG 09...	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.041	<.006	<.003	<.007
SEP 07...	<.029	<.013	<.024	<.016	<.003	<.004	<.035	<.027	<.015	.098	<.006	<.003	<.007

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

Date	p,p'-DDE, water, fltrd, ug/L (34653)	Parathion, water, fltrd, ug/L (39542)	Pebulate, water, fltrd, 0.7u GF ug/L (82669)	Pendimethalin, water, fltrd, 0.7u GF ug/L (82683)	Phorate, water, fltrd, 0.7u GF ug/L (82664)	Prometon, water, fltrd, ug/L (04037)	Propyzamide, water, fltrd, 0.7u GF ug/L (82676)	Propachlor, water, fltrd, ug/L (04024)	Propanil, water, fltrd, 0.7u GF ug/L (82679)	Propargite, water, fltrd, 0.7u GF ug/L (82685)	Simazine, water, fltrd, ug/L (04035)	Tebu-thiuron, water, fltrd, 0.7u GF ug/L (82670)	Terbacil, water, fltrd, 0.7u GF ug/L (82665)
MAR 11...	<.003	<.010	<.004	<.022	<.011	<.01	<.004	<.025	<.011	<.02	<.005	<.02	<.034
MAR 29...	<.003	<.010	<.004	E.007	<.011	.01	<.004	<.025	<.011	<.02	<.005	<.02	<.034
APR 12...	<.003	<.010	<.004	<.022	<.011	<.01	<.004	<.025	<.011	<.02	<.005	<.02	<.034
MAY 10...	<.003	<.010	<.004	E.017	<.011	.01	<.004	<.025	<.011	<.02	.098	<.02	<.034
MAY 25...	<.003	<.010	<.004	.028	<.011	.01	<.004	<.025	<.011	<.02	.042	<.02	<.034
JUN 07...	<.003	<.010	<.004	E.009	<.011	.01	<.004	<.025	<.011	<.02	.006	<.02	<.034
JUL 12...	<.003	<.010	<.004	<.022	<.011	.02	<.004	<.025	<.011	<.02	.009	<.02	<.034
AUG 09...	<.003	<.010	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	<.005	<.02	<.034
SEP 07...	<.003	<.010	<.004	<.022	<.011	.01	<.004	<.025	<.011	<.02	.011	<.02	<.034

WATER-QUALITY DATA, WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004—CONTINUED

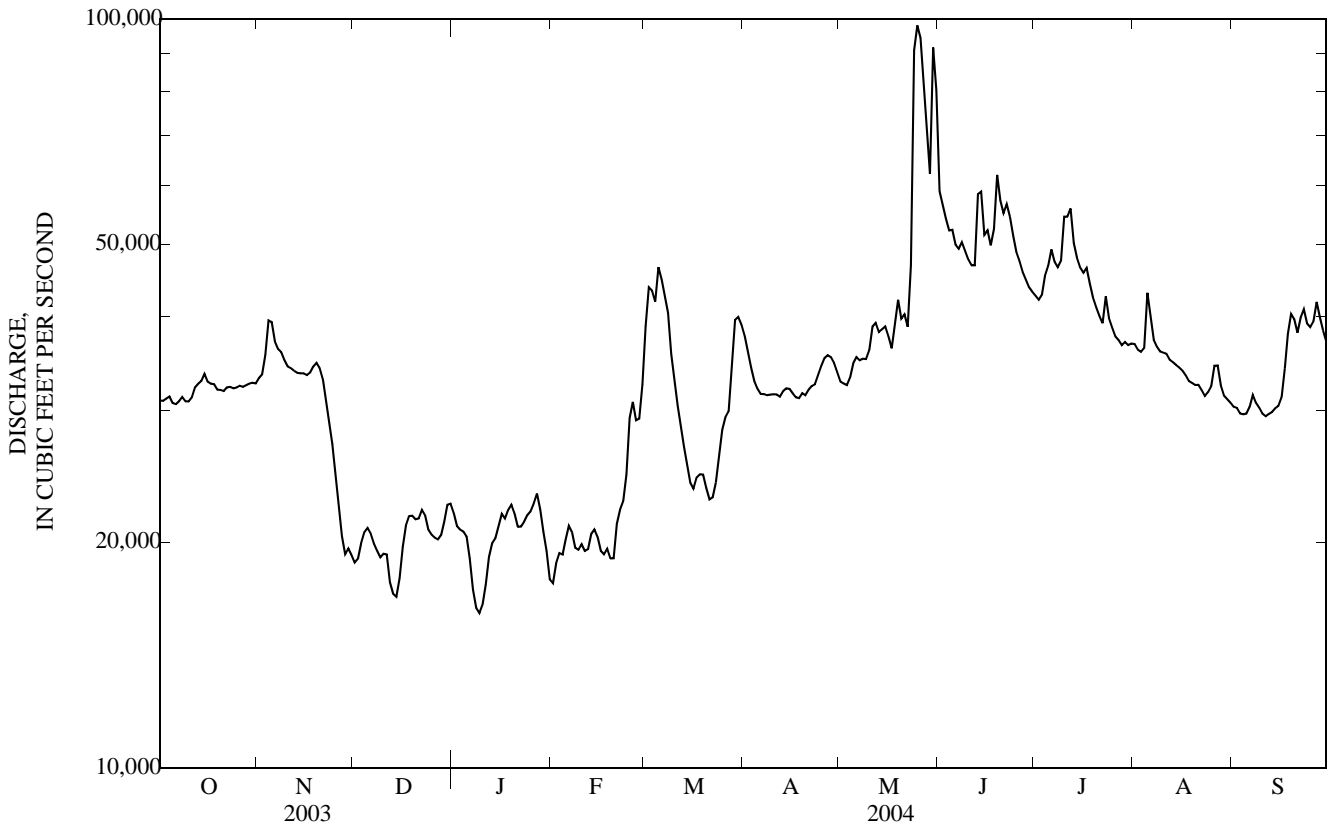
Date	Terbufos, water, fltrd, 0.7u GF ug/L (82675)	Thio-bencarb, water, fltrd, 0.7u GF ug/L (82681)	Tri-allate, water, fltrd, 0.7u GF ug/L (82678)	Tri-fluralin, water, fltrd, 0.7u GF ug/L (82661)	Suspended sediment concentration mg/L (80154)	Number of sampling points, count (00063)
MAR 11...	<.02	<.010	<.002	<.009	553	11
MAR 29...	<.02	<.010	<.002	E.004	3,210	10
APR 12...	<.02	<.010	<.002	<.009	200	12
MAY 10...	<.02	<.010	<.002	.035	8,700	14
MAY 25...	<.02	<.010	<.002	.034	5,340	8
JUN 07...	<.02	<.010	<.002	<.009	633	10
JUL 12...	<.02	<.010	<.002	<.009	1,500	10
AUG 09...	<.02	<.010	<.002	<.009	861	14
SEP 07...	<.02	<.010	<.002	<.009	228	11

MISSOURI RIVER MAIN STEM

06813500 MISSOURI RIVER AT RULO, NE—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1953 - 2004 a	
ANNUAL TOTAL	11,421,100		12,351,800			
ANNUAL MEAN	31,290		33,750		41,880	
HIGHEST ANNUAL MEAN					71,880 1997	
LOWEST ANNUAL MEAN					26,340 1957	
HIGHEST DAILY MEAN	62,800	Jun 13	98,000	May 25	289,000	Jul 24, 1993
LOWEST DAILY MEAN	16,000	Jan 19	16,100	Jan 9	4,420	Jan 13, 1957
ANNUAL SEVEN-DAY MINIMUM	16,900	Jan 15	17,400	Jan 6	5,560	Nov 30, 1955
MAXIMUM PEAK FLOW			109,000	May 30	307,000	Jul 24, 1993
MAXIMUM PEAK STAGE			19.42	May 30	25.37	Jul 24, 1993
INSTANTANEOUS LOW FLOW			16,000	Jan 9		
ANNUAL RUNOFF (AC-FT)	22,650,000		24,500,000		30,340,000	
ANNUAL RUNOFF (CFSM)	0.075		0.081		0.101	
ANNUAL RUNOFF (INCHES)	1.02		1.11		1.37	
10 PERCENT EXCEEDS	44,400		47,800		66,300	
50 PERCENT EXCEEDS	31,900		32,500		38,400	
90 PERCENT EXCEEDS	19,600		19,800		19,100	

a Post regulation.



06817000 NODAWAY RIVER AT CLARINDA, IA

LOCATION.--Lat 40°44'22"(revised), long 95°00'47", in SW¼ NE¼ sec.32, T.69 N., R.36 W., Page County, Hydrologic Unit 10240009, near left abutment on downstream side of bridge on State Highway 2 (city route), 0.5 mi downstream from North Branch, 1.2 mi east of city square of Clarinda, and 7.5 mi upstream from East Nodaway River.

DRAINAGE AREA.--762 mi².

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310. No winter records 1918-1925.

REVISED RECORDS.--WSP 1240: 1918-20 (M), 1921, 1922-25 (M), 1936-38, 1942, 1943-45 (M), 1948. WSP 1440: Drainage area. WSP 1710: 1958, 1959 (P).

GAGE.--Water-stage recorder. Datum of gage is 955.36 ft above NGVD of 1929. Prior to July 5, 1925, and May 28, 1936 to Mar. 26, 1957, nonrecording gage at same site, and prior to Oct. 1, 1987, at datum 5.00 ft. higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Clarinda municipal water supply is taken from Nodaway River, 500 ft upstream from station. Average daily pumpage was 1.61 ft³/s. U.S. Geological Survey data collection platform with satellite telemetry at station.

COOPERATION.--Average pumpage provided by City of Clarinda water works.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1903 reached a stage of 25.4 ft, from floodmarks, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	21	41	e42	e36	e703	708	156	1,430	208	113	101
2	19	30	39	e42	e31	e514	615	145	1,060	209	106	92
3	20	54	46	e36	e19	e361	540	136	908	229	105	86
4	20	379	46	e23	e21	e321	494	139	799	259	2,830	81
5	19	524	45	e15	e24	e491	446	142	722	297	1,370	86
6	18	149	46	e14	e22	1,210	426	142	675	219	528	438
7	16	83	43	e23	e20	549	395	127	633	180	334	495
8	18	62	42	e30	e20	424	352	122	581	175	245	171
9	19	53	39	e24	e29	354	315	166	519	449	198	122
10	19	48	e29	e26	e40	322	287	623	504	1,970	156	105
11	20	44	e27	e32	e43	294	265	337	511	617	131	96
12	21	42	e26	e30	e36	263	253	250	497	470	118	87
13	19	39	e32	e29	e37	238	244	355	1,420	388	114	80
14	21	38	41	e26	e33	246	238	482	1,270	274	108	76
15	22	38	41	e25	e32	224	235	406	903	227	95	74
16	22	37	e34	e34	e45	244	232	345	709	246	86	69
17	22	38	e32	e29	e45	246	223	313	608	225	82	65
18	22	44	45	e20	e54	320	207	2,340	549	180	79	106
19	21	47	e37	e17	e64	359	189	1,420	501	155	72	300
20	20	53	e40	e29	e117	511	183	807	474	147	69	112
21	19	48	49	e37	e186	578	237	640	532	143	64	78
22	18	43	53	e22	e357	386	279	546	490	395	63	67
23	20	43	53	e46	e756	349	229	2,870	400	784	59	63
24	21	32	48	e40	e312	338	206	2,520	326	372	68	64
25	20	37	55	e38	e240	316	238	5,110	333	224	286	62
26	20	43	60	e33	e213	299	252	1,940	306	182	591	58
27	19	41	68	e26	e298	546	202	1,430	284	149	639	55
28	20	36	65	e21	e572	4,190	198	1,140	266	134	227	53
29	19	34	e51	e19	e869	1,960	182	867	234	128	147	49
30	18	41	e45	e24	---	1,180	159	5,450	214	127	125	52
31	20	---	e41	e29	---	862	---	3,010	---	128	106	---
TOTAL	610	2,221	1,359	881	4,571	19,198	9,029	34,476	18,658	9,890	9,314	3,443
MEAN	19.7	74.0	43.8	28.4	158	619	301	1,112	622	319	300	115
MAX	22	524	68	46	869	4,190	708	5,450	1,430	1,970	2,830	495
MIN	16	21	26	14	19	224	159	122	214	127	59	49
AC-FT	1,210	4,410	2,700	1,750	9,070	38,080	17,910	68,380	37,010	19,620	18,470	6,830
CFSM	0.03	0.10	0.06	0.04	0.21	0.81	0.39	1.46	0.82	0.42	0.39	0.15
IN.	0.03	0.11	0.07	0.04	0.22	0.94	0.44	1.68	0.91	0.48	0.45	0.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2004, BY WATER YEAR (WY)

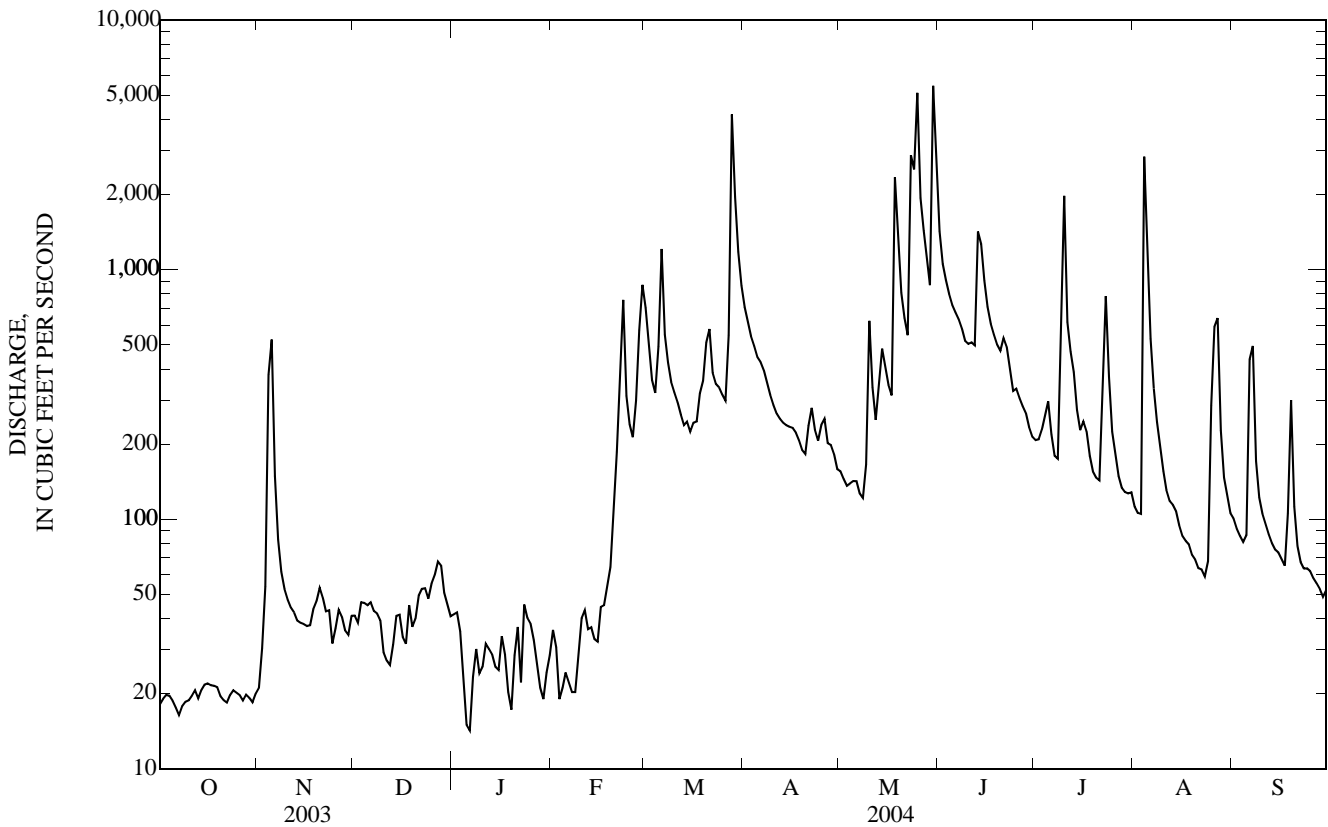
MEAN	168	168	133	126	307	565	554	712	757	428	228	304
MAX	1,658	1,602	1,090	853	1,857	2,456	2,450	2,489	4,779	6,778	1,953	3,019
(WY)	(1974)	(1973)	(1993)	(1974)	(1973)	(1979)	(1973)	(1996)	(1947)	(1993)	(1987)	(1972)
MIN	7.52	8.27	2.10	6.00	11.3	14.0	14.4	10.3	20.0	17.3	9.81	6.83
(WY)	(1938)	(1938)	(1924)	(1924)	(1940)	(1938)	(1956)	(1939)	(1968)	(1954)	(1936)	(1937)

NODAWAY RIVER BASIN

06817000 NODAWAY RIVER AT CLARINDA, IA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1919 - 2004	
ANNUAL TOTAL	54,864		113,650		376	
ANNUAL MEAN	150		311		1,577	
HIGHEST ANNUAL MEAN					1968	
LOWEST ANNUAL MEAN					36.8	
HIGHEST DAILY MEAN	5,480	May 9	5,450	May 30	25,500	Sep 13, 1972
LOWEST DAILY MEAN	10	Feb 7	14	Jan 6 a	1.0	Dec 9, 1923 b
ANNUAL SEVEN-DAY MINIMUM	15	Feb 6	18	Oct 4	1.3	Dec 25, 1923
MAXIMUM PEAK FLOW			9,000	May 30	31,100	Jun 13, 1947c
MAXIMUM PEAK STAGE			14.02	May 30	25.30	Jun 13, 1947d
ANNUAL RUNOFF (AC-FT)	108,800		225,400		272,600	
ANNUAL RUNOFF (CFSM)	0.197		0.408		0.494	
ANNUAL RUNOFF (INCHES)	2.68		5.55		6.71	
10 PERCENT EXCEEDS	327		639		826	
50 PERCENT EXCEEDS	45		122		101	
90 PERCENT EXCEEDS	20		21		20	

- a Ice affected.
- b Also Dec. 27-31, 1923.
- c From rating curve extended above 15,000 ft³/s on basis of an overflow profile and extended channel rating.
- d From floodmark.
- e Estimated.



06817000 NODAWAY RIVER AT CLARINDA, IA—Continued