SKUNK RIVER BASIN

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

LOCATION.--Lat 41°21'20.5", long 92°39'25.8" referenced to North American Datum of 1927, in NE 1/4 NW 1/4 SW 1/4 sec.25, T.76 N., R.16 W., Mahaska County, IA, Hydrologic Unit 07080105, on left bank 10 ft downstream from bridge on U.S. Highway 63, 4.0 mi north of Oskaloosa, 0.3 mi downstream from Painter Creek, 51.2 mi upstream from confluence with North Skunk River, and 145.9 mi upstream from mouth of Skunk River.

DRAINAGE AREA.--1,635 mi².

PERIOD OF RECORD.--Discharge records from October 1945 to current year. Prior to October 1966, published as "Skunk River near Oskaloosa"; prior to October 1948, monthly mean discharge for some periods published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 685.50 ft above National Geodetic Vertical Datum of 1929. Prior to November 21, 1947, non-recording gage at same site and datum; November 21, 1947, to May 3, 1995, at site 400 ft upstream at same datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 25.8 ft, from high-water mark, discharge 37,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of velocity-area study.

A summary of all available data for this streamgage is provided through the USGS National Water Information System web interface (NWISWeb). The following link provides access to current/historical observations, daily data, daily statistics, monthly statistics, annual statistics, peak streamflow, field measurements, field/lab water-quality samples, and the latest water-year summaries. Data can be filtered by parameter and/or dates, and can be output in various tabular and graphical formats.

http://waterdata.usgs.gov/nwis/inventory/?site_no=05471500

The USGS WaterWatch Toolkit is available at:

http://waterwatch.usgs.gov/?id=ww_toolkit

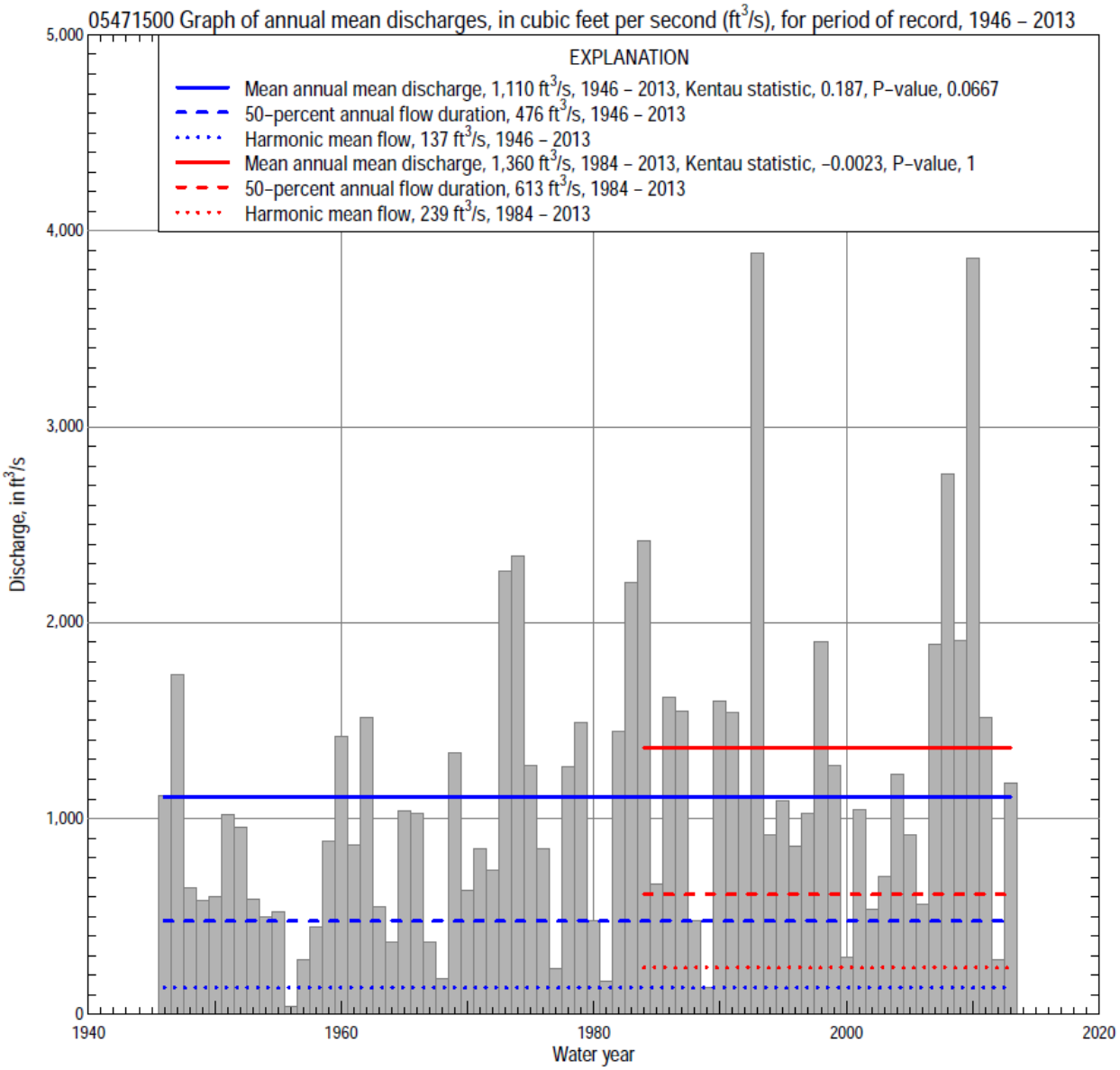
Tools for summarizing streamflow information include the duration hydrograph builder, the cumulative streamflow hydrograph builder, the streamgage statistics retrieval tool, the rating curve builder, the flood tracking chart builder, the National Weather Service Advanced Hydrologic Prediction Service (AHPS) river forecast hydrograph builder, and the raster-hydrograph builder. Entering the above number for this streamgage into these toolkit webpages will provide streamflow information specific to this streamgage.

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

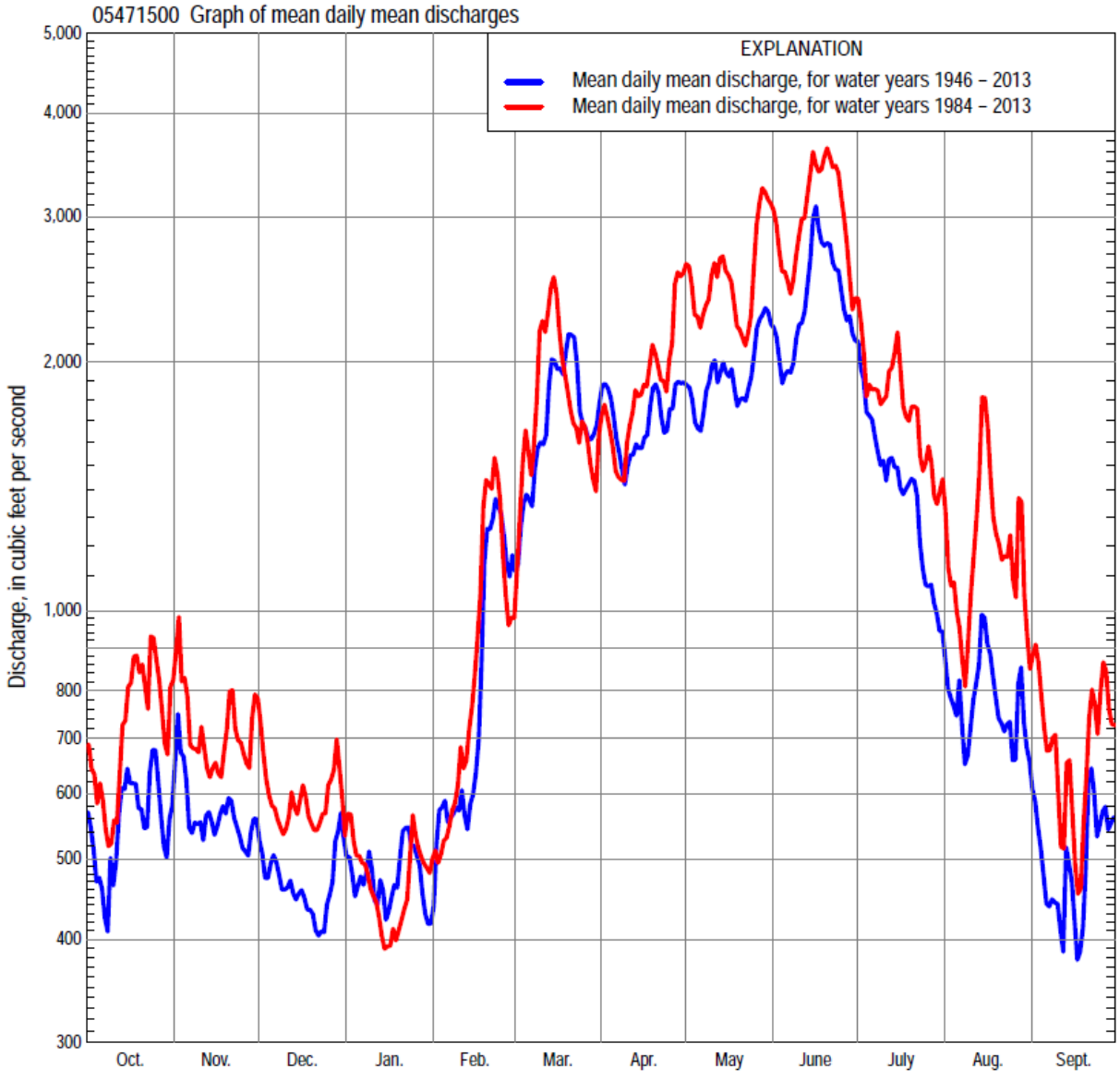
A description of the statistics presented for this streamgage is available in the main body of the report at:

http://dx.doi.org/10.3133/ofr20151214

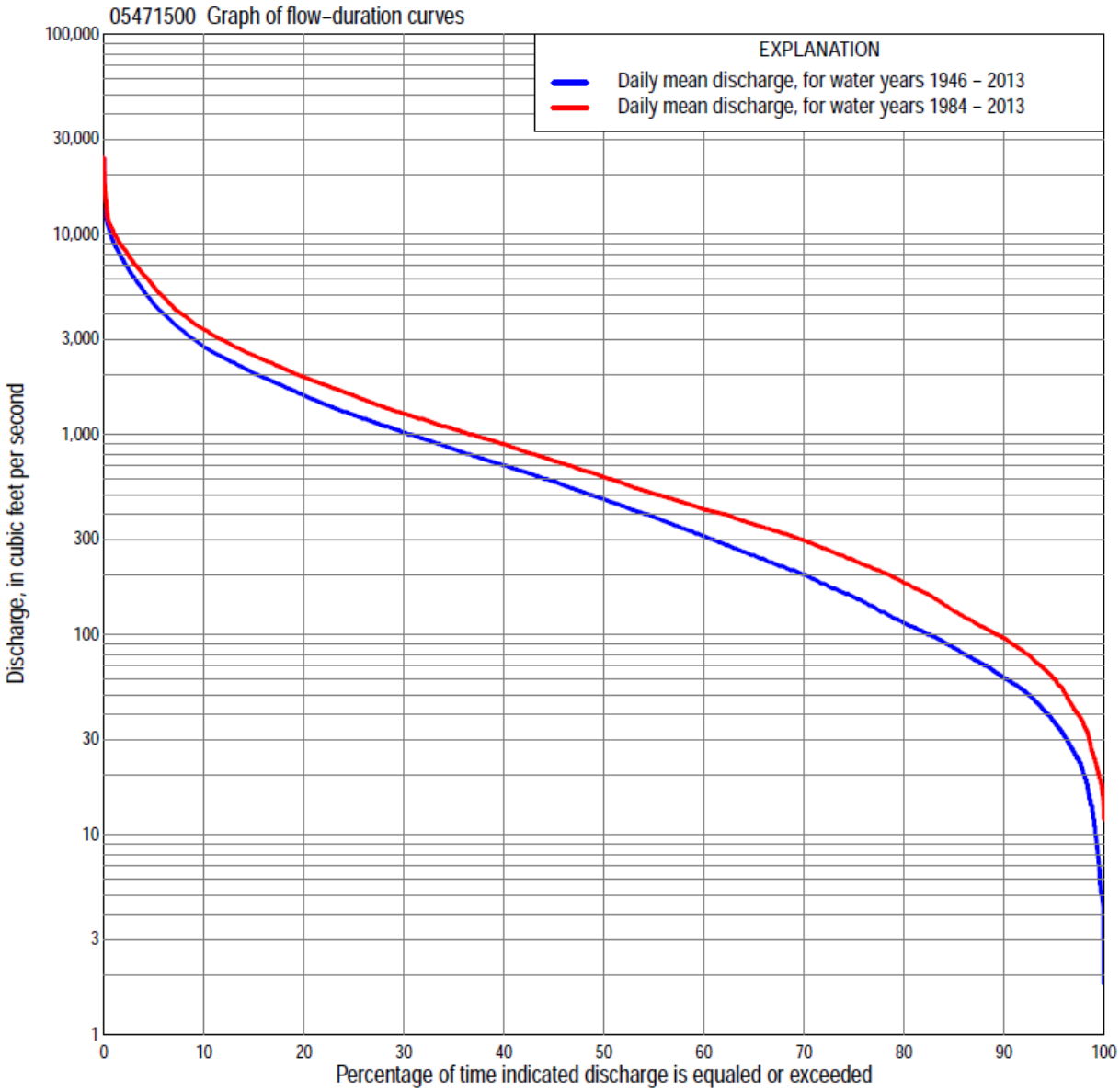
A link to other streamgages included in this report, a map showing the location of the streamgages, information on the programs used to compute the statistical analyses, and references are included in the main body of the report.



05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA



05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA



SKUNK RIVER BASIN

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

Statistics Based on the Entire Streamflow Period of Record

05471500 Monthly and annual flow durations, based on 1946–2013 period of record (68 years)

Percentage of days discharge equaled or exceeded	Discharge (cubic feet per second)													Annual flow durations	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Annual	Kentau statistic	P-value
99	12	15	7.2	5.0	8.7	33	46	60	33	16	25	14	12	0.260	0.002
98	21	20	9.4	5.3	19	42	68	68	43	24	31	20	20	0.262	0.002
95	27	33	18	12	35	75	86	106	132	83	52	32	37	0.266	0.001
90	46	49	34	28	56	126	164	170	231	157	77	52	61	0.269	0.001
85	55	59	45	38	77	194	265	302	335	219	101	67	86	0.263	0.002
80	61	74	55	66	105	300	374	432	425	282	124	78	115	0.251	0.003
75	72	93	75	84	138	400	489	560	542	333	149	95	154	0.233	0.005
70	84	118	105	100	170	500	585	725	672	398	170	110	200	0.221	0.008
65	100	148	132	120	210	636	674	880	810	476	196	125	250	0.207	0.013
60	118	185	170	170	240	746	799	1,000	1,030	574	226	141	310	0.191	0.021
55	158	244	223	205	290	880	945	1,160	1,200	658	261	163	388	0.181	0.029
50	192	306	265	230	360	1,020	1,090	1,310	1,400	760	293	189	476	0.179	0.032
45	222	383	320	265	480	1,190	1,270	1,470	1,610	850	338	218	582	0.174	0.037
40	259	466	370	320	580	1,360	1,430	1,670	1,870	970	385	260	700	0.183	0.028
35	370	560	413	380	690	1,600	1,610	1,900	2,140	1,100	438	313	845	0.197	0.018
30	533	650	496	478	800	1,840	1,860	2,190	2,520	1,260	501	370	1,030	0.188	0.024
25	666	737	657	550	950	2,170	2,180	2,470	2,920	1,470	586	431	1,250	0.205	0.014
20	850	850	800	660	1,200	2,550	2,530	2,880	3,630	1,770	713	512	1,570	0.205	0.014
15	1,030	1,080	975	810	1,640	3,120	3,030	3,570	4,660	2,290	959	676	2,020	0.195	0.019
10	1,350	1,400	1,160	1,000	2,200	4,100	3,860	4,500	6,170	3,350	1,390	1,030	2,740	0.170	0.041
5	2,200	1,970	1,480	1,500	3,200	6,290	5,740	6,530	8,730	5,800	3,000	2,120	4,490	0.156	0.061
2	3,580	2,700	2,200	3,200	4,600	8,350	8,240	8,440	11,300	8,670	7,390	4,260	7,320	0.163	0.050
1	5,020	3,780	2,620	4,700	6,450	9,190	10,200	9,520	12,300	10,600	9,850	5,570	9,080	0.124	0.137

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

05471500 Annual exceedance probability of instantaneous peak discharges, in cubic feet per second (ft^3/s), based on the Weighted Independent Estimates method,

Annual exceed-ance probability	Recur-rence interval (years)	Discharge (ft^3/s)	95-percent lower confi-dence interval (ft^3/s)	95-percent upper confi-dence interval (ft^3/s)
0.500	2	8,680	7,770	9,700
0.200	5	13,200	11,800	14,900
0.100	10	16,300	14,300	18,700
0.040	25	20,900	17,800	24,500
0.020	50	24,300	20,200	29,200
0.010	100	27,600	22,300	34,100
0.005	200	31,800	24,900	40,600
0.002	500	35,700	26,800	47,500
and based on the expected moments algorithm/multiple Grubbs-Beck analysis computed using a historical period length of 83 years (1931–2013)				
0.500	2	8,660	7,640	9,820
0.200	5	13,100	11,500	15,100
0.100	10	16,100	14,000	19,200
0.040	25	20,100	17,100	25,500
0.020	50	23,200	19,200	31,000
0.010	100	26,300	21,300	37,300
0.005	200	29,500	23,200	44,500
0.002	500	33,800	25,600	55,700
Kentau statistic		0.107		
P-value		0.198		
Begin year		1946		
End year		2013		
Number of peaks		68		

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

05471500 Annual exceedance probability of high discharges, based on 1946–2013 period of record (68 years)

[ND, not determined]

Annual exceedance probability	Recurrence interval (years)	Maximum average discharge (ft^3/s) for indicated number of consecutive days				
		1	3	7	15	30
0.990	1.01	ND	639	522	365	239
0.950	1.05	ND	1,830	1,410	999	699
0.900	1.11	ND	2,890	2,200	1,570	1,130
0.800	1.25	ND	4,580	3,490	2,540	1,860
0.500	2	ND	8,480	6,780	5,110	3,820
0.200	5	ND	11,800	10,300	8,070	6,000
0.100	10	ND	12,800	11,800	9,440	6,950
0.040	25	ND	13,700	13,000	10,600	7,730
0.020	50	ND	14,100	13,500	11,200	8,090
0.010	100	ND	14,400	13,900	11,600	8,330
0.005	200	ND	14,600	14,100	11,900	8,490
0.002	500	ND	14,700	14,300	12,100	8,630
Kentau statistic		0.090	0.087	0.121	0.124	0.133
P-value		0.280	0.295	0.145	0.137	0.110

05471500 Annual nonexceedance probability of low discharges, based on April 1946 to March 2013 period of record (67 years)

Annual nonexceedance probability	Recurrence interval (years)	Minimum average discharge (ft^3/s) for indicated number of consecutive days								
		1	3	7	14	30	60	90	120	183
0.01	100	2.5	2.4	2.6	3.1	3.9	5.5	7.7	8.8	15
0.02	50	4.0	4.0	4.2	5.0	6.2	8.5	12	13	21
0.05	20	8.1	8.2	8.6	10	12	16	22	25	36
0.10	10	14	15	15	17	20	27	36	41	58
0.20	5	27	28	29	32	37	49	64	74	101
0.50	2	76	79	84	90	105	136	175	209	269
0.80	1.25	174	181	192	209	252	329	420	519	663
0.90	1.11	250	258	273	303	374	496	633	798	1,030
0.96	1.04	348	357	377	428	545	739	944	1,220	1,610
0.98	1.02	419	428	452	522	681	938	1,200	1,580	2,120
0.99	1.01	486	494	521	614	819	1,150	1,470	1,960	2,690
Kentau statistic		0.264	0.265	0.266	0.268	0.240	0.227	0.200	0.196	0.199
P-value		0.002	0.002	0.001	0.001	0.004	0.007	0.017	0.019	0.018

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

05471500 Annual nonexceedance probability of seasonal low discharges, based on October 1945 to September 2013 period of record (68 years)

Annual nonexceed-ance probability	Recur-rence interval (years)	Minimum average discharge (cubic feet per second) for indicated number of consecutive days							
		1	7	14	30	1	7	14	30
		January-February-March				April-May-June			
0.01	100	2.9	3.0	3.2	5.0	18	21	25	32
0.02	50	4.8	5.0	5.4	8.3	28	33	38	49
0.05	20	9.8	11	11	17	52	61	70	91
0.10	10	18	20	21	31	88	102	116	153
0.20	5	36	40	43	61	156	180	207	274
0.50	2	121	135	146	199	409	468	547	743
0.80	1.25	340	383	415	549	893	1,030	1,230	1,720
0.90	1.11	547	618	671	875	1,250	1,460	1,770	2,520
0.96	1.04	870	984	1,070	1,380	1,720	2,030	2,500	3,630
0.98	1.02	1,150	1,300	1,410	1,800	2,060	2,450	3,060	4,500
0.99	1.01	1,450	1,640	1,790	2,260	2,380	2,860	3,610	5,380
Kentau statistic		0.248	0.238	0.238	0.163	0.242	0.212	0.205	0.229
P-value		0.003	0.004	0.004	0.050	0.004	0.011	0.014	0.006
		July-August-September				October-November-December			
0.01	100	7.5	11	14	23	3.0	3.3	4.1	6.4
0.02	50	11	15	18	27	4.9	5.4	6.6	9.7
0.05	20	17	22	26	37	9.9	11	13	18
0.10	10	26	32	37	49	18	20	23	30
0.20	5	43	49	56	71	34	38	44	56
0.50	2	107	114	128	160	107	120	136	167
0.80	1.25	246	268	308	408	282	315	366	457
0.90	1.11	371	419	496	700	440	489	580	747
0.96	1.04	564	675	836	1,290	674	746	911	1,230
0.98	1.02	732	921	1,180	1,970	867	956	1,200	1,670
0.99	1.01	919	1,220	1,620	2,910	1,070	1,180	1,500	2,190
Kentau statistic		0.198	0.191	0.178	0.164	0.214	0.214	0.215	0.202
P-value		0.017	0.022	0.032	0.048	0.010	0.010	0.010	0.015

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

Statistics Based on the 1984–2013 Streamflow Period of Record

05471500 Monthly and annual flow durations, based on 1984–2013 period of record (30 years)

Percentage of days discharge equaled or exceeded	Discharge (cubic feet per second)													Annual flow durations	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Annual	Kentau statistic	P-value
99	21	35	15	18	37	42	80	76	117	59	28	21	25	0.048	0.721
98	23	39	17	22	41	55	95	107	152	69	34	24	35	0.032	0.817
95	46	52	31	40	56	151	139	170	213	84	51	34	60	0.051	0.708
90	65	78	47	63	100	250	275	386	292	131	78	73	96	0.034	0.803
85	80	96	74	90	130	328	419	482	397	245	138	94	131	0.039	0.775
80	89	115	110	115	167	416	507	803	561	328	168	108	181	0.016	0.915
75	102	169	165	178	210	527	586	964	777	406	194	119	236	-0.009	0.957
70	122	232	220	208	251	652	698	1,180	1,050	500	223	131	296	-0.041	0.762
65	160	286	270	235	311	771	917	1,380	1,250	597	259	146	356	-0.055	0.682
60	192	316	334	265	400	924	1,030	1,580	1,450	709	293	164	424	-0.076	0.568
55	221	399	355	300	460	1,050	1,180	1,740	1,700	807	336	189	506	-0.074	0.580
50	253	461	400	328	530	1,160	1,340	1,940	1,930	922	371	213	613	-0.071	0.592
45	321	540	422	366	590	1,270	1,470	2,140	2,170	1,050	412	260	740	-0.048	0.721
40	436	613	500	421	660	1,440	1,660	2,350	2,500	1,200	466	323	897	-0.025	0.858
35	544	690	680	500	760	1,620	1,920	2,600	2,780	1,370	521	370	1,060	-0.021	0.887
30	663	764	789	580	860	1,810	2,260	2,880	3,140	1,580	617	416	1,270	-0.044	0.748
25	813	880	905	650	1,050	2,140	2,560	3,350	3,750	1,820	770	475	1,570	0.007	0.972
20	961	1,050	1,000	740	1,300	2,540	2,890	3,810	4,770	2,270	1,030	590	1,940	0.011	0.943
15	1,210	1,270	1,140	820	1,680	3,110	3,360	4,640	6,030	3,150	1,400	1,010	2,490	0.032	0.817
10	1,920	1,640	1,300	944	2,190	3,920	4,030	5,750	7,960	4,690	2,540	1,770	3,350	0.030	0.830
5	2,770	2,170	1,610	1,100	2,930	6,400	5,680	7,500	10,500	6,850	6,990	3,410	5,470	0.076	0.568
2	4,660	3,560	2,280	1,660	4,200	8,640	7,790	8,910	12,100	9,780	9,900	5,570	8,510	0.113	0.392
1	6,780	4,500	2,790	2,980	5,800	9,980	8,790	9,890	14,100	13,800	12,800	7,620	10,100	0.057	0.669

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

05471500 Annual exceedance probability of high discharges, based on 1984–2013 period of record (30 years)

Annual exceed-ance probability	Recur-rence interval (years)	Maximum average discharge (ft^3/s) for indicated number of consecutive days				
		1	3	7	15	30
0.990	1.01	1,800	1,290	875	636	456
0.950	1.05	3,060	2,430	1,740	1,290	957
0.900	1.11	3,970	3,290	2,440	1,830	1,370
0.800	1.25	5,340	4,630	3,560	2,700	2,050
0.500	2	8,840	8,160	6,720	5,250	4,000
0.200	5	13,600	13,000	11,400	9,170	6,910
0.100	10	16,600	15,900	14,500	11,800	8,800
0.040	25	20,000	19,200	18,200	15,000	11,000
0.020	50	22,400	21,400	20,400	17,300	12,600
0.010	100	24,600	23,400	22,400	19,400	14,000
0.005	200	26,600	25,200	24,400	21,400	15,200
0.002	500	29,100	27,400	26,600	23,900	16,800
Kentau statistic		0.039	0.062	0.117	0.126	0.101
P-value		0.775	0.643	0.372	0.335	0.443

05471500 Annual nonexceedance probability of low discharges, based on April 1983 to March 2013 period of record (30 years)

Annual nonexceed-ance probability	Recur-rence interval (years)	Minimum average discharge (ft^3/s) for indicated number of consecutive days								
		1	3	7	14	30	60	90	120	183
0.01	100	8.1	8.4	9.1	10	11	17	19	19	23
0.02	50	12	12	13	14	16	24	27	28	34
0.05	20	20	20	22	24	27	39	45	49	59
0.10	10	30	31	34	38	43	58	69	76	94
0.20	5	49	51	55	61	70	91	111	127	159
0.50	2	113	117	126	140	161	203	252	305	394
0.80	1.25	229	235	250	277	326	408	510	641	862
0.90	1.11	314	322	340	377	449	566	706	900	1,240
0.96	1.04	425	434	455	503	610	779	969	1,250	1,760
0.98	1.02	508	516	539	595	729	945	1,170	1,510	2,180
0.99	1.01	589	597	621	684	846	1,110	1,370	1,770	2,600
Kentau statistic		0.007	0.007	0.011	0.011	-0.007	-0.039	-0.062	-0.039	-0.071
P-value		0.972	0.972	0.943	0.943	0.972	0.775	0.643	0.775	0.592

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IOWA

05471500 Annual nonexceedance probability of seasonal low discharges, based on October 1983 to September 2013 period of record (30 years)

Annual nonexceed-ance probability	Recur-rence interval (years)	Minimum average discharge (cubic feet per second) for indicated number of consecutive days							
		1	7	14	30	1	7	14	30
		January-February-March				April-May-June			
0.01	100	7.4	9.8	11	23	39	44	45	58
0.02	50	12	16	17	32	57	63	66	86
0.05	20	24	29	33	51	96	106	115	151
0.10	10	41	50	55	76	148	164	183	242
0.20	5	76	89	97	121	243	268	309	414
0.50	2	209	233	250	284	560	623	751	1,040
0.80	1.25	472	507	536	619	1,130	1,270	1,580	2,290
0.90	1.11	670	710	744	906	1,560	1,760	2,220	3,300
0.96	1.04	926	970	1,010	1,330	2,120	2,410	3,070	4,680
0.98	1.02	1,110	1,160	1,190	1,700	2,530	2,900	3,710	5,770
0.99	1.01	1,290	1,330	1,370	2,090	2,940	3,390	4,340	6,870
Kentau statistic		0.000	-0.009	0.002	-0.016	0.067	0.053	0.053	0.113
P-value		1.000	0.957	1.000	0.915	0.617	0.695	0.695	0.392
		July-August-September				October-November-December			
0.01	100	18	20	22	32	7.3	8.3	9.3	13
0.02	50	22	24	27	37	11	13	14	19
0.05	20	29	32	36	47	20	23	26	33
0.10	10	38	43	47	60	33	37	43	53
0.20	5	56	62	69	85	58	66	75	92
0.50	2	124	137	156	193	155	173	200	244
0.80	1.25	317	351	412	551	361	401	463	584
0.90	1.11	547	609	730	1,060	533	590	683	884
0.96	1.04	1,020	1,150	1,410	2,280	779	859	994	1,340
0.98	1.02	1,560	1,770	2,220	3,920	977	1,070	1,240	1,720
0.99	1.01	2,320	2,660	3,400	6,580	1,180	1,300	1,500	2,140
Kentau statistic		-0.007	0.011	-0.011	-0.016	-0.044	-0.044	-0.057	-0.090
P-value		0.972	0.943	0.943	0.915	0.748	0.748	0.669	0.498