

SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA

LOCATION.--Lat 40°45'13", long 91°16'37.0" referenced to North American Datum of 1927, in NE 1/4 NE 1/4 NE 1/4 sec.26, T.69 N., R.4 W., Des Moines County, IA, Hydrologic Unit 07080107, on left bank on downstream side of bridge on County Highway X38 in Augusta, 2.0 mi upstream from Long Creek, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--4,312 mi².

PERIOD OF RECORD.--Discharge records from September to November 1913, October 1914 to current year. Prior to June 1915, monthly mean discharge for some periods published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 521.24 ft above National Geodetic Vertical Datum of 1929. September 30 to November 15, 1913, non-recording gage at site 400 ft upstream at datum 0.73 ft higher; October 1, 1914, to January 14, 1935, non-recording gage at site 400 ft upstream at same datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Since at least 1851, no flood outside the period of record exceeded the April 23, 1973, stage of 27.05 ft, discharge 66,800 ft³/s. Flood of June 1, 1903, reached a stage of about 21.0 ft, discharge about 45,000 ft³/s, at datum in use in 1913.

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=05474000

The USGS WaterWatch Toolkit is available at:

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

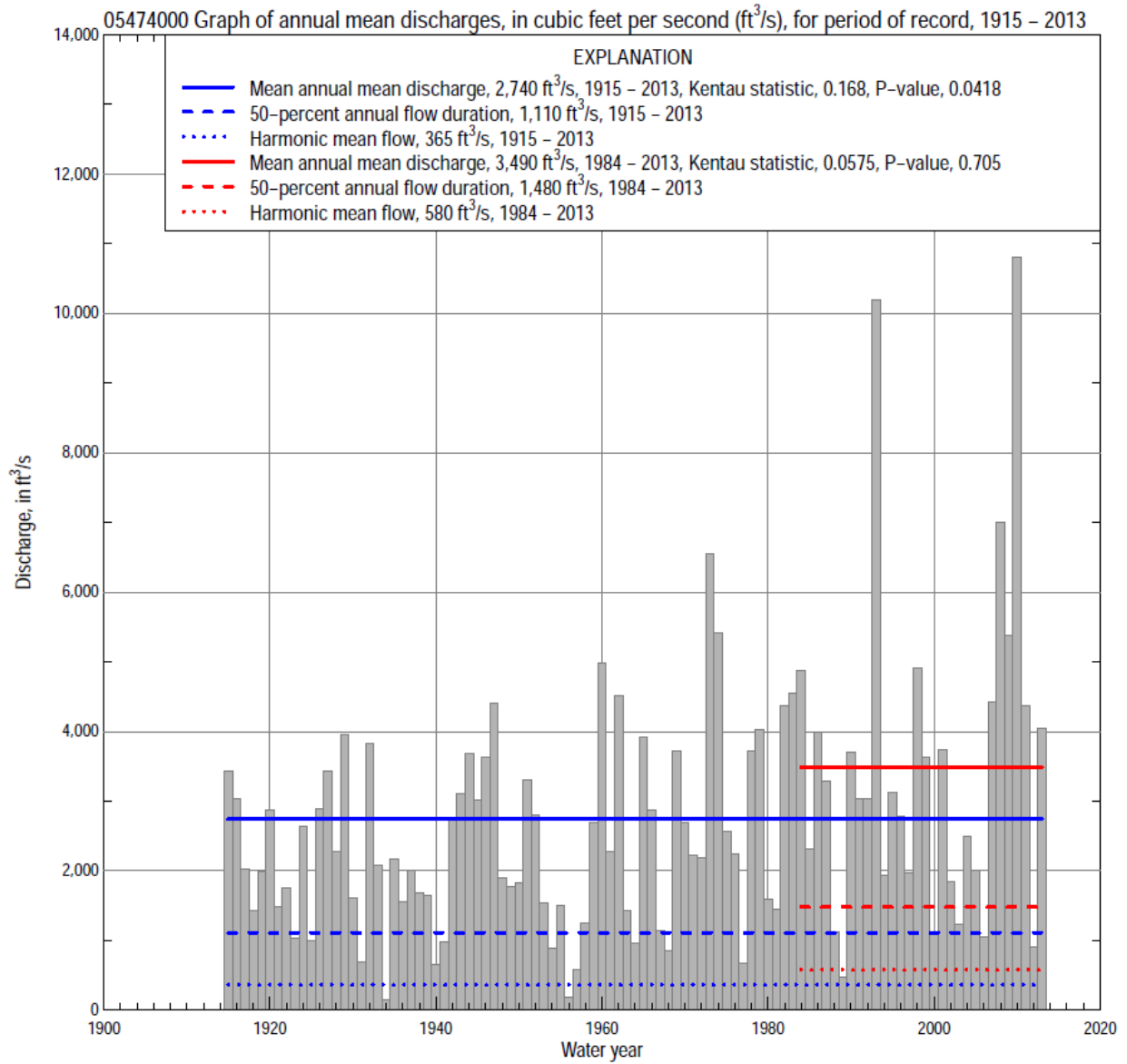
Tools for summarizing streamflow information include the duration hydrograph builder, the cumulative streamflow hydrograph builder, the streamgage statistics retrieval tool, the rating curve builder, the flood tracking chart builder, the National Weather Service Advanced Hydrologic Prediction Service (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.

SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA

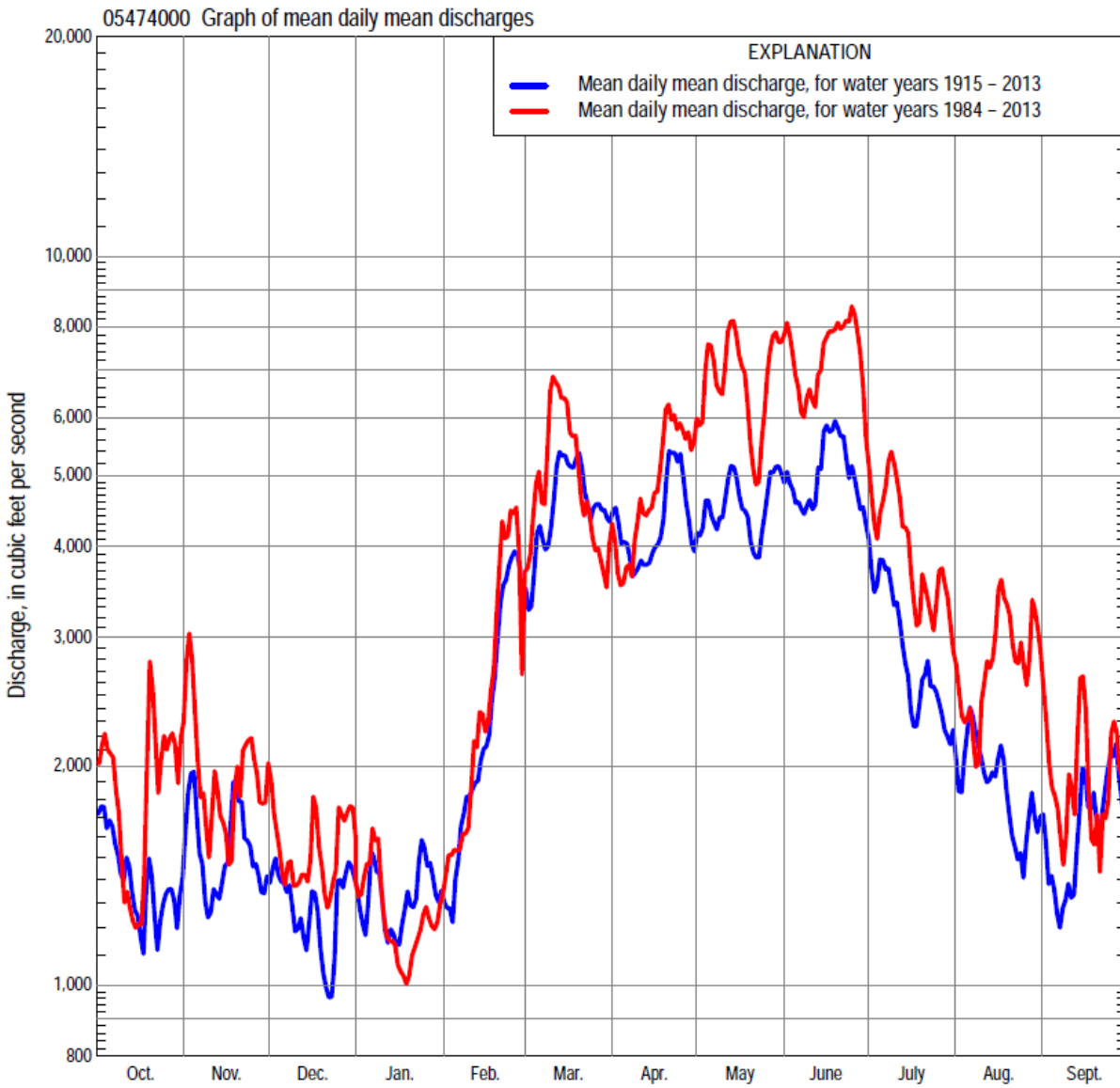
A description of the statistics presented for this streamgage is available in the main body of the report at:

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

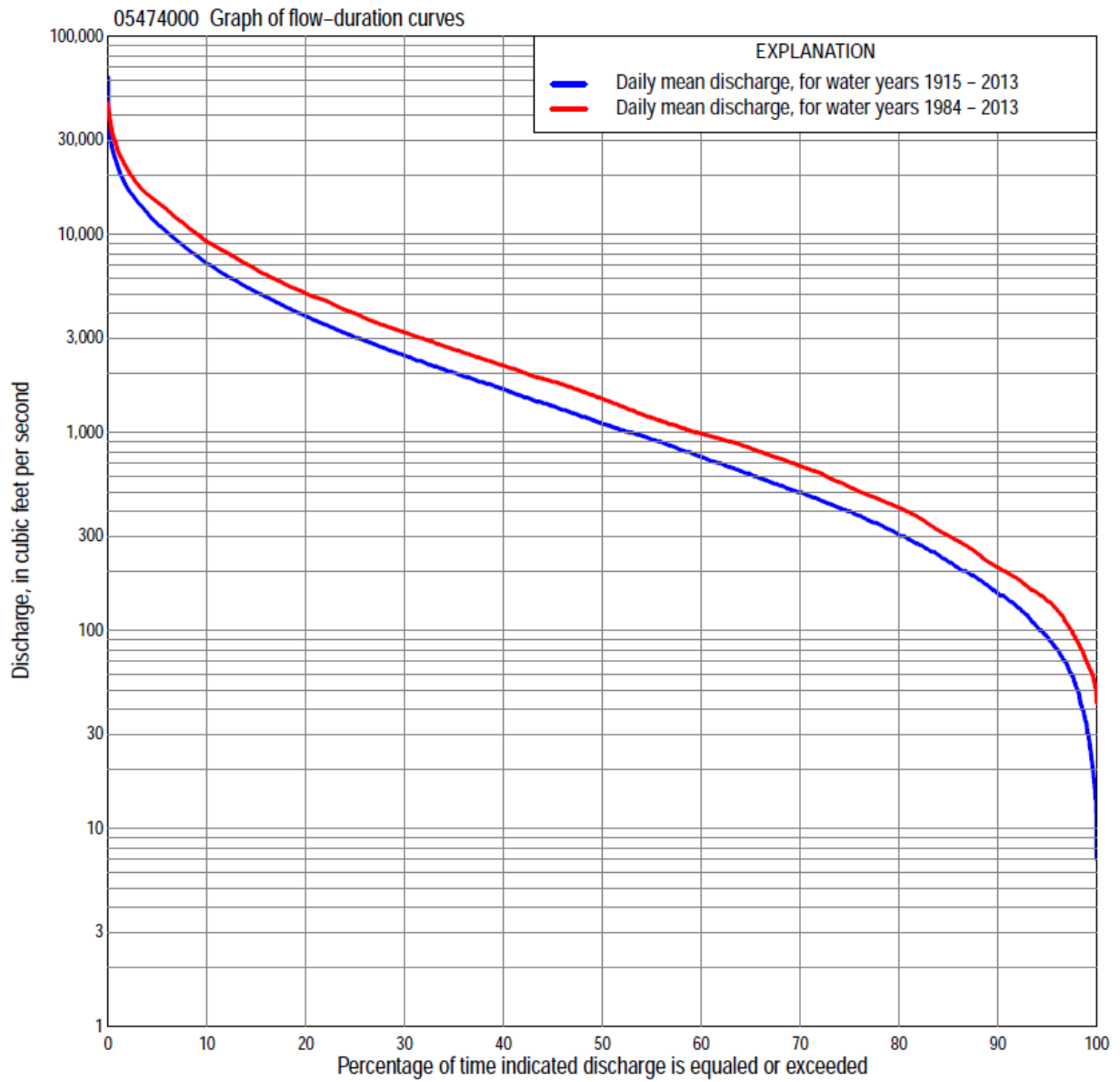
A link to other streamgages included in this report, a map showing the location of the streamgages, information on the programs used to compute the statistical analyses, and references are included in the main body of the report.



SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA



SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA



SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA
Statistics Based on the Entire Streamflow Period of Record

05474000 Monthly and annual flow durations, based on 1915–2013 period of record (99 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	18	30	20	17	24	119	111	95	90	82	52	42	33	0.181	0.008
98	39	42	30	22	45	142	171	134	140	103	75	52	51	0.165	0.016
95	68	65	50	37	91	294	407	325	344	184	120	78	93	0.157	0.021
90	96	109	80	80	150	508	658	529	505	324	189	122	155	0.171	0.012
85	129	142	110	140	220	681	915	711	667	435	242	163	225	0.175	0.010
80	152	192	155	180	300	933	1,120	904	851	542	297	196	307	0.152	0.026
75	179	252	200	223	400	1,150	1,300	1,130	1,090	659	349	228	400	0.150	0.028
70	205	325	267	260	510	1,380	1,440	1,390	1,370	781	400	265	500	0.145	0.034
65	252	415	330	326	600	1,670	1,680	1,660	1,660	936	455	300	620	0.134	0.050
60	314	506	392	380	730	1,980	1,900	2,010	1,970	1,070	518	350	757	0.139	0.042
55	387	605	474	450	960	2,270	2,160	2,300	2,320	1,240	582	408	923	0.153	0.025
50	455	709	553	553	1,110	2,610	2,510	2,670	2,730	1,430	668	468	1,110	0.164	0.016
45	566	812	697	650	1,370	2,980	2,900	3,120	3,120	1,650	792	558	1,360	0.167	0.014
40	713	949	820	780	1,740	3,510	3,330	3,590	3,720	1,870	913	681	1,660	0.167	0.014
35	907	1,120	1,010	900	2,100	4,160	3,930	4,240	4,520	2,170	1,050	805	2,000	0.167	0.015
30	1,140	1,330	1,220	1,100	2,590	5,000	4,530	4,920	5,360	2,570	1,240	950	2,450	0.178	0.009
25	1,510	1,630	1,520	1,400	3,160	6,140	5,220	5,810	6,360	3,150	1,490	1,140	3,020	0.179	0.009
20	1,970	2,020	1,890	1,740	4,000	7,270	6,080	6,970	7,740	3,880	1,890	1,540	3,880	0.184	0.007
15	2,570	2,620	2,350	2,110	4,930	9,020	7,760	8,290	9,680	5,170	2,530	2,300	5,110	0.179	0.009
10	3,640	3,520	3,120	2,900	6,240	11,200	10,300	10,800	12,800	7,060	3,740	3,710	7,160	0.163	0.017
5	5,920	5,770	4,500	5,100	9,370	15,400	14,500	15,800	17,900	11,600	7,990	8,460	11,300	0.144	0.035
2	9,620	11,100	7,840	9,630	12,900	21,100	19,600	22,000	25,500	16,400	16,200	14,500	17,000	0.114	0.095
1	13,200	14,500	10,600	13,500	15,000	25,000	25,800	25,800	30,000	21,600	23,500	18,500	21,800	0.095	0.166

SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA

05474000 Annual exceedance probability of instantaneous peak discharges, in cubic feet per second (ft³/s), based on the Weighted Independent Estimates method,

Annual exceedance probability	Recurrence interval (years)	Discharge (ft ³ /s)	95-percent lower confidence interval (ft ³ /s)	95-percent upper confidence interval (ft ³ /s)
0.500	2	21,400	19,700	23,100
0.200	5	31,200	28,900	33,700
0.100	10	37,300	34,300	40,500
0.040	25	44,700	40,400	49,500
0.020	50	49,800	44,100	56,300
0.010	100	54,600	47,300	63,100
0.005	200	60,100	50,800	71,100
0.002	500	65,300	53,400	79,900

and based on the expected moments algorithm/multiple Grubbs-Beck analysis computed using a historical period length of 162 years (1852–2013)

0.500	2	21,400	19,300	23,600
0.200	5	31,300	28,500	34,400
0.100	10	37,500	34,100	41,400
0.040	25	44,800	40,400	50,600
0.020	50	50,000	44,600	57,800
0.010	100	54,800	48,100	65,300
0.005	200	59,400	51,200	73,200
0.002	500	65,200	54,700	84,200
Kantau statistic		0.081		
P-value		0.238		
Begin year		1915		
End year		2013		
Number of peaks		99		

SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA

05474000 Annual exceedance probability of high discharges, based on
 1915–2013 period of record (99 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	2,460	1,710	1,040	749
0.950	1.05	ND	5,290	3,960	2,710	1,980
0.900	1.11	ND	7,520	5,820	4,170	3,060
0.800	1.25	ND	11,000	8,750	6,530	4,830
0.500	2	ND	19,600	16,200	12,500	9,330
0.200	5	ND	29,600	24,600	18,900	14,100
0.100	10	ND	34,500	28,600	21,700	16,200
0.040	25	ND	39,300	32,200	23,900	17,900
0.020	50	ND	41,900	34,100	25,000	18,700
0.010	100	ND	43,900	35,500	25,700	19,300
0.005	200	ND	45,500	36,600	26,200	19,600
0.002	500	ND	47,100	37,600	26,600	19,900
Kantau statistic		0.097	0.102	0.100	0.129	0.157
P-value		0.155	0.134	0.144	0.058	0.021

05474000 Annual nonexceedance probability of low discharges, based on April 1915
 to March 2013 period of record (98 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	7.7	8.6	9.0	11	13	20	24	27	52
0.02	50	11	13	13	16	19	29	35	40	73
0.05	20	19	22	24	28	33	50	61	73	121
0.10	10	31	35	38	44	53	78	99	119	186
0.20	5	53	59	65	74	91	132	171	211	306
0.50	2	137	151	167	187	235	334	452	566	752
0.80	1.25	322	343	376	420	540	777	1,070	1,340	1,720
0.90	1.11	486	505	548	617	799	1,170	1,620	2,000	2,570
0.96	1.04	734	739	792	899	1,170	1,760	2,450	2,950	3,860
0.98	1.02	929	930	987	1,130	1,480	2,260	3,150	3,740	4,970
0.99	1.01	1,120	1,130	1,190	1,370	1,810	2,810	3,900	4,560	6,190
Kantau statistic		0.273	0.241	0.209	0.201	0.168	0.131	0.124	0.113	0.126
P-value		0.000	0.000	0.002	0.003	0.014	0.055	0.069	0.099	0.065

SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA

05474000 Annual nonexceedance probability of seasonal low discharges, based on October 1914 to
September 2013 period of record (99 years)

Annual nonexceedance probability	Recurrence 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	10	11	12	19	51	73	86	108
0.02	50	16	18	19	29	74	102	121	156
0.05	20	29	33	37	56	127	165	197	264
0.10	10	50	56	64	95	198	250	298	412
0.20	5	91	103	119	176	329	402	482	687
0.50	2	266	302	355	521	796	937	1,130	1,680
0.80	1.25	696	789	912	1,350	1,720	2,010	2,460	3,720
0.90	1.11	1,100	1,250	1,410	2,130	2,450	2,890	3,560	5,410
0.96	1.04	1,750	1,970	2,170	3,320	3,470	4,160	5,170	7,840
0.98	1.02	2,320	2,600	2,800	4,350	4,280	5,200	6,500	9,810
0.99	1.01	2,960	3,300	3,470	5,480	5,110	6,300	7,910	11,900
Kentau statistic		0.170	0.171	0.158	0.123	0.251	0.235	0.259	0.225
P-value		0.013	0.012	0.021	0.072	0.000	0.001	0.000	0.001
		July-August-September				October-November-December			
0.01	100	17	23	33	54	9.8	14	16	19
0.02	50	23	30	42	66	15	19	22	28
0.05	20	36	47	60	90	25	33	38	49
0.10	10	53	68	83	121	41	53	60	79
0.20	5	85	107	126	177	73	90	103	138
0.50	2	207	250	283	388	206	243	278	382
0.80	1.25	485	574	665	921	540	614	707	981
0.90	1.11	748	880	1,060	1,500	870	973	1,120	1,560
0.96	1.04	1,180	1,380	1,750	2,570	1,420	1,560	1,810	2,510
0.98	1.02	1,570	1,840	2,440	3,710	1,920	2,100	2,450	3,370
0.99	1.01	2,020	2,370	3,300	5,200	2,510	2,720	3,190	4,360
Kentau statistic		0.189	0.149	0.126	0.106	0.142	0.109	0.108	0.111
P-value		0.006	0.029	0.065	0.120	0.037	0.110	0.115	0.105

SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA

Statistics Based on the 1984–2013 Streamflow Period of Record

05474000 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	52	72	59	70	76	163	156	179	216	108	74	60	68	0.041	0.762
98	55	104	65	83	82	281	207	432	257	124	82	64	89	0.053	0.695
95	130	134	86	104	105	450	446	560	450	176	123	106	149	0.034	0.803
90	152	182	138	150	264	713	799	802	653	319	194	158	219	0.011	0.943
85	180	214	164	193	406	960	1,010	1,230	861	565	311	200	315	0.044	0.748
80	196	308	228	273	514	1,170	1,190	1,680	1,150	747	382	222	433	0.037	0.789
75	219	423	302	352	627	1,490	1,400	2,060	1,640	930	420	253	554	0.021	0.887
70	260	482	476	430	779	1,830	1,760	2,500	2,220	1,080	487	279	700	-0.023	0.872
65	307	582	600	490	943	2,030	2,110	3,090	2,660	1,230	558	309	850	-0.021	0.887
60	374	709	701	572	1,040	2,270	2,580	3,570	3,340	1,440	625	352	1,000	-0.062	0.643
55	424	819	826	670	1,200	2,640	2,930	4,340	3,990	1,650	688	406	1,200	-0.067	0.617
50	546	920	980	780	1,450	3,000	3,300	4,770	4,690	1,880	781	473	1,500	-0.023	0.872
45	729	1,090	1,130	919	1,780	3,380	3,780	5,350	5,350	2,180	876	573	1,820	0.005	0.986
40	853	1,290	1,390	1,020	2,080	3,910	4,320	6,030	6,160	2,600	981	703	2,190	0.011	0.943
35	1,000	1,550	1,620	1,340	2,450	4,580	4,940	6,980	7,080	3,090	1,130	861	2,630	-0.002	1.000
30	1,260	1,810	1,780	1,500	2,900	5,390	5,510	7,800	8,270	3,610	1,350	1,040	3,200	0.021	0.887
25	1,880	2,120	2,040	1,700	3,310	6,310	6,140	8,840	9,670	4,370	1,680	1,340	3,970	0.041	0.762
20	2,530	2,680	2,340	1,940	3,890	7,550	7,120	10,100	12,000	5,340	2,230	2,040	5,000	0.080	0.544
15	3,350	3,190	2,760	2,300	4,660	8,960	8,490	12,700	14,800	7,200	3,280	2,940	6,580	0.055	0.682
10	4,440	4,320	3,370	2,610	5,790	11,600	11,500	15,900	18,100	11,200	7,740	5,420	9,110	0.122	0.354
5	7,950	7,250	4,480	3,300	10,700	15,900	15,200	21,000	24,000	14,800	15,200	10,600	14,400	0.131	0.318
2	14,900	13,200	7,410	5,650	14,000	24,200	18,700	26,300	32,400	22,900	25,600	14,700	20,500	0.069	0.605
1	17,500	19,200	10,600	8,530	16,800	28,900	22,400	32,000	37,500	29,900	30,800	17,600	25,600	0.103	0.432

SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA

05474000 Annual exceedance probability of high discharges, based on
 1984–2013 period of record (30 years)

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	5,500	4,700	3,880	2,520	1,800
0.950	1.05	8,820	7,740	6,240	4,350	3,210
0.900	1.11	11,100	9,900	7,940	5,700	4,270
0.800	1.25	14,500	13,100	10,500	7,780	5,910
0.500	2	23,000	21,200	17,200	13,400	10,300
0.200	5	34,100	32,300	27,100	21,400	16,600
0.100	10	40,900	39,100	33,700	26,800	20,700
0.040	25	48,800	47,200	42,000	33,300	25,500
0.020	50	54,200	52,800	48,100	37,900	28,900
0.010	100	59,300	58,100	54,100	42,400	32,200
0.005	200	64,000	63,000	60,000	46,700	35,200
0.002	500	69,800	69,100	67,800	52,200	39,000
Kantau statistic		0.122	0.126	0.083	0.094	0.085
P-value		0.353	0.335	0.532	0.475	0.521

05474000 Annual nonexceedance probability of low discharges, based on April 1983
 to March 2013 period of record (30 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	23	25	27	28	34	49	54	56	68	
0.02	50	30	33	35	38	45	63	71	76	95	
0.05	20	47	50	52	57	69	91	107	119	157	
0.10	10	67	71	75	82	98	127	153	177	240	
0.20	5	103	108	113	125	151	191	238	285	395	
0.50	2	224	231	243	274	332	425	555	692	975	
0.80	1.25	461	474	505	576	707	961	1,300	1,630	2,250	
0.90	1.11	658	678	730	836	1,040	1,490	2,020	2,540	3,390	
0.96	1.04	947	982	1,070	1,230	1,540	2,380	3,250	4,020	5,140	
0.98	1.02	1,190	1,240	1,360	1,560	1,980	3,230	4,420	5,390	6,670	
0.99	1.01	1,450	1,520	1,680	1,940	2,480	4,270	5,830	6,990	8,370	
Kantau statistic		0.044	0.034	0.039	0.025	-0.007	0.007	-0.011	-0.025	-0.076	
P-value		0.748	0.803	0.775	0.858	0.972	0.972	0.943	0.858	0.568	

SKUNK RIVER BASIN
05474000 SKUNK RIVER AT AUGUSTA, IOWA

05474000 Annual nonexceedance probability of seasonal low discharges, based on October 1983 to
September 2013 period of record (30 years)

Annual nonexceedance probability	Recurrence 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	21	27	34	50	81	90	91	135
0.02	50	31	40	49	70	118	133	137	200
0.05	20	56	70	85	114	203	229	249	352
0.10	10	91	112	134	175	319	359	409	566
0.20	5	160	194	226	287	530	598	713	974
0.50	2	426	499	560	694	1,260	1,430	1,810	2,500
0.80	1.25	1,010	1,140	1,240	1,560	2,620	3,000	3,920	5,690
0.90	1.11	1,510	1,670	1,800	2,310	3,650	4,210	5,520	8,340
0.96	1.04	2,250	2,430	2,590	3,440	5,020	5,820	7,610	12,100
0.98	1.02	2,860	3,040	3,220	4,390	6,040	7,050	9,170	15,200
0.99	1.01	3,510	3,680	3,880	5,430	7,050	8,280	10,700	18,300
Kantau statistic		-0.002	0.030	0.025	0.016	0.149	0.154	0.195	0.223
P-value		1.000	0.830	0.858	0.915	0.254	0.239	0.134	0.087
		July-August-September				October-November-December			
0.01	100	57	59	67	81	24	28	29	35
0.02	50	63	67	74	92	32	37	40	50
0.05	20	77	82	91	115	50	57	62	82
0.10	10	94	102	113	145	74	84	92	126
0.20	5	126	139	154	202	119	133	147	209
0.50	2	257	292	330	455	288	318	356	521
0.80	1.25	652	770	908	1,310	688	749	837	1,220
0.90	1.11	1,160	1,410	1,710	2,540	1,080	1,170	1,300	1,850
0.96	1.04	2,330	2,880	3,670	5,600	1,730	1,860	2,050	2,840
0.98	1.02	3,800	4,790	6,310	9,800	2,340	2,520	2,740	3,700
0.99	1.01	6,080	7,770	10,600	16,700	3,070	3,300	3,560	4,670
Kantau statistic		0.062	0.048	0.021	0.023	-0.002	-0.011	0.007	-0.067
P-value		0.643	0.721	0.887	0.872	1.000	0.943	0.972	0.617