DES MOINES RIVER BASIN

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

LOCATION.--Lat 41°13'08.4", long 92°54'30" referenced to North American Datum of 1927, in SW 1/4 SW 1/4 SW 1/4 sec.11, T.74 N., R.18 W., Marion County, IA, Hydrologic Unit 07100009, on left bank 10 ft downstream from bridge on State Highway 156, 1.6 mi northwest of Bussey, 0.8 mi downstream from North Cedar Creek, 3.0 mi upstream from Honey Creek, and 8.8 mi upstream from mouth.

DRAINAGE AREA.--374 mi².

PERIOD OF RECORD.--Discharge records from October 1947 to current year.

GAGE.--Water stage recorder. Datum of gage is 682.15 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to February 21, 1949, non-recording gage at same site and datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1946 reached a stage of 28.45 ft on upstream side and 28.05 ft on downstream side of bridge, levels to high-water marks by U.S. Army Corps of Engineers, discharge 31,500 ft³/s.

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=05489000

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.

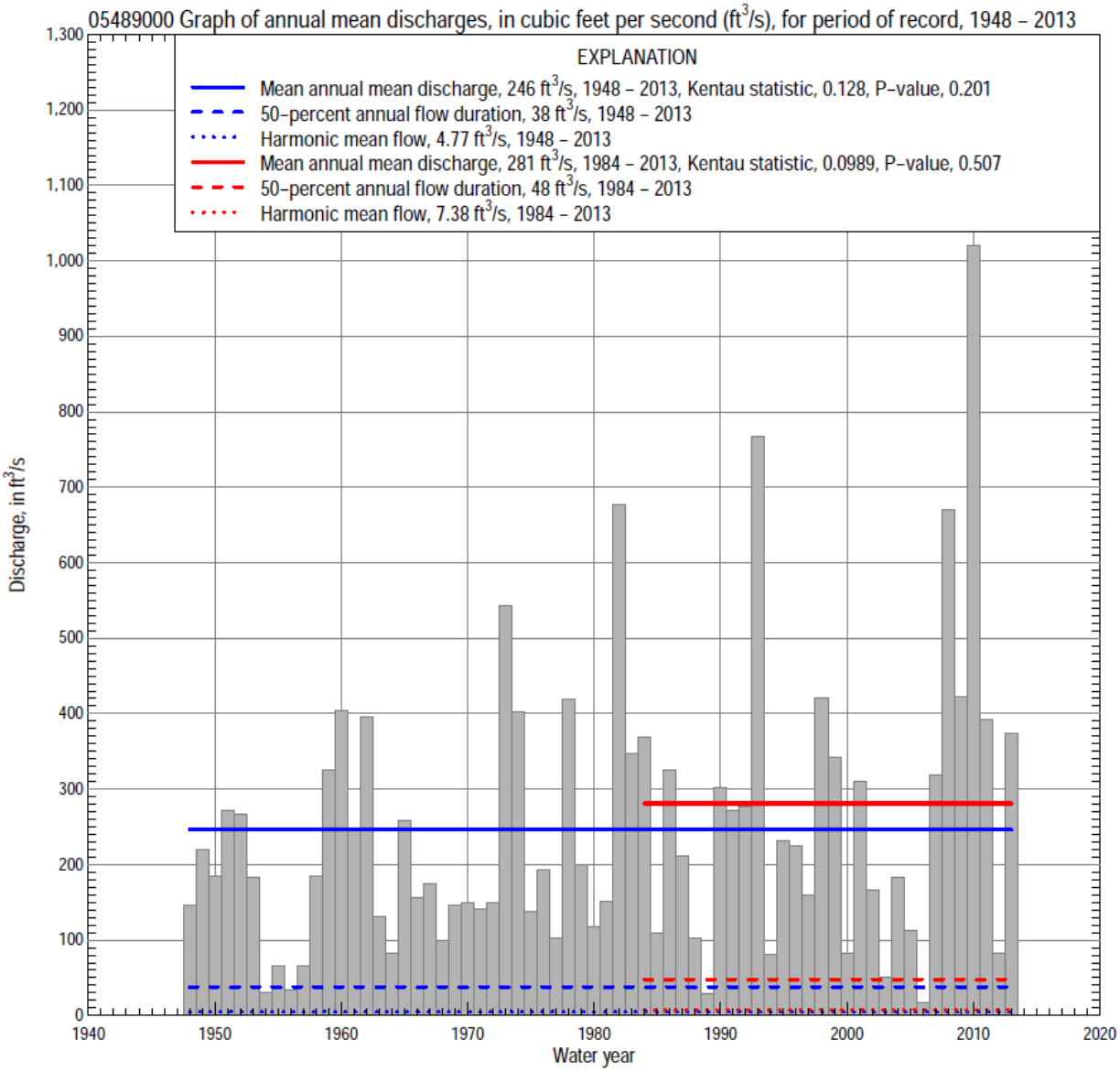
DES MOINES RIVER BASIN

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

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

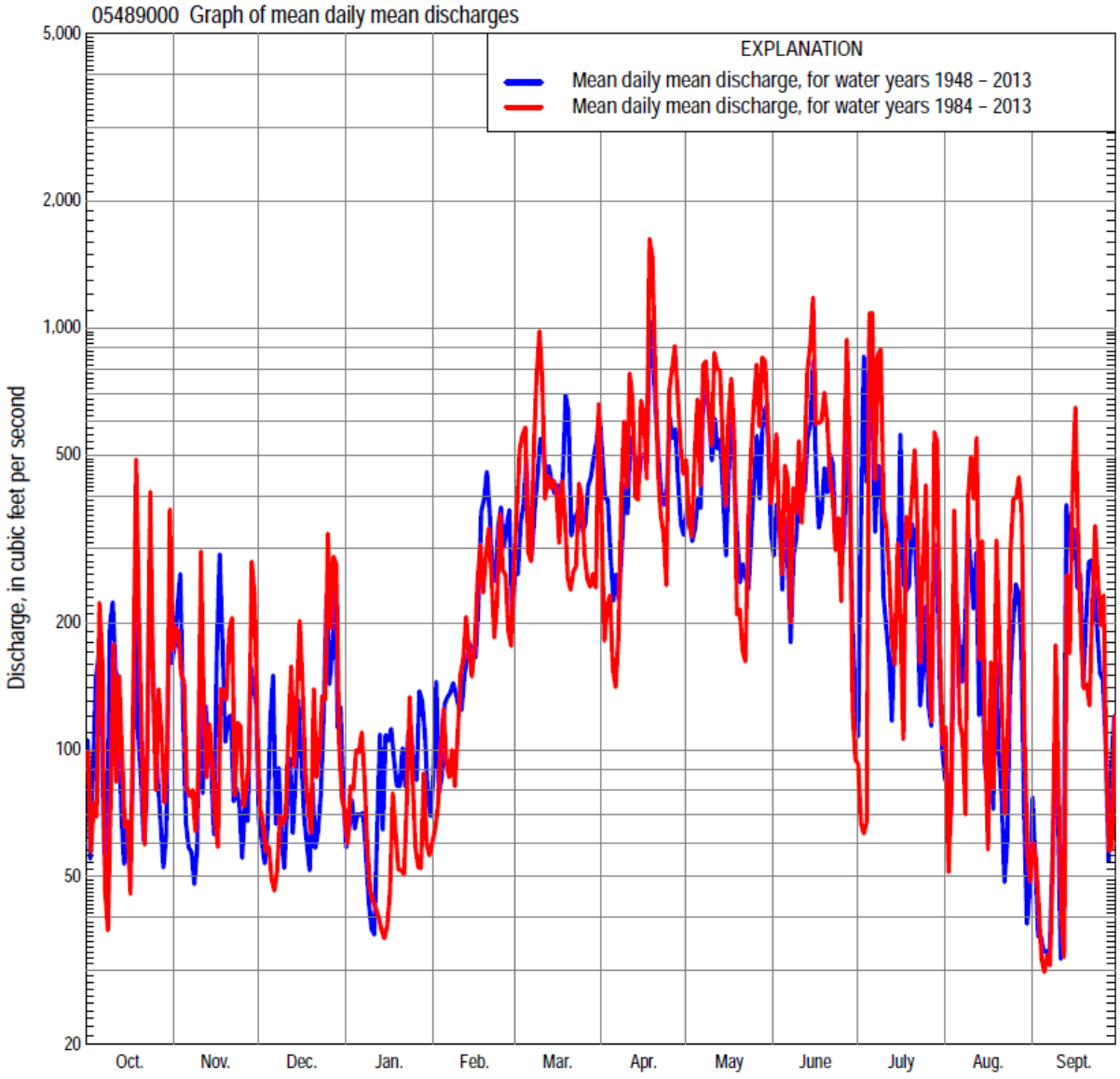
http://dx.doi.org/10.3133/ofr20151214

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.

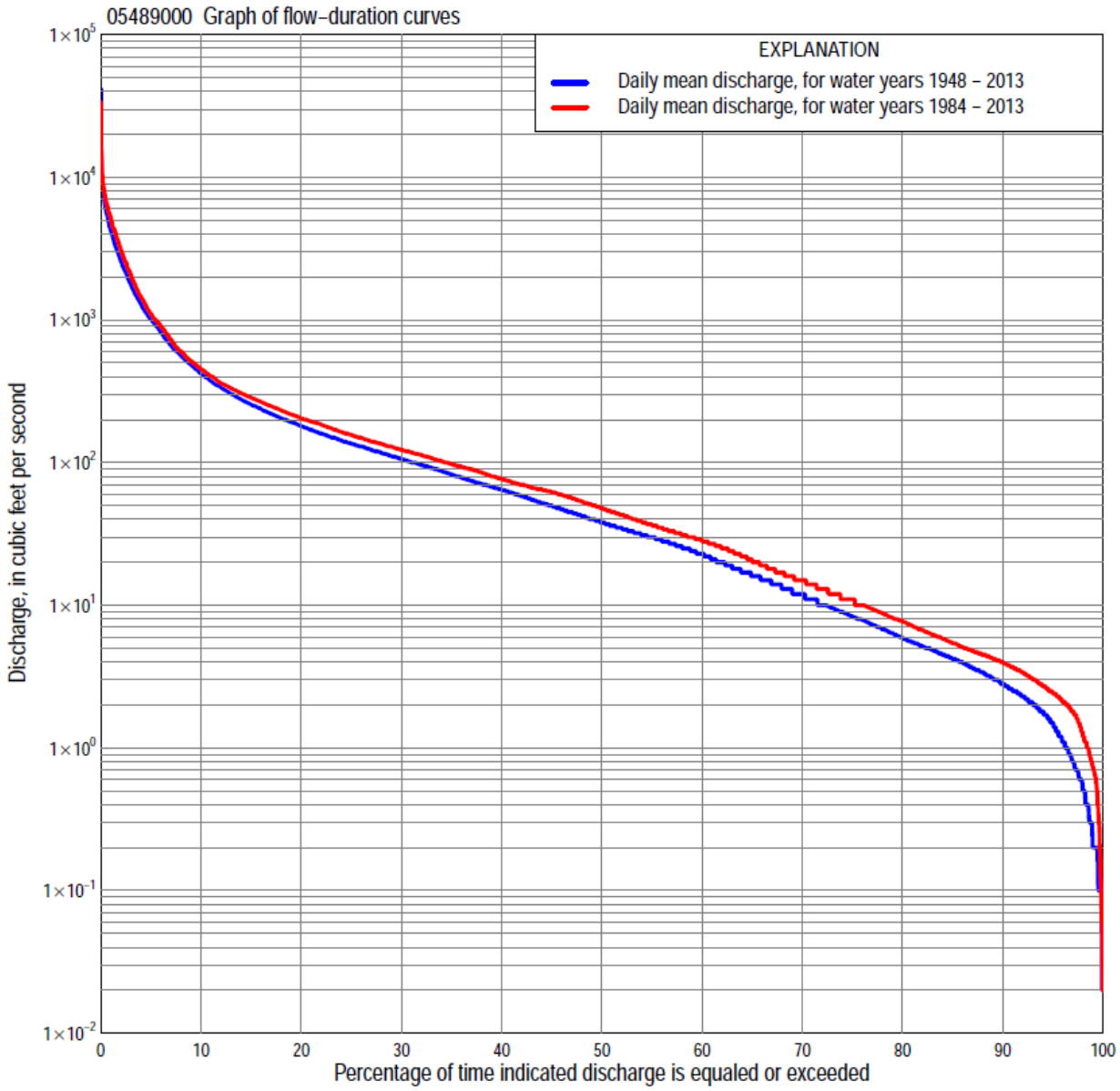


DES MOINES RIVER BASIN

05489000 CEDAR CREEK NEAR BUSSEY, IOWA



05489000 CEDAR CREEK NEAR BUSSEY, IOWA



DES MOINES RIVER BASIN

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

Statistics Based on the Entire Streamflow Period of Record

05489000 Monthly and annual flow durations, based on 1948–2013 period of record (66 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	0.10	0.30	0.40	0.16	0.10	1.8	0.80	0.40	1.0	0.31	0.29	0.12	0.20	0.166	0.044
98	0.20	0.40	0.70	0.20	0.30	2.3	4.0	3.6	2.1	0.59	0.90	0.29	0.50	0.177	0.033
95	0.60	1.0	1.2	0.80	1.8	7.0	10	9.9	4.6	1.8	1.8	0.75	1.5	0.193	0.021
90	1.1	2.5	2.1	2.4	3.5	16	28	20	7.6	4.2	2.7	1.5	2.8	0.203	0.016
85	1.7	3.3	3.0	3.7	5.9	30	40	29	10	6.1	3.4	2.1	4.2	0.195	0.020
80	2.2	4.2	4.1	5.1	9.8	42	50	36	16	8.0	4.4	2.9	5.9	0.209	0.013
75	2.7	4.9	5.2	7.0	14	53	59	47	23	9.9	5.6	3.6	8.4	0.205	0.015
70	3.1	6.0	7.8	8.6	19	69	77	59	30	12	6.7	4.3	12	0.189	0.025
65	3.7	8.3	10	11	25	80	94	72	38	15	8.1	5.0	16	0.177	0.036
60	4.5	12	14	13	32	99	110	85	48	18	9.3	5.6	23	0.161	0.057
55	5.7	17	19	16	42	114	127	101	60	23	11	6.5	30	0.146	0.084
50	8.4	24	23	19	59	132	144	119	72	26	14	7.7	38	0.143	0.090
45	13	30	28	24	76	151	169	137	88	32	17	9.5	50	0.148	0.080
40	19	36	34	30	95	177	197	158	108	40	20	13	65	0.144	0.088
35	28	45	43	36	114	212	229	184	137	51	26	19	82	0.138	0.102
30	36	55	52	47	140	265	270	216	170	68	33	27	106	0.143	0.091
25	51	70	68	64	180	347	328	282	226	90	44	40	136	0.133	0.116
20	68	94	90	76	234	458	425	362	307	128	62	60	180	0.121	0.153
15	97	127	117	100	310	655	599	519	458	192	97	88	255	0.105	0.215
10	150	182	153	150	494	969	955	907	847	300	161	153	420	0.063	0.458
5	313	398	300	262	1,000	1,890	2,100	2,260	1,940	977	443	442	1,000	0.061	0.472
2	1,080	1,070	750	846	2,070	3,550	4,000	4,580	3,840	3,420	1,760	1,540	2,580	0.134	0.112
1	2,850	1,700	1,500	1,310	2,770	5,280	6,250	5,890	4,990	6,070	3,770	3,010	4,240	0.187	0.026

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

05489000 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	9,000	7,960	10,200
0.200	5	16,900	14,900	19,300
0.100	10	23,300	20,100	27,100
0.040	25	32,600	27,100	39,300
0.020	50	40,200	32,300	50,200
0.010	100	48,400	37,500	62,400
0.005	200	57,000	42,600	76,100
0.002	500	68,900	49,100	96,700
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	9,020	7,420	11,000
0.200	5	17,000	13,900	21,200
0.100	10	23,600	18,900	30,400
0.040	25	33,400	25,700	46,000
0.020	50	41,700	31,000	61,000
0.010	100	51,000	36,200	79,700
0.005	200	61,100	41,600	103,000
0.002	500	76,200	48,600	141,000
Kentau statistic		0.089		
P-value		0.296		
Begin year		1948		
End year		2013		
Number of peaks		66		

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

05489000 Annual exceedance probability of high discharges, based on 1948–2013 period of record (66 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	884	492	284	167	101
0.950	1.05	1,760	1,030	597	365	235
0.900	1.11	2,460	1,480	851	528	348
0.800	1.25	3,600	2,210	1,260	793	533
0.500	2	6,860	4,320	2,410	1,530	1,040
0.200	5	11,800	7,450	4,050	2,530	1,710
0.100	10	15,100	9,470	5,070	3,130	2,080
0.040	25	19,200	11,900	6,220	3,770	2,460
0.020	50	22,000	13,500	6,980	4,180	2,680
0.010	100	24,700	15,000	7,660	4,530	2,870
0.005	200	27,300	16,300	8,270	4,840	3,020
0.002	500	30,400	18,000	8,980	5,180	3,180
Kentau statistic		0.127	0.107	0.123	0.100	0.156
P-value		0.134	0.207	0.147	0.236	0.065

05489000 Annual nonexceedance probability of low discharges, based on April 1948 to March 2013 period of record (65 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	0.00	0.00	0.00	0.00	0.11	0.27	0.33	0.34	0.65
0.02	50	0.00	0.01	0.03	0.05	0.18	0.41	0.53	0.57	1.1
0.05	20	0.03	0.07	0.13	0.20	0.36	0.80	1.1	1.3	2.4
0.10	10	0.19	0.20	0.30	0.42	0.66	1.4	2.0	2.4	4.7
0.20	5	0.52	0.53	0.69	0.90	1.4	2.7	4.0	5.2	10
0.50	2	2.2	2.5	2.7	3.3	4.8	9.4	15	20	38
0.80	1.25	7.1	8.1	8.6	10	15	30	48	67	123
0.90	1.11	12	13	15	18	27	54	87	120	215
0.96	1.04	22	23	25	30	47	98	159	211	375
0.98	1.02	30	32	35	42	67	144	232	299	524
0.99	1.01	41	43	46	56	90	201	322	402	698
Kentau statistic		0.173	0.174	0.199	0.221	0.195	0.174	0.135	0.113	0.106
P-value		0.042	0.042	0.020	0.009	0.022	0.041	0.114	0.187	0.215

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

05489000 Annual nonexceedance probability of seasonal low discharges, based on October 1947 to September 2013 period of record (66 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	0.05	0.07	0.11	0.17	0.27	0.47	0.52	1.1
0.02	50	0.11	0.14	0.22	0.35	0.53	0.87	0.99	2.1
0.05	20	0.32	0.40	0.57	0.95	1.3	2.0	2.5	5.2
0.10	10	0.75	0.94	1.2	2.1	2.7	4.0	5.1	11
0.20	5	1.9	2.4	3.0	5.2	5.9	8.5	11	25
0.50	2	9.2	11	13	23	20	28	41	94
0.80	1.25	32	37	42	71	49	67	106	251
0.90	1.11	55	61	70	117	70	95	156	374
0.96	1.04	89	97	113	182	94	130	218	529
0.98	1.02	118	126	149	234	110	153	262	638
0.99	1.01	147	154	186	285	123	173	301	736
Kentau statistic		0.120	0.114	0.106	0.018	0.214	0.206	0.193	0.171
P-value		0.157	0.177	0.211	0.833	0.011	0.015	0.023	0.043
		July-August-September				October-November-December			
0.01	100	0.00	0.00	0.00	0.45	0.00	0.10	0.11	0.14
0.02	50	0.00	0.06	0.10	0.63	0.06	0.16	0.19	0.25
0.05	20	0.10	0.23	0.35	1.0	0.21	0.33	0.40	0.58
0.10	10	0.29	0.49	0.70	1.6	0.43	0.61	0.77	1.2
0.20	5	0.74	1.1	1.4	2.8	0.92	1.3	1.7	2.6
0.50	2	3.1	3.8	4.9	8.2	3.7	4.9	6.6	11
0.80	1.25	9.9	12	15	26	14	18	24	37
0.90	1.11	17	21	26	47	28	35	46	67
0.96	1.04	29	36	46	91	58	70	89	121
0.98	1.02	40	51	66	140	93	108	135	173
0.99	1.01	52	68	89	208	141	160	193	235
Kentau statistic		0.177	0.218	0.215	0.125	0.140	0.132	0.158	0.187
P-value		0.036	0.010	0.011	0.138	0.098	0.117	0.062	0.026

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

Statistics Based on the 1984–2013 Streamflow Period of Record

05489000 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	0.40	0.74	1.1	1.4	0.71	5.8	4.3	3.3	2.6	0.34	0.06	0.52	0.74	-0.044	0.743
98	0.77	2.1	1.3	2.3	1.9	7.0	5.2	5.2	2.9	0.79	0.29	0.63	1.2	-0.023	0.871
95	1.2	3.0	2.5	3.0	2.6	12	9.7	13	5.4	1.8	2.0	0.85	2.4	-0.037	0.788
90	2.0	4.1	3.4	4.2	5.2	21	28	22	8.2	3.9	2.9	1.8	4.0	0.002	1.000
85	2.5	4.6	4.3	5.3	9.0	40	39	32	17	6.7	4.0	2.7	5.4	-0.014	0.929
80	3.0	5.5	5.5	6.5	13	55	48	44	24	9.0	5.5	3.9	7.7	-0.005	0.986
75	3.6	7.4	8.1	8.0	16	71	57	60	32	11	6.5	4.5	11	-0.085	0.520
70	4.1	10	11	10	24	88	71	76	42	13	7.8	5.0	15	-0.110	0.401
65	4.8	14	14	12	34	102	87	95	56	16	9.2	5.8	20	-0.124	0.344
60	6.1	18	20	15	46	115	100	119	65	20	11	6.4	28	-0.124	0.344
55	8.8	26	26	19	60	132	119	137	81	24	13	7.6	37	-0.120	0.363
50	13	33	30	24	70	148	138	157	99	28	16	9.2	48	-0.126	0.335
45	17	38	39	30	84	165	174	177	120	34	19	12	62	-0.117	0.372
40	25	45	50	35	100	188	203	204	149	43	25	18	77	-0.120	0.363
35	35	57	64	46	120	219	232	245	183	56	30	26	98	-0.094	0.475
30	47	70	73	60	147	262	282	300	225	75	40	35	123	-0.060	0.656
25	62	94	94	65	183	312	350	361	293	97	58	48	156	-0.039	0.775
20	77	123	115	74	231	392	441	497	368	135	92	65	204	0.002	1.000
15	117	158	141	95	282	533	623	693	584	215	137	94	285	0.007	0.972
10	195	251	186	130	405	905	1,020	1,160	1,280	383	230	154	452	-0.016	0.915
5	381	461	313	204	700	1,550	2,250	2,760	2,590	1,540	635	400	1,100	0.067	0.617
2	1,300	1,240	752	430	1,200	3,630	5,870	5,340	4,820	4,370	2,790	1,810	3,110	0.154	0.239
1	2,870	1,890	1,630	1,000	2,260	5,770	6,930	7,080	6,350	6,350	5,140	3,120	5,150	0.202	0.121

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

05489000 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	455	295	184	99	60
0.950	1.05	1,400	851	493	281	185
0.900	1.11	2,320	1,380	779	455	309
0.800	1.25	3,910	2,300	1,270	760	528
0.500	2	8,290	4,960	2,700	1,660	1,170
0.200	5	13,200	8,350	4,610	2,850	1,990
0.100	10	15,400	10,100	5,660	3,480	2,400
0.040	25	17,200	11,700	6,700	4,090	2,770
0.020	50	18,000	12,500	7,300	4,430	2,970
0.010	100	18,500	13,200	7,770	4,690	3,110
0.005	200	18,900	13,700	8,140	4,890	3,210
0.002	500	19,200	14,100	8,520	5,090	3,300
Kentau statistic		0.149	0.154	0.163	0.140	0.154
P-value		0.254	0.239	0.212	0.284	0.239

05489000 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	0.00	0.01	0.03	0.06	0.23	1.0	1.0	1.3	1.7
0.02	50	0.00	0.02	0.07	0.12	0.35	1.3	1.3	1.7	2.4
0.05	20	0.05	0.08	0.17	0.28	0.65	1.9	2.1	2.8	4.3
0.10	10	0.21	0.22	0.38	0.58	1.1	2.7	3.3	4.3	7.0
0.20	5	0.62	0.64	0.91	1.3	2.1	4.4	5.7	7.4	13
0.50	2	2.9	3.3	3.7	4.7	6.4	11	17	21	41
0.80	1.25	9.4	11	12	13	18	32	52	65	129
0.90	1.11	15	16	18	20	31	58	97	117	235
0.96	1.04	24	25	27	31	52	112	191	225	443
0.98	1.02	31	32	33	39	72	174	299	346	667
0.99	1.01	37	38	40	47	96	261	451	511	963
Kentau statistic		0.028	0.028	0.051	0.076	0.025	0.021	0.002	-0.007	-0.044
P-value		0.844	0.844	0.708	0.568	0.858	0.887	1.000	0.972	0.748

05489000 CEDAR CREEK NEAR BUSSEY, IOWA

05489000 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	0.09	0.18	0.40	1.1	0.60	1.1	1.4	2.6
0.02	50	0.18	0.33	0.66	1.5	1.0	1.8	2.3	4.3
0.05	20	0.52	0.82	1.4	2.6	2.2	3.6	4.7	9.1
0.10	10	1.2	1.7	2.5	4.2	4.1	6.3	8.6	17
0.20	5	3.0	3.9	4.9	7.4	8.1	12	17	35
0.50	2	13	15	16	21	25	34	51	116
0.80	1.25	39	43	46	61	62	80	128	327
0.90	1.11	61	68	73	104	91	116	191	524
0.96	1.04	90	103	117	182	130	163	278	826
0.98	1.02	112	129	154	261	158	198	345	1,080
0.99	1.01	132	156	195	359	186	231	412	1,350
Kentau statistic		-0.175	-0.161	-0.159	-0.145	0.172	0.177	0.163	0.145
P-value		0.181	0.218	0.225	0.269	0.187	0.175	0.212	0.269
		July-August-September				October-November-December			
0.01	100	0.00	0.05	0.08	0.32	0.09	0.23	0.27	0.49
0.02	50	0.00	0.10	0.15	0.49	0.14	0.32	0.41	0.74
0.05	20	0.06	0.24	0.36	0.90	0.29	0.56	0.75	1.4
0.10	10	0.27	0.53	0.74	1.5	0.54	0.91	1.3	2.3
0.20	5	0.82	1.3	1.7	2.9	1.1	1.7	2.4	4.4
0.50	2	4.1	5.3	6.8	9.9	4.4	5.5	8.2	14
0.80	1.25	14	18	22	33	16	19	27	43
0.90	1.11	23	30	37	61	31	37	50	75
0.96	1.04	38	49	62	118	61	78	96	135
0.98	1.02	50	66	84	180	93	126	146	196
0.99	1.01	62	83	108	262	136	196	213	272
Kentau statistic		-0.034	-0.030	-0.030	-0.030	-0.053	-0.014	-0.021	-0.055
P-value		0.803	0.830	0.830	0.830	0.695	0.929	0.887	0.682