

IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA

LOCATION.--Lat 42°42'43", long 92°34'58" referenced to North American Datum of 1927, in SW 1/4 NW 1/4 NE 1/4 sec.11, T.91 N., R.15 W., Butler County, IA, Hydrologic Unit 07080202, on right bank 400 ft upstream from bridge on County Highway C45 in Shell Rock, 2.2 mi downstream from Curry Creek, and 10.7 mi upstream from confluence with West Fork Cedar River.

DRAINAGE AREA.--1,746 mi².

PERIOD OF RECORD.--Discharge records from June 1953 to current year.

GAGE.--Water-stage recorder. Rockfill dam since October 19, 1957. Datum of gage is 885.34 ft above National Geodetic Vertical Datum of 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1856 reached a stage of 17.7 ft, at bridge 400 ft downstream, from information by U.S. Army Corps of Engineers, discharge about 45,000 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=05462000

The USGS WaterWatch Toolkit is available at:

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

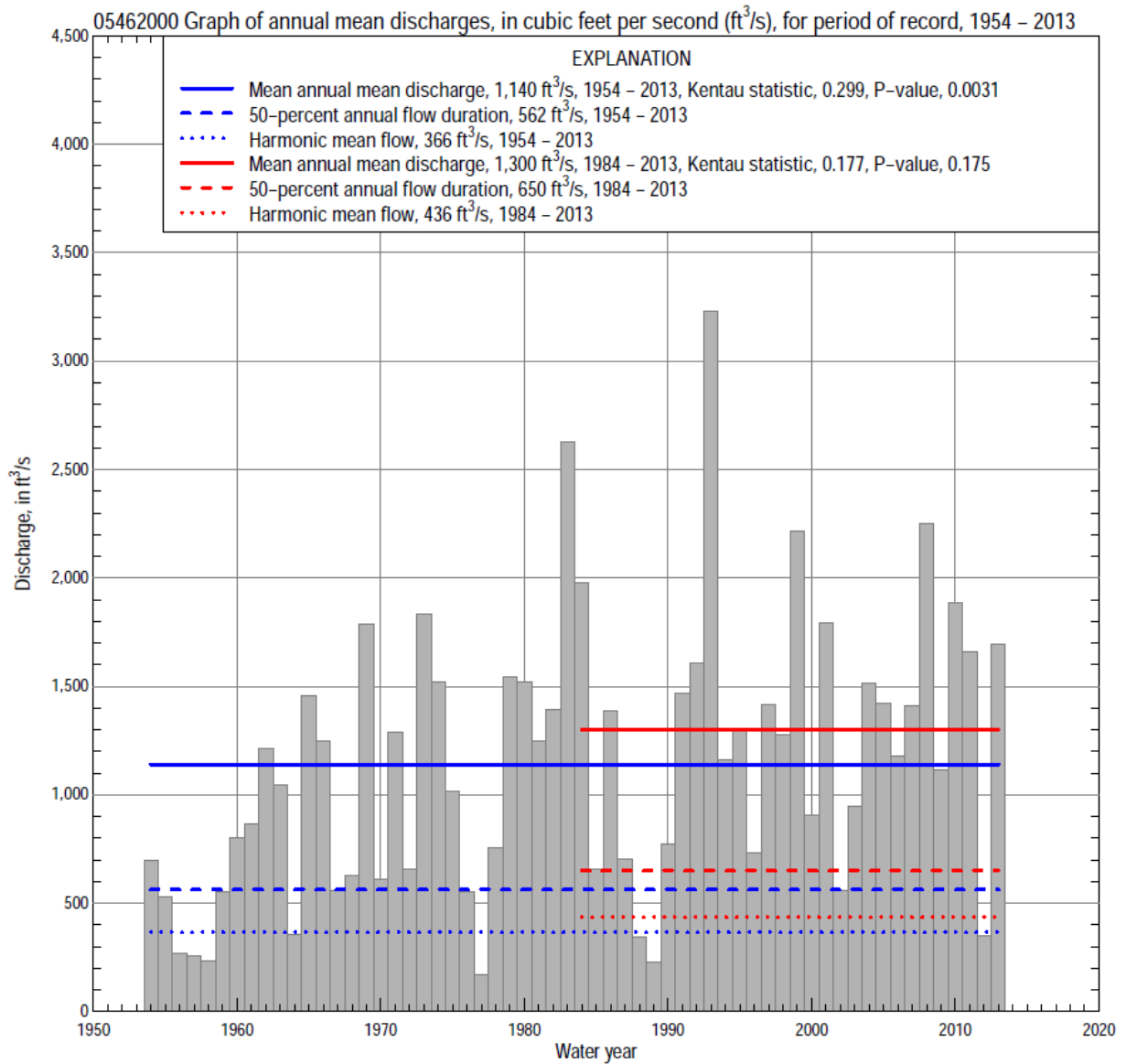
Tools for summarizing streamflow information include the duration hydrograph builder, the cumulative streamflow hydrograph builder, the streamgage statistics retrieval tool, the rating curve builder, the flood tracking chart builder, the National Weather Service Advanced Hydrologic Prediction Service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

IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA

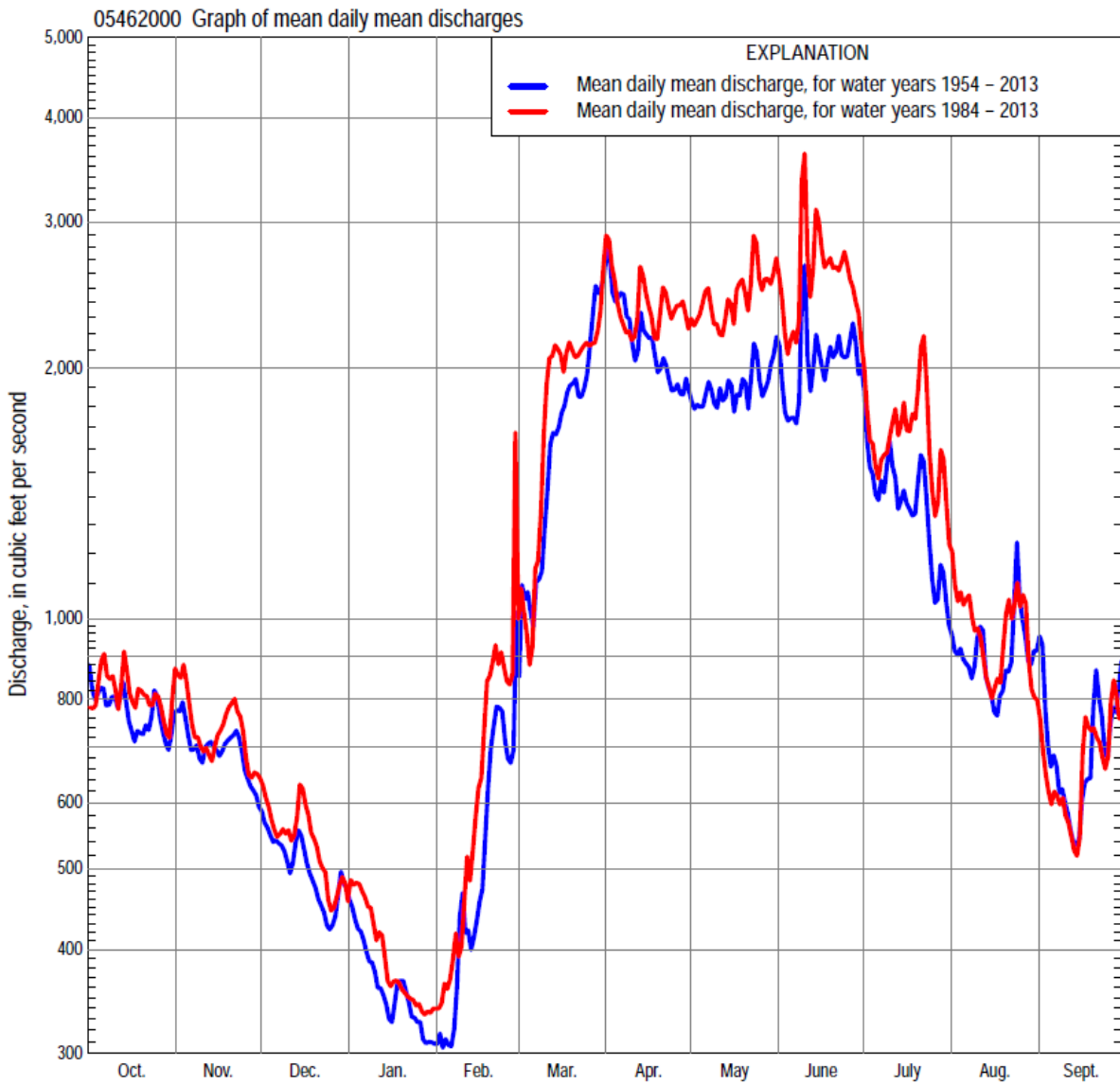
A description of the statistics presented for this streamgauge is available in the main body of the report at:

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

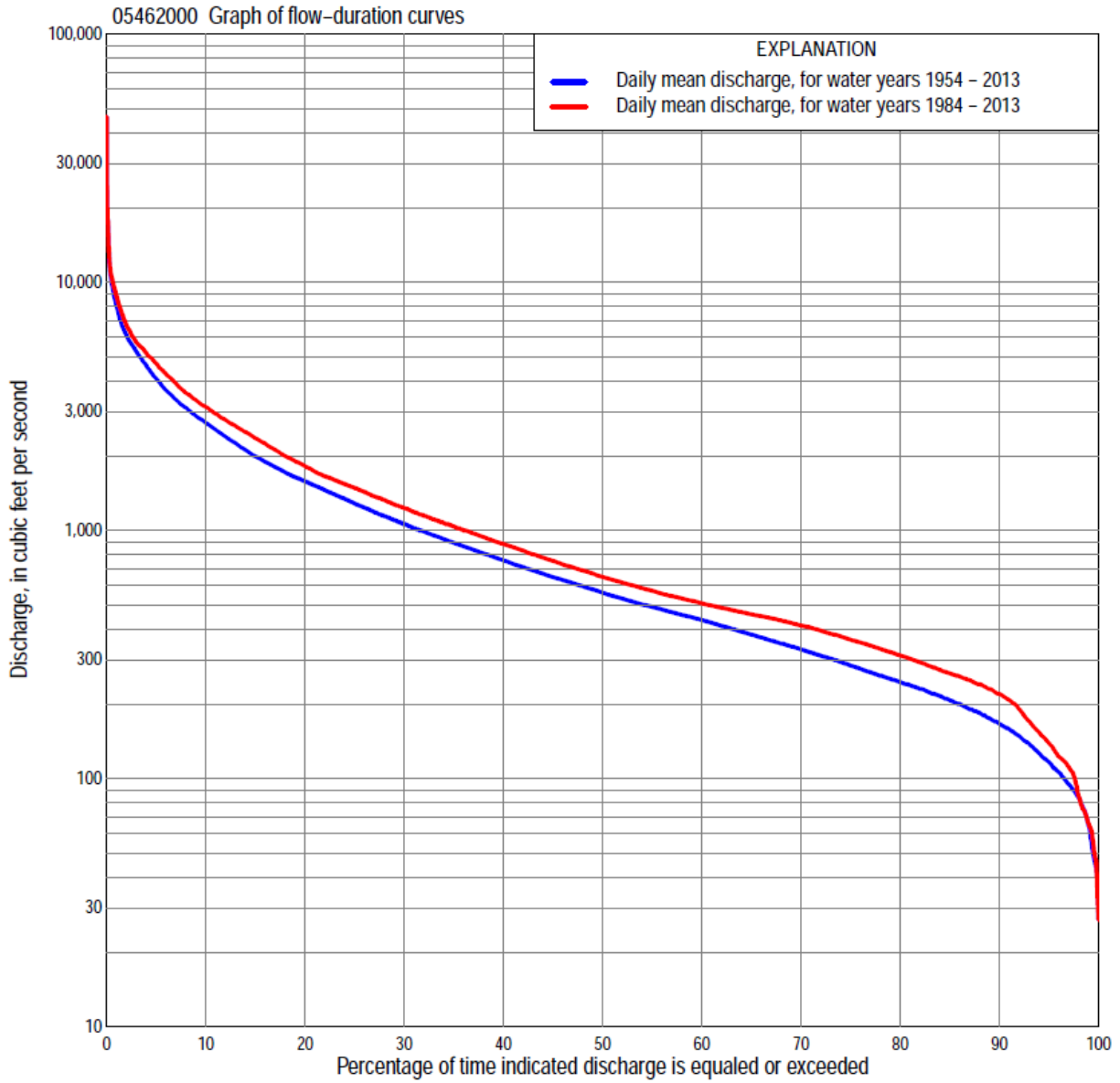
A link to other streamgages included in this report, a map showing the location of the streamgages, information on the programs used to compute the statistical analyses, and references are included in the main body of the report.



IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA



IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA



IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA
Statistics Based on the Entire Streamflow Period of Record

05462000 Monthly and annual flow durations, based on 1954–2013 period of record (60 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	75	76	40	44	45	103	184	168	114	87	66	78	65	0.346	0.000
98	82	90	50	49	49	132	206	186	136	106	80	85	84	0.329	0.000
95	107	113	90	75	90	172	277	270	204	159	115	112	116	0.303	0.001
90	143	148	126	99	114	208	385	380	323	235	167	139	166	0.299	0.001
85	176	195	170	123	140	246	492	482	419	300	208	172	207	0.280	0.002
80	212	237	205	159	164	300	609	566	537	371	239	227	245	0.263	0.003
75	242	262	233	183	184	386	736	655	659	434	287	267	286	0.234	0.008
70	278	300	258	196	205	450	850	767	790	499	342	294	332	0.216	0.015
65	313	354	293	215	220	520	946	877	886	585	392	326	381	0.204	0.022
60	352	393	320	235	240	590	1,060	1,000	1,020	686	435	352	436	0.207	0.020
55	395	440	346	251	259	680	1,230	1,150	1,200	806	474	384	493	0.249	0.005
50	451	503	374	280	281	784	1,470	1,300	1,380	916	514	415	561	0.267	0.003
45	514	565	415	308	310	955	1,650	1,470	1,540	1,030	567	453	650	0.288	0.001
40	617	628	462	332	351	1,110	1,880	1,640	1,680	1,150	620	487	760	0.290	0.001
35	743	708	505	370	387	1,260	2,190	1,860	1,900	1,310	680	534	894	0.295	0.001
30	883	805	553	410	440	1,460	2,540	2,100	2,180	1,460	750	599	1,060	0.295	0.001
25	1,050	886	617	450	471	1,800	2,860	2,410	2,510	1,650	863	678	1,290	0.312	0.000
20	1,210	1,040	685	495	569	2,490	3,230	2,830	2,930	1,910	1,050	796	1,580	0.334	0.000
15	1,470	1,220	789	556	732	3,290	3,760	3,300	3,470	2,260	1,320	1,040	1,990	0.325	0.000
10	1,820	1,500	944	671	1,010	4,610	4,600	4,130	4,540	2,860	1,850	1,470	2,720	0.325	0.000
5	2,410	1,930	1,290	929	1,660	6,220	6,090	5,540	6,140	4,190	3,160	2,560	4,100	0.292	0.001
2	3,140	2,680	1,930	1,340	3,520	8,830	9,540	7,810	8,570	6,320	5,320	3,960	6,140	0.229	0.010
1	3,680	3,080	2,450	1,710	4,980	10,400	10,900	9,290	11,000	8,760	6,940	5,760	8,020	0.163	0.066

IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA

05462000 Annual exceedance probability of instantaneous
 peak discharges, in cubic feet per second (ft³/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	8,990	7,870	10,300
0.200	5	17,100	15,100	19,400
0.100	10	23,000	20,100	26,400
0.040	25	31,200	26,500	36,800
0.020	50	37,300	30,800	45,100
0.010	100	43,200	34,600	54,000
0.005	200	50,800	39,300	65,700
0.002	500	57,600	42,500	78,000

and based on the expected moments algorithm/multiple
 Grubbs-Beck analysis computed using a historical period
 length of 158 years (1856–2013)

0.500	2	8,950	7,170	11,100
0.200	5	17,000	13,800	20,900
0.100	10	23,100	18,700	28,500
0.040	25	31,300	24,900	39,900
0.020	50	37,800	29,400	50,000
0.010	100	44,400	33,500	61,600
0.005	200	51,200	37,400	74,900
0.002	500	60,400	41,900	95,500
Kantau statistic		0.076		
P-value		0.396		
Begin year		1954		
End year		2013		
Number of peaks		60		

IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA

05462000 Annual exceedance probability of high discharges, based on
 1954–2013 period of record (60 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	878	755	592	440	363
0.950	1.05	1,830	1,600	1,280	967	783
0.900	1.11	2,650	2,320	1,860	1,410	1,130
0.800	1.25	4,020	3,530	2,830	2,160	1,710
0.500	2	8,330	7,220	5,740	4,380	3,360
0.200	5	15,800	13,300	10,300	7,820	5,800
0.100	10	21,200	17,600	13,400	10,100	7,360
0.040	25	28,400	23,000	17,100	12,800	9,160
0.020	50	33,900	27,000	19,800	14,700	10,400
0.010	100	39,300	30,900	22,300	16,400	11,500
0.005	200	44,700	34,600	24,600	18,000	12,500
0.002	500	51,900	39,400	27,400	19,900	13,600
Kantau statistic		0.086	0.142	0.162	0.207	0.254
P-value		0.335	0.109	0.069	0.020	0.004

05462000 Annual nonexceedance probability of low discharges, based on April 1954
 to March 2013 period of record (59 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	24	26	28	30	36	43	45	51	54	
0.02	50	32	35	37	41	47	55	59	67	72	
0.05	20	47	53	56	61	70	80	87	97	108	
0.10	10	65	74	79	85	96	109	119	133	152	
0.20	5	94	106	113	122	136	153	171	190	225	
0.50	2	173	193	204	217	237	270	314	352	441	
0.80	1.25	285	306	320	336	366	430	523	602	793	
0.90	1.11	356	370	385	402	439	528	658	773	1,040	
0.96	1.04	438	438	452	471	516	639	818	986	1,360	
0.98	1.02	480	481	494	512	563	713	928	1,140	1,590	
0.99	1.01	516	517	529	547	604	780	1,030	1,290	1,820	
Kantau statistic		0.335	0.314	0.308	0.320	0.287	0.255	0.226	0.191	0.163	
P-value		0.000	0.000	0.001	0.000	0.001	0.004	0.012	0.033	0.069	

IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA

05462000 Annual nonexceedance probability of seasonal low discharges, based on July 1953 to September 2013 period of record (60–61 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	30	33	36	43	51	73	80	104
0.02	50	38	43	46	54	70	97	105	137
0.05	20	55	62	66	75	111	145	158	206
0.10	10	74	84	89	99	163	204	224	292
0.20	5	105	119	126	138	252	304	336	438
0.50	2	190	216	227	246	540	619	699	910
0.80	1.25	319	360	380	418	1,040	1,170	1,370	1,780
0.90	1.11	406	455	481	540	1,420	1,590	1,910	2,480
0.96	1.04	512	571	607	698	1,910	2,170	2,660	3,460
0.98	1.02	589	653	697	818	2,280	2,620	3,280	4,250
0.99	1.01	663	731	783	938	2,650	3,080	3,920	5,090
Kantau statistic		0.302	0.298	0.297	0.273	0.352	0.331	0.328	0.315
P-value		0.001	0.001	0.001	0.002	0.000	0.000	0.000	0.000
		July-August-September				October-November-December			
0.01	100	37	56	65	69	31	36	38	45
0.02	50	48	69	78	84	42	49	51	59
0.05	20	69	93	102	111	63	74	78	89
0.10	10	94	120	130	142	88	104	111	124
0.20	5	135	163	174	193	129	153	164	182
0.50	2	255	285	300	346	244	290	315	352
0.80	1.25	451	484	513	620	414	491	540	618
0.90	1.11	592	631	677	843	525	619	684	801
0.96	1.04	776	830	908	1,170	656	770	854	1,030
0.98	1.02	916	987	1,100	1,440	747	872	971	1,190
0.99	1.01	1,060	1,150	1,300	1,750	831	966	1,080	1,350
Kantau statistic		0.349	0.305	0.295	0.250	0.220	0.191	0.172	0.169
P-value		0.000	0.001	0.001	0.004	0.013	0.032	0.053	0.057

IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA

Statistics Based on the 1984–2013 Streamflow Period of Record

05462000 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	70	60	32	48	64	112	267	223	114	82	63	77	66	0.048	0.721
98	75	85	40	51	66	153	284	287	157	110	67	84	85	0.039	0.775
95	117	132	131	102	108	280	323	393	246	173	117	120	139	0.025	0.858
90	164	202	200	131	140	360	436	511	382	260	193	165	219	-0.005	0.986
85	231	253	230	178	177	440	528	597	556	364	263	259	265	-0.018	0.901
80	262	269	254	210	220	497	678	710	769	454	355	286	313	-0.030	0.830
75	293	337	300	238	240	542	855	834	951	524	407	315	363	-0.037	0.789
70	335	383	324	252	260	591	942	1,050	1,120	651	448	337	414	-0.053	0.695
65	385	421	344	270	279	642	1,060	1,250	1,270	803	489	359	459	-0.083	0.532
60	434	465	367	296	302	723	1,220	1,450	1,430	899	550	390	509	-0.074	0.580
55	478	523	400	315	351	862	1,510	1,610	1,560	1,010	590	424	571	-0.005	0.986
50	513	586	450	346	380	991	1,680	1,800	1,710	1,140	638	449	650	0.057	0.669
45	559	644	473	378	405	1,110	2,050	1,970	1,930	1,260	685	474	753	0.080	0.544
40	670	742	504	410	434	1,240	2,350	2,200	2,160	1,430	726	504	882	0.122	0.353
35	756	823	546	439	458	1,400	2,670	2,430	2,500	1,570	792	545	1,040	0.152	0.246
30	883	883	600	468	497	1,580	2,930	2,730	2,830	1,720	908	589	1,230	0.163	0.212
25	1,060	998	656	500	549	1,940	3,270	3,120	3,270	1,980	1,040	649	1,480	0.168	0.199
20	1,220	1,110	744	540	730	2,490	3,600	3,560	3,840	2,270	1,220	752	1,820	0.166	0.205
15	1,450	1,240	845	598	968	3,220	4,100	4,330	4,780	2,740	1,450	844	2,350	0.202	0.121
10	1,800	1,390	952	673	1,300	4,640	4,830	5,070	5,620	3,570	1,960	1,140	3,150	0.209	0.108
5	2,490	1,790	1,200	813	1,930	6,370	6,420	6,600	7,080	4,930	3,140	2,410	4,700	0.209	0.108
2	3,210	2,130	1,580	1,100	4,060	9,290	9,750	9,160	9,310	7,740	4,890	3,520	6,710	0.182	0.164
1	3,860	2,820	2,090	1,380	5,410	10,900	10,800	11,400	12,000	9,640	6,520	4,630	8,790	0.143	0.276

IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA

05462000 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	1,320	1,180	986	728	635
0.950	1.05	2,320	2,110	1,790	1,410	1,190
0.900	1.11	3,110	2,850	2,410	1,940	1,610
0.800	1.25	4,420	4,050	3,420	2,790	2,260
0.500	2	8,520	7,720	6,320	5,150	4,000
0.200	5	16,100	14,100	11,000	8,610	6,410
0.100	10	22,300	19,100	14,400	10,800	7,910
0.040	25	31,400	26,000	18,800	13,500	9,640
0.020	50	39,000	31,600	22,100	15,400	10,800
0.010	100	47,300	37,500	25,400	17,100	11,900
0.005	200	56,300	43,700	28,800	18,700	12,800
0.002	500	69,500	52,400	33,300	20,700	14,000
Kantau statistic		0.138	0.140	0.131	0.168	0.186
P-value		0.292	0.284	0.318	0.199	0.154

05462000 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	26	29	30	32	38	45	50	55	56
0.02	50	39	42	44	46	54	62	68	75	79
0.05	20	64	70	73	77	87	97	106	116	127
0.10	10	95	103	108	113	125	137	151	164	185
0.20	5	141	152	160	168	181	197	220	239	280
0.50	2	246	261	273	287	304	336	390	431	535
0.80	1.25	339	351	366	384	408	474	583	660	867
0.90	1.11	373	381	397	417	445	533	678	780	1,050
0.96	1.04	396	401	417	437	470	581	767	897	1,240
0.98	1.02	405	408	424	445	480	604	816	964	1,350
0.99	1.01	411	412	428	449	486	620	853	1,020	1,440
Kantau statistic		-0.018	-0.034	-0.053	-0.025	-0.048	-0.044	-0.053	-0.071	-0.080
P-value		0.901	0.803	0.695	0.858	0.721	0.748	0.695	0.592	0.544

IOWA RIVER BASIN
05462000 SHELL ROCK RIVER AT SHELL ROCK, IOWA

05462000 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	38	43	45	50	76	81	86	113
0.02	50	51	57	59	66	104	113	121	157
0.05	20	76	84	88	96	165	180	195	249
0.10	10	105	116	120	130	241	264	289	368
0.20	5	149	163	170	182	366	405	451	571
0.50	2	257	281	293	312	734	826	952	1,210
0.80	1.25	382	421	441	473	1,290	1,480	1,770	2,310
0.90	1.11	445	496	520	561	1,650	1,900	2,340	3,100
0.96	1.04	508	570	600	653	2,070	2,410	3,050	4,120
0.98	1.02	543	614	647	709	2,360	2,760	3,550	4,880
0.99	1.01	571	650	685	756	2,620	3,080	4,030	5,620
Kantau statistic		-0.055	-0.057	-0.057	-0.080	0.170	0.163	0.159	0.177
P-value		0.682	0.669	0.669	0.544	0.193	0.212	0.225	0.175
		July-August-September				October-November-December			
0.01	100	50	65	71	73	29	32	34	41
0.02	50	65	81	87	90	44	48	51	60
0.05	20	96	111	117	123	75	83	88	100
0.10	10	132	146	153	163	114	126	135	149
0.20	5	189	200	208	226	174	195	209	227
0.50	2	343	352	367	416	311	356	385	423
0.80	1.25	557	590	628	748	431	507	552	636
0.90	1.11	690	758	822	1,010	472	565	616	733
0.96	1.04	843	976	1,090	1,370	500	606	662	817
0.98	1.02	945	1,140	1,290	1,670	511	623	681	858
0.99	1.01	1,040	1,310	1,510	1,980	517	633	693	887
Kantau statistic		0.080	0.071	0.062	0.025	-0.018	-0.034	-0.071	-0.039
P-value		0.544	0.592	0.643	0.858	0.901	0.803	0.592	0.775