



2 Summary of U.S. Geological Survey Reports Documenting Flood Profiles of Streams in Iowa, 1963–2012

**Table 7.** Comparison of annual exceedance-probability estimates of observed flood-peak discharges published in U.S. Geological Survey flood-profile reports during 1963–2012 to those computed using data updated through the 2012 water year.—Continued

[USGS, U.S. Geological Survey; ft<sup>3</sup>/s, cubic feet per second; AEP, annual exceedance probability; RI, recurrence interval; %, percent; RRE, regional regression equation; WIE, weighted independent estimates; do., ditto; B17B, Bulletin 17B (Interagency Advisory Committee on Water Data, 1982); <, less than; >, greater than; WY, water year; USACE, U.S. Army Corps of Engineers; ND, not determined; Eq., equation. Substantial differences between historic and updated AEP estimates are highlighted in grey]

Streamgage number	Map number (fig. 3)	Flood-profile report number <sup>a</sup>	Streamgage name	Observed flood event profiled at streamgage location in USGS flood-profile report				AEP analysis based on data through water year 2012 <sup>a</sup>																							
				Date of flood event (month/day/year)	Peak discharge of flood event at stream-gage (ft <sup>3</sup> /s)	Historic AEP estimate of flood event from flood-profile report (percent)	Historic RI estimate of flood event from flood-profile report (years)	AEP streamgage flood-estimation method used in flood-profile report	Uncensored peak-discharge record length used in AEP analysis (years)	Historic record length used in AEP analysis (years)	Rank of observed flood event of uncensored or historic peak-discharge record length	Updated AEP estimate of observed flood event (percent)	66.7% lower confidence interval (percent)	66.7% upper confidence interval (percent)	Updated RI estimate of observed flood event (years)	10-percent AEP (ft <sup>3</sup> /s) (10-year recurrence)			4-percent AEP (ft <sup>3</sup> /s) (25-year recurrence)			2-percent AEP (ft <sup>3</sup> /s) (50-year recurrence)			1-percent AEP (ft <sup>3</sup> /s) (100-year recurrence)			0.2-percent AEP (ft <sup>3</sup> /s) (500-year recurrence)			
																Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	
05418450	12	41	North Fork Maquoketa River at Fulton	6/5/2002	22,600	0.91	110	B17B through WY 2002	30	59	2	0.31	1.2	5.4	0.32	15,700	12,900	19,100	21,000	16,900	26,200	24,800	19,300	31,800	28,300	21,300	37,600	36,900	25,300	53,700	
05418500	13	41	Maquoketa River near Maquoketa	6/5/2002	47,900	2	50	B17B through WY 2003	99	110	2	1.2	0.67	2.9	83	29,700	26,200	33,700	37,800	32,600	44,000	43,700	36,600	52,100	49,300	40,200	60,500	62,700	47,400	82,900	
05420500	14	3	Mississippi River at Clinton	4/28/1965	307,000	0.72	139	USGS (Dalrymple, 1960)	101	101	1	0.63	0.18	1.8	159	202,000	ND	ND	ND	ND	ND	259,000	ND	ND	283,000	ND	ND	337,000	ND	ND	
05420560	15	14	Wapsipinicon River near Elma	6/29/1969	5,500	<2	>50	RRE (Schwob, 1966a)	35	41	7	15.5	13.1	25.7	6	6,300	5,200	7,640	8,270	6,670	10,200	9,690	7,610	12,300	11,100	8,440	14,500	14,500	10,100	20,600	
05420560	15	39	Wapsipinicon River near Elma	7/21/1999	3,800	25	4	B17B through WY 2000	do.	do.	14	36.2	31.0	46.7	3	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	
05420650	16	14	Little Wapsipinicon River near New Hampton	7/14/1966	2,250	>4	<25	RRE (Schwob, 1966a)	24	49	11	46.7	34.4	53.6	2	6,820	5,170	9,000	9,640	7,220	12,900	11,600	8,450	15,900	13,600	9,540	19,300	18,700	11,900	29,400	
05420650	16	14	Little Wapsipinicon River near New Hampton	6/27/1969	9,200	<2	>50	RRE (Schwob, 1966a)	do.	do.	3	4.8	5.9	18.0	21	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	
05420690	17	14	East Fork Wapsipinicon River near New Hampton	7/14/1966	4,350	<2	>50	RRE (Schwob, 1966a)	18	49	5	10.2	16.6	35.9	10	4,380	3,230	5,940	6,390	4,680	8,720	7,800	5,560	10,900	9,220	6,340	13,400	13,000	8,090	21,000	
05420690	17	14	East Fork Wapsipinicon River near New Hampton	6/26/1969	11,000	<2	>50	RRE (Schwob, 1966a)	do.	do.	1	0.63	0.37	3.6	159	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05420850	18	38	Little Wapsipinicon River near Oran	5/17/1999	12,800	0.24	417	B17B through WY 1999	42	65	1	0.62	0.28	2.7	161	4,810	3,890	5,960	7,260	5,730	9,200	9,090	6,970	11,900	10,900	8,080	14,700	15,400	10,400	22,900	
05421000	19	14	Wapsipinicon River at Independence	7/18/1968	26,800	<2	>50	RRE (Schwob, 1966a)	79	112	2	2.3	0.65	2.9	43	16,800	14,400	19,600	23,000	19,200	27,500	27,500	22,300	33,800	31,900	25,100	40,500	42,500	30,700	58,800	
05421000	19	38	Wapsipinicon River at Independence	5/18/1999	31,100	1.1	90	B17B through WY 1999	do.	do.	1	1.2	0.16	1.6	83	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05421200	20	14	Pine Creek near Winthrop	7/17/1968	24,200	<2	>50	RRE (Schwob, 1966a)	37	73	1	<0.2	0.25	2.4	>500	3,870	3,010	4,970	5,760	4,390	7,570	7,160	5,300	9,680	8,600	6,140	12,000	12,400	8,030	19,200	
05421550	21	14	Buffalo Creek above Winthrop	7/17/1968	14,100	<2	>50	RRE (Schwob, 1966a)	29	41	1	0.74	0.44	4.3	135	5,810	4,310	7,840	8,610	6,340	11,700	10,600	7,590	14,700	12,500	8,670	18,000	17,700	11,000	28,200	
05421550	21	14	Buffalo Creek above Winthrop	7/18/1969	8,800	<2	>50	RRE (Schwob, 1966a)	do.	do.	3	3.8	4.9	15.0	26	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05421600	22	14	Buffalo Creek near Winthrop	7/17/1968	14,800	<2	>50	RRE (Schwob, 1966a)	20	41	1	0.57	0.44	4.3	175	5,600	4,130	7,580	8,320	6,110	11,300	10,200	7,310	14,300	12,100	8,360	17,500	17,100	10,600	27,400	
05421600	22	14	Buffalo Creek near Winthrop	7/18/1969	8,800	<2	>50	RRE (Schwob, 1966a)	do.	do.	3	3.4	7.1	21.4	29	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05422000	23	14	Wapsipinicon River near De Witt	4/6/1962	17,600	>4	<25	RRE (Schwob, 1966a)	78	78	16	19.3	15.9	24.6	5	21,900	18,800	25,500	28,000	23,400	33,500	32,200	26,200	39,600	36,300	28,600	46,100	46,100	33,500	63,400	
05448500	24	15	West Branch Iowa River near Klemme	6/21/1954	1,920	16.7	6	USGS (Heinitz, 1973a)	10	10	1	10.1	1.8	16.4	10	1,930	1,260	2,950	2,800	1,750	4,480	3,480	2,090	5,800	4,220	2,430	7,340	6,000	3,090	11,700	
05449000	25	15	East Branch Iowa River near Klemme	6/19/1954	5,960	<1	>100	USGS (Heinitz, 1973a)	46	46	1	0.84	0.40	3.8	119	2,640	2,000	3,480	3,760	2,710	5,220	4,670	3,210	6,780	5,640	3,700	8,580	8,040	4,700	13,800	
05449500	26	15	Iowa River near Rowan	6/21/1954	8,460	2.6	38	USGS (Heinitz, 1973a)	71	72	1	1.6	0.25	2.5	63	4,830	4,000	5,820	6,540	5,180	8,260	7,950	6,040	10,500	9,490	6,920	13,000	13,400	8,850	20,400	





**Table 7.** Comparison of annual exceedance-probability estimates of observed flood-peak discharges published in U.S. Geological Survey flood-profile reports during 1963–2012 to those computed using data updated through the 2012 water year.—Continued

[USGS, U.S. Geological Survey; ft<sup>3</sup>/s, cubic feet per second; AEP, annual exceedance probability; RI, recurrence interval; %, percent; RRE, regional regression equation; WIE, weighted independent estimates; do., ditto; B17B, Bulletin 17B (Interagency Advisory Committee on Water Data, 1982); <, less than; >, greater than; WY, water year; USACE, U.S. Army Corps of Engineers; ND, not determined; Eq., equation. Substantial differences between historic and updated AEP estimates are highlighted in grey]

Streamgage number	Map number (fig. 3)	Flood-profile report number <sup>a</sup>	Streamgage name	Observed flood event profiled at streamgage location in USGS flood-profile report											AEP analysis based on data through water year 2012 <sup>a</sup>																
				Date of flood event (month/day/year)	Peak discharge of flood event at stream-gage (ft <sup>3</sup> /s)	Historic AEP estimate of flood event from flood-profile report (percent)		Historic RI estimate of flood event from flood-profile report (years)	AEP streamgage flood-estimation method used in flood-profile report	Uncensored peak-discharge record length used in AEP analysis (years)	Historic record length used in AEP analysis (years)	Rank of observed flood event of uncensored or historic peak-discharge record length	Updated AEP estimate of observed flood event (percent)	66.7% lower confidence interval (percent)	66.7% upper confidence interval (percent)	Updated RI estimate of observed flood event (years)	10-percent AEP (ft <sup>3</sup> /s) (10-year recurrence)			4-percent AEP (ft <sup>3</sup> /s) (25-year recurrence)			2-percent AEP (ft <sup>3</sup> /s) (50-year recurrence)			1-percent AEP (ft <sup>3</sup> /s) (100-year recurrence)			0.2-percent AEP (ft <sup>3</sup> /s) (500-year recurrence)		
						Estimate	95% lower confidence interval										95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval		
05470000	49	17	South Skunk River near Ames	6/28/1975	5,230	16.7	6	RRE (Lara, 1973)	88	94	15	18.8	13.0	20.7	5	6,630	5,660	7,770	8,800	7,230	10,700	10,500	8,360	13,300	12,400	9,470	16,200	17,000	11,900	24,400	
05470000	49	29	South Skunk River near Ames	6/17/1990	6,600	6.7	15	B17B through WY 1994	do.	do.	7	10.2	5.1	10.6	10	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05470000	49	29	South Skunk River near Ames	7/9/1993	11,100	<1	>100	B17B through WY 1994	do.	do.	4	1.7	2.3	6.1	59	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05470000	49	29	South Skunk River near Ames	8/16/1993	11,200	<1	>100	B17B through WY 1994	do.	do.	3	1.6	1.5	4.8	62	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05470000	49	47	South Skunk River near Ames	8/11/2010	14,800	0.2–1	100–500	WIE 2010 (Eash, 2001)	do.	do.	1	0.44	0.19	1.9	227	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05470500	50	17	Squaw Creek at Ames	6/27/1975	11,300	<1	>100	RRE (Lara, 1973)	57	95	6	2.5	3.9	8.6	40	6,770	5,550	8,260	9,620	7,510	12,300	12,000	8,980	16,100	14,700	10,500	20,500	21,600	13,800	33,700	
05470500	50	29	Squaw Creek at Ames	6/17/1990	12,500	1.3	75	B17B through WY 1994	do.	do.	5	1.8	3.1	7.3	56	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05470500	50	29	Squaw Creek at Ames	7/9/1993	24,300	<1	>100	B17B through WY 1994	do.	do.	1	<0.2	0.19	1.9	>500	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05471000	51	17	South Skunk River below Squaw Creek near Ames	6/27/1975	14,700	<1	>100	RRE (Lara, 1973)	50	94	5	6.1	3.1	7.4	16	12,200	10,300	14,300	16,200	13,200	20,000	19,500	15,300	24,900	23,100	17,400	30,700	32,200	22,000	47,100	
05471000	51	29	South Skunk River below Squaw Creek near Ames	6/17/1990	13,000	4	25	B17B through WY 1994	do.	do.	6	8.7	7.5	16.0	11	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05471000	51	29	South Skunk River below Squaw Creek near Ames	7/9/1993	26,500	<1	>100	B17B through WY 1994	do.	do.	2	0.55	0.78	3.4	182	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05471000	51	47	South Skunk River below Squaw Creek near Ames	8/11/2010	36,200	<0.2	>500	WIE 2010 (Eash, 2001)	do.	do.	1	<0.2	0.19	1.9	>500	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05471050	52	47	South Skunk River at Colfax	8/14/2010	24,000	0.2–1	100–500	WIE 2010 (Eash, 2001)	27	27	1	0.56	0.67	6.4	179	11,700	9,230	14,800	15,500	11,900	20,000	18,100	13,600	24,100	20,600	15,000	28,400	26,800	17,800	40,500	
05471500	53	47	South Skunk River near Oskaloosa	8/16/2010	25,200	1–2	50–100	WIE 2010 (Eash, 2001)	68	82	2	1.7	1.1	4.7	59	16,300	14,300	18,700	20,900	17,800	24,600	24,300	20,200	29,300	27,700	22,300	34,300	35,900	26,900	47,900	
05473500	54	19	Big Creek near Mount Pleasant	4/22/1973	10,500	1.1	90	RRE (Lara, 1973)	24	24	1	2.9	0.76	7.2	34	6,240	4,730	8,250	9,320	6,980	12,500	11,500	8,400	15,800	13,600	9,600	19,300	19,000	12,200	29,600	
05474000	55	19	Skunk River at Augusta	4/23/1973	66,800	<1	>100	RRE (Lara, 1973)	99	161	1	<0.2	0.11	1.1	>500	37,000	34,000	40,100	44,300	40,000	49,000	49,300	43,700	55,700	54,100	46,800	62,400	64,600	52,900	79,000	
05474500	56	3	Mississippi River at Keokuk	5/1/1965	<sup>c</sup> 327,000	1.4	70	USGS (Dalrymple, 1960)	<sup>b</sup> 101	<sup>b</sup> 101	<sup>b</sup> 3	2.4	1.4	4.5	41	<sup>a</sup> 262,000	ND	ND	ND	ND	ND	<sup>a</sup> 331,000	ND	ND	<sup>a</sup> 366,000	ND	ND	<sup>a</sup> 429,000	ND	ND	
05476500	57	10	Des Moines River at Estherville	4/10/1965	10,200	>4	<25	RRE (Schwob, 1966a)	43	43	3	6.5	3.3	10.3	15	8,090	6,000	10,900	12,000	8,480	17,100	15,300	10,300	22,700	18,900	12,100	29,400	28,000	15,900	49,200	
05476500	57	10	Des Moines River at Estherville	4/12/1969	16,000	<2	>50	RRE (Schwob, 1966a)	do.	do.	1	1.8	0.42	4.1	56	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
05476750	58	10	Des Moines River at Humboldt	7/31/1964	6,110	>4	<25	RRE (Schwob, 1966a)	73	73	26	37.9	29.8	40.5	3	11,000	9,260	13,100	14,500	11,800	17,900	17,200	13,500	22,000	20,100	15,200	26,600	27,100	18,600	39,400	





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06599950	79	30	Perry Creek near Hinton	5/19/1990	4,600	7.1	14	B17B through WY 1995	41	60	3	6.2	2.3	7.4	16	3,470	2,620	4,610	5,390	3,920	7,410	6,900	4,830	9,880	8,540	5,740	12,700	12,400	7,560	20,200	
06600000	80	30	Perry Creek at 38th Street, Sioux City	5/19/1990	8,670	2.9	35	B17B through WY 1995	60	72	2	1.8	1.2	5.3	56	5,240	4,400	6,250	7,010	5,690	8,640	8,400	6,600	10,700	9,870	7,500	13,000	13,400	9,370	19,200	
06600100	81	25	Floyd River at Alton	3/28/1962	12,200	5	20	RRE (Lara, 1973)	58	137	4	5.9	3.7	9.8	17	8,670	6,990	10,700	14,300	11,300	18,300	18,700	14,200	24,600	23,100	17,000	31,500	34,800	23,200	52,300	
06600100	81	25	Floyd River at Alton	6/20/1983	16,300	2	50	RRE (Lara, 1973)	do.	do.	2	3.0	1.3	5.5	33	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06600300	82	25	West Branch Floyd River near Struble	3/3/1973	3,100	50	2	RRE (Lara, 1973)	53	57	23	39.9	36.1	49.1	3	6,580	5,420	7,990	9,490	7,630	11,800	11,700	9,120	14,900	13,800	10,400	18,200	19,000	13,100	27,400	
06600300	82	25	West Branch Floyd River near Struble	6/20/1983	7,590	11.1	9	RRE (Lara, 1973)	do.	do.	4	7.7	4.1	10.7	13	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06600500	83	25	Floyd River at James	6/8/1953	71,500	<1	>100	RRE (Lara, 1973)	78	137	1	<0.2	0.13	1.3	>500	13,100	10,900	15,800	20,000	15,900	25,000	25,600	19,700	33,300	31,900	23,600	42,900	47,200	32,000	69,700	
06600500	83	25	Floyd River at James	3/29/1962	20,600	5.9	17	RRE (Lara, 1973)	do.	do.	2	3.8	0.94	4.1	26	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06600500	83	25	Floyd River at James	6/21/1983	18,000	9.1	11	RRE (Lara, 1973)	do.	do.	3	5.5	1.8	5.8	18	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06605600	84	4	Little Sioux River at Gillette Grove	3/31/1962	9,680	>4	<25	RRE (Schwob, 1966a)	16	119	5	16.2	18.8	40.0	6	11,800	9,970	14,000	16,300	13,200	20,100	19,800	15,500	25,300	23,400	17,600	31,200	32,100	21,800	47,400	
06605600	84	4	Little Sioux River at Gillette Grove	9/11/1964	3,980	>4	<25	RRE (Schwob, 1966a)	do.	do.	9	>50	41.2	64.6	<2	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06605600	84	4	Little Sioux River at Gillette Grove	4/7/1965	20,200	<2	>50	RRE (Schwob, 1966a)	do.	do.	2	1.9	4.6	18.8	53	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06606600	85	4	Little Sioux River at Corretionville	3/30/1962	19,800	2–4	25–50	RRE (Schwob, 1966a)	87	121	7	7.8	5.2	10.7	13	17,400	15,100	20,100	24,700	20,800	29,300	30,100	24,700	36,800	35,500	28,200	44,700	48,500	35,500	66,100	
06606600	85	4	Little Sioux River at Corretionville	4/7/1965	29,800	<2	>50	RRE (Schwob, 1966a)	do.	do.	1	2.1	0.15	1.5	48	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06606700	86	4	Little Sioux River near Kennebec	3/31/1962	19,000	2–4	25–50	RRE (Schwob, 1966a)	30	30	2	12.1	2.5	10.4	8	20,200	15,600	26,100	27,000	20,200	36,100	31,500	22,800	43,600	36,400	25,400	52,100	46,800	30,000	73,000	
06606700	86	4	Little Sioux River near Kennebec	4/8/1965	29,700	<2	>50	RRE (Schwob, 1966a)	do.	do.	1	2.8	0.61	5.8	36	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06609560	87	43	Willow Creek near Soldier	5/6/2007	6,110	3.3	30	B17B through WY 2007	33	47	2	3.4	1.6	6.9	29	3,670	2,720	4,950	5,650	4,040	7,890	7,230	4,990	10,500	8,960	5,960	13,500	13,100	7,970	21,600	
06807410	88	26	West Nishnabotna River at Hancock	9/13/1972	26,400	2.2	45	B17B through WY 1988	53	53	2	3.1	1.4	6.0	32	19,100	15,800	23,100	24,600	19,700	30,700	28,600	22,200	36,900	32,700	24,500	43,600	41,900	28,900	60,800	
06807470	89	24	Indian Creek near Emerson	6/15/1982	15,800	<1	>100	RRE (Lara, 1973)	28	47	1	<0.2	0.39	3.7	>500	3,900	2,750	5,540	5,800	3,960	8,490	7,190	4,730	10,900	8,550	5,430	13,500	11,500	6,660	20,000	
06808500	90	26	West Nishnabotna River at Randolph	9/14/1972	18,500	33.3	3	B17B through WY 1988	64	64	22	32.4	28.2	39.5	3	27,700	23,700	32,300	34,200	28,400	41,100	38,700	31,200	47,900	43,100	33,700	55,100	52,600	38,000	72,700	
06809210	91	26	East Nishnabotna River near Atlantic	9/12/1972	26,700	4	25	B17B through WY 1988	53	65	4	4.4	4.1	10.7	23	21,000	17,200	25,500	27,200	21,600	34,300	31,600	24,200	41,300	35,900	26,600	48,600	45,300	30,700	66,900	
06809210	91	37	East Nishnabotna River near Atlantic	6/15/1998	41,400	0.40	250	B17B through WY 1998	do.	do.	1	0.42	0.28	2.7	238	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.
06809500	92	26	East Nishnabotna River at Red Oak	9/13/1972	38,000	1	100	B17B through WY 1988	86	96	2	1.3	0.76	3.3	77	22,600	19,400	26,400	29,400	24,400	35,400	34,500	27,700	42,800	39,600	30,800	50,800	51,200	36,800	71,200	



**Table 7.** Comparison of annual exceedance-probability estimates of observed flood-peak discharges published in U.S. Geological Survey flood-profile reports during 1963–2012 to those computed using data updated through the 2012 water year.—Continued

[USGS, U.S. Geological Survey; ft<sup>3</sup>/s, cubic feet per second; AEP, annual exceedance probability; RI, recurrence interval; %, percent; RRE, regional regression equation; WIE, weighted independent estimates; do., ditto; B17B, Bulletin 17B (Interagency Advisory Committee on Water Data, 1982); <, less than; >, greater than; WY, water year; USACE, U.S. Army Corps of Engineers; ND, not determined; Eq., equation. Substantial differences between historic and updated AEP estimates are highlighted in grey]

Streamgage number	Map number (fig. 3)	Flood-profile report number <sup>a</sup>	Streamgage name	Observed flood event profiled at streamgage location in USGS flood-profile report											AEP analysis based on data through water year 2012 <sup>a</sup>																									
				Date of flood event (month/day/year)	Peak discharge of flood event at stream-gage (ft <sup>3</sup> /s)	Historic AEP estimate of flood event from flood-profile report (percent)	Historic RI estimate of flood event from flood-profile report (years)	AEP streamgage flood-estimation method used in flood-profile report	Uncensored peak-discharge record length used in AEP analysis (years)	Historic record length used in AEP analysis (years)	Rank of observed flood event of uncensored or historic peak-discharge record length	Updated AEP estimate of observed flood event (percent)	66.7% lower confidence interval (percent)	66.7% upper confidence interval (percent)	Updated RI estimate of observed flood event (years)	10-percent AEP (ft <sup>3</sup> /s) (10-year recurrence)			4-percent AEP (ft <sup>3</sup> /s) (25-year recurrence)			2-percent AEP (ft <sup>3</sup> /s) (50-year recurrence)			1-percent AEP (ft <sup>3</sup> /s) (100-year recurrence)			0.2-percent AEP (ft <sup>3</sup> /s) (500-year recurrence)												
																Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval	Estimate	95% lower confidence interval	95% upper confidence interval										
06809500	92	37	East Nishnabotna River at Red Oak	6/15/1998	60,500	<0.2	>500	B17B through WY 1998	do.	do.	1	<0.2	0.19	1.8	>500	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	
06810000	93	26	Nishnabotna River above Hamburg	9/15/1972	25,200	14.3	7	B17B through WY 1988	86	91	15	22.0	13.3	21.1	5	32,600	28,400	37,300	41,200	34,900	48,600	47,600	39,200	57,700	54,100	43,300	67,600	68,800	51,100	92,700										
06810000	93	26	Nishnabotna River above Hamburg	5/27/1987	31,400	5.9	17	B17B through WY 1988	do.	do.	10	11.7	8.2	14.7	9	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	
06810000	93	37	Nishnabotna River above Hamburg	6/17/1998	65,100	<0.2	>500	B17B through WY 1998	do.	do.	1	0.33	0.20	1.9	303	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	
06897950	94	32	Elk Creek near Decatur City	9/15/1992	16,200	11.1	9	B17B through WY 1995	46	161	6	6.9	8.1	17.4	14	13,900	12,000	16,100	18,700	15,600	22,300	22,300	18,100	27,600	25,900	20,300	33,200	34,400	24,700	47,900										
06898000	95	32	Thompson River at Davis City	9/16/1992	57,000	<1	>100	B17B through WY 1995	82	128	1	<0.2	0.14	1.4	>500	18,200	15,900	20,800	24,100	20,400	28,500	28,700	23,500	34,900	33,400	26,600	42,000	44,800	33,000	60,800										
06898400	96	32	Weldon River near Leon	9/15/1992	<sup>km</sup> 76,200	<1	>100	B17B through WY 1995	34	94	1	<0.2	0.19	1.9	>500	15,500	12,900	18,700	21,100	16,800	26,300	25,500	19,700	33,000	30,000	22,400	40,300	41,300	28,100	60,500										
06903400	97	23	Chariton River near Chariton	7/4/1981	16,600	1	100	RRE (Lara, 1973)	49	66	2	2.7	1.1	4.8	37	9,990	8,000	12,500	14,300	11,000	18,600	17,900	13,200	24,100	21,600	15,500	30,300	30,800	20,100	47,300										
06903400	97	32	Chariton River near Chariton	9/15/1992	<sup>m</sup> 37,700	<1	>100	B17B through WY 1995	do.	do.	1	<0.2	0.28	2.7	>500	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	
06903700	98	32	South Fork Chariton River near Promise City	7/4/1981	28,000	<1	>100	RRE (Lara, 1973)	46	161	2	2.4	1.6	6.9	42	16,900	14,500	19,600	23,600	19,600	28,500	29,100	23,400	36,200	34,900	27,100	45,000	49,300	35,200	69,200										
06903700	98	32	South Fork Chariton River near Promise City	9/15/1992	<sup>m</sup> 70,600	<1	>100	B17B through WY 1995	do.	do.	1	<0.2	0.11	1.1	>500	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.	do.

<sup>a</sup>Unless noted otherwise, AEP analyses, and associated AEP or RI estimates and confidence intervals, were computed using the WIE method. The WIE program (Cohn and others, 2012) was used to estimate AEPs following guidelines in appendix 8 of B17B (Interagency Advisory Committee on Water Data, 1982). The WIE program uses the variance and estimate of the B17B annual streamgage-probability analysis and the variance and estimate of the RRE probability calculation (Eash and others, 2013) to compute a weighted probability estimate and variance at a streamgage. The AEP estimates computed at a streamgage are then used to calculate AEP estimates and confidence intervals for observed flood events. Note the AEP estimates for observed flood events will occasionally be outside of the range of the 66.7 percent confidence intervals because the uncertainty of these estimates is large. Note the AEP estimates computed by USACE for regulated streamgages on the Mississippi River are based on data through the 1998 water year, and estimates computed for regulated streamgages on the Iowa and Des Moines Rivers are based on data through the 2008 water year.

<sup>b</sup>See report number for report where AEP estimate for flood event was originally published.

<sup>c</sup>Computed using RREs (Eash, 2001) because of short peak-flow record.

<sup>d</sup>Annual exceedance-probability estimate is based on inclusion of additional annual-peak discharges from discontinued downstream streamgage (05388000).

<sup>e</sup>Discharge is a maximum daily average.

<sup>f</sup>Discharge affected by regulation.

<sup>g</sup>Regulated period of record.

<sup>h</sup>Pre-regulated period of record.

<sup>i</sup>Data source: Upper Mississippi River System Flow Frequency Study, Hydrology and Hydraulics Appendix B, St. Paul District (U.S. Army Corps of Engineers, 2004).

<sup>j</sup>Annual exceedance-probability estimate is based on inclusion of additional annual-peak discharges from discontinued upstream streamgage (05412000).

<sup>k</sup>Estimate.

<sup>l</sup>Based on indirect measurement of discharge at Mederville.

<sup>m</sup>Discharge computed from indirect measurement.

<sup>n</sup>Annual exceedance-probability estimate is based on inclusion of additional annual-peak discharges from discontinued downstream streamgage (05417000).

<sup>o</sup>Annual exceedance-probability estimate is based on inclusion of additional annual-peak discharges from discontinued downstream streamgage (05418450).

<sup>p</sup>Annual exceedance-probability estimate is based on inclusion of additional annual-peak discharges from active upstream streamgage (05418400).

<sup>q</sup>Data source: Upper Mississippi River System Flow Frequency Study, Hydrology & Hydraulics Appendix C Mississippi River, Rock Island District (U.S. Army Corps of Engineers, 2004).

<sup>r</sup>Annual exceedance-probability estimate is based on inclusion of additional annual-peak discharges from active downstream streamgage (05453100).

<sup>s</sup>Annual exceedance-probability estimate is based on inclusion of additional annual-peak discharges from discontinued upstream streamgage (05452500).

<sup>t</sup>Based on information from the U.S. Army Corps of Engineers (Hydraulics Branch, oral commun., 1994).

<sup>u</sup>Data source: Iowa River Regulated Flow Frequency Study, Final Report, Rock Island District (U.S. Army Corps of Engineers, 2009).

<sup>v</sup>Computed using weighted estimates from nearby downstream streamgage (05458500) and regional regression estimates for this site (05458300) (Eash, 2001).

<sup>w</sup>Computed using B17B streamgage-probability analysis (Interagency Advisory Committee on Water Data, 1982) because RREs were not applicable.

<sup>x</sup>Data source: Des Moines River Regulated Flow Frequency Study, Rock Island District (U.S. Army Corps of Engineers, 2010).

<sup>y</sup>Annual exceedance-probability estimate computed for pre-regulated period of record and is based on inclusion of additional annual-peak discharges from upstream streamgage (05481650).

<sup>z</sup>Annual exceedance-probability estimate is based on inclusion of additional annual-peak discharges from discontinued downstream streamgage (05488000).