U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

NWS-FORM E-19A

REPORT ON RIVER GAGE STATION

SITE

LID: MRRC2 PROXIMITY: AT
NAME: MORRISON
STREAM: BEAR CREEK
COUNTY/STATE: Jefferson, CO BASIN: SOUTH PLATTE

DRAINAGE:	164.00	FLOOD STAGE:	9.00	STATION NO:	BCRMORCO
RIVER MILE:	0.00	ACTION STAGE:	8.00	USGS NO:	06710605
ZERO DATUM:	5780.430	BANKFULL STAGE:	8.50	NESS ID:	CE519FDA
CHECKBAR:	0.000	NORMAL POOL:	0.00	RFC:	MBRFC
LATITUDE:	39 39 11	TIDAL EFFECTS:	None	HSA:	BOU
LONGITUDE:	105 11 43	FLOODCATS: MAJOR:	11.00		
		MODERATE:	10.00		
		MINOR:	9.00		

PERIOD OF RECORD: 4/1/1888 - PRESENT

OBSERVER

SERVICE DATE: SPONSOR: FC-1
CD-404: RATE: $ 0.00
HOME PHONE:
WORK PHONE:

CO

DUTIES:
RECIPIENT: BOU COMMS TYPE: Internet TASK:

GAGES

TELEM TYPE: ALERT TELEM OWNER: State OGA PHONE:
DCP ID: CE519FDA DCP OWNER: COEOMA

LATEST GAGE TYPE	START DATE	OWNER OF GAGE
pres trans	04/08/1994	State OGA

CRESTS

	LEVEL	DATE
HIGHEST BASED ON GAGE READING:	11.20	07/24/1896
HIGHEST BASED ON HIGH WATERMARKS:		
HIGHEST SINCE 1/01/1993:		
HIGHEST SINCE 1/01/2003:		

REMARKS

THE GAGE WAS NOT MOVED BUT THE WATER LEVEL WAS RAISED WHEN A GRADE CONTROL STRUCTURE WAS INSTALLED IMMEDIATELY DOWNSTREAM OF THE GAGE IN 2002. THIS HAS RAISED THE WATER LEVEL APPROXIMATELY 1.9 FEET AT THE GAGE SITE.

HYDROLOGIST: TRESTE' HUSE REVISED, PRINTED DATES: 10/28/2003, 10/28/2003

NWS FORM E-19 (COVER)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

REPORT ON RIVER GAGE STATION

REVISED, PRINTED DATES: 10/28/2003, 10/28/2003

LOCATION: MORRISON
STREAM: BEAR CREEK
BASIN: SOUTH PLATTE HSA: BOU

REFERENCES:

ABBREVIATIONS:

BM	- bench mark	EPA	- Environmental Protection Agency
DS	- downstream	IBWC	- International Boundary and Water Comm.
US	- upstream	MSRC	- Mississippi River Commission
HW	- high water	MORC	- Missouri River Commission
LW	- low water	NOAA	- National Oceanic and Atmospheric Admin.
RB	- right bank	NOS	- National Ocean Survey
LB	- left bank	NWS	- National Weather Service
MGL	- mean gulf level	TVA	- Tennessee Valley Authority
MLW	- mean low water	USACE	- U.S. Army Corps of Engineers
MSL	- mean sea level	USBR	- U.S. Bureau of Reclamation
MLT	- mean low tide	USGS	- U.S. Geological Survey
MT	- mean tide	USWB	- U.S. Weather Bureau
WQ	- water quality	NGVD	- National Geodetic Vertical Datum
RM	- reference mark	NAD	- North American Datum
RP	- reference point		

LOCATION IDENTIFICATION: MRRC2
NWS INDEX NUMBER: BCRMORCO
USGS NUMBER: 06710605

MAP OF GAGE LOCATION

LATITUDE: 39 39 11
LONGITUDE: 105 11 43

SOURCE:

BENCHMARKS

ELEVATION OF GAGE ZERO: 5780.430 VERTICAL DATUM:
LEVELING AGENCY AND DATE: CHECKBAR: 0.000
RATING AGENCY:

BENCHMARK	DESCRIPTION	GAGE ZERO	DATUM
RM1	RM1 IS A STANDARD USGS BRONZE TABLET ABOUT 1/2 FOOT ABOVE GROUND LEVEL IN TOP OF LARGE BOULDER LOCATED ACROSS STREAM ABOUT 60 FEET DOWNSTREAM AND ABOUT 100 FEET SOUTH OF STATION ON RIGHT BANK. ELEVATION 12.3 FT.	12.300	5792.730
RM3	IS A RAILROAD SPIKE IN CONCRETE SLAB 1.5 FT ABOVE GROUND LEVEL AND 72 FT NORTHWEST OF GAGE AT SOUTH END OF CITY SHEDS. ELEVATION IS 10.92 FT.	10.920	5791.350

GAGES

DCP

NESS ID: CE519FDA
OWNER: COEOMA
REPORT TIME: 03:07:00
INTERVAL: 240

TELEM

TYPE OF TELEMETRY: ALERT
OWNER: State OGA
PHONE NUMBER:
INTERVAL: 5
PAYOR/COST OF LINE: State OGA / $

GAGE TYPE	OWNER	MAINTENANCE	BEGAN	ENDED	GAGE LOCATION/REMARKS
Unk	Unk	Unk	04/01/1888	09/30/1891	NON-RECORDING GAGE AT SITE 0.2 MILES DOWNSTREAM AT DIFFERENT DATUM
Unk	Unk	Unk	04/01/1899	02/28/1902	NON-RECORDING GAGE AT SITE 0.2 MILE UPSTREAM AT A DIFFERENT DATUM.
Other	USGS	USGS	10/01/1919	09/30/1934	NON-RECORDING GAGE UNTIL 3/01/1921 AND AFTER 3/01/1921 A WATER-STAGE RECORDER AT IDLEDALE 4 MILES UPSTREAM AT DIFFERENT DATUM.
float	USGS	USGS	10/01/1934	10/10/1961	AT SITE 80 FEET DOWNSTREAM AT SAME DATUM.
float	State DWR	State DWR	10/11/1961		
pres trans	State OGA	State OGA	04/08/1994		

HISTORY

PUBLICATION/LOCATION OF RECORDS	STARTING DATE	ENDING DATE

TYPE OF GAGE	OWNER	STARTING DATE	ENDING DATE
Unk	Unk	04/01/1888	09/30/1891
Unk	Unk	04/01/1899	02/28/1902
Other	USGS	10/01/1919	09/30/1934
float	USGS	10/01/1934	10/10/1961
float	State DWR	10/11/1961	
pres trans	State OGA	04/08/1994	

ZERO ELEVATION	STARTING DATE
5780.430	10/11/1961

CRESTS

FLOOD STAGE: 9.00 ACTION STAGE: 8.00 BANKFULL STAGE: 8.50
FLOOD FLOW: ACTION FLOW:

DATE OF CREST	TIME LST	CREST (ft)	FLOW (CFS)	FROM HIGH WATERMARKS	BASED ON OLD DATUM	CAUSED BY ICE JAM	REMARKS
07/24/1896	UNDEF	11.20	8600		X		
07/07/1933	UNDEF	10.80	8110		X		
08/09/1934	UNDEF	7.09	4620		X		
09/02/1938	UNDEF	9.20	6200		X		
05/07/1969	UNDEF	7.65	2040				
07/22/1983	UNDEF	8.67	4140				

LOW WATER RECORDS

DATE OF LOW WATER	STAGE (ft)	FLOW (CFS)	REMARKS
08/02/1963	5.09	2	
02/11/1981	5.09	2	

CONDITIONS AFFECTING FLOW

MILES ABOVE MOUTH: 0.0 DRAINAGE AREA: 164.0 POOL STAGE: 0.0

STREAM BED: SAND AND GRAVEL.

REACH: EAST OF IDLEDALE TO BEAR CREEK RESERVOIR.

REGULATION: SMALL DIVERSIONS FOR IRRIGATION OF ABOUT 1,000 ACRES ABOVE GAGE.

DIVERSION: SMALL DIVERSIONS FOR IRRIGATION OF ABOUT 1000 ACRES.

WINTER: STREAM ICE-COVERED FOR SEVERAL DAYS DURING SEVERAL MONTHS OF NORMAL WINTERS.

TOPOGRAPHY: AREA LINED WITH DENSE BRUSH AND TREES AND IS STEEP SLOPED. RIGHT BANK WILL OVERFLOW AT ABOUT 4 FEET. RAPID DROP THROUGH BRIDGE DS SO BRIDGE CANNOT AFFECT RATINGS FOR ANY BUT VERY DESTRUCTIVE FLOODS.

REMARKS: A WEIR HAS BEEN BUILT JUST DOWNSTREAM OF THE GAGE. THIS HAS RAISED THE WATER LEVEL APPROXIMATELY 1.9 FEET AT THE GAGE SITE. THERE IS A RAPID DROP THROUGH BRIDGE DOWNSTREAM BEGINNING ABOUT 50 FT ABOVE THE BRIDGE.

DAMAGE

STAGE	AREAS AFFECTED
8.00	ACTION STAGE. WATER TO SIDEWALK ALONG HIGHWAY 8 ON EASTERN EDGE OF MORRISON.
8.50	WATER BEGINS TO OVERFLOW BANKS INTO YARDS IN EASTERN MORRISON.
9.00	FLOOD STAGE. WATER OVER HIGHWAY 8 IN EASTERN MORRISON BETWEEN MARKET STREET AND MOUNT VERNON AVENUE. MUNICIPAL STORAGE GARAGE NEAR GAGE WILL BE FLOODED.
9.50	WATER INTO HOUSES IN EASTERN MORRISON.
10.00	LEVELS REACHED DURING FLOODS OF 1896 AND 1933.
10.50	WATER INTO HOUSES IN WESTERN MORRISON.
11.00	WATER INTO BUSINESSES IN DOWNTOWN MORRISON.
14.50	WATER TO BOTTOM OF HIGHWAY 8 BRIDGE NEAR GAGE.

RIVER STAGE DATA

14.50 - WATER TO BOTTOM OF HIGHWAY 8 BRIDGE NEAR GAGE.

11.00 - WATER INTO BUSINESSES IN DOWNTOWN MORRISON.

10.50 - WATER INTO HOUSES IN WESTERN MORRISON.

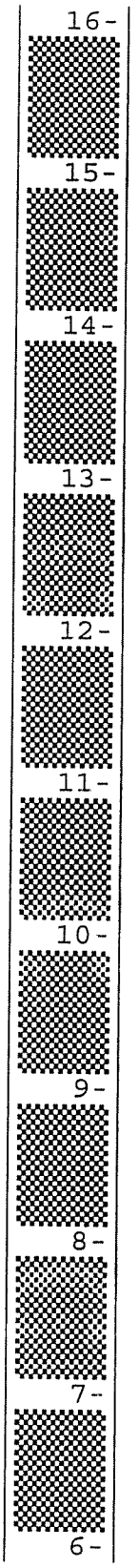
10.00 - LEVELS REACHED DURING FLOODS OF 1896 AND 1933.

9.50 - WATER INTO HOUSES IN EASTERN MORRISON.

9.00 - FLOOD STAGE. WATER OVER HIGHWAY 8 IN EASTERN MORRISON BETWEEN MARKET STREET AND MOUNT VERNON AVENUE. MUNICIPAL STORAGE GARAGE NEAR GAGE WILL BE FLOODED.

8.50 - WATER BEGINS TO OVERFLOW BANKS INTO YARDS IN EASTERN MORRISON.

8.00 - ACTION STAGE. WATER TO SIDEWALK ALONG HIGHWAY 8 ON EASTERN EDGE OF MORRISON.



11.20 07/24/1896

10.80 07/07/1933

9.20 09/02/1938

8.67 07/22/1983

7.65 05/07/1969

7.09 08/09/1934

REACH: EAST OF IDLEDALE TO BEAR CREEK RESERVOIR.

ELEVATION ZERO: 5780.43

LOCATION: BEAR CREEK AT MORRISON, CO

ID: MRRC2 HSA: BOU

Revised, Printed Dates: 10/28/2003, 10/28/2003

NWS FORM E-19 PAGE 9: STAFF

BCRMORCO

- STATION DESCRIPTION -

Station number: 06710605

MRRC2

Bear Creek at Morrison, Colorado

Revised by: Rodger L. Burcher
Date: January 18, 2000

LOCATION -- Lat. 39°39'11", Long. 105°11'42", in SE1/4, SW1/4 sec.35, T4S, 70W, Jefferson County, Hydrologic Unit 10190002, on left bank, at Morrison, 180 feet upstream from bridge on State Highway 8 and 0.2 mile upstream from Mt. Vernon Creek.

ESTABLISHMENT AND HISTORY -- No data available on gage used August 18 to September 30, 1987.

April 1, 1888 to September 30, 1891 and May 19, 1899 non-recording gage at site 0.2 mi. downstream at different datum.

April 1, 1899 to February 28, 1902, non-recording gage at site 0.2 mile upstream at a different datum.

October 1, 1919 to February 28, 1921, non-recording gage and March 1, 1921 to September 30, 1934 water-stage recorder at Idledale 4 miles upstream at different datum.

October 1, 1934 to October 10, 1961, water-stage recorder at site 80 feet downstream at same datum.

Since October 11, 1961, at present site and datum.

DRAINAGE AREA -- 164 mi^2 (From topographic maps.)

GAGE – A Stevens A-35 recorder, Sutron 8210 DCP with digital shaft encoder and a speech modem interface to telephone number (303) 697-8341 and a pressure transducer connected to a transmitter in the Urban Drainage System, in a 60 inch corrugated shelter with a 48 inch corrugated well. Shelter and well were installed September 1996, Well is connected to stream by two 2-inch intakes with standard gate valves and street key. Flushing risers are outside of shelter. Equipment is referenced by drop tape at an adjustable reference point on the edge of the equipment shelf. Datum of gage is 5,780.43 feet above mean sea level, datum of 1929. There is no outside gage.

REFERENCE MARKS – Tape length = 14.50 ft.

RM1-- Is a standard USGS bronze tablet about 1/2 ft. above ground level in top of large boulder located across stream about 60 ft. downstream and about 100 ft south of station on right bank. Elevation is 12.30 ft.

RM2 (Destroyed)--Established 1962, is high point on a large bolt 2.5 ft. above ground level driven into a tree 6 ft. below gage. Elevation is 8.85 ft.

RM3—Established 1969, is a railroad spike in concrete slab 1.5 ft. above ground level and 72 ft. NW of gage at south end of city sheds. Elevation is 10.92 ft.

RM4—(Destroyed) Established 1972, is the head of a bolt in a concrete post 3 ft. below gage. Elevation is 9.11 ft.

CHANNEL AND CONTROL – Low water control is a gravel and cobble riffle extending 50 to 100 ft. downstream. Moderate shifts occur through movement of streambed materials and lodging of trash and debris on scattered large rocks. High water control is channel control with dense brush along banks affecting stage-discharge relationship. Left bank is high and not subject to overflow except in major flood conditions. Right bank will overflow at about 4.0 ft. There is a rapid drop through bridge downstream beginning about 50 ft. above the bridge.

Bridge cannot affect ratings except in extreme conditions of flood. There are small inflows from right bank about 50 and 80 ft. above gage. Inflow is return from fish ponds upstream. Flow is in one channel at all stages. Average velocities in measuring sections ranges from about 0.6 fps at low stages to about 7.2 fps at discharge of 750 cfs.

DISCHARGE MEASUREMENTS – Low and medium stage flows may be measured by wading near gage. High flows can be measured from a suspension bridge leading to fish ponds about 1,000 ft. upstream. Superstructure of the bridge makes crane or bridge board measurements difficult and bridge has locked access. High water measurements can also be made from road bridge 1/4 mile above gage. Cross section is heavily boulder strewn and is at an angle making for poor measurements.

FLOODS – Maximum discharge during period of record is an estimated 8,600 cfs, July 24, 1896.

WINTER FLOW – Stream can be ice covered for as much as 10-12 weeks during months of a normal winter.

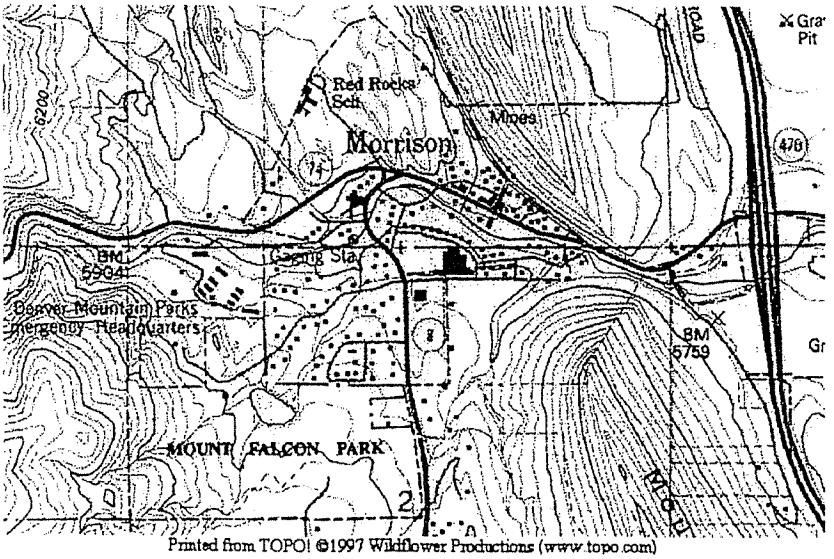
POINT OF ZERO FLOW – About 2.6 ft.

ROAD LOG – At north end of bridge, Turn west from State Highway 8 onto Bear Creek Ave. Turn left into Town of Morrison maintenance yard. Gage can be seen from upstream side of bridge.

REGULATION AND DIVERSION – Small diversions for irrigation of about 1,000 acres above gage.

ACCURACY – Records should be good except for winter and estimated periods which should be poor.

COOPERATION – Station is maintained by State Engineer in cooperation with the USGS.



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STATE OF COLORADO

Division of Water Resources

OFFICE OF THE STATE ENGINEER

Rating Table ID: BCRMORCO23

Time of last edit: n/a

Gage	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09	DIFF
4.00											
.10											
.20											
.30											
.40											
.50											
.60											
.70											
.80									0.00	0.030	
.90	0.060	0.135	0.210	0.285	0.360	0.435	0.510	0.585	0.660	0.735	
5.00	0.810	0.937	1.06	1.19	1.32	1.44	1.57	1.70	1.83	1.95	0.750
.10	2.08	2.24	2.40	2.55	2.71	2.87	3.03	3.19	3.34	3.50	1.27
.20	3.66	3.84	4.03	4.21	4.40	4.58	4.76	4.95	5.13	5.32	1.58
.30	5.50	5.71	5.92	6.12	6.33	6.54	6.75	6.96	7.16	7.37	1.84
.40	7.58	7.81	8.04	8.26	8.49	8.72	8.95	9.18	9.40	9.63	2.08
.50	9.86	10.1	10.3	10.6	10.8	11.1	11.3	11.6	11.8	12.1	2.28
.60	12.3	12.6	12.8	13.1	13.4	13.6	13.9	14.2	14.5	14.7	2.44
.70	15.0	15.3	15.6	15.8	16.1	16.4	16.7	17.0	17.2	17.5	2.70
.80	17.8	18.1	18.4	18.7	19.0	19.3	19.6	19.9	20.2	20.5	2.80
.90	20.8	21.1	21.3	21.6	21.8	22.1	22.4	22.6	22.9	23.1	3.00
6.00	23.4	23.7	23.9	24.2	24.5	24.8	25.0	25.3	25.6	25.8	2.60
.10	26.1	26.8	27.6	28.3	29.0	29.8	30.5	31.2	31.9	32.7	2.70
.20	33.4	34.3	35.2	36.1	37.0	37.9	38.8	39.7	40.6	41.5	7.30
.30	42.4	43.5	44.6	45.7	46.8	48.0	49.1	50.2	51.3	52.4	9.00
.40	53.5	54.9	56.2	57.6	59.0	60.4	61.7	63.1	64.5	65.8	11.1
.50	67.2	68.9	70.5	72.2	73.9	75.6	77.2	78.9	80.6	82.2	13.7
.60	83.9	85.9	87.9	89.9	91.9	94.0	96.0	98.0	100.0	102	16.7
.70	104	106	109	112	114	116	119	122	124	126	20.1
.80	129	132	135	138	141	144	147	150	153	156	25.0
.90	159	162	166	170	173	176	180	184	187	190	30.0
7.00	194	198	203	207	211	216	220	224	228	233	35.0
.10	237	242	247	252	257	262	268	273	278	283	43.0
.20	288	294	300	306	312	318	324	330	336	342	51.0
.30	348	355	362	369	376	384	391	398	405	412	60.0
.40	419	427	436	444	453	461	469	478	486	495	71.0
.50	503	513	523	533	543	552	562	572	582	592	84.0
.60	602	614	625	637	648	660	672	683	695	706	99.0
.70	718	732	745	758	772	786	799	812	826	840	116
.80	853										135
.90											
8.00											

Water Resources

Data Category: Surface Water | Geographic Area: Colorado | GO

Peak Streamflow for Colorado

USGS 06710500 BEAR CREEK AT MORRISON, CO.

Available data for this site Station home page | GO

Jefferson County, Colorado
Hydrologic Unit Code 10190002
Latitude 39°39'11", Longitude 105°11'43" NAD27
Drainage area 164.00 square miles
Gage datum 5,780.43 feet above sea level NGVD29

Output formats

- Table
- Graph
- Tab-separated file
- WATSTORE formatted file
- Reselect output format

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1888	Aug. 17, 1888		139[1]
1889	May 20, 1889		195[1]
1890	Jul. 23, 1890		75.0[1]
1891	May 27, 1891		622[1]
1896	Jul. 24, 1896		8,600
1897	Aug. 04, 1897	6.10	1,180
1898	Jul. 13, 1898		208[1]
1899	Aug. 04, 1899		325[1]
1900	Jul. 29, 1900		691[1]
1901	Jun. 15, 1901	5.20	214
1920	May 02, 1920	2.10	360
1921	Jun. 03, 1921		678[1]
1922	Jun. 25, 1922	2.60	350
1923	Aug. 16, 1923	3.95	1,070
1924	Jun. 05, 1924	2.85	482
1925	Aug. 30, 1925	3.08	590
1926	Apr. 21, 1926	2.74	588
1927	Aug. 14, 1927	3.10	390

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1956	May 23, 1956	3.73	348
1957	Aug. 21, 1957	5.63	1,640
1958	May 16, 1958	4.55	421
1959	Jun. 23, 1959	4.21	147
1960	May 09, 1960	4.56	208
1961	Aug. 03, 1961	4.26	252
1962	May 07, 1962	4.13	152
1963	Jun. 16, 1963	5.00	200
1964	Aug. 07, 1964	5.17	286
1965	Jul. 25, 1965	6.45	1,030
1966	Aug. 04, 1966	3.86	82.0
1967	Jul. 18, 1967	4.28	155
1968	Jun. 02, 1968	4.19	131
1969	May 07, 1969	7.65	2,340
1970	Aug. 05, 1970	6.27	608
1971	May 30, 1971	5.40	174
1972	Aug. 03, 1972	5.52	227
1973	May 06, 1973	7.30	1,480
1974	May 10, 1974	5.73	171

1928	May 17, 1928	2.67	305
1929	Jul. 22, 1929	4.60	1,560
1930	Aug. 04, 1930	3.55	741
1931	Jun. 03, 1931	2.48	270
1932	Jun. 27, 1932	2.48	302
1933	Jul. 07, 1933		8,110
1934	Aug. 09, 1934	7.09	4,620
1935	Jul. 12, 1935	2.16	1,060
1936	Aug. 12, 1936	2.50	745
1937	Aug. 30, 1937	1.98	392
1938	Sep. 02, 1938	9.20	6,200
1939	Oct. 01, 1938	3.49	295
1940	Aug. 25, 1940	3.65	615
1941	Jun. 21, 1941	6.28	2,500
1942	Apr. 19, 1942	5.80	1,850
1943	Jun. 30, 1943	4.32	244
1944	May 15, 1944	4.57	542
1945	Aug. 20, 1945	4.58	375
1946	Aug. 24, 1946	4.20	152
1947	Jun. 22, 1947	4.71	386
1948	Apr. 30, 1948	4.40	398
1949	Jun. 06, 1949	5.22	1,250
1950	Jun. 16, 1950	3.63	264
1951	Aug. 03, 1951	3.15	238
1952	May 23, 1952	3.58	455
1953	Jul. 31, 1953	3.56	444
1954	Jul. 21, 1954	3.58	445
1955	Aug. 10, 1955	5.34	1,700
1975	Jun. 14, 1975	6.12	250
1976	Aug. 03, 1976	5.56	139
1977	May 01, 1977	5.57	136
1978	May 17, 1978	5.38	107
1979	Jun. 09, 1979	6.80	530
1980	Apr. 30, 1980	6.99	726
1981	Jul. 18, 1981	5.93	235
1982	Aug. 14, 1982	5.78	193
1983	Jul. 22, 1983	8.67	4,140
1984	Aug. 26, 1984	5.99	576
1985	Jul. 19, 1985	5.50	317
1986	Jun. 10, 1986	5.31	260
1987	Jun. 10, 1987	5.68	435
1988	May 19, 1988	5.22	253
1990	Jul. 08, 1990	5.59	377
1991	Jun. 01, 1991	5.37	298
1992	Aug. 24, 1992	5.07	171
1993	Jun. 18, 1993	4.89	136
1994	May 10, 1994	4.82	127
1995	Jun. 18, 1995	6.53	894
1996	May 26, 1996	5.11	166
1997	Jun. 13, 1997	6.06	485
1998	May 07, 1998	6.40	833
1999	May 25, 1999	6.18	911
2000	Jul. 17, 2000	4.96	122
2001	Jul. 13, 2001	5.16	174
2002	Sep. 13, 2002	6.22	50[2]

[2] Peak Streamflow Qualification Codes.

- 1 -- Discharge is a Maximum Daily Average
- 2 -- Discharge is an Estimate

Questions about data gs-w-co_NWISWeb_Data_Inquiries@usgs.gov Top
Feedback on this website gs-w-co_NWISWeb_Maintainer@usgs.gov Explanation of terms

Surface Water for Colorado: Peak Streamflow
http://waterdata.usgs.gov/co/nwis/peak?

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