



Water-Data Report 2008

**07189000 ELK RIVER NEAR TIFF CITY, MO**

Neosho Basin  
Elk Subbasin

LOCATION.--Lat 36°37'53", long 94°35'12" referenced to North American Datum of 1927, in NE ¼ NE ¼ sec.22, T.22 N., R.34 W., McDonald County, Hydrologic Unit 11070208, near right abutment of bridge on State Highway 43, 0.8 mi downstream from Blackfoot Branch, 2.8 mi upstream from Buffalo Creek, 3.0 mi southeast of Tiff City, and at mile 15.8.

DRAINAGE AREA.--872 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 927: 1940. WSP 1117: Drainage area.

GAGE.--Water stage recorder. Datum of gage is 750.61 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Sept. 6, 1960 to Aug. 25, 1961, at site 100 ft downstream.

REMARKS.--No estimated daily discharges. Records good. U.S. Army Corps of Engineers' satellite telemeter at station.

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft<sup>3</sup>/s and (or) maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 8	2115	34,900	21.18
Feb 17	2115	16,300	15.23
Mar 19	0645	*63,600	*25.39
Apr 1	1300	9,070	11.52
Apr 11	0015	47,300	23.35
Sep 15	0345	18,000	16.00

## 07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**  
**DAILY MEAN VALUES**

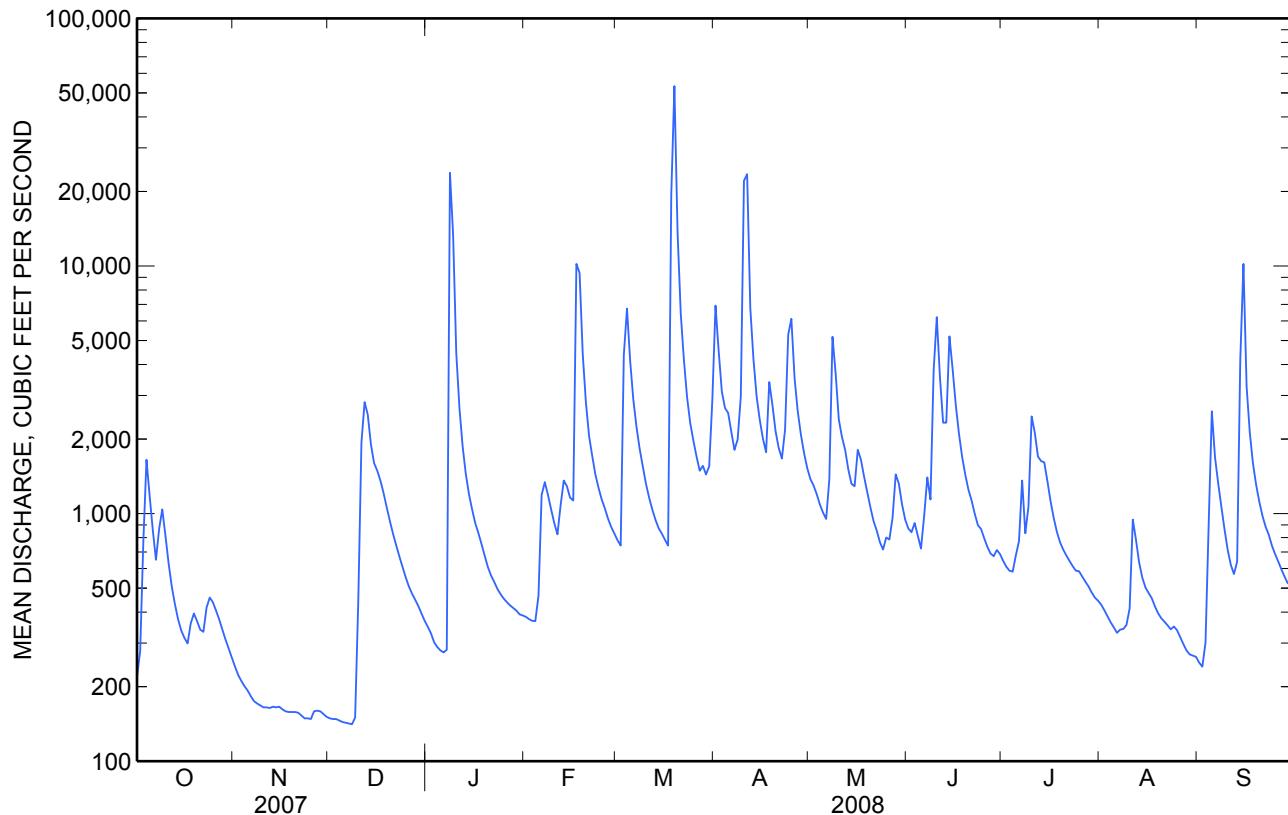
<b>Day</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>
<b>1</b>	219	241	149	349	383	781	6,920	1,380	871	644	429	250
<b>2</b>	278	223	148	328	375	743	4,530	1,300	841	610	407	241
<b>3</b>	767	211	148	302	369	4,380	3,110	1,200	916	588	385	301
<b>4</b>	1,650	201	146	289	368	6,730	2,670	1,090	814	583	364	905
<b>5</b>	1,180	193	144	280	466	4,130	2,550	1,010	723	677	347	2,590
<b>6</b>	857	183	143	275	1,190	2,890	2,140	952	980	775	330	1,690
<b>7</b>	651	175	142	282	1,340	2,240	1,810	1,370	1,400	1,360	340	1,330
<b>8</b>	868	171	141	23,800	1,190	1,830	1,990	5,180	1,140	833	342	1,070
<b>9</b>	1,040	168	150	13,300	1,040	1,550	2,970	3,690	3,780	1,070	355	867
<b>10</b>	814	165	443	4,440	916	1,320	22,100	2,400	6,220	2,470	414	716
<b>11</b>	629	165	1,940	2,670	825	1,160	23,500	2,040	3,550	2,120	946	621
<b>12</b>	508	164	2,820	1,870	1,080	1,040	6,760	1,810	2,330	1,700	785	570
<b>13</b>	430	166	2,510	1,450	1,360	945	4,210	1,510	2,330	1,630	636	640
<b>14</b>	374	165	1,900	1,200	1,290	874	2,980	1,320	5,200	1,610	552	4,180
<b>15</b>	337	166	1,600	1,040	1,160	831	2,390	1,290	3,830	1,350	503	10,200
<b>16</b>	315	162	1,490	916	1,130	784	2,010	1,810	2,750	1,120	478	3,260
<b>17</b>	299	159	1,360	834	10,200	743	1,770	1,650	2,110	958	455	2,130
<b>18</b>	360	158	1,210	752	9,380	19,400	3,400	1,410	1,700	843	422	1,600
<b>19</b>	395	158	1,060	675	4,420	53,300	2,750	1,220	1,440	765	396	1,310
<b>20</b>	368	158	933	608	2,810	13,700	2,150	1,060	1,250	715	378	1,120
<b>21</b>	340	157	828	562	2,060	6,450	1,840	932	1,130	677	366	982
<b>22</b>	333	153	744	530	1,710	4,180	1,670	854	999	643	354	885
<b>23</b>	417	149	671	497	1,440	2,960	2,180	767	898	613	341	823
<b>24</b>	458	149	609	473	1,270	2,320	5,290	716	866	588	350	743
<b>25</b>	439	148	553	454	1,140	1,970	6,120	801	795	585	338	687
<b>26</b>	406	159	508	439	1,050	1,700	3,540	786	734	557	317	641
<b>27</b>	374	160	475	426	954	1,490	2,600	961	690	531	297	596
<b>28</b>	340	159	449	416	884	1,560	2,090	1,440	673	508	280	557
<b>29</b>	310	155	423	406	831	1,440	1,760	1,320	713	480	270	524
<b>30</b>	285	151	395	392	---	1,550	1,530	1,090	686	458	267	527
<b>31</b>	262	---	369	388	---	2,890	---	946	---	445	264	---
<b>Total</b>	16,303	5,092	24,601	60,643	52,631	147,881	131,330	45,305	52,359	28,506	12,708	42,556
<b>Mean</b>	526	170	794	1,956	1,815	4,770	4,378	1,461	1,745	920	410	1,419
<b>Max</b>	1,650	241	2,820	23,800	10,200	53,300	23,500	5,180	6,220	2,470	946	10,200
<b>Min</b>	219	148	141	275	368	743	1,530	716	673	445	264	241
<b>Ac-ft</b>	32,340	10,100	48,800	120,300	104,400	293,300	260,500	89,860	103,900	56,540	25,210	84,410
<b>Cfsm</b>	0.60	0.19	0.91	2.24	2.08	5.47	5.02	1.68	2.00	1.05	0.47	1.63
<b>In.</b>	0.70	0.22	1.05	2.59	2.25	6.31	5.60	1.93	2.23	1.22	0.54	1.82

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2008, BY WATER YEAR (WY)**

	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>
<b>Mean</b>	395	685	748	743	880	1,346	1,582	1,492	957	485	253	301
<b>Max</b>	2,938	4,094	3,651	4,025	2,971	5,020	6,119	8,964	4,245	2,565	2,418	2,164
(WY)	(1942)	(1975)	(1993)	(2005)	(1951)	(1945)	(1945)	(1943)	(1995)	(1976)	(1950)	(1993)
<b>Min</b>	25.7	49.8	58.5	55.9	70.7	75.7	145	227	78.6	14.3	12.0	30.9
(WY)	(1957)	(1964)	(1964)	(1964)	(1954)	(1956)	(1956)	(1964)	(1954)	(1954)	(1954)	(1953)

**07189000 ELK RIVER NEAR TIFF CITY, MO—Continued****SUMMARY STATISTICS**

	<b>Calendar Year 2007</b>	<b>Water Year 2008</b>			<b>Water Years 1940 - 2008</b>	
<b>Annual total</b>	210,835		619,915			
<b>Annual mean</b>	578		1,694		821	
<b>Highest annual mean</b>					1,881	1993
<b>Lowest annual mean</b>					135	1954
<b>Highest daily mean</b>	3,710	Jun 13	53,300	Mar 19	68,600	Apr 19, 1941
<b>Lowest daily mean</b>	73	Aug 17-19,24	141	Dec 8	5.1	Sep 5, 1954
<b>Annual seven-day minimum</b>	75	Aug 15	145	Dec 2	5.6	Sep 2, 1954
<b>Maximum peak flow</b>			63,600	Mar 19	137,000	Apr 19, 1941
<b>Maximum peak stage</b>			25.39	Mar 19	28.40	Apr 19, 1941
<b>Annual runoff (ac-ft)</b>	418,200		1,230,000		595,000	
<b>Annual runoff (cfs·m)</b>	0.662		1.94		0.942	
<b>Annual runoff (inches)</b>	8.99		26.45		12.80	
<b>10 percent exceeds</b>	1,250		2,970		1,710	
<b>50 percent exceeds</b>	395		826		343	
<b>90 percent exceeds</b>	145		208		86	



**07189000 ELK RIVER NEAR TIFF CITY, MO—Continued****WATER-QUALITY RECORDS**

PERIOD OF RECORD--August 1962 to June 1963, November 1965 to July 1975, October 1980 to September 1981, October 1982 to June 1990, November 1992 to current year.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**

Part 1 of 5

[QC, quality control sample. Remark codes: <, less than; E, estimated; M, presence verified but not quantified.]

Date	Time	Sample medium and type	Instan- taneous dis- charge, cfs (00061)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfiltrd field, units (00400)	Specif- ic conduc- tance, wat unf μS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO <sub>3</sub> (00900)
Oct 16...	1310	Surface water, regular	311	8.5	96	7.6	354	19.1	--
Nov 14...	0820	Surface water, regular	162	5.9	62	7.2	360	16.4	160
Dec 10...	1550	Surface water, regular	461	13.2	114	8.4	315	7.7	--
Jan 07...	1410	Surface water, regular	300	12.1	121	7.4	334	13.6	150
Feb 11...	1220	Surface water, regular	877	11.4	97	8.2	295	7.0	--
Mar 03...	1615	Surface water, regular	6,350	9.3	85	7.4	201	9.8	--
Apr 07...	1530	Surface water, regular	1,790	9.5	97	8.1	272	14.9	--
May 06...	0945	Surface water, regular	961	8.4	90	7.5	272	16.8	130
Jun 23...	1310	Surface water, regular	898	8.5	100	7.9	302	21.8	--
Jul 07...	1540	Surface water, regular	1,200	5.8	74	7.0	273	25.9	130
Aug 26...	0920	Surface water, regular	319	6.7	81	8.1	320	23.7	--
Sep 09...	1245	Surface water, regular	721	8.7	102	7.5	335	22.2	--

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## 07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

Date					ANC, wat unf infl pt	Bicar- bonate, wat unf infl pt	Carbon- ate, wat unf infl pt	Chlor- ide, water, filtrd, mg/L (00940)	Fluor- ide, water, filtrd, mg/L (00950)	Sulfate water, filtrd, mg/L (00945)	Residue on evap. at 180degC wat filt mg/L (70300)	Residue total non- filter- able, mg/L (00530)
	Calcium water, filtrd, mg/L (00915)	Magnes- ium, filtrd, mg/L (00925)	Potas- sium, filtrd, mg/L (00935)	Sodium, filtrd, mg/L (00930)	titr., field, mg/L as CaCO <sub>3</sub> (00419)	titr., field, mg/L (00450)	titr., field, mg/L (00447)	titr., field, mg/L (00940)	titr., field, mg/L (00950)			
Oct 16...	--	--	--	--	--	--	--	--	--	--	--	<10
Nov 14...	58.2	3.89	3.15	8.49	149	182	<1	12.9	<.12	10.2	205	<10
Dec 10...	--	--	--	--	--	--	--	--	--	--	--	17
Jan 07...	56.0	3.56	2.48	7.29	120	146	<1	20.3	<.12	9.54	196	<10
Feb 11...	--	--	--	--	--	--	--	--	--	--	--	<10
Mar 03...	--	--	--	--	--	--	--	--	--	--	--	131
Apr 07...	--	--	--	--	--	--	--	--	--	--	--	<10
May 06...	46.1	2.43	1.89	3.96	111	135	<1	5.75	E.06	6.58	171	<10
Jun 23...	--	--	--	--	--	--	--	--	--	--	--	<10
Jul 07...	47.2	2.47	2.58	3.79	122	148	<1	5.71	<.12	5.79	182	12
Aug 26...	--	--	--	--	--	--	--	--	--	--	--	<10
Sep 09...	--	--	--	--	--	--	--	--	--	--	--	<10

## 07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**

Part 3 of 5

[QC, quality control sample. Remark codes: <, less than; E, estimated; M, presence verified but not quantified. Microbiology results with a remark code of E are based on non-ideal colony counts.]

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate + nitrite water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phosphate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, fltrd, mg/L as P (00666)	Phos- phorus, water, unfltrd mg/L as P (00665)	E coli, modif. m-TEC, water, col/ 100 mL (90902)	Fecal coli- form, M-FC 0.7u MF water, col/ 100 mL (31625)	Alum- inum, water, unfltrd fltrd, μg/L (01106)	Alum- inum, water, recover- able, fltrd, μg/L (01105)	Arsenic water, fltrd, μg/L (01000)	Boron, water, fltrd, μg/L (01020)
Oct 16...	E.12	E.011	2.03	.004	.034	.04	.05	E12	E28	--	--	--	--
Nov 14...	.14	E.010	1.64	.009	.007	<.04	E.02	20	22	E1.5	8	.27	17
Dec 10...	.39	E.016	2.14	.004	.035	.06	.08	840	1,000	--	--	--	--
Jan 07...	<.14	<.020	2.71	.004	.013	E.02	E.03	E32	E20	E1.1	9	.21	12
Feb 11...	E.10	<.020	2.84	E.002	.021	.04	E.02	E32	70	--	--	--	--
Mar 03...	.64	<.020	1.82	.002	.042	.05	.17	3,400	E3,400	--	--	--	--
Apr 07...	E.12	<.020	2.50	.003	.030	E.04	.04	E12	E18	--	--	--	--
May 06...	E.14	<.020	1.92	.003	.008	E.02	E.04	54	74	<1.6	47	.21	9.6
Jun 23...	E.10	<.020	2.12	.003	.036	E.04	.04	E27	52	--	--	--	--
Jul 07...	.21	<.020	1.62	.003	.042	.05	.07	340	130	2.5	266	.39	13
Aug 26...	E.11	<.020	1.44	.005	.021	E.03	E.02	E15	22	--	--	--	--
Sep 09...	E.14	<.020	1.99	.003	.039	.05	.05	E27	48	--	--	--	--

## 07189000 ELK RIVER NEAR TIFF CITY, MO—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**

Part 4 of 5

[QC, quality control sample. Remark codes: &lt;, less than; E, estimated; M, presence verified but not quantified.]

Date	Cadmium water, filtrd, µg/L (01025)	Cadmium water, unfiltrd µg/L (01027)	Copper, water, filtrd, µg/L (01040)	Iron, water, filtrd, µg/L (01046)	Lead, water, filtrd, µg/L (01049)	Lead, water, unfiltrd recover -able, µg/L (01051)	Lithium water, filtrd, µg/L (01130)	Manganese, water, filtrd, µg/L (01056)	Mercury water, unfiltrd recover -able, µg/L (71900)	Selenium, water, filtrd, µg/L (01145)	Strontium, water, filtrd, µg/L (01080)	Zinc, water, filtrd, µg/L (01090)	Zinc, water, unfiltrd recover -able, µg/L (01092)
Oct 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
Nov 14...	<.04	<.01	<1.0	E5	<.08	<.06	1	2.4	<.010	.15	61.6	<1.8	2.3
Dec 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
Jan 07...	<.04	<.01	<1.0	<8	<.08	<.06	1	.7	<.010	.20	56.8	<1.8	<2.0
Feb 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
Apr 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
May 06...	<.04	<.01	<1.0	<8	<.08	.08	M	2.6	<.010	.13	46.0	<1.8	E1.1
Jun 23...	--	--	--	--	--	--	--	--	--	--	--	--	--
Jul 07...	<.04	.02	E.61	<8	<.08	.50	M	3.9	<.010	.11	48.8	<1.8	2.8
Aug 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
Sep 09...	--	--	--	--	--	--	--	--	--	--	--	--	--