Water-Data Report 2013

071912213 SPAVINAW CREEK NEAR COLCORD, OK

Neosho Basin
Lower Neosho Subbasin

LOCATION.--Lat 36°19′21″, long 94°41′06″ referenced to North American Datum of 1927, in SE ¼ SE ¼ sec.1, T.21 N., R.24 E., Delaware County, OK, Hydrologic Unit 11070209, on left upstream end of country road bridge, .7 mi downstream from Hog Eye Creek, 4.1 mi north of Colcord, OK, and at mile 31.7.

DRAINAGE AREA.--163 mi^2, from automated delineation using 10-meter National Elevation Dataset digital elevation model data dated 10/01/2006 and Watershed Boundary Dataset dated 10/01/2006, using Albers Equal-Area Projection, North American Datum 1983.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 2001 to current year.

REVISED RECORDS.—WDR 2012: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 840.48 ft NAVD of 1988.

REMARKS.--Records good except for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter at station.

Suggested citation: U.S. Geological Survey, 2014, Water-resources data for the United States, Water Year 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 071912213, accessed at http://wdr.water.usgs.gov/wy2013/pdfs/071912213.2013.pdf

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	20	26	24	28	100	147	146	252	254	62	93	68
2	20	26	24	29	115	133	e167	229	221	60	94	65
3	19	26	24	29	104	121	e182	223	186	58	87	64
4	18	26	32	30	93	111	192	222	e169	57	86	63
5	18	25	32	31	84	99	187	221	e157	56	98	62
6	18	25	36	32	77	90	175	217	e148	55	97	60
7	18	24	40	33	72	84	159	210	140	53	91	60
8	17	23	43	33	67	78	143	194	132	53	2,140	59
9	17	23	44	33	63	74	128	208	124	52	1,210	58
10	16	24	43	33	61	110	476	4,590	117	51	636	56
11	16	26	41	34	57	326	1,230	1,740	112	50	410	55
12	30	26	39	36	55	361	682	e998	108	49	306	54
13	51	26	36	40	54	297	458	e647	102	48	281	53
14	132	26	34	45	53	239	343	460	99	48	404	52
15	81	27	33	47	53	186	262	362	97	47	324	52
16	81	27	31	48	53	156	207	312	97	46	255	52
17	80	27	31	49	53	135	168	278	96	46	e206	51
18	72	27	30	49	54	120	6,280	243	95	47	e182	51
19	65	27	30	48	55	104	2,010	214	93	47	140	51
20	58	27	29	46	56	95	1,110	193	88	48	124	55
21	52	26	29	44	90	87	768	184	84	49	112	52
22	48	26	28	42	156	86	614	210	80	48	102	53
23	44	25	28	39	188	83	504	239	76	49	96	54
24	41	25	28	37	181	83	405	219	73	57	e90	54
25	37	25	28	35	159	79	340	189	69	62	e84	53
26	34	25	27	34	148	77	318	169	68	66	82	51
27	32	24	27	33	147	72	313	157	66	66	77	50
28	31	24	26	32	151	69	321	146	65	67	76	51
29	29	24	25	38	---	67	311	138	65	66	72	49
30	28	24	26	74	---	70	281	192	63	75	71	48
31	27	---	28	82	---	100	---	387	---	77	71	---
Total	1,250	762	976	1,243	2,599	3,939	18,880	14,243	3,344	1,715	8,197	1,656
Mean	40.3	25.4	31.5	40.1	92.8	127	629	459	111	55.3	264	55.2
Max	132	27	44	82	188	361	6,280	4,590	254	77	2,140	68
Min	16	23	24	28	53	67	128	138	63	46	71	48
Ac-ft	2,480	1,510	1,940	2,470	5,160	7,810	37,450	28,250	6,630	3,400	16,260	3,280

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	87.9	74.9	88.3	160	146	235	320	264	128	103	64.6	69.2
Max	508	234	189	692	408	1,011	882	625	509	569	264	288
(WY)	(2010)	(2005)	(2005)	(2005)	(2008)	(2008)	(2008)	(2011)	(2008)	(2004)	(2013)	(2008)
Min	20.2	25.4	21.8	21.7	25.2	31.4	29.8	52.5	26.0	13.0	14.8	22.8
(WY)	(2007)	(2013)	(2006)	(2006)	(2006)	(2006)	(2006)	(2012)	(2006)	(2006)	(2012)	(2002)

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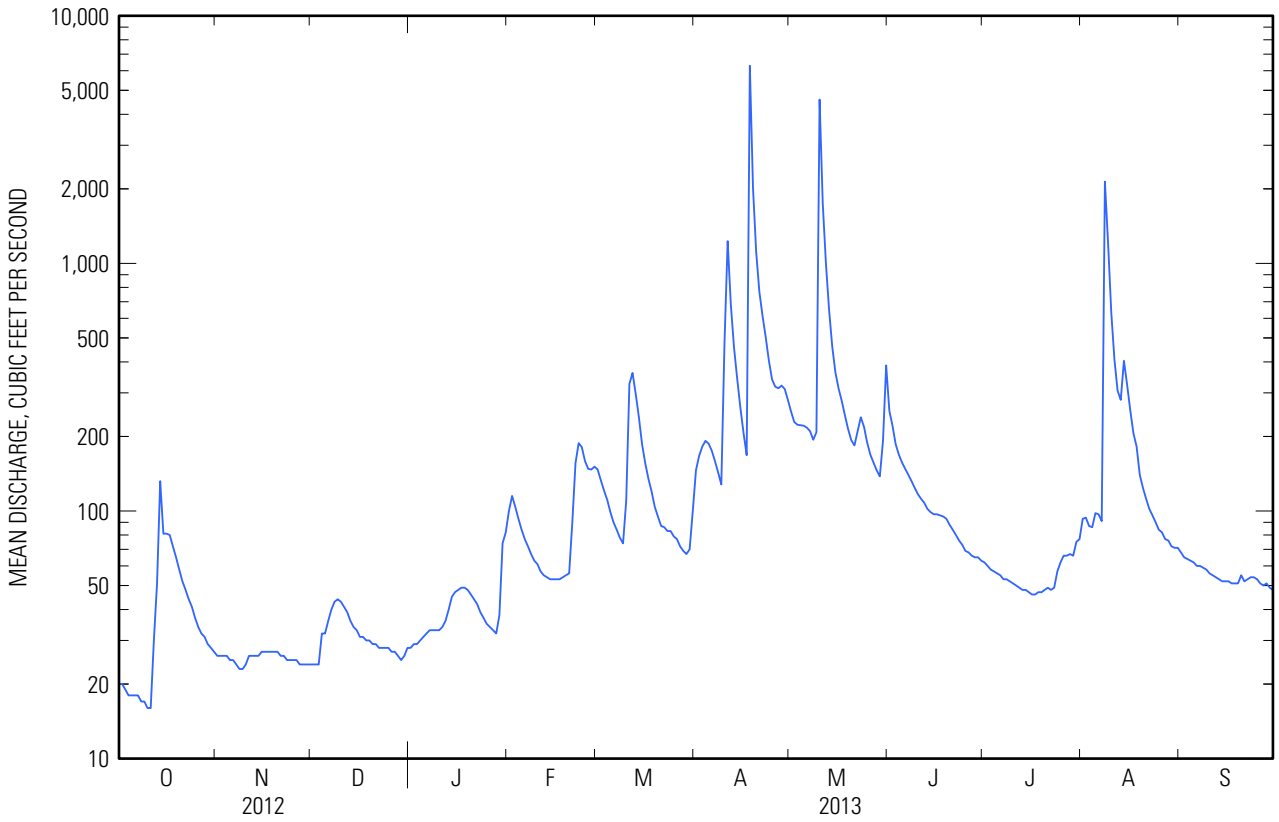
SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 2002 - 2013	
Annual total	23,360		58,804			
Annual mean	63.8		161		145	
Highest annual mean					366	2008
Lowest annual mean					30.9	2006
Highest daily mean	1,290	Mar 21 [a]	6,280	Apr 18	10,800	Apr 25, 2011
Lowest daily mean	12	Aug 16	16	Oct 10 [b]	8.7	Jul 29, 2006
Annual seven-day minimum	13	Jul 25	17	Oct 5	9.7	Jul 24, 2006
Maximum peak flow			13,300	Apr 18	18,200	Mar 19, 2008
Maximum peak stage			16.08	Apr 18	19.37	Jul 3, 2004
Annual runoff (ac-ft)	46,330		116,600		105,100	
10 percent exceeds	91		281		257	
50 percent exceeds	38		65		69	
90 percent exceeds	16		26		23	

[a] Also Mar. 22.
[b] Also Oct. 11.



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 2001 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: November 2004 to current year.
pH: November 2004 to current year.
WATER TEMPERATURE: November 2004 to current year.
DISSOLVED OXYGEN: November 2004 to current year.
TURBIDITY: November 2004 to current year.

INSTRUMENTATION.--Water-quality monitor since November 2004.

REMARKS.--Samples collected periodically by the U.S. Geological Survey. All water-quality samples were analyzed at the City of Tulsa Quality Assurance Laboratory in Tulsa, Oklahoma. Suspended sediment samples were analyzed by U.S. Geological Survey. Specific conductance, pH, water temperature, air temperature, turbidity, and dissolved oxygen were determined in the field.

COOPERATION.--All analytical records were furnished by City of Tulsa Quality Assurance Laboratory, Tulsa, Oklahoma.

EXTREMES FOR PERIOD OF RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 390 microsiemens, Sept. 9 & 10, 2007; minimum, 55 microsiemens, June 9, 2008.
pH: Maximum, 8.7 standard units, Mar. 16, 2007, Apr. 5-8, 2011; minimum, 6.9 standard units, May 31, June 24-25 2013.
WATER TEMPERATURE: Maximum, 26.9°C, Aug. 04, 2012; minimum, 4.0°C, Feb. 9, 2011.
DISSOLVED OXYGEN: Maximum, 15.4 mg/l, Feb. 27, 28, 2007; minimum, 2.5 mg/l, Aug. 17, 2007.
TURBIDITY: Maximum, 1270 FNU, Apr. 18, 2013; minimum, <1 FNU, many days in most water years.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 362 microsiemens, Oct.1, 22-23; minimum, 83 microsiemens, Apr. 18.
pH: Maximum, 8.0 standard units, March 20, 26-28; minimum, 6.9 standard units, May 31, June 24-25.
WATER TEMPERATURE: Maximum, 25.1°C, Jul.19; minimum, 8.7°C, Mar. 25-26, 2012.
DISSOLVED OXYGEN: Maximum, 13.3 mg/l, Mar. 27; minimum, 6.2 mg/l, Oct. 12, July 21, Sept. 20.
TURBIDITY: Maximum, 1270 FNU, Apr. 18; minimum, <1 FNU, many days.

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SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	362	354	358	356	351	354	354	350	352	349	346	348
2	361	353	357	356	350	353	354	349	352	350	345	348
3	360	353	356	356	351	353	355	346	352	350	345	348
4	361	353	357	355	350	353	346	334	340	350	345	348
5	361	356	359	355	351	353	352	346	350	350	346	348
6	360	355	358	355	350	353	355	350	352	350	346	348
7	358	351	355	355	350	352	355	352	354	350	345	348
8	357	353	355	355	350	353	356	351	354	350	343	347
9	357	353	356	355	349	352	356	353	355	348	343	345
10	358	353	356	356	350	353	357	351	354	349	343	347
11	359	353	356	356	346	351	356	350	353	349	343	346
12	360	324	341	353	349	351	355	350	353	349	339	346
13	349	226	338	354	350	352	354	349	352	346	342	344
14	317	203	281	355	350	352	354	349	352	348	343	346
15	331	317	325	355	351	353	352	347	350	349	344	347
16	350	326	340	355	350	353	353	348	351	350	343	347
17	357	350	354	355	350	353	353	347	350	349	343	347
18	359	355	357	355	349	353	352	346	349	349	343	347
19	361	356	358	354	350	352	352	347	349	349	343	347
20	361	356	359	355	351	353	352	347	350	350	343	347
21	361	355	358	356	351	353	352	347	349	350	343	346
22	362	357	359	355	351	353	352	347	349	349	342	346
23	362	356	359	356	351	353	351	346	349	348	341	345
24	361	355	358	355	350	352	352	346	349	348	343	345
25	361	357	359	355	350	352	351	347	349	348	341	345
26	360	354	357	355	353	354	351	346	349	347	340	344
27	358	353	355	356	350	353	351	346	348	347	341	344
28	357	352	354	354	350	352	351	346	348	348	340	344
29	357	352	354	354	349	352	350	346	348	348	327	339
30	356	351	353	354	349	352	350	345	348	330	315	321
31	355	351	354	---	---	---	348	341	344	325	320	322
Month	362	203	351	356	346	353	357	334	350	350	315	345

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SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	334	325	329	322	316	320	312	303	308	279	276	277
2	337	332	334	323	316	320	312	304	308	279	274	278
3	338	332	336	323	316	320	310	303	307	279	274	277
4	341	332	336	324	315	320	308	300	304	279	275	277
5	339	332	336	323	316	320	307	300	304	280	277	278
6	339	332	336	324	316	320	308	300	304	280	277	279
7	339	335	337	324	313	320	308	299	304	282	278	280
8	339	331	336	323	318	320	308	299	304	283	278	281
9	339	333	336	325	315	321	309	299	305	284	250	277
10	338	331	335	318	299	311	309	197	277	256	146	180
11	339	332	335	311	299	305	265	225	252	231	207	221
12	338	333	335	306	300	303	273	265	270	240	231	236
13	336	331	334	306	295	301	277	273	275	247	240	244
14	338	330	335	308	303	306	282	277	279	253	247	250
15	338	331	335	309	303	307	285	281	283	256	252	254
16	338	331	335	310	303	307	287	284	286	260	256	258
17	338	331	335	311	307	309	290	287	288	263	259	261
18	339	329	334	312	304	308	289	83	176	266	263	264
19	337	330	334	312	304	309	234	205	222	270	265	267
20	338	330	334	313	304	309	244	233	239	271	268	269
21	336	295	321	314	307	310	251	243	247	271	267	270
22	306	295	299	311	306	308	256	251	254	273	271	272
23	316	306	311	313	307	310	260	256	258	274	273	273
24	318	314	316	313	306	310	264	259	261	275	273	274
25	321	314	317	314	305	310	267	263	265	276	273	275
26	321	318	320	314	305	310	268	264	267	277	274	275
27	321	315	318	314	305	310	271	266	269	278	274	276
28	321	315	318	315	304	310	273	271	272	280	275	278
29	---	---	---	314	302	309	275	273	274	281	276	278
30	---	---	---	315	302	308	276	275	275	280	164	270
31	---	---	---	312	301	307	---	---	---	267	165	243
Month	341	295	329	325	295	312	312	83	275	284	146	264

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SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	276	267	272	319	314	316	336	330	334	321	313	317
2	280	276	278	319	313	316	341	335	338	321	315	318
3	283	279	281	319	313	316	341	330	336	321	315	319
4	284	281	283	319	314	317	340	335	338	322	316	319
5	286	280	283	319	313	317	340	335	338	322	316	319
6	287	282	285	320	315	318	345	336	340	323	316	320
7	290	284	287	321	314	318	341	333	338	323	317	320
8	290	282	287	321	314	317	339	130	217	324	316	321
9	292	281	288	321	315	318	276	239	261	325	317	321
10	293	284	289	323	315	319	288	276	282	325	317	321
11	295	284	290	323	316	320	295	288	292	325	316	321
12	296	286	292	324	316	320	299	293	297	326	317	322
13	---	---	---	324	316	320	301	297	299	326	319	323
14	---	---	---	324	316	320	299	294	296	327	319	323
15	---	---	---	324	316	320	301	297	299	327	317	322
16	---	---	---	325	316	320	304	300	302	326	320	323
17	---	---	---	326	318	322	305	303	304	327	318	323
18	304	298	302	327	319	323	307	305	306	328	320	324
19	306	301	304	327	319	323	308	306	307	329	322	326
20	307	302	305	327	319	323	310	307	309	325	317	321
21	308	303	306	328	318	323	311	307	309	329	323	326
22	310	303	307	327	321	324	312	307	310	330	325	328
23	310	306	309	329	317	324	313	308	311	331	325	328
24	312	306	310	329	308	318	314	308	311	332	326	329
25	313	309	311	332	322	327	315	309	312	333	326	330
26	315	311	314	330	323	326	316	310	313	333	327	330
27	317	313	315	332	324	328	316	309	313	334	327	331
28	318	314	316	333	326	330	315	310	313	335	320	329
29	318	313	316	335	327	331	317	311	314	333	327	330
30	318	314	316	332	316	324	318	312	315	335	329	332
31	---	---	---	336	327	332	319	312	316	---	---	---
Month	---	---	---	336	308	322	345	130	309	335	313	324

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

pH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
		October			November			December			January	
1	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.4	7.6	7.4	7.5
2	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.4	7.7	7.4	7.5
3	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.3	7.4	7.7	7.4	7.5
4	7.5	7.3	7.4	7.5	7.3	7.4	7.5	7.4	7.4	7.7	7.4	7.5
5	7.4	7.3	7.3	7.5	7.3	7.4	7.6	7.3	7.4	7.6	7.4	7.5
6	7.5	7.4	7.4	7.5	7.3	7.4	7.6	7.3	7.4	7.7	7.4	7.5
7	7.5	7.4	7.4	7.5	7.3	7.4	7.5	7.3	7.4	7.7	7.4	7.5
8	7.5	7.4	7.4	7.5	7.3	7.4	7.6	7.3	7.4	7.7	7.4	7.5
9	7.5	7.4	7.4	7.5	7.3	7.4	7.5	7.4	7.4	7.7	7.3	7.5
10	7.5	7.3	7.4	7.5	7.3	7.4	7.7	7.4	7.5	7.6	7.4	7.5
11	7.5	7.3	7.4	7.4	7.3	7.3	7.7	7.5	7.5	7.7	7.4	7.5
12	7.4	7.2	7.3	7.6	7.3	7.4	7.7	7.5	7.5	7.5	7.3	7.4
13	7.3	7.2	7.2	7.6	7.4	7.4	7.7	7.5	7.5	7.7	7.4	7.5
14	7.2	7.0	7.1	7.6	7.4	7.4	7.6	7.4	7.5	7.7	7.4	7.5
15	7.3	7.1	7.2	7.6	7.4	7.4	7.7	7.4	7.5	7.7	7.4	7.5
16	7.3	7.2	7.2	7.6	7.4	7.4	7.6	7.4	7.5	7.7	7.4	7.5
17	7.4	7.2	7.3	7.6	7.4	7.4	7.6	7.4	7.5	7.7	7.4	7.5
18	7.5	7.3	7.3	7.6	7.4	7.4	7.7	7.4	7.5	7.7	7.4	7.5
19	7.5	7.3	7.3	7.6	7.3	7.4	7.6	7.4	7.5	7.7	7.4	7.5
20	7.5	7.3	7.3	7.6	7.3	7.4	7.7	7.4	7.5	7.7	7.4	7.5
21	7.5	7.3	7.3	7.6	7.3	7.4	7.6	7.4	7.5	7.7	7.4	7.5
22	7.4	7.2	7.3	7.6	7.3	7.4	7.6	7.4	7.5	7.7	7.4	7.5
23	7.4	7.2	7.3	7.6	7.3	7.5	7.6	7.4	7.5	7.8	7.4	7.5
24	7.4	7.2	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.7	7.4	7.5
25	7.3	7.2	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.8	7.4	7.5
26	7.5	7.3	7.4	7.5	7.4	7.4	7.7	7.5	7.5	7.8	7.4	7.5
27	7.5	7.3	7.4	7.6	7.4	7.5	7.7	7.4	7.5	7.7	7.4	7.5
28	7.5	7.3	7.4	7.6	7.4	7.5	7.6	7.4	7.5	7.7	7.4	7.5
29	7.5	7.3	7.4	7.6	7.4	7.5	7.7	7.5	7.5	7.6	7.3	7.4
30	7.5	7.3	7.4	7.6	7.4	7.5	7.7	7.5	7.5	7.5	7.3	7.3
31	7.5	7.3	7.4	---	---	---	7.6	7.4	7.5	7.6	7.3	7.4
Max	7.5	7.4	7.4	7.6	7.4	7.5	7.7	7.5	7.5	7.8	7.4	7.5
Min	7.2	7.0	7.1	7.4	7.3	7.3	7.5	7.3	7.4	7.5	7.3	7.3

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

pH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
		February			March			April			May	
1	7.6	7.3	7.4	7.7	7.4	7.4	7.8	7.3	7.4	7.5	7.2	7.3
2	7.7	7.4	7.4	7.8	7.4	7.5	7.6	7.3	7.4	7.4	7.2	7.3
3	7.7	7.4	7.4	7.8	7.4	7.5	7.7	7.3	7.4	7.6	7.3	7.4
4	7.7	7.3	7.4	7.8	7.4	7.5	7.8	7.3	7.4	7.6	7.3	7.4
5	7.7	7.4	7.5	7.8	7.4	7.5	7.8	7.3	7.4	7.6	7.3	7.4
6	7.7	7.4	7.5	7.9	7.4	7.5	7.8	7.3	7.4	7.6	7.2	7.4
7	7.5	7.4	7.4	7.9	7.4	7.5	7.9	7.3	7.4	7.7	7.3	7.4
8	7.8	7.4	7.5	7.8	7.4	7.5	7.8	7.3	7.4	7.7	7.2	7.4
9	7.7	7.4	7.5	7.8	7.3	7.5	7.9	7.3	7.4	7.7	7.2	7.3
10	7.8	7.4	7.5	7.5	7.3	7.4	7.5	7.2	7.3	7.3	7.0	7.0
11	7.8	7.4	7.5	7.6	7.3	7.4	7.4	7.2	7.3	7.2	7.0	7.1
12	7.6	7.4	7.5	7.6	7.3	7.4	7.4	7.2	7.3	7.2	7.1	7.2
13	7.8	7.4	7.5	7.7	7.3	7.4	7.4	7.2	7.3	7.2	7.1	7.2
14	7.8	7.4	7.5	7.8	7.3	7.4	7.5	7.3	7.3	7.2	7.1	7.2
15	7.8	7.4	7.5	7.8	7.3	7.5	7.5	7.3	7.3	7.3	7.1	7.2
16	7.8	7.4	7.5	7.9	7.3	7.5	7.5	7.3	7.3	7.3	7.2	7.2
17	7.8	7.4	7.5	7.6	7.3	7.4	7.6	7.3	7.3	7.4	7.2	7.3
18	7.7	7.4	7.5	7.8	7.3	7.5	7.3	7.0	7.1	7.4	7.2	7.3
19	7.8	7.4	7.5	7.9	7.3	7.5	7.2	7.1	7.2	7.4	7.2	7.3
20	7.8	7.4	7.5	8.0	7.4	7.5	7.2	7.2	7.2	7.4	7.2	7.2
21	7.6	7.3	7.4	7.7	7.4	7.5	7.3	7.2	7.2	7.3	7.2	7.3
22	7.6	7.3	7.4	7.8	7.4	7.5	7.3	7.2	7.2	7.5	7.1	7.3
23	7.6	7.3	7.4	7.7	7.4	7.5	7.2	7.2	7.2	7.4	7.1	7.2
24	7.7	7.3	7.4	7.8	7.4	7.5	7.3	7.2	7.2	7.5	7.1	7.2
25	7.5	7.3	7.4	7.9	7.4	7.6	7.3	7.2	7.2	7.5	7.1	7.2
26	7.6	7.3	7.4	8.0	7.4	7.6	7.3	7.2	7.2	7.6	7.1	7.3
27	7.7	7.4	7.5	8.0	7.4	7.6	7.3	7.2	7.3	7.6	7.1	7.3
28	7.7	7.4	7.4	8.0	7.4	7.6	7.3	7.2	7.3	7.6	7.1	7.3
29	---	---	---	7.9	7.3	7.5	7.4	7.2	7.3	7.6	7.1	7.3
30	---	---	---	7.9	7.3	7.5	7.4	7.2	7.3	7.5	7.0	7.2
31	---	---	---	7.9	7.3	7.5	---	---	---	7.2	6.9	7.1
Max	7.8	7.4	7.5	8.0	7.4	7.6	7.9	7.3	7.4	7.7	7.3	7.4
Min	7.5	7.3	7.4	7.5	7.3	7.4	7.2	7.0	7.1	7.2	6.9	7.0

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

pH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
		June			July			August			September	
1	7.3	7.0	7.1	7.5	7.2	7.3	7.5	7.2	7.3	7.8	7.6	7.7
2	7.3	7.0	7.2	7.5	7.2	7.3	7.5	7.3	7.3	7.9	7.6	7.7
3	7.4	7.1	7.2	7.5	7.2	7.3	7.5	7.3	7.3	7.9	7.6	7.7
4	7.4	7.1	7.2	7.4	7.2	7.3	7.5	7.2	7.3	7.9	7.6	7.7
5	7.5	7.1	7.2	7.6	7.2	7.4	---	---	---	7.9	7.6	7.7
6	7.5	7.1	7.2	7.6	7.3	7.4	---	---	---	7.9	7.6	7.7
7	7.5	7.0	7.2	7.6	7.3	7.4	---	---	---	7.9	7.6	7.7
8	7.5	7.0	7.1	7.6	7.3	7.4	7.7	7.3	7.4	7.9	7.6	7.7
9	7.5	7.0	7.1	7.6	7.2	7.4	7.5	7.4	7.5	7.9	7.6	7.7
10	7.5	7.0	7.1	7.6	7.2	7.4	7.6	7.5	7.5	7.9	7.6	7.7
11	7.5	7.0	7.1	7.5	7.2	7.3	7.6	7.5	7.5	7.9	7.6	7.7
12	7.5	7.0	7.1	7.6	7.2	7.4	7.6	7.5	7.6	7.9	7.6	7.7
13	---	---	---	7.6	7.3	7.4	7.6	7.6	7.6	7.9	7.6	7.7
14	---	---	---	7.6	7.3	7.4	7.7	7.6	7.6	7.9	7.7	7.7
15	---	---	---	7.6	7.3	7.3	7.7	7.6	7.6	7.9	7.7	7.7
16	---	---	---	7.5	7.3	7.3	7.7	7.6	7.6	7.8	7.6	7.7
17	---	---	---	7.6	7.2	7.3	7.8	7.6	7.7	7.9	7.6	7.7
18	7.4	7.0	7.1	7.5	7.2	7.3	7.8	7.6	7.7	7.9	7.6	7.7
19	7.3	7.0	7.1	7.5	7.3	7.3	7.8	7.6	7.7	7.8	7.6	7.6
20	7.3	7.0	7.1	7.5	7.3	7.4	7.9	7.6	7.7	7.7	7.5	7.6
21	7.3	7.0	7.1	7.5	7.3	7.3	7.9	7.6	7.7	7.8	7.6	7.6
22	7.3	7.0	7.1	7.5	7.3	7.4	7.9	7.6	7.7	7.8	7.6	7.6
23	7.3	7.0	7.1	7.5	7.3	7.4	7.9	7.6	7.7	7.8	7.6	7.6
24	7.2	6.9	7.0	7.5	7.2	7.3	7.9	7.6	7.7	7.8	7.6	7.6
25	7.3	6.9	7.1	7.5	7.2	7.3	7.9	7.6	7.7	7.8	7.6	7.6
26	7.4	7.1	7.3	7.4	7.2	7.3	7.9	7.6	7.7	7.8	7.6	7.6
27	7.4	7.1	7.2	7.5	7.3	7.4	7.9	7.6	7.7	7.8	7.6	7.6
28	7.4	7.1	7.2	7.5	7.3	7.3	7.9	7.6	7.7	7.7	7.6	7.6
29	7.4	7.2	7.3	7.5	7.3	7.4	7.9	7.6	7.7	7.8	7.6	7.6
30	7.4	7.2	7.2	7.5	7.2	7.3	7.9	7.6	7.7	7.8	7.6	7.6
31	---	---	---	7.5	7.2	7.3	7.9	7.6	7.7	---	---	---
Max	---	---	---	7.6	7.3	7.4	---	---	---	7.9	7.7	7.7
Min	---	---	---	7.4	7.2	7.3	---	---	---	7.7	7.5	7.6

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	20.8	19.6	20.2	17.3	15.0	16.1	15.8	14.1	15.0	10.9	10.2	10.7
2	20.8	19.1	19.9	17.8	15.5	16.6	16.4	14.9	15.6	10.3	9.5	9.9
3	20.7	18.4	19.6	17.3	16.2	16.8	16.4	15.4	15.9	10.6	9.0	9.7
4	21.3	18.9	20.1	16.8	15.0	15.9	16.0	14.3	15.4	10.9	9.4	10.1
5	20.7	17.8	19.1	16.6	15.7	16.0	14.6	13.1	13.9	10.8	9.9	10.3
6	17.8	16.8	17.1	16.7	15.5	16.0	14.8	13.1	13.9	10.8	9.3	9.9
7	17.4	16.2	16.9	16.0	14.3	15.1	15.0	14.2	14.6	10.9	8.9	9.9
8	17.8	16.0	16.9	16.2	14.1	15.1	15.4	14.7	15.0	11.6	9.6	10.6
9	17.8	16.3	17.1	17.4	15.5	16.4	15.0	13.2	14.6	12.3	11.6	11.9
10	18.4	17.0	17.7	17.8	16.4	17.1	13.2	11.9	12.4	12.3	11.6	11.9
11	18.9	18.0	18.4	17.1	15.0	16.4	12.8	10.9	11.8	12.9	11.6	12.2
12	19.0	18.5	18.8	15.0	13.8	14.4	12.7	11.0	11.8	12.6	10.4	11.8
13	19.2	18.0	18.6	15.0	13.1	14.0	13.1	11.4	12.1	10.4	9.5	10
14	18.8	17.6	18.2	15.1	13.4	14.2	12.8	12.0	12.5	10.4	8.9	9.6
15	19.1	16.9	18.0	15.1	13.2	14.1	14.0	12.7	13.2	10.3	9.1	9.7
16	19.4	17.4	18.3	15.2	13.3	14.2	13.9	12.5	13.1	10.6	8.8	9.7
17	19.3	18.1	18.6	15.0	13.2	14.1	13.3	12.3	12.9	11.0	9.1	10
18	18.2	16.8	17.6	15.3	13.3	14.3	13.3	11.5	12.3	11.2	9.2	10.2
19	18.2	16.6	17.4	16.0	14.8	15.3	14.0	12.0	12.9	12.0	10.1	10.9
20	18.9	16.2	17.5	15.9	14.2	15.0	13.9	11.0	12.0	11.8	9.8	10.8
21	19.6	17.5	18.6	15.5	13.6	14.5	12.0	10.3	11.1	10.9	9.4	10.1
22	19.7	18.7	19.2	15.6	14.5	15.0	12.3	10.5	11.4	10.9	8.8	9.8
23	19.9	18.7	19.3	15.4	13.2	14.3	13.1	11.5	12.2	11.7	9.2	10.3
24	20.4	18.6	19.5	13.7	12.1	12.9	12.5	11.2	11.6	11.1	10.2	10.5
25	19.6	17.1	18.5	14.4	12.6	13.4	11.2	9.8	10.4	11.7	10.3	10.8
26	17.1	16.0	16.5	13.7	12.9	13.5	10.5	9.2	9.8	11.6	9.9	10.8
27	16.7	14.9	15.7	13.4	12.0	12.7	10.8	9.6	10.2	12.1	11.1	11.6
28	16.5	14.5	15.5	13.5	11.6	12.5	11.1	10.2	10.8	14.0	12.0	13.1
29	16.7	14.6	15.5	14.0	12.2	13.0	10.2	9.0	9.6	13.8	12.6	13.4
30	16.7	14.8	15.7	14.7	12.9	13.8	10.4	8.8	9.6	12.6	10.8	11.7
31	17.1	15.2	16.1	---	---	---	10.9	10.3	10.5	12.0	10.3	11.0
Month	21.3	14.5	17.9	17.8	11.6	14.8	16.4	8.8	12.5	14.0	8.8	10.7

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	11.7	9.6	10.5	10.2	9.5	9.9	14.1	10.9	12.3	17.8	13.7	15.5
2	12.2	9.9	10.9	11.5	9.0	10.1	11.8	10.9	11.1	15.2	12.1	13.8
3	12.2	10.0	11.0	12.3	9.3	10.6	11.5	10.7	11.0	13.6	11.9	12.6
4	12.9	11.0	11.7	13.4	10.3	11.6	13.5	11.0	11.9	13.4	12.2	12.7
5	12.8	10.3	11.5	12.1	10.2	11.0	14.8	10.5	12.4	14.7	12.0	13.2
6	12.6	10.4	11.5	12.2	9.2	10.6	15.2	11.6	13.0	15.4	12.9	13.8
7	12.3	11.7	11.9	13.0	9.9	11.3	15.4	11.8	13.4	16.5	12.7	14.4
8	12.7	10.9	11.7	11.9	10.4	11.2	14.6	12.7	13.6	16.5	13.3	14.7
9	11.4	10.4	11.0	12.6	11.1	11.9	15.2	12.8	13.8	16.4	14.0	15.0
10	13.0	11.2	11.9	12.2	10.4	11.5	13.8	10.3	11.9	15.6	14.6	15.2
11	12.3	10.1	11.2	12.1	9.7	10.7	13.3	10.7	11.7	16.1	13.7	14.8
12	11.1	10.1	10.6	12.8	10.0	11.0	14.1	11.0	12.3	15.9	13.4	14.5
13	12.2	10.3	11.0	12.3	9.8	10.9	14.1	11.5	12.5	16.9	13.6	15.0
14	12.4	9.8	11.1	13.1	9.9	11.3	15.7	12.1	13.6	17.7	14.2	15.7
15	11.7	10.2	10.9	14.2	10.6	12.1	14.9	12.9	13.7	16.3	14.7	15.4
16	11.2	9.3	10.2	14.5	11.3	12.6	14.3	12.7	13.4	15.6	14.8	15.1
17	12.4	9.5	10.9	12.3	11.2	11.4	15.5	12.9	14.1	17.8	14.7	15.9
18	12.0	10.8	11.4	13.0	11.1	11.8	15.9	12.4	14.2	18.2	15.1	16.4
19	11.8	9.6	10.7	13.1	10.1	11.4	14.0	11.6	12.7	19.1	15.6	17.0
20	10.6	9.8	10.1	13.0	10.0	11.3	13.9	12.0	12.9	16.7	15.8	16.2
21	10.6	9.2	9.8	11.2	10.2	10.4	14.6	12.4	13.3	15.8	15.1	15.4
22	11.8	9.8	10.7	11.2	10.0	10.6	15.0	12.4	13.6	18.7	14.6	16.3
23	12.1	9.7	10.7	11.0	10.5	10.7	13.5	12.2	13.0	16.9	15.2	16.0
24	12.8	9.7	11.1	10.8	9.3	10.0	15.0	11.8	13.1	18.9	15.1	16.7
25	10.9	10.3	10.5	10.0	8.7	9.4	15.7	11.7	13.4	19.5	15.6	17.2
26	10.4	9.8	10.1	12.7	8.7	10.4	13.5	12.8	13.0	19.4	16.1	17.5
27	10.9	9.9	10.3	12.8	9.2	11.0	13.3	12.8	13.0	19.9	16.2	17.8
28	10.4	9.5	10	13.9	10.3	12.0	16.4	12.8	14.2	19.0	16.7	17.7
29	---	---	---	13.5	11.4	12.3	17.2	13.1	14.9	18.7	16.6	17.6
30	---	---	---	14.4	11.7	12.8	17.5	13.6	15.3	18.3	16.7	17.5
31	---	---	---	15.0	11.7	13.0	---	---	---	18.4	16.7	17.4
Month	13.0	9.2	10.9	15.0	8.7	11.2	17.5	10.3	13.1	19.9	11.9	15.6

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	18.5	16.5	17.3	22.4	18.9	20.6	24.1	20.3	22.0	23.4	21.2	22.3
2	17.6	16.0	16.8	22.6	18.4	20.5	22.3	20.6	21.4	24.3	21.0	22.4
3	19.6	15.6	17.3	22.7	18.5	20.5	22.6	20.8	21.6	24.1	20.3	22.1
4	18.4	16.3	17.1	21.8	18.7	20.4	21.9	20.7	21.2	24.1	20.2	22.0
5	19.4	16.4	17.5	23.3	18.9	21.0	24.0	20.6	22.1	24.1	20.3	22.1
6	18.6	16.5	17.4	22.3	19.3	20.8	24.0	21.0	22.2	24.0	20.3	22.1
7	19.8	15.9	17.6	23.5	19.5	21.4	23.4	21.1	22.2	24.3	20.6	22.4
8	19.8	16.0	17.8	23.6	19.9	21.8	22.1	20.8	21.4	24.4	20.9	22.6
9	20.8	16.8	18.4	24.4	20.2	22.2	21.3	20.1	20.6	24.4	20.9	22.6
10	21.5	17.0	19.0	24.8	20.6	22.6	21.8	19.9	20.7	24.4	20.8	22.5
11	21.9	17.3	19.4	24.0	20.9	22.5	22.4	19.9	20.8	24.0	21.0	22.5
12	22.2	17.8	19.8	24.5	20.4	22.4	21.5	20.1	20.6	24.4	21.1	22.7
13	---	---	---	24.1	20.5	22.3	20.9	19.9	20.4	23.9	21.2	22.4
14	---	---	---	23.7	20.6	22.2	21.9	19.4	20.4	23.4	19.7	21.5
15	---	---	---	23.6	20.6	22.0	22.0	19.2	20.4	23.2	20.1	21.6
16	---	---	---	22.7	20.8	21.8	21.8	19.5	20.4	22.2	21.0	21.6
17	---	---	---	24.8	20.4	22.4	21.7	19.2	20.3	22.3	20.6	21.5
18	21.5	17.8	19.4	23.9	20.9	22.5	22.6	19.2	20.7	23.7	20.8	22.0
19	21.8	17.9	19.7	25.1	20.9	22.9	22.7	19.4	20.9	23.7	21.1	22.4
20	22.7	18.2	20.2	24.4	21.2	22.8	23.2	19.4	21.1	22.4	20.5	21.4
21	23.0	18.9	20.8	22.9	21.1	21.9	23.3	19.6	21.3	22.5	19.3	20.7
22	22.7	19.0	20.8	23.0	20.9	21.8	23.1	19.9	21.3	22.4	18.9	20.6
23	23.3	19.2	21.1	24.8	20.9	22.7	23.7	20.1	21.7	22.4	18.8	20.5
24	23.3	19.4	21.2	23.6	21.1	22.3	23.7	20.2	21.8	22.5	19.6	20.9
25	22.6	19.6	21.1	22.6	20.1	21.3	23.9	20.4	22.0	22.6	19.2	20.8
26	23.9	19.7	21.6	21.5	20.6	20.9	23.8	20.5	22.0	22.8	19.3	21.0
27	23.9	19.9	21.8	23.8	20.2	21.7	24.0	20.3	22.0	22.9	19.7	21.2
28	24.1	20.2	22.0	22.4	20.2	21.2	24.4	20.6	22.3	21.4	20.2	20.7
29	23.4	19.5	21.4	23.1	20.2	21.6	24.5	20.8	22.5	22.3	19.4	20.6
30	21.9	19.2	20.6	23.1	20.8	21.9	24.6	21.0	22.6	22.5	19.2	20.7
31	---	---	---	23.6	20.4	21.8	24.7	21.0	22.7	---	---	---
Month	---	---	---	25.1	18.4	21.8	24.7	19.2	21.4	24.4	18.8	21.7

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

[<, less than]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	---	---	---	<1.0	<1.0	<1.0	---	---	---	<1.0	<1.0	<1.0
2	---	---	---	<1.0	<1.0	<1.0	---	---	---	<1.0	<1.0	<1.0
3	---	---	---	<1.0	<1.0	<1.0	---	---	---	<1.0	<1.0	<1.0
4	---	---	---	<1.0	<1.0	<1.0	5.2	<1.0	1.8	<1.0	<1.0	<1.0
5	---	---	---	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0
6	---	---	---	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0
7	---	---	---	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0
8	---	---	---	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9	---	---	---	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	1.3	<1.0	<1.0
10	---	---	---	1.0	<1.0	<1.0	1.3	<1.0	<1.0	1.7	<1.0	<1.0
11	---	---	---	2.0	<1.0	<1.0	1.0	<1.0	<1.0	1.7	<1.0	<1.0
12	---	---	---	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0
13	---	---	---	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	1.4	<1.0	<1.0
14	96	2.4	15	1.0	<1.0	<1.0	1.1	<1.0	<1.0	1.0	<1.0	<1.0
15	2.9	<1.0	1.4	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
16	---	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6.8	<1.0	<1.0
17	---	---	---	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0
18	---	---	---	---	---	---	1.1	<1.0	<1.0	1.0	<1.0	<1.0
19	---	---	---	---	---	---	1.5	<1.0	<1.0	1.7	<1.0	<1.0
20	---	---	---	---	---	---	<1.0	<1.0	<1.0	1.4	1.0	1.2
21	---	---	---	---	---	---	<1.0	<1.0	<1.0	1.6	<1.0	1.1
22	---	---	---	---	---	---	<1.0	<1.0	<1.0	1.9	<1.0	<1.0
23	---	---	---	---	---	---	1.3	<1.0	<1.0	4.8	<1.0	1.1
24	---	---	---	---	---	---	1.0	<1.0	<1.0	1.8	<1.0	<1.0
25	---	---	---	---	---	---	<1.0	<1.0	<1.0	2.0	<1.0	<1.0
26	---	---	---	---	---	---	<1.0	<1.0	<1.0	1.8	<1.0	<1.0
27	---	---	---	---	---	---	1.0	<1.0	<1.0	2.0	<1.0	<1.0
28	---	---	---	---	---	---	1.0	<1.0	<1.0	1.6	<1.0	<1.0
29	---	---	---	---	---	---	<1.0	<1.0	<1.0	5.4	<1.0	1.5
30	---	---	---	---	---	---	1.1	<1.0	<1.0	10	3.0	5.1
31	---	---	---	---	---	---	<1.0	<1.0	<1.0	5.4	1.4	2.8
Month	---	---	---	---	---	---	---	---	---	10	1.0	1.2

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

[<, less than]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	4.0	<1.0	1.4	2.9	1.6	2.0	3.1	1.1	1.6	1.8	<1.0	1.0
2	2.9	<1.0	1.0	2.4	1.6	1.8	1.9	<1.0	1.2	1.3	<1.0	<1.0
3	2.0	<1.0	<1.0	2.4	1.6	1.8	2.5	1.0	1.5	1.1	<1.0	<1.0
4	2.0	<1.0	<1.0	3.1	1.6	1.9	2.4	1.5	1.9	1.6	<1.0	<1.0
5	1.4	<1.0	<1.0	3.2	1.5	1.9	3.1	<1.0	1.7	1.2	<1.0	<1.0
6	---	---	---	2.8	1.9	2.1	4.2	<1.0	1.6	1.1	<1.0	<1.0
7	---	---	---	2.5	1.8	2.1	5.7	<1.0	1.5	1.4	<1.0	<1.0
8	---	---	---	2.4	<1.0	1.6	2.1	<1.0	1.3	1.3	<1.0	<1.0
9	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	4.1	<1.0	1.1	24	<1.0	2.4
10	<1.0	<1.0	<1.0	5.6	<1.0	2.2	290	<1.0	50	560	12	290
11	<1.0	<1.0	<1.0	9.2	4.1	6.0	140	7.3	32	110	30	59
12	<1.0	<1.0	<1.0	5.1	2.0	3.0	9.5	3.2	5.2	34	8.0	17
13	<1.0	<1.0	<1.0	4.2	1.6	2.1	4.4	2.0	2.8	23	6.0	11
14	<1.0	<1.0	<1.0	2.7	1.1	1.6	3.8	1.5	2.2	7.0	2.8	4.8
15	<1.0	<1.0	<1.0	1.7	<1.0	1.2	4.1	1.2	1.8	6.0	2.3	3.6
16	<1.0	<1.0	<1.0	2.0	<1.0	1.2	2.8	1.0	1.5	3.8	1.6	2.4
17	<1.0	<1.0	<1.0	1.7	<1.0	<1.0	2.7	<1.0	1.6	4.1	1.5	2.1
18	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	1,270	1.4	510	3.8	1.2	1.9
19	1.6	<1.0	<1.0	1.8	<1.0	<1.0	160	19	60	2.4	1.0	1.7
20	<1.0	<1.0	<1.0	1.4	<1.0	1.0	20	7.3	12	3.7	<1.0	1.3
21	13	<1.0	3.7	1.3	<1.0	1.0	8.3	4.5	6.1	2.5	<1.0	1.2
22	14	4.1	7.6	1.8	<1.0	1.1	6.2	2.7	3.9	1.9	<1.0	1.2
23	4.3	1.5	2.6	1.5	<1.0	1.0	3.5	1.8	2.5	1.5	<1.0	<1.0
24	3.7	<1.0	1.9	1.5	<1.0	1.2	3.6	1.6	2.1	1.5	<1.0	<1.0
25	2.9	2.0	2.3	1.6	<1.0	1.1	2.6	1.5	1.8	1.6	<1.0	<1.0
26	3.1	2.0	2.2	1.6	<1.0	1.1	4.4	1.1	1.8	2.6	<1.0	1.1
27	2.9	1.8	2.2	1.6	<1.0	1.2	1.7	<1.0	1.3	1.7	<1.0	<1.0
28	3.3	1.8	2.2	2.0	<1.0	1.4	1.7	<1.0	1.2	1.1	<1.0	<1.0
29	---	---	---	2.3	1.1	1.6	1.4	<1.0	1.1	1.4	<1.0	<1.0
30	---	---	---	9.3	<1.0	1.6	1.8	<1.0	1.1	410	<1.0	18
31	---	---	---	3.3	1.2	2.0	---	---	---	190	2.1	22
Month	---	---	---	9.3	1.0	1.7	1,270	1.0	24	560	1.0	15

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

[<, less than]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	4.1	<1.0	1.4	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	4.7	<1.0	<1.0
2	2.1	<1.0	<1.0	1.9	<1.0	<1.0	1.6	<1.0	<1.0	1.7	<1.0	<1.0
3	1.9	<1.0	<1.0	1.7	<1.0	1.0	---	---	---	1.6	<1.0	<1.0
4	3.0	<1.0	<1.0	1.6	<1.0	1.0	---	---	---	1.8	<1.0	<1.0
5	2.0	<1.0	<1.0	1.4	<1.0	<1.0	---	---	---	1.8	<1.0	<1.0
6	2.5	<1.0	<1.0	1.7	<1.0	1.0	2.4	<1.0	1.1	1.5	<1.0	<1.0
7	2.5	<1.0	<1.0	---	---	---	6.5	<1.0	1.1	1.5	<1.0	<1.0
8	3.5	<1.0	<1.0	---	---	---	840	<1.0	270	1.9	<1.0	1.0
9	1.7	<1.0	<1.0	---	---	---	99	11	34	1.5	<1.0	<1.0
10	1.6	<1.0	<1.0	---	---	---	12	4.9	7.4	1.5	<1.0	1.0
11	---	---	---	<1.0	<1.0	<1.0	6.8	2.9	4.3	1.5	<1.0	1.1
12	---	---	---	<1.0	<1.0	<1.0	5.6	2.5	3.7	1.7	<1.0	1.1
13	---	---	---	---	---	---	4.7	2.0	3.1	1.8	<1.0	1.2
14	---	---	---	---	---	---	5.0	2.2	3.3	2.0	1.2	1.5
15	---	---	---	<1.0	<1.0	<1.0	3.6	1.4	2.2	---	---	---
16	---	---	---	<1.0	<1.0	<1.0	3.0	1.3	2.0	---	---	---
17	---	---	---	1.2	0.2	<1.0	3.4	1.1	1.8	---	---	---
18	4.7	<1.0	<1.0	<1.0	<1.0	<1.0	3.6	1.2	1.8	---	---	---
19	1.6	<1.0	<1.0	1.5	<1.0	<1.0	2.9	1.0	1.7	---	---	---
20	1.5	<1.0	<1.0	1.3	<1.0	<1.0	3.4	<1.0	1.6	2.8	<1.0	1.2
21	1.2	<1.0	<1.0	1.7	<1.0	<1.0	2.5	<1.0	1.4	1.5	<1.0	<1.0
22	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	2.7	<1.0	1.4	1.9	<1.0	<1.0
23	1.4	<1.0	<1.0	3.6	<1.0	<1.0	2.1	<1.0	1.3	1.7	<1.0	<1.0
24	2.0	<1.0	<1.0	9.5	<1.0	1.2	2.1	1.0	1.3	2.0	<1.0	<1.0
25	1.6	<1.0	<1.0	1.2	<1.0	<1.0	2.0	1.0	1.4	1.8	<1.0	<1.0
26	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	1.8	1.0	1.3	1.9	<1.0	1.0
27	1.8	<1.0	1.0	1.3	<1.0	<1.0	1.9	<1.0	1.2	1.9	<1.0	1.0
28	1.9	<1.0	<1.0	---	---	---	2.2	<1.0	1.1	3.3	<1.0	1.1
29	1.5	<1.0	<1.0	---	---	---	2.3	<1.0	1.1	1.4	<1.0	<1.0
30	1.6	<1.0	<1.0	---	---	---	1.9	<1.0	1.0	1.9	<1.0	1.0
31	---	---	---	---	---	---	1.7	<1.0	<1.0	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	10.2	6.3	8.1	10.1	7.6	8.6	10.9	8.1	9.3	10.7	9.0	9.7
2	10.0	6.6	8.2	10.4	7.4	8.7	10.8	7.8	9.1	11.9	9.5	10.5
3	10.2	6.8	8.3	10.1	7.1	8.4	10.5	7.6	8.9	11.9	9.7	10.6
4	10.1	6.6	8.2	10.3	7.6	8.7	10.4	7.7	8.9	11.8	9.6	10.5
5	8.4	6.4	7.4	10.2	7.4	8.6	11.0	8.3	9.3	11.6	9.5	10.3
6	9.5	7.2	8.2	10.5	7.4	8.7	11.1	8.4	9.4	11.8	9.6	10.5
7	10.4	7.5	8.8	10.4	7.9	8.9	10.2	8.0	8.8	12.2	9.8	10.7
8	9.8	7.5	8.6	10.4	8.0	8.9	10.7	7.9	9.0	12.1	9.5	10.5
9	9.7	7.3	8.4	10.3	7.5	8.7	9.6	7.9	8.7	11.9	8.9	10.2
10	9.7	6.9	8.3	10.2	7.1	8.5	11.1	8.7	9.7	10.9	9.2	9.9
11	9.6	6.9	8.1	8.6	7.0	7.8	11.2	9.2	9.9	11.8	8.9	10.1
12	8.9	6.2	7.6	10.4	7.6	8.9	11.3	9.2	10	10.4	8.7	9.5
13	9.8	6.7	8.0	10.7	8.3	9.2	11.3	9.1	10	12.2	9.4	10.5
14	9.3	7.4	8.2	10.6	8.2	9.2	10.6	8.9	9.6	12.0	9.8	10.7
15	9.6	7.5	8.3	10.8	8.3	9.3	11.3	8.5	9.6	12.1	9.8	10.6
16	9.4	7.2	8.1	10.8	8.3	9.3	10.9	8.6	9.5	12.1	9.8	10.7
17	9.0	6.8	7.6	10.8	8.3	9.3	11.0	8.6	9.6	12.2	9.7	10.7
18	9.6	7.1	8.0	11.2	8.4	9.5	11.2	9.0	9.8	12.2	9.8	10.7
19	9.6	7.1	8.1	10.8	7.8	9.1	10.9	8.7	9.7	12.1	9.5	10.5
20	9.7	7.3	8.2	10.7	8.0	9.1	11.1	8.6	9.7	12.2	9.6	10.6
21	9.8	6.9	8.1	10.7	8.1	9.2	11.3	9.2	10.0	12.3	9.6	10.7
22	9.2	6.5	7.7	10.8	8.0	9.1	11.3	9.1	10	12.6	9.9	10.9
23	9.5	6.5	7.7	10.8	7.9	9.2	11.2	8.8	9.7	12.6	9.8	10.9
24	9.6	6.4	7.7	11.3	8.7	9.7	11.6	8.8	10	12.1	9.5	10.5
25	8.0	6.3	7.2	10.9	8.6	9.5	11.3	9.2	10.1	12.7	9.4	10.7
26	10.0	7.2	8.4	9.5	8.3	8.8	11.8	9.6	10.5	12.7	9.5	10.8
27	10.1	7.7	8.6	11.2	8.6	9.7	11.9	9.4	10.5	11.9	9.2	10.3
28	10.2	7.8	8.8	11.2	8.9	9.8	11.3	9.1	10.0	12.1	8.8	10.2
29	10.3	7.9	8.8	11.2	8.8	9.8	11.8	9.6	10.5	10.3	8.5	9.3
30	10.5	7.8	8.9	11.2	8.5	9.6	12.3	9.8	10.8	11.0	8.6	9.6
31	10.3	7.6	8.7	---	---	---	10.7	9.3	9.9	11.8	9.4	10.3
Month	10.5	6.2	8.2	11.3	7.0	9.1	12.3	7.6	9.7	12.7	8.5	10.4

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	11.9	9.7	10.5	12.1	9.8	10.7	12.6	9.1	10.5	9.6	8.3	8.9
2	11.9	9.6	10.4	12.6	10.0	11.0	11.1	9.2	10	9.6	8.2	8.9
3	12.0	9.6	10.5	12.6	9.8	11.0	11.9	9.4	10.4	10.4	8.7	9.4
4	11.8	9.3	10.2	12.5	9.4	10.7	12.6	9.3	10.7	10.6	8.7	9.5
5	12.0	9.4	10.3	12.6	9.4	10.8	12.5	9.3	10.6	10.8	8.8	9.7
6	12.3	9.4	10.4	13.0	9.8	11.1	12.4	9.0	10.4	11.0	8.6	9.6
7	10.7	9.0	9.7	12.9	9.6	11.0	12.6	8.8	10.4	11.1	8.6	9.7
8	12.3	9.2	10.5	12.5	9.4	10.7	12.3	8.5	10.1	11.1	8.4	9.6
9	12.1	9.4	10.4	12.3	9.2	10.5	12.4	8.4	10.1	11.0	8.2	9.1
10	12.0	9.0	10.3	10.9	9.0	9.8	9.9	8.4	9.2	8.7	8.3	8.6
11	12.2	9.3	10.5	11.7	9.6	10.5	10.1	9.3	9.7	8.8	8.5	8.7
12	11.7	9.4	10.4	11.8	9.8	10.5	10.3	9.2	9.7	8.9	8.6	8.7
13	12.3	9.3	10.6	12.2	9.8	10.7	10.3	9.0	9.6	8.8	8.4	8.6
14	12.6	9.4	10.7	12.3	9.7	10.7	10.3	8.7	9.5	8.7	8.4	8.6
15	12.4	9.3	10.7	12.3	9.5	10.6	10.2	8.6	9.2	9.0	8.7	8.8
16	12.7	9.7	10.9	12.5	9.2	10.5	10.5	8.6	9.3	9.2	8.7	8.9
17	12.5	9.6	10.8	11.0	9.1	9.9	10.4	8.4	9.3	9.3	8.6	8.9
18	11.7	9.1	10.2	12.5	9.2	10.5	9.3	8.3	8.9	9.5	8.5	9.0
19	12.6	9.5	10.8	12.9	9.4	10.8	9.5	9.2	9.4	9.7	8.3	8.9
20	12.4	9.5	10.7	12.9	9.5	10.9	9.4	9.1	9.3	9.7	8.2	8.7
21	11.1	9.6	10.1	11.6	9.4	10.4	9.3	9.0	9.2	9.2	8.4	8.7
22	12.1	9.6	10.6	12.2	9.4	10.6	9.2	8.9	9.1	10.1	8.5	9.2
23	12.0	9.7	10.6	11.9	9.3	10.4	9.0	8.7	8.9	10.4	8.4	9.3
24	12.0	9.6	10.5	12.2	9.3	10.5	9.1	8.8	8.9	10.8	8.5	9.5
25	10.8	9.5	9.9	12.9	9.8	11.2	9.2	8.6	8.9	11.1	8.4	9.6
26	11.2	9.4	10.1	13.1	9.9	11.3	9.0	8.6	8.8	11.2	8.2	9.6
27	12.1	9.6	10.6	13.3	9.7	11.2	9.1	8.7	8.9	11.5	8.1	9.6
28	12.1	9.8	10.7	13.2	9.3	11.1	9.2	8.5	8.9	11.2	7.8	9.3
29	---	---	---	12.9	9.0	10.5	9.2	8.3	8.8	11.4	7.8	9.5
30	---	---	---	12.7	8.9	10.4	9.4	8.3	8.8	10.8	7.7	9.0
31	---	---	---	12.8	8.8	10.5	---	---	---	9.9	7.9	8.7
Month	12.7	9.0	10.4	13.3	8.8	10.7	12.6	8.3	9.5	11.5	7.7	9.1

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	10.2	7.8	8.6	10.0	6.9	8.4	10.8	6.8	8.5	10.0	6.6	8.1
2	10.4	7.9	9.0	10.3	7.0	8.5	10.3	6.8	8.2	10.3	6.6	8.2
3	10.8	8.0	9.2	10.4	7.0	8.6	10.6	6.7	8.4	10.3	6.8	8.2
4	10.5	7.7	8.8	10.0	7.0	8.5	10.3	6.7	8.0	10.4	6.8	8.3
5	10.9	7.7	8.9	10.6	7.0	8.7	10.7	6.8	8.4	10.6	6.8	8.3
6	11.0	7.6	9.1	10.5	6.8	8.3	10.6	6.6	8.2	10.6	6.8	8.3
7	11.1	7.8	9.2	10.7	6.7	8.6	10.3	6.6	8.1	10.7	6.7	8.3
8	11.4	7.7	9.3	10.5	6.7	8.5	8.3	6.7	7.6	10.7	6.6	8.3
9	11.4	7.5	9.1	10.5	6.6	8.4	7.8	7.6	7.7	10.7	6.5	8.3
10	11.4	7.4	9.1	10.5	6.4	8.3	7.9	7.6	7.7	10.6	6.6	8.3
11	11.4	7.2	9.0	10.4	6.4	8.3	7.9	7.4	7.7	10.7	6.5	8.3
12	11.3	7.0	8.9	10.6	6.6	8.5	7.9	7.4	7.7	10.7	6.5	8.3
13	---	---	---	10.9	6.5	8.5	8.0	7.4	7.7	10.5	6.4	8.1
14	---	---	---	10.6	6.5	8.5	8.4	7.7	8.0	10.8	6.8	8.4
15	---	---	---	10.5	6.6	8.5	8.6	7.7	8.1	11.0	6.8	8.5
16	---	---	---	9.5	6.4	7.9	8.9	7.6	8.2	10.0	6.5	7.7
17	---	---	---	10.7	6.5	8.4	9.3	7.6	8.3	10.4	6.6	8.2
18	10.5	6.9	8.5	10.3	6.4	8.3	9.5	7.6	8.4	10.6	6.5	8.2
19	10.2	6.8	8.3	10.7	6.4	8.4	9.8	7.5	8.4	9.8	6.4	7.8
20	10.0	6.8	8.2	10.4	6.3	8.3	10.0	7.4	8.5	9.4	6.2	7.4
21	9.8	6.6	8.1	9.8	6.2	7.7	10.2	7.3	8.5	9.8	6.6	7.9
22	9.8	6.6	8.1	10.3	6.4	8.2	10.5	7.2	8.6	9.8	6.7	8.0
23	9.5	6.6	7.9	10.5	6.4	8.3	10.6	7.2	8.6	9.9	6.8	8.0
24	9.6	6.5	7.9	10.3	6.4	8.2	10.6	7.1	8.6	9.9	6.6	7.9
25	9.6	6.5	8.0	10.7	6.6	8.5	10.5	7.0	8.5	10.0	6.7	8.0
26	9.7	6.6	8.1	9.1	6.6	7.7	10.5	7.0	8.4	10.0	6.7	8.0
27	9.7	6.5	8.0	10.7	6.7	8.5	10.6	6.9	8.5	10.1	6.6	8.0
28	9.6	6.4	7.9	10.6	6.7	8.4	10.6	6.9	8.4	8.6	6.4	7.3
29	9.8	6.6	8.0	10.8	6.8	8.6	10.5	6.8	8.3	9.8	6.6	7.9
30	9.8	6.7	8.2	10.7	6.8	8.5	10.4	6.7	8.3	9.9	6.8	8.0
31	---	---	---	10.7	6.7	8.5	10.4	6.6	8.2	---	---	---
Month	---	---	---	10.9	6.2	8.4	10.8	6.6	8.2	11.0	6.2	8.1

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
Part 1 of 4

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; mm, millimeters; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than]

Date	Sample start time	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Discharge, instantaneous, ft^3/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)	Specific conductance, water, unfiltered, µS/cm at 25°C (00095)	Temperature, water, °C (00010)
01-30-2013	**1430**	749	1.4	77	10.7	100	7.9	316	11.6
03-11-2013	**1130**	731	5.4	379	10.5	97	7.7	309	10.0
04-03-2013	**1200**	738	9.7	188	11.1	104	7.8	306	11.1
04-11-2013	**0730**	--	--	1,340	9.7	--	7.6	247	11.0
04-18-2013	**1045**	732	7.8	11,200	8.9	91	7.5	131	14.8
05-10-2013	**1115**	744	29.8	7,830	9.0	91	7.3	150	15.3
08-08-2013	**1115**	--	--	2,650	7.5	--	7.3	154	22.2

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
Part 2 of 4

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; mm, millimeters; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than]

Date	Sample start time	Turbidity, water, unfiltered, monochrome near infrared LED light, 780-900 nm, detection angle 90 +/- 2.5 degrees, FNU (63680)	ANC, water, unfiltered, fixed endpoint (pH 4.5) titration, laboratory, mg/L as $CaCO_3$ (90410)	Carbon dioxide, water, unfiltered, mg/L (00405)	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, unfiltered, milligrams per liter as NH4 (71845)	Ammonia, water, unfiltered, mg/L as N (00610)	Nitrate plus nitrite, water, unfiltered, mg/L as N (00630)	Nitrate, water, unfiltered, mg/L as N (00620)
01-30-2013	**1430**	6.9	130	3.4	< .12	< .052	< .040	4.00	4.00
03-11-2013	**1130**	7.5	130	4.9	< .12	< .052	< .040	5.10	5.10
04-03-2013	**1200**	1.4	120	4.1	< .64	< .039	< .030	4.90	4.90
04-11-2013	**0730**	22	94	4.5	< .89	< .039	< .030	4.90	4.90
04-18-2013	**1045**	630	51	3.5	6.5	.206	.160	2.40	2.40
05-10-2013	**1115**	460	66	6.2	3.8	.090	.070	2.20	2.10
08-08-2013	**1115**	680	56	5.5	6.3	.064	.050	2.70	2.60

071912213 SPAVINAW CREEK NEAR COLCORD, OK—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
Part 3 of 4

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; mm, millimeters; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than]

Date	Sample start time	Nitrite, water, unfiltered, mg/L as N (00615)	Organic nitrogen, water, unfiltered, mg/L (00605)	Orthophosphate, water, filtered, mg/L (00660)	Orthophosphate, water, filtered, mg/L as P (00671)	Phosphorus, water, filtered, mg/L as P (00666)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, mg/L (00600)	Total nitrogen, water, unfiltered, milligrams per liter as nitrate (71887)
01-30-2013	**1430**	< .100	< .12	0.202	0.066	0.076	0.080	< 4.1	< 18
03-11-2013	**1130**	< .100	< .12	.196	.064	.075	.083	< 5.2	< 23
04-03-2013	**1200**	< .070	< .64	.153	.050	.053	.054	< 5.5	< 25
04-11-2013	**0730**	< .070	< .89	.297	.097	.095	.150	< 5.8	< 26
04-18-2013	**1045**	< .070	6.3	.951	.310	.360	1.60	8.9	39
05-10-2013	**1115**	< .100	3.7	.644	.210	.240	1.20	6.0	27
08-08-2013	**1115**	< .100	6.2	.736	.240	.260	1.90	9.0	40

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
Part 4 of 4

[%, percent; ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; mm, millimeters; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than]

Date	Sample start time	Suspended sediment, sieve diameter, percent smaller than 0.0625 mm (70331)	Suspended sediment concentration, mg/L (80154)	Suspended sediment discharge, tons per day (80155)
01-30-2013	**1430**	100	2	0.42
03-11-2013	**1130**	89	15	15
04-03-2013	**1200**	5	5	2.5
04-11-2013	**0730**	90	72	260
04-18-2013	**1045**	91	1,750	52,900
05-10-2013	**1115**	89	1,100	23,300
08-08-2013	**1115**	92	1,780	12,700