07316000 RED RIVER NEAR GAINESVILLE, TX

Red-Lake Texoma Basin
Farmers-Mud Subbasin

LOCATION.--Lat 33°43′40″, long 97°09′35″ referenced to North American Datum of 1927, in SW ¼ sec.36, T.9 S., R.1 E., Love County, OK, Hydrologic Unit 11130201, on downstream right bank at end of bridge on Interstate 35, 0.2 mi downstream from Gulf, Colorado, and Santa Fe Railway Co. bridge, 5.0 mi downstream from Fish Creek, 4.5 mi southwest of Thackerville, OK, 7.0 mi north of Gainesville, and at mile791.5.

DRAINAGE AREA.--30,782 mi^2 of which 5,936 mi^2 probably is noncontributing.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--May 1936 to current year. Monthly discharge only for some periods, published in WSP 1311.

REVISED RECORDS.--WSP 1211: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 627.91 ft above NGVD of 1929. Prior to Jan. 17, 1939, and Feb. 13, 1965 to Nov. 14, 1966, nonrecording gage at same site and datum.

REMARKS.--Records poor. Flow regulated by Lake Kemp (station 07312000 in Texas), since 1943 by Lake Altus (station 07302500 in Oklahoma), since 1946 by Lake Kickapoo (station 07314000 in Texas), since 1967 by Lake Arrowhead (station 07314800 in Texas) and Moss Lake (station 07315950 in Texas), since 1978 by Waurika Lake (07313400 in Oklahoma). U.S. Army Corps of Engineers' satellite telemeter at station.

07316000 RED RIVER NEAR GAINESVILLE, TX—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	370	2,270	387	2,870	14,700	2,270	941	4,210	1,020	1,280	1,610	772
2	374	1,900	465	3,470	10,200	2,350	998	3,600	1,050	952	1,660	822
3	e347	1,340	563	3,080	6,860	2,770	969	3,200	1,130	808	1,580	813
4	383	1,400	518	2,590	5,230	3,120	922	2,890	1,040	e775	1,410	772
5	362	1,530	e493	2,080	4,600	2,800	e904	2,660	953	999	1,330	743
6	348	1,240	e448	1,610	6,030	2,430	e890	e2,460	889	1,030	1,310	847
7	332	999	460	1,360	8,590	e2,440	e910	e2,270	839	946	1,340	882
8	307	863	e478	e1,180	9,150	2,600	e894	2,090	812	10,100	1,220	1,870
9	758	768	e448	e1,040	8,170	4,240	848	e2,000	782	15,000	1,140	4,460
10	720	701	436	e955	7,140	6,430	e802	e1,940	765	14,500	1,090	1,680
11	1,430	648	e421	e900	6,120	5,590	e778	e1,870	742	15,600	1,050	1,160
12	3,140	598	e418	e810	5,320	3,950	762	e1,690	714	24,100	1,050	1,710
13	3,700	571	e404	e740	4,740	3,770	e732	e1,710	679	22,600	997	2,030
14	2,250	565	400	e690	5,230	3,080	e712	2,190	656	14,600	953	1,420
15	1,410	548	390	687	6,530	2,420	e691	16,200	923	14,300	925	1,130
16	1,020	e515	381	682	6,560	2,120	801	23,000	1,110	13,800	905	1,070
17	809	e489	378	687	5,400	2,100	879	19,300	1,100	9,830	875	898
18	693	473	e376	e679	4,330	2,040	e1,680	13,500	1,630	7,360	903	816
19	600	445	373	661	3,910	1,930	e5,500	9,480	2,220	5,820	898	694
20	517	464	e365	646	3,500	1,840	24,800	6,300	1,710	4,760	849	610
21	547	450	e366	632	3,240	1,750	23,200	3,590	e1,670	4,080	834	583
22	1,660	435	e366	e617	2,860	1,730	16,400	e2,710	1,300	e3,530	1,120	558
23	1,870	420	e368	e590	3,330	1,600	11,900	2,330	1,130	2,890	1,570	525
24	2,610	e412	421	594	4,230	1,510	9,120	e1,990	938	2,530	1,350	586
25	2,620	405	792	604	e4,400	1,820	7,780	1,700	757	2,300	1,100	700
26	3,830	399	662	610	3,930	1,450	8,860	1,510	669	2,150	948	883
27	2,610	395	600	582	3,170	1,310	12,200	1,380	612	2,150	874	722
28	1,590	376	674	732	2,560	1,240	9,410	1,290	567	1,960	823	657
29	1,700	387	1,470	1,410	---	1,180	7,150	1,200	586	1,890	793	630
30	4,050	391	1,490	10,800	---	1,080	5,560	1,130	635	1,720	e755	549
31	3,800	---	1,660	21,200	---	990	---	1,070	---	1,620	752	---
Total	46,757	22,397	17,471	65,788	160,030	75,950	157,993	142,460	29,628	205,980	34,014	31,592
Mean	1,508	747	564	2,122	5,715	2,450	5,266	4,595	988	6,645	1,097	1,053
Max	4,050	2,270	1,660	21,200	14,700	6,430	24,800	23,000	2,220	24,100	1,660	4,460
Min	307	376	365	582	2,560	990	691	1,070	567	775	752	525
Ac-ft	92,740	44,420	34,650	130,500	317,400	150,600	313,400	282,600	58,770	408,600	67,470	62,660

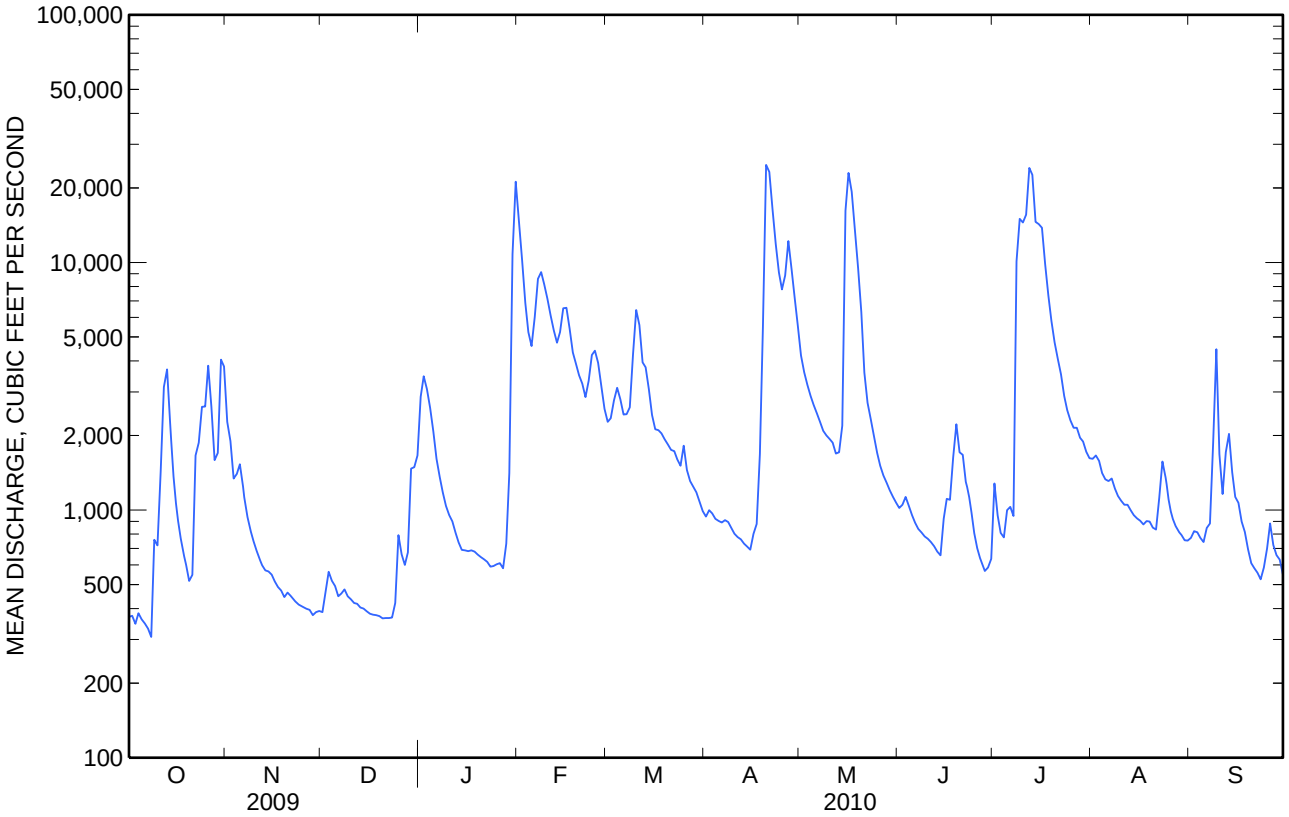
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2010, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	3,479	2,077	1,528	1,309	1,901	2,766	3,521	7,550	7,720	2,424	1,672	2,289
Max	31,080	14,020	14,990	7,258	10,920	19,590	27,400	47,780	43,510	23,390	20,730	12,880
(WY)	(1942)	(1942)	(1992)	(1998)	(2001)	(1998)	(1990)	(1957)	(1941)	(2007)	(1995)	(1986)
Min	119	137	125	82.4	151	90.5	153	204	296	146	97.5	108
(WY)	(1953)	(1955)	(1940)	(1940)	(1953)	(1940)	(1971)	(1971)	(2006)	(2006)	(2006)	(1956)

07316000 RED RIVER NEAR GAINESVILLE, TX—Continued

SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1937 - 2010	
Annual total	714,294		990,060			
Annual mean	1,957		2,712		3,188	
Highest annual mean					11,890	1987
Lowest annual mean					567	2006
Highest daily mean	64,300	May 2	24,800	Apr 20	232,000	May 31, 1987
Lowest daily mean	194	Sep 10	307	Oct 8	39	Aug 21, 2006
Annual seven-day minimum	203	Sep 4	350	Oct 2	43	Aug 16, 2006
Maximum peak flow			26,600	Jul 13	265,000	May 31, 1987
Maximum peak stage			20.87	Jul 13	40.08	May 31, 1987
Annual runoff (ac-ft)	1,417,000		1,964,000		2,310,000	
10 percent exceeds	3,370		6,540		7,090	
50 percent exceeds	435		1,130		832	
90 percent exceeds	301		449		217	



07316000 RED RIVER NEAR GAINESVILLE, TX—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1994 to 2007 and 2009. October 2009 to present.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1994 to September 2009, October 2009 to September 2010 data available upon request.
WATER TEMPERATURE: October 1994 to September 2009, October 2009 to September 2010 data available upon request.

INSTRUMENTATION.--Water-quality monitor since October 1994. QW monitoring equipment consists of two parameter Hydrolab Reporter suspended vertically within polyethylene protection tube.

REMARKS.--Samples were collected periodically by the U.S. Geological Survey. Specific conductance, pH, water temperature, air temperature, dissolved oxygen, and alkalinity were determined in the field.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum, 12,600 microsiemens Apr. 19, 2004; minimum, 98 microsiemens Aug. 17, 2005.

WATER TEMPERATURE: Maximum, 39.8 C Aug.03, 2008; minimum , -0.5°C Jan. 4, 5, 1999.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 1 of 8

[%, percent; CaCO3, calcium carbonate; L, milligrams per liter; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated; M, presence verified but not quantified]

Date	Sample start time	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Discharge, instantaneous, ft³/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)	Dissolved solids, water, filtered, sum of constituents, milligrams per liter (70301)
10-05-2009	1230	744	20.3	357	9.5	108	8.0	4,090	19.8	E 2,320
12-08-2009	1530	735	9.2	E 478	13.6	114	8.5	4,090	5.6	E 2,410
02-17-2010	1530	757	13.8	5,250	12.8	105	8.1	2,560	5.9	E 1,330
03-16-2010	1300	751	14.4	2,140	10.3	102	8.6	2,820	13.6	E 1,600
05-24-2010	1400	751	31.6	E 1,990	15.5	198	8.3	5,350	26.1	E 3,140
07-12-2010	1330	744	36.8	24,500	5.2	70	7.6	1,220	28.6	E 715
09-30-2010	1330	749	28.3	548	9.6	120	8.4	3,830	25.1	E 2,300

07316000 RED RIVER NEAR GAINESVILLE, TX—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
Part 2 of 8

[%, percent; CaCO3, calcium carbonate; L, milligrams per liter; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated; M, presence verified but not quantified]

Date	Dissolved solids, water, filtered, tons per acre-foot (70303)	Dissolved solids, water, tons per day (70302)	Hardness, water, mg/L as CaCO3 (00900)	Noncarbonate hardness, water, filtered, field, milligrams per liter as calcium carbonate (00904)	Suspended solids, water, unfiltered, mg/L (00530)	Calcium, water, filtered, mg/L (00915)	Magne-sium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium adsorption ratio, water, number (00931)	Sodium fraction of cations, water, percent in equiva-lents of major cations (00932)
10-05-2009	E 3.15	E 2,240	614	508	61	150	57.9	7.53	9.91	66
12-08-2009	E 3.28	E 3,120	715	552	27	174	67.9	6.79	8.92	62
02-17-2010	E 1.81	E 18,800	395	284	248	100	35.1	6.03	7.06	64
03-16-2010	E 2.17	E 9,230	513	371	128	128	47.1	6.44	7.17	61
05-24-2010	E 4.27	E 16,900	831	699	140	222	67.5	9.14	11.7	67
07-12-2010	E .97	E 47,300	235	132	1,030	66.7	16.7	6.71	4.48	59
09-30-2010	E 3.13	E 3,410	627	499	34	158	56.7	8.10	9.51	65

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
Part 3 of 8

[%, percent; CaCO3, calcium carbonate; L, milligrams per liter; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated; M, presence verified but not quantified]

Date	Sodium, water, filtered, mg/L (00930)	Alkalinity, water, filtered, inflection-point, incremental titration method, field, mg/L as CaCO3 (39086)	Bicarbonate, water, filtered, inflection-point, incremental titration method, field, mg/L (00453)	Carbon dioxide, water, unfiltered, mg/L (00405)	Carbonate, water, filtered, inflection-point incremental titration method, field, mg/L (00452)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Silica, water, filtered, mg/L as SiO2 (00955)	Sulfate, water, filtered, mg/L (00945)
10-05-2009	564	106	129	2.2	< 1	984	.38	7.0	484
12-08-2009	548	163	194	1.0	2	1,030	.38	7.2	484
02-17-2010	323	113	136	1.6	< 1	569	.26	7.8	217
03-16-2010	373	142	169	.8	2	654	.33	6.3	298
05-24-2010	778	132	156	1.4	2.2	1,400	.40	9.3	581
07-12-2010	158	104	126	5.1	< 1	236	.26	11.2	155
09-30-2010	547	128	152	1.1	2	974	.36	8.1	473

07316000 RED RIVER NEAR GAINESVILLE, TX—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 4 of 8

[%, percent; CaCO3, calcium carbonate; L, milligrams per liter; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated; M, presence verified but not quantified]

Date	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, filtered, mg/L as NH4 (71846)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Nitrate, water, filtered, mg/L (71851)	Nitrate, water, filtered, mg/L as N (00618)	Nitrite, water, filtered, milligrams per liter (71856)	Nitrite, water, filtered, mg/L as N (00613)	Organic nitrogen, water, unfiltered, mg/L (00605)	Orthophos-phate, water, filtered, mg/L (00660)
10-05-2009	.98	< .026	< .020	< .04	< .177	< .040	< .007	< .002	< .98	.058
12-08-2009	1.2	< .026	< .020	< .04	< .150	< .034	.020	.006	< 1.2	< .025
02-17-2010	1.1	.117	.091	.71	3.09	.699	.049	.015	.99	.262
03-16-2010	1.2	< .026	< .020	.07	.253	.057	.026	.008	< 1.2	.064
05-24-2010	1.2	< .026	< .020	.15	.655	.148	.017	.005	< 1.2	.273
07-12-2010	2.1	.067	.052	.36	1.51	.342	.049	.015	2.0	.285
09-30-2010	.79	< .026	< .020	< .04	< .177	< .040	< .007	< .002	< .79	.088

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 5 of 8

[%, percent; CaCO3, calcium carbonate; L, milligrams per liter; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated; M, presence verified but not quantified]

Date	Orthophos-phate, water, filtered, mg/L as P (00671)	Phos-phorus, water, filtered, mg/L as P (00666)	Phosphorus, water, unfiltered, mg/L as P (00665)	Total nitrogen, water, unfiltered, mg/L (00600)	Barium, water, filtered, µg/L (01005)	Barium, water, unfiltered, recover-able, µg/L (01007)	Cadmium, water, filtered, µg/L (01025)	Cadmium, water, unfiltered, µg/L (01027)	Chromium, water, filtered, µg/L (01030)
10-05-2009	.019	E .03	.19	< 1.0	164	178	E .03	E .05	E .17
12-08-2009	< .008	< .04	.15	< 1.3	149	146	E .03	E .07	.28
02-17-2010	.085	.10	.30	1.8	146	230	.03	.06	.34
03-16-2010	.021	.04	.22	1.3	160	189	E .04	.12	< .24
05-24-2010	.089	.08	.32	1.4	204	328	E .08	E .09	.97
07-12-2010	.093	.09	1.04	2.4	101	536	E .01	.22	.28
09-30-2010	.029	E .02	.17	< .83	152	177	< .04	E .04	E .12

07316000 RED RIVER NEAR GAINESVILLE, TX—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
Part 6 of 8
[%, percent; CaCO3, calcium carbonate; L, milligrams per liter; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated; M, presence verified but not quantified]

Date	Chromium, water, unfiltered, recover-able, µg/L (01034)	Copper, water, filtered, µg/L (01040)	Copper, water, unfiltered, recover-able, µg/L (01042)	Iron, water, filtered, µg/L (01046)	Iron, water, unfiltered, recover-able, µg/L (01045)	Lead, water, filtered, µg/L (01049)	Lead, water, unfiltered, recover-able, µg/L (01051)	Manga-nese, water, filtered, µg/L (01056)	Manganese, water, unfiltered, recover-able, µg/L (01055)	Mercury, water, filtered, µg/L (71890)
10-05-2009	1.5	E 1.2	E 2.4	< 18	877	.10	1.68	5.2	196	E .008
12-08-2009	E .43	E 1.5	E 2.3	< 18	165	E .04	.76	25.9	63.3	< .010
02-17-2010	5.1	2.5	6.5	16	4,150	E .03	4.71	4.1	180	< .010
03-16-2010	2.7	E 1.8	4.5	E 7	1,740	E .04	2.35	4.4	118	< .010
05-24-2010	6.0	< 8.0	7.5	< 18	3,100	< .24	7.88	E 1.7	262	< .010
07-12-2010	18.5	1.3	18.6	16	13,500	E .03	19.3	2.6	816	< .010
09-30-2010	E .50	E 1.6	E 1.8	< 12	270	.20	.68	5.4	118	< .010

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
Part 7 of 8
[%, percent; CaCO3, calcium carbonate; L, milligrams per liter; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated; M, presence verified but not quantified]

Date	Mercury, water, unfiltered, recover-able, µg/L (71900)	Nickel, water, filtered, µg/L (01065)	Nickel, water, unfiltered, recover-able, µg/L (01067)	Silver, water, filtered, µg/L (01075)	Silver, water, unfiltered, recover-able, µg/L (01077)	Zinc, water, filtered, µg/L (01090)	Zinc, water, unfiltered, recover-able, µg/L (01092)	Arsenic, water, filtered, µg/L (01000)	Arsenic, water, unfiltered, µg/L (01002)	Selenium, water, filtered, µg/L (01145)
10-05-2009	E .007	3.5	3.1	< .02	E .02	< 5.6	5.7	4.1	5.3	M
12-08-2009	< .010	6.4	2.3	< .02	< .03	< 5.6	4.9	2.7	3.0	1
02-17-2010	E .006	3.8	8.0	< .01	E .01	< 2.8	14.3	3.1	4.2	1
03-16-2010	< .010	1.7	4.7	E .01	< .03	< 5.6	10.8	2.3	3.3	M
05-24-2010	E .005	3.4	9.5	< .08	E .03	< 22.4	34.4	3.8	7.1	1
07-12-2010	.016	1.8	25.4	< .01	.05	< 2.8	42.2	4.2	9.9	1
09-30-2010	< .010	2.0	2.6	< .02	< .03	< 5.6	5.1	4.1	7.1	--

07316000 RED RIVER NEAR GAINESVILLE, TX—Continued

WATER-QUALITY DATA WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 8 of 8

[%, percent; CaCO3, calcium carbonate; L, milligrams per liter; N, nitrogen; P, phosphorus; SiO2, silicon dioxide; ft^3/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated; M, presence verified but not quantified]

Date	Selenium, water, unfiltered, µg/L (01147)
10-05-2009	M
12-08-2009	2
02-17-2010	1
03-16-2010	1
05-24-2010	2
07-12-2010	2
09-30-2010	--