



Small Watershed Rotating Basin Monitoring Program

Basin Group 4: Washita and Upper Red Basins

Final Report

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1.0 INTRODUCTION

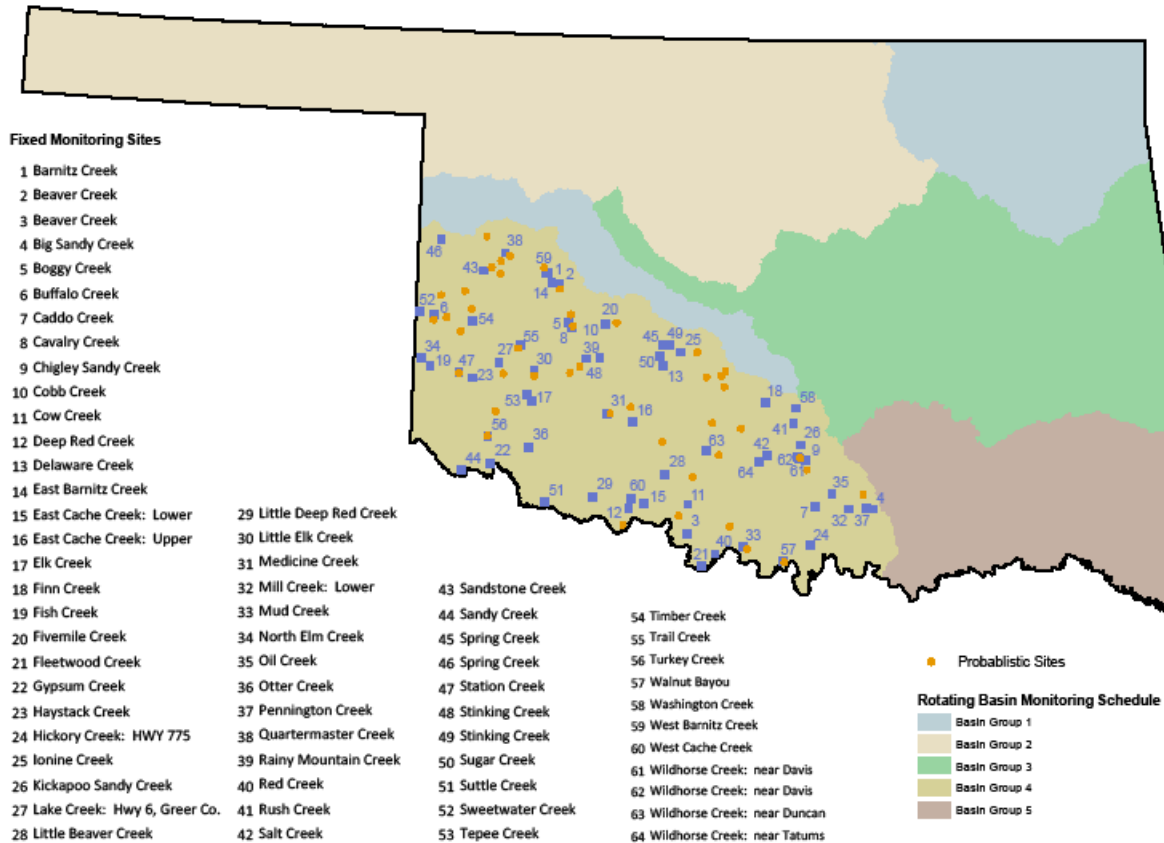
1.1 PROJECT BACKGROUND AND DESCRIPTION

The Clean Water Act has charged each state's nonpoint source (NPS) pollution agency with two primary tasks: 1) identify all waters being impacted by NPS pollution, and 2) develop a management program describing programs to be implemented to correct any identified problems. In addition, each state's NPS agency is charged with identification of all programs which are actively planning or enforcing NPS controls in order to reduce NPS pollution in cooperation with local, regional, and interstate entities. The state NPS agency can then report on total program status with regard to efforts to address NPS impacts and improve water quality. The Oklahoma Conservation Commission (OCC) is charged by Oklahoma state statute as the NPS Program technical lead and therefore must monitor to determine the occurrence, nature and extent of NPS impacts to state waters. Robust and meaningful assessment of the state's water quality is the foundation for meeting the long-term goals of the Oklahoma NPS program and water quality management in general.

In 2000, the Oklahoma Conservation Commission (OCC) initiated a progressive ambient monitoring program to assess NPS issues on a larger spatial and temporal scale than previously done. Known as the *Small Watershed Rotating Basin Monitoring Program* ("Rotating Basin Program"), this effort entails fixed station sampling at or near the outlets of complete eleven digit Hydrologic Unit Code watersheds (HUC-111). Oklahoma contains all or part of 414 U.S. Geological Survey (USGS) 11-digit HUC basins which have been collated into eleven larger planning basins for state water quality management purposes. The sampling units for the Rotating Basin Monitoring Program are based at the outlets of HUC 11 watersheds located entirely in the state, with secondary sites located upstream in selected watersheds where isolation of a particular tributary influence is necessary. Fixed stations are segregated into strategic basin groups and are sampled every five weeks for a period of two years. Each year, sampling is initiated in a new basin group, resulting in a statewide coverage of all sites in five years (Figure 1).

To complement the fixed site monitoring, the OCC added a probabilistic component to the Rotating Basin Monitoring Program in 2008. This addition to the Rotating Basin Program provides a statistically qualified assessment of water quality conditions throughout each of the project basin units. To accomplish this, sites are randomly selected from all of the waters of interest in a target area (i.e., basin unit), and the monitoring results are used to estimate water quality conditions in the larger area with known confidence (USGAO 2004). Through the probabilistic component, data will be collected from 250 stream locations over a five-year period, with 50 targeted sites sampled each year. The probabilistic sites will be coordinated with the basins being sampled by the rotating basin project in any given year; thus, for 2009, both rotating basin and probabilistic sites were sampled in the Washita and Upper Red basins (Figure 1).

Figure 1. Fixed and probabilistic monitoring sties in "Basin Group 4" for the second cycle of the Small Watershed Rotating Basin Monitoring Project.



Effectively coordinated with other state monitoring programs, the OCC's Rotating Basin program is designed to accomplish the state's NPS monitoring needs in four stages. The first stage includes a comprehensive, coordinated investigation and analysis of the causes and sources of NPS pollution throughout the state – *Ambient Monitoring*. The second stage involves more intensive, specialized monitoring designed to identify specific causes and sources of NPS pollution – *Diagnostic Monitoring*. The data from diagnostic monitoring can be used to formulate an implementation plan to specifically address the sources and types of identified NPS pollution. The third stage of monitoring is designed to initiate remedial and/or mitigation efforts to address the NPS problems – *Implementation Monitoring*. Finally, the fourth stage evaluates the effectiveness of the implementation through assessment and post-implementation monitoring – *Success Monitoring*. This assessment program provides a thorough and statistically sound evaluation of Oklahoma's waters every five years, which helps focus NPS program planning, education, and implementation efforts in areas where they can be most effective.

The Small Watershed Rotating Basin Monitoring Program considers the following specific questions in the context of Oklahoma Water Quality Standards and Use Support Assessment Protocols (USAPs) in addressing NPS pollution:

1. Which HUC 11 waterbodies are not supporting assigned beneficial uses due to NPS or NPS plus point source (PS) pollution?
2. Which waterbodies show elevated or increasing levels of NPS or NPS plus PS pollutants, which may threaten water quality?
3. What are the sources and magnitude of pollution loading within threatened or impaired waterbodies?
4. Which land uses or changes in land use are sources or potential sources for pollutants causing beneficial use impairment?

In its entirety, OCC's Rotating Basin Monitoring Program provides an assessment of water quality, watershed condition, and support status for selected streams statewide necessary for planning, implementation, and eventual evaluation of mitigation efforts. The statewide ambient monitoring program has allowed a comprehensive approach for the identification of nonpoint source (NPS) affected waters, as well as the identification of high quality streams. Results from this effort are used to assist the state in producing the 305(b) and 303(d) lists which are required by the EPA to assess beneficial use support for Waterbodies biannually.

This report discusses the results of the *ambient* (routine physical, chemical, and biological sampling) and *diagnostic* (special parameter sampling) stages of the second cycle of the Rotating Basin program in the Washita and Upper Red basins (see Figure 1). Data from both fixed and probabilistic sites will be discussed. *Implementation* and *success* monitoring are typically accomplished through priority watershed projects and reported on in project-specific final reports.

This program will continue to provide a robust baseline dataset to assess the impact of NPS pollution throughout the state, identify the causes and sources of the pollution, and determine the success of measures to improve water conditions. The use of probabilistic monitoring in conjunction with the rotating basin monitoring program will allow a statistically valid and qualified assessment/representation of the percentage of stream miles across the state that are in good or bad condition and the percentage of stream miles that are fulfilling or not fulfilling their designated uses.

2.0 MATERIALS AND METHODS

2.1 GENERAL

Sampling stations were selected to effectively represent streams of the Washita and Upper Red Basins. Candidate streams were selected from subwatersheds within these basins located entirely within the state of Oklahoma having perennial water. Watersheds that did not have perennial water or were actually a segment of a larger river being sampled by another agency were not chosen. Where a particular watershed was monitored by another entity, the stream was dropped from consideration for a Rotating Basin site if the monitoring being conducted met the project data quality objectives. For most subwatersheds, the monitoring site was located near the outflow of the primary stream far enough upstream to limit backwater (surface and alluvial) effects of the waterbody to which it drained. For larger subwatersheds, an additional site was sometimes located upstream to isolate a particularly strong tributary influence. In some cases, sites were specifically chosen to monitor a stream draining an

area of landuse different from the majority of the other streams being monitored in that region or subwatershed.

Reconnaissance of all of the potential sites within the Washita and Upper Red basins was accomplished prior to the first round of monitoring in 2004, and sites which did not meet the sampling criteria were removed from the project. Sixty-one sites were monitored during the first rotating basin cycle, from 2004-2006. The second cycle of the monitoring in these basins occurred from June 2009-May 2011. Several sites have changed slightly due to landowner permission issues and several more have been added. There were 63 sites during this cycle of monitoring.

With the initiation of the probabilistic component of the Rotating Basin Program, the OCC sampled a total of 45 randomly selected sites in the Washita and Upper Red basins during the summer of 2009. These sites were part of a master site list generated by Tony Olsen with the EPA Corvallis Lab which included 150 sites total. Sampling occurred in the order the list was generated until 45 sites were assessed. The additional sites were “back-ups” to be used if one of the first 45 sites was inaccessible or if access permission was denied.

The sites monitored in the Washita basin occur in two level-three ecoregions: the Central Great Plains (CGP) and the Cross Timbers (CT). In the Upper Red basin, sites are located in the Cross Timbers (CT), Central Great Plains (CGP), and Southwestern Tablelands (SWT) ecoregions. Three fixed sites had a heavy influence from a bordering ecoregion (i.e., the sites are very close to the ecoregion border and have water originating in the other ecoregions), so they were grouped with the influencing ecoregions when compared to reference conditions: Kickapoo Sandy Creek and Stinking Creek (located in CGP but influenced by CT) and Mud Creek (located in CT but influenced by CGP). In addition, five CT sites are in the “Arbuckle Uplift” level 4 ecoregion, which is a unique area in the CT region. One CGP site is in the “Wichita Mountains” level 4 ecoregion. These changes are indicated by the “modified ecoregion” column in Table 1.

Table 1. Fixed Site List for Rotating Basin Monitoring Program: Basin Group 4, Cycle 2.

SiteName	WBID	Latitude	Longitude	LegalDesc	County	Ecoregion	Modified Ecoregion
Barnitz Creek	OK310830-03-0200C	35.53800	-99.01000	NW¼ NW¼NW¼9-12N-17W	Custer	CGP	CGP
Beaver Creek	OK310830-03-0190C	35.53300	-98.95800	NW¼ SW¼ NW¼ 12-12N-17W	Custer	CGP	CGP
Beaver Creek	OK311200-00-0030L	34.07100	-97.97300	NW¼ NE¼ NW¼ 6-6S-7W	Jefferson	CGP	CGP
Big Sandy Creek	OK310800-01-0090G	34.23133	-96.63492	SE¼ SE¼SE¼2-4S-6E	Johnston	CT	Arbuckle
Boggy Creek	OK310830-03-0100C	35.30600	-98.87900	SE¼ SE¼ SW¼ 27-10N-16W	Washita	CGP	CGP
Buffalo Creek	OK311510-02-0090D	35.32100	-99.86700	SW¼ SW¼ SE¼ 20-10N-25W	Beckham	CGP	CGP
Caddo Creek	OK310800-03-0010F	34.24000	-97.05200	NE¼ SW¼ NW¼ 1-4S-2E	Carter	CT	Arbuckle
Cavalry Creek	OK310830-03-0070D	35.27700	-98.85300	NE¼ NE¼NE¼11-9N-16W	Washita	CGP	CGP
Chigley Sandy Creek	OK310800-02-0190D	34.51400	-97.12200	SW¼ SW¼ NW¼ 32-1N-2E	Murray	CT	CT
Cobb Creek	OK310830-06-0050M	35.29900	-98.60600	SW¼ SW¼ NW¼ 32-10N-13W	Caddo	CGP	CGP
Cow Creek	OK311200-00-0060L	34.24500	-97.97400	NE¼ NE¼ NW¼ Sectin 6-4S-7W	Jefferson	CGP	CGP
Deep Red Creek	OK311310-03-0010D	34.21800	-98.40000	SE¼ SE¼SE¼12-4S-12W	Cotton	CGP	CGP
Delaware Creek	OK310830-01-0030G	35.05800	-98.17600	NW¼ NE¼ NW¼ 29-7N-9W	Caddo	CT	CT
East Barnitz Creek	OK310830-03-0210C	35.59500	-99.04500	SE¼ SW¼ SE¼ 18-13N-17W	Custer	CGP	CGP

SiteName	WBID	Latitude	Longitude	LegalDesc	County	Ecoregion	Modified Ecoregion
East Cache Creek: Lower	OK311300-01-0020G	34.24600	-98.29200	NE¼ NW¼ NW¼6-4S-10W	Cotton	CGP	CGP
East Cache Creek: Upper	OK311300-02-0010M	34.72500	-98.38800	SE¼ SE¼SE¼18-3N-11W	Comanche	CGP	CGP
Elk Creek	OK311500-03-0010G	34.83200	-99.12500	SE¼ NE¼ SE¼ 7-4N-18W	Kiowa	CGP	CGP
Finn Creek	OK310810-02-0020D	34.85500	-97.42400	SW¼ SW¼SW¼33-5N-2W	McClain	CGP	CGP
Fish Creek	OK311800-00-0130G	35.01920	-99.88040	NE¼ SE¼ SW¼ 6-6N-25W	Greer	SWT	SWT
Fivemile Creek	OK310830-06-0080D	35.30500	-98.60800	NE¼ NE¼NE¼31-10N-13W	Caddo	CGP	CGP
Fleetwood Creek	OK311100-01-0300D	33.88200	-97.86200	SE¼ SW¼ SE¼ 6-8S-6W	Jefferson	CGP	CGP
Gypsum Creek	OK311600-01-0020F	34.45400	-99.41200	SE¼ NE¼ SE¼ 20-1S-21W	Jackson	CGP	CGP
Haystack Creek	OK311800-00-0040D	34.95800	-99.56200	NW¼ NW¼ NE¼ 31-6N-22W	Greer	CGP	CGP
Hickory Creek	OK311100-02-0010M	34.01400	-97.08400	NW¼ NW¼ NE¼ 27-6S-2E	Love	CT	CT
Ionine Creek	OK310820-01-0160L	35.14560	-98.04630	NW¼ NW¼ NE¼ 29-8N-8W	Grady	CGP	CGP
Kickapoo Sandy Creek	OK310810-01-0050G	34.60800	-97.16300	NW¼ NE¼ NE¼35-2N-1E	Murray	CGP	CT
Lake Creek	OK311510-01-0040D	35.05600	-99.37800	SW¼ NW¼ NW¼25-7N-21W	Greer	CGP	CGP
Little Beaver Creek	OK311210-00-0050D	34.42000	-98.14200	SW¼ SE¼ SE¼33-1S-9W	Cotton	CGP	CGP
Little Deep Red Creek	OK311310-03-0040D	34.27800	-98.66200	NE¼ SW¼ SW¼22-3S-14W	Tillman	CGP	CGP
Little Elk Creek	OK311500-03-0040D	35.01600	-99.11800	NW¼ NE¼ NE¼5-6N-18W	Kiowa	CGP	CGP
Medicine Creek	OK311300-04-0060H	34.77200	-98.58000	NE¼ SE¼ SE¼32-4N-13W	Comanche	CGP	Wichita
Mill Creek	OK310800-01-0190G	34.23069	-96.81308	SE¼ SE¼6-4S-5E	Johnston	CT	Arbuckle
Mud Creek	OK311100-04-0010G	34.00390	-97.56950	nw¼ se¼ 25-6s-4w	Jefferson	CT	CGP
North Elm Creek	OK311800-00-0170G	35.05990	-99.95060	Sections 17/21 7N-26W	Beckham	CGP	CGP
Oil Creek	OK310800-01-0240P	34.32000	-96.93100	SW¼ SW¼6-3S-4E	Johnston	CT	Arbuckle
Otter Creek	OK311500-01-0080F	34.56000	-99.14100	SE¼ SE¼ NE¼ 13-1N-19W	Tillman	CGP	CGP
Pennington Creek	OK310800-01-0120G	34.24100	-96.68200	NE¼ SW¼ NW¼ 4-4S-6E	Johnston	CT	Arbuckle
Quartermaster Creek	OK310840-01-0060L	35.70300	-99.35800	NW¼ NW¼ SW¼ 8-14N-20W	Custer	CGP	CGP
Rainy Mountain Creek	OK310830-02-0060G	35.09200	-98.74400	SW¼ NW¼ SW¼ 12-7N-15W	Kiowa	CGP	CGP
Red Creek	OK311100-01-0290D	33.95500	-97.77000	NW¼ NW¼NW¼18-7S-5W	Jefferson	CGP	CGP
Rush Creek	OK310810-05-0010D	34.73500	-97.21400	NE¼ SE¼ NE¼ 17-3N-1E	Garvin	CGP	CGP
Salt Creek	OK310810-03-0080G	34.54300	-97.40500	NW¼ NW¼ SW¼ 22-1N-2W	Garvin	CT	CT
Sandstone Creek	OK310840-02-0020C	35.59300	-99.50900	SW¼ NW¼ NE¼ 23-13N-22W	Roger Mills	CGP	CGP
Sandy Creek	OK311600-01-0040G	34.41000	-99.62100	NE¼ SE¼ SE¼5-2S-23W	Jackson	CGP	CGP
Spring Creek (Caddo Co.)	OK310830-04-0010G	35.18920	-98.17601	NE¼ NW¼ NW¼8-8N-9W	Caddo	CT	CT
Spring Creek (Roger Mills Co.)	OK310840-02-0240D	35.76900	-99.83700	NE¼ NE¼NE¼22-15N-25W	Roger Mills	CGP	CGP
Station Creek	OK311800-00-0060G	34.98750	-99.66778	NW¼ NW¼ NE¼ 18-6N-23W	Greer	CGP	CGP
Stinking Creek (Kiowa Co.)	OK310830-02-0020D	35.09700	-98.63900	NW¼ SW¼ NW¼ 12-7N-14W	Kiowa	CGP	CGP
Stinking Creek (Caddo Co.)	OK310830-04-0030K	35.18911	-98.12640	NE¼ NE¼NE¼10-8N-9W	Caddo	CGP	CT
Sugar Creek	OK310830-05-0010D	35.11700	-98.19700	NE¼ NE¼NE¼1-7N-10W	Caddo	CT	CT
Suttle Creek	OK311310-01-0070H	34.23500	-99.01100	NW¼ SW¼ SW¼5-4S-17W	Tillman	CGP	CGP
Sweetwater Creek	OK311510-02-0120D	35.33500	-99.97100	NE¼ NW¼ NE¼ 20-10N-26W	Beckham	CGP	CGP
Tepee Creek	OK311500-01-0110D	34.87000	-99.16700	NW¼ NW¼NW¼35-5N-19W	Kiowa	CGP	CGP
Timber Creek	OK311510-01-0090G	35.29100	-99.58200	SE¼ SW¼ SE¼ 36-10N-23W	Beckham	CGP	CGP
Trail Creek	OK311500-03-0070D	35.16000	-99.22800	SW¼ SW¼ SE¼ 17-8N-19W	Washita	CGP	CGP
Turkey Creek	OK311600-02-0060J	34.61150	-99.43900	NW¼ SW¼ SW¼29-2N-21W	Jackson	CGP	CGP

SiteName	WBID	Latitude	Longitude	LegalDesc	County	Ecoregion	Modified Ecoregion
Walnut Bayou	OK311100-03-0010G	33.91800	-97.28100	NW¼ NW¼ SW¼ 26-7S-1W	Love	CT	CT
Washington Creek	OK310810-01-0190G	34.82600	-97.20200	NE¼ NW¼ NE¼ 16-4N-1E	Garvin	CGP	CGP
West Barnitz Creek	OK310830-03-0230C	35.59500	-99.05200	NW¼ NE¼ NW¼ 19-13N-17W	Custer	CGP	CGP
West Cache Creek	OK311310-02-0010M	34.27500	-98.38800	NW¼ NE¼ NE¼30-3S-11W	Cotton	CGP	CGP
Wildhorse Creek (Davis)	OK310810-01-0020G	34.53310	-97.18710	SE¼ NE¼ NW¼ 27-1N-1E	Garvin	CT	CT
Wildhorse Creek (Duncan)	OK310810-04-0140D	34.56500	-97.84400	NE¼ NE¼NE¼17-1N-6W	Stephens	CT	CT
Wildhorse Creek (Tatums)	OK310810-03-0010R	34.50200	-97.45700	SW¼ SW¼ NW¼ 6-1S-2W	Carter	CT	CT

Table 2 shows the site information for the probabilistic sites which were sampled.

Table 2. Probabilistic Site List for Rotating Basin Monitoring Program: Basin Group 4, Cycle 2.

SiteName	WBID	Latitude	Longitude	LegalDesc	County	Ecoregion
Armstrong Creek	OKR09730-095	34.61100	-98.16647	NW¼ SE¼ SECTION 29-2N-9W	Comanche	CGP
Barnitz Creek	OKR09730-106	35.62177	-99.06660	NE¼ SE¼ NW¼ SECTION 12-13N-18W	Custer	CGP
Beaver Creek	OKR09730-091	34.17514	-98.03612	SW¼ SW¼ SECTION 28-4S-8W	Jefferson	CGP
Bitter Creek	OKR09730-005	34.76244	-99.39203	SW¼ NE¼ SECTION 3-3N-21W	Jackson	CGP
Buffalo Creek	OKR09730-012	35.43564	-99.81770	NE¼ NW¼ SECTION 14-11N-25W	Roger Mills	CGP
Cavalry Creek	OKR09730-058	35.28089	-98.84020	NE¼ SE¼ SECTION 1-9N-16W	Washita	CGP
Chandler Creek	OKR09730-085	34.81094	-98.40175	NW¼ NW¼ SECTION 19-4N-11W	Comanche	CGP
Cow Creek	OKR09730-098	34.40477	-97.94205	NE¼ NW¼ SECTION 9-2S-7W	Stephens	CT
East Winter Creek	OKR09730-046	35.00978	-97.74905	NE¼ SECTION 8-6N-5W	Grady	CT
East Winter Creek	OKR09730-119	35.03475	-97.71598	SECTION 34-7N-5W	Grady	CT
Elk Creek	OKR09730-041	35.14012	-99.23987	SE¼ NE¼ SECTION 30-8N-19W	Washita	CGP
Elk Creek	OKR09730-057	34.98191	-99.11347	SW¼ NW¼ SECTION 21-6N-18W	Kiowa	CGP
Lafin Creek	OKR09730-003	34.94351	-97.72115	SW¼ SECTION 34-6N-5W	Grady	CT
Lake Creek	OKR09730-080	35.31010	-98.52256	NW¼ SE¼ SECTION 25-10N-13W	Caddo	CGP
Little Turkey Creek	OKR09730-069	35.29013	-99.86486	NE¼ SECTION 5-9N-25W	Beckham	CGP
Medicine Creek	OKR09730-026	34.76870	-98.54936	SE¼ SECTION 34-4N-13W	Comanche	CGP
Mud Creek	OKR09730-031	33.98282	-97.53599	NE¼ NW¼ SECTION 5-7S-3W	Love	CT
Mud Creek	OKR09730-110	34.11563	-97.66338	SW¼ SECTION 18-5S-4W	Jefferson	CGP
Negro Sandy Creek	OKR09730-130	35.44043	-95.97127	SE¼ SECTION 36-3N-1E	Garvin	CT
North Fork Red River	OKR09730-025	34.98509	-99.34247	NE¼ NW¼ SECTION 20-6N-20W	Greer	CGP
North Fork Red River	OKR09730-096	35.30850	-99.76957	SW¼ SECTION 29-10N-24W	Beckham	CGP
Owens Creek	OKR09730-059	34.53891	-97.75336	SW¼ SW¼ SECTION 20-1N-5W	Stephens	CT
Pennington Creek	OKR09730-124	34.31459	-96.70171	NW¼ SECTION 8-3S-6E	Johnston	CT
Quartermaster Creek	OKR09730-116	35.79336	-99.49614	NW¼ SECTION 12-15N-22W	Roger Mills	CGP
Rabbit Creek	OKR09730-045	34.11448	-98.43809	NE¼ NE¼ SECTION 22-5S-12W	Cotton	CGP
Rainy Mountain Creek	OKR09730-014	35.00297	-98.85265	SE¼ SECTION 11-6N-16W	Kiowa	CGP
Rainy Mountain Creek	OKR09730-071	35.04083	-98.78138	NE¼ SECTION 33-7N-15W	Kiowa	CGP
Rush Creek	OKR09730-019	34.72735	-97.80722	SW¼ SW¼ SECTION 14-3N-6W	Grady	CGP
Rush Creek	OKR09730-084	34.69750	-97.59632	SW¼ SW¼ SECTION 26-3N-4W	Garvin	CT
Salt Creek	OKR09730-062	35.14368	-97.92752	NW¼ SECTION 27-8N-7W	Grady	CGP

SiteName	WBID	Latitude	Longitude	LegalDesc	County	Ecoregion
Sand Creek	OKR09730-139	35.22831	-99.66427	SECTION 29-9N-23W	Beckham	CGP
Sandstone Creek	OKR09730-060	35.46650	-99.64250	SW¼ NW¼ NE¼ SECTION 22-15N-25W	Roger Mills	CGP
Station Creek	OKR09730-123	34.98004	-99.66435	SW¼ SE¼ NE¼ SECTION 19-6N-23W	Greer	CGP
Timber Creek	OKR09730-136	35.36035	-99.58819	NW¼ SECTION 12-10N-23W	Beckham	CGP
Turkey Creek	OKR09730-109	34.61711	-99.43945	SE¼ SE¼ NE¼ SECTION 30-2N-21W	Jackson	CGP
Walnut Bayou	OKR09730-027	33.90991	-97.26554	NE¼ NE¼ SECTION 35-7S-1W	Love	CT
Washita River	OKR09730-020	35.49824	-98.94504	SE¼ SECTION 24-12N-17W	Custer	CGP
Washita River	OKR09730-047	34.45869	-97.10986	SE¼ NE¼ SECTION 20-15N-3E	Murray	CT
Washita River	OKR09730-074	35.34903	-98.85818	NE¼ SECTION 14-10N-16W	Washita	CGP
Washita River	OKR09730-078	35.61372	-99.45394	NW¼ SE¼ SECTION 8-13N-21W	Roger Mills	CGP
Washita River	OKR09730-081	34.53022	-97.16283	NE¼ SECTION 26-1N-1E	Garvin	CT
Washita River	OKR09730-127	34.99761	-97.85561	SECTION 17-6N-6W	Grady	CGP
White Shield Creek	OKR09730-052	35.57713	-99.38759	NW¼ SECTION 25-13N-21W	Roger Mills	CGP
White Shield Creek	OKR09730-094	35.65091	-99.38391	NE¼ SECTION 36-14N-21W	Roger Mills	CGP
Wild Horse Creek	OKR09730-008	35.68457	-99.31969	SE¼ SECTION 15-14N-20W	Custer	CGP

All sampling and analyses performed during this project were conducted under a Quality Assurance Project Plan (QAPP) approved by EPA Region VI and on file at the OCC Water Quality Division, the Oklahoma Secretary of the Environment (OSE), and EPA Region VI in Dallas. The reader is encouraged to obtain and consult the QAPP for specific questions concerning laboratory analytical methods, detection limits, and accuracy and precision limits. All sampling and measurement activities of OCC Water Quality staff followed procedures outlined in the appropriate OCC Standard Operating Procedure (OCC 2011). Water quality chemical analyses were conducted by the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) laboratory.

2.3 WATER QUALITY MONITORING

Starting in June 2009, 63 sites were monitored for physical and chemical parameters on a fixed interval schedule of ten sampling events per year (five-week intervals) through May 2011 (usually 20 total events per sites). This sampling frequency exceeds state data requirements for beneficial use assessment and meets a sample number necessary to provide a 90% level of confidence for principal water quality data (specifically phosphorus, a critical NPS concern) as determined from EPA's DEFT software. Samples were collected during both base flow and high flow conditions as they occurred on predetermined sampling dates. All sampling and measurement activities followed procedures outlined in the appropriate OCC SOP (OCC 2011).

One water sample was collected per site per 35-day interval in two, new, sample-rinsed HDPE bottles; one was preserved to a pH <2 with H₂SO₄, and both were stored and delivered on ice at 4° C or lower. Quality assurance/control samples were collected in accordance with Data Quality Objectives (DQOs) outlined in the project QAPP. Samples were submitted to the ODAFF Laboratory for analysis of the following parameters: nitrate (NO₃), nitrite (NO₂), orthophosphate (PO₄), total phosphorus (TP), total Kjeldahl nitrogen (TKN), ammonia (NH₃), chloride (Cl), sulfate (SO₄), total suspended solids (TSS), and total dissolved solids (TDS). An estimate of total nitrogen was calculated by summing the values of nitrate, nitrite, and TKN for each sample. Available nitrogen was calculated by summing the values of ammonia, nitrate, and nitrite. In addition, *in-situ* water quality parameters were measured at each sampling location and include the following: water temperature, dissolved oxygen, pH, conductivity, alkalinity, hardness, turbidity, and instantaneous discharge.

Separate samples were collected and submitted concurrently for analysis of *E. coli* and *Enterococcus* bacteria during the recreational season (May 1 – September 30), ensuring that a minimum of 10 samples were assessed per site over the two-year monitoring period. In addition, site observations of odor, excessive bottom deposits, surface scum, oil/grease, foam and other observations were recorded each time.

Probabilistic sites were visited only twice, once to collect the physical and chemical parameters described above, as well as the bacteria sample, and once to collect biological and habitat data as discussed in later sections below. Data was collected only during base-flow conditions at the probabilistic sites.

All data were compiled and entered into an Access database for later analysis. Upon retrieval, data were proofed and quality assured, and the descriptive statistics were generated for each parameter using the statistical software package *Minitab V. 14*.

2.5 BIOLOGICAL MONITORING

2.5.1 Habitat Assessment

In the summer of 2009, OCC staff began conducting instream and riparian habitat assessments at sites concurrent with fish collections; any sites not sampled in 2009 were sampled in the summer of 2010 (see Table 12 for exact dates). All assessments were conducted in accordance with procedures outlined in the OCC Habitat Assessment SOP (OCC 2011). The OCC's habitat assessment adheres to a modified version of the EPA Rapid Bioassessment Protocols (RBP) (Plafkin et al. 1989) and is designed to assess habitat quality in relation to its ability to support biological communities in the stream. The assessment is based on particular parameters grouped into three categories for a total of eleven components (Plafkin et al. 1989). The eleven components are discussed in more detail below. The three primary categories assessed include micro scale habitat, macro scale habitat, and riparian/bank structure. Micro scale habitat includes substrate makeup, stable cover, canopy, depth, and velocity. Macro scale assesses the channel morphology, sediment deposits, and other parameters. The third category looks at the riparian zone quality, width, and general makeup (trees, shrubs, vines, and grasses) as well as bank features. Bank erosion and streamside vegetative cover are incorporated into this section.

Each stream segment was surveyed for 400 meters upstream or downstream of the starting point (usually a road crossing). Investigators recorded data for the described parameters for 20 stations at 20 meter intervals. Habitat data were entered, metrics were computed, and a "total habitat score" was rendered via Access programming. The total habitat score, which can reach a maximum of 180 points, was calculated based on quantitative weighting given to each of the habitat parameters in relation to their biological significance. Scores were computed for each of the eleven categories, summed, and assigned as an evaluation of that stream section and riparian zone.

OCC's habitat assessment components include:

(1) **Instream cover** is the component of habitat that organisms hide behind, within, or under. High quality cover consists of things like submerged logs, cobble and boulders, root wads, and beds of aquatic plants. Cover required by smaller members of the stream community will consist of gravel, cobbles, small woody debris, and dense beds of fine aquatic plants. At least 50% of the stream's area should be occupied by a mixture of stable cover types for this category to be considered optimal.

(2) **Pool bottom substrate** describes the type of stream bed found in pools. Pools are depositional areas of the stream, and as such, are easily damaged by materials that settle. A loose shifting pool bottom will not provide substrate for burrowing organisms and will not allow bottom-spawning fish to successfully spawn. It will not provide habitat to the smaller vertebrates and invertebrates that are necessary to support many of the pool dwelling fish. At least 80% of all pool bottoms must have stable substrate for a reach to be considered optimal for the habitat component.

(3) **Pool variability** describes the depth of pools. A healthy, diverse community of aquatic organisms requires both deep and shallow pools. A fairly even mix of pool depths from a few centimeters to 0.5 meters or greater is optimal.

(4) **Canopy cover** assesses the shading of the stream section. Plants lie at the base of almost all food chains. Since plants require light for growth and survival, a stream that is functioning well needs some amount of light. Moderation is optimal, however, because light is associated with heat, and most aquatic organisms are more stressed by the warmer waters and the lower oxygen solubility and higher metabolic rates that accompany the warming of water.

(5) The **percent of rocky runs and riffles** is calculated for the fifth component. Rocky runs and riffles offer an unique combination of highly oxygenated, turbulent water, flowing over high quality cover and substrate. Turbulence prevents the formation of nutrient concentration gradients from cell membranes outward so that algae and other plants grow at a much higher rate than they would at the same concentration in pools. More food means more growth. Larger crops of algae are translated into larger invertebrate crops. It is these invertebrates, reared in riffle areas, that feed many of the fish in the stream. Because turbulent water is well oxygenated, there has been no selection pressure for riffle dwelling organisms to develop tolerance to poorly oxygenated waters. These are often the first animals to disappear from the stream if oxygen becomes scarce. The presence of rocky runs and riffles offers habitat for many highly adapted animals that will increase diversity of samples collected from the streams they occupy.

(6) **Discharge** at representative low flow reflects stream size. Water is the most basic requirement of aquatic organisms. Larger streams tend to have more water, and thus, more varied high quality habitat. Overall habitat quality should rise as streams increase in size and discharge, other factors being equal.

(7) **Channel alteration** is the seventh category. The presence of newly formed point bars and islands is very significant. Unstable streambeds support fewer types of animals than those that are stable. This is because unstable streambeds tend to have unstable pool bottom substrate, riffle areas whose cobbles are embedded in finer material, and little cover because it is continually being buried. Few or no signs of channel alteration are considered optimal.

(8) **Channel sinuosity** measures how far a channel deviates from a straight line. More sinuous channels tend to have more undercut banks, root wads, submerged logs, etc. Index of Biotic Integrity (IBI) scores should be higher as channels become more sinuous. Sinuosity is calculated by dividing the length of the assessment (400 meters) by the distance between the GPS locations of the start point and end point of the assessment.

(9) The **bank erosion** index assesses the stability of the stream bank. Stable stream banks tend to increase IBI scores for many reasons. Most importantly, they do not contribute sediment to the stream channel. As a rule, channels with stable banks tend to be deeper and narrower than channels with unstable banks. Because of the increased depth and decreased width, they tend to be cooler and also tend to grow less algae for a given amount of nutrients than do shallow, wide channels. Overall habitat quality should increase as bank stability increases.

(10)The **vegetative stability of the stream bank** is an important component. Stream banks can be stabilized with a number of materials including rock, concrete, and fabric. Banks that are stabilized with vegetation benefit the aquatic community more than those stabilized with other materials. This is because the vegetation offers several extra advantages beyond that of bank stability. The riparian plants of the stream bank offer a high quality source of food and shade to the aquatic community. Riparian vegetation stabilizes point bars and contributes greatly to structure in the form of root wads and woody debris. Overall habitat quality should improve as bank vegetative stability increases.

(11)The last category is **streamside cover**. A large part of the energy and food input to the stream comes from the terrestrial vegetation along the banks. A mixture of grasses, forbs, shrubs, vines, saplings, and large trees transfer these necessities to the stream more effectively than does any single type of vegetation. Habitat quality should increase as the form of bank vegetation increases in diversity.

2.5.2 Fish

Fish collections were obtained in the summer of 2009 or 2010 for each site. Fish were collected from a 400-meter reach at all sites using a combination of seining and electroshocking according to procedures outlined in OCC SOP (2011). The collection of fish follows a modified version of the EPA Rapid Bioassessment Protocol V (Plafkin et al. 1989) supplemented by other documents. Specific techniques and relative advantages of seining and electrofishing vary considerably according to stream type and conductivity. Depending upon workable habitat, seining was performed first at all sites and was accomplished by use of either 6' X 10' or 6' X 20' seines of ¼ inch mesh equipped with 8' brailles. Electroshocking was undertaken at all sites with suitable conductivities (usually < 1000 µS/cm) and involved the use of a Smith Root LR 24 backpack shocker. For sites possessing long pools too deep to seine or backpack shock, OCC field personnel employed a boat electrofishing unit consisting of a Smith-Root GPP 2.5 shocking unit powered by a Honda 5kw generator.

Except for those individuals readily identifiable, fish were placed in 10% formalin upon capture and identified to species by a professional taxonomist. Fish species identified and released in the field were photographed for reference. All fixed fish samples were transferred to ethanol and retained for future reference.

Fish data were compiled and analyzed by site using state biocriteria and methods outlined in the state's *Use Support Assessment Protocols* (OWRB 2011). In addition, each site was assessed using a modified version of Karr's Index of Biotic Integrity (IBI) (adapted from Plafkin et al. 1989). Descriptive statistics were determined for each metric using the *Minitab V. 14* software. The condition of the fish community was based on indices of species richness, community quality, trophic structure, and by comparison to the average scores of high-quality streams in that ecoregion. The modified IBI score was calculated using the following metrics:

- (1) The **total number of fish species** decreases with decreasing water or habitat quality.
- (2) The **number of sensitive benthic species (darters, madtoms, sculpins)** decreases with increasing siltation and increasing benthic oxygen demand. Many of these fish actually live within the cobble and

gravel interstices and are very good indicators of conditions that make this environment inhospitable. These species are weak swimmers that do not readily travel up and down a stream, so their presence or absence at a site relates well to both past and present habitat and water quality conditions at that site.

(3) The **number of sunfish species** decreases with decreasing pool quality and with decreasing cover. Sunfish also require a fairly stable substrate on which to spawn, so their long-term success is also tied to conditions that affect the amount of sediment that enters and leaves the stream.

(4) The **number of intolerant species** is a characteristic of the fish community that separates high quality from moderate quality sites. A high quality stream will have several members of the fish community that are intolerant to environmental stress. A stream of only moderate quality will have fish that are moderately and highly tolerant of environmental stress. The intolerant species will not be present in the moderate quality stream.

(5) The **proportion of tolerant individuals** is a characteristic that allows moderate quality streams to be separated from low quality streams. These are opportunistic, tolerant fish that dominate communities that have lost their competitors through loss of habitat or water quality.

(6) The **proportion of individuals as insectivorous cyprinids** increases as the quality and quantity of the invertebrate food base increases. These are the dominant minnows in North American streams but are replaced by either omnivorous or herbivorous minnows as the quality of the food base deteriorates. Often, as the density of aquatic invertebrates decreases, the standing crop of algae increases. This is because the aquatic invertebrates are the largest group of primary consumers. Fish that can switch their diet to algae or fish that eat only algae will replace fish that cannot adapt to the new conditions.

(7) The **proportion of individuals as lithophilic spawners** decreases as the quality of the stream decreases. Lithophilic spawners require cobble or gravel in order to spawn; hence, these fish are sensitive to siltation. This metric allows separation of excellent streams from moderate quality streams.

For each of these seven metrics, a score of 5, 3, or 1 was assigned (Table 3), and these scores were summed to get a total IBI score (35 point maximum) for each site. For all “proportion” metrics, the score was based on the actual metric. For all non–proportion metrics, the score was determined by dividing the monitoring site’s metric by the average high quality site metric of the same ecoregion. Each monitoring site’s total score was then compared to the high quality site total score in that ecoregion and given an integrity rating (as established and suggested by the EPA RBP; see Table 4, below). IBI scores that fell between the assessment ranges were classified in the closest scoring group. This score indicates the quality of the fish community (high scores indicate higher quality) but says nothing about whether any deficiencies are due to degraded water quality or to degraded habitat.

Table 3. Index of Biotic Integrity (IBI) scoring criteria for fish.

Metrics	5	3	1
Number of species	>67%	33-67%	<33%
Number of sensitive benthic species	>67%	33-67%	<33%
Number of sunfish species	>67%	33-67%	<33%
Number of intolerant species	>67%	33-67%	<33%
Proportion tolerant individuals	<10%	10-25%	>25%
Proportion insectivorous cyprinid individuals	>45%	20-45%	<20%
Proportion individuals as lithophilic spawners	>36%	18-36%	<18%

Table 4. Index of Biotic Integrity (IBI) score interpretation for fish.

% Comparison to the Reference Score	Integrity Class	Characteristics
97 – 100 %	Excellent	Comparable to pristine conditions, exceptional species assemblage
80 – 87%	Good	Decreased species richness, especially intolerant species
67 – 73%	Fair	Intolerant and sensitive species rare or absent
47 – 57%	Poor	Top carnivores and many expected species absent or rare; omnivores and tolerant species dominant
20 – 37%	Very Poor	Few species and individuals present; tolerant species dominant; diseased fish frequent

2.5.3 Macroinvertebrates

Collection of macroinvertebrates was attempted at all fixed sites for both winter and summer index periods of July 2009 through March 2011 according to procedures outlined in the OCC SOP (2011). A single macroinvertebrate collection was obtained during the summer period for each probabilistic site. Index periods represent seasons of relative community stability that afford opportunity for meaningful site comparisons. For Oklahoma, the summer index occurs from July 1 to September 15; the winter index occurs from January 1 to March 15. In order for macroinvertebrate collections to be obtained, flowing water must be present. Sampling efforts included attempts to procure animals from all available habitats at a site; thus, total effort at a site may entail up to three total samples with one from each of the following habitats: rocky riffles, streamside vegetation, and woody debris.

Collection methods involved sampling each of the habitats similar to methods outlined in the EPA Rapid Bioassessment Protocols (Plafkin et al. 1989). Riffle sampling effort consisted of three, one meter squared kicknet samples in the areas of rocky substrate reflecting the breadth of the velocity regime at a site. Riffles with substrates of bedrock or tight clay were not sampled. Any streamside vegetation in the current that appeared to offer fine structure was sampled by agitation within a #30 mesh dip net for three minutes total agitation time. Any dead wood with or without bark which was in current fast enough to offer suitable habitat for organisms was sampled by agitation or by scraping/brushing

upstream of a #30 mesh dip net for 5 minutes. Woody debris sampled generally ranged in size from ¼” to about 8” in diameter. Each sample type was preserved independently in quart mason jars with ethanol, labeled, and sent to a professional taxonomist for picking and identification.

Data was compiled, collated by year, season, and sample type and entered into a spreadsheet for metric calculations. The six metrics used to assess the macroinvertebrate community include the following:

- (1) The **number of taxa** refers to the total number of taxonomically different types of animals in the sample. As is the case with the fish, this number rises with increasing water and/or habitat quality (Plafkin et al. 1989).
- (2) The **Modified Hilsenhoff Biotic Index (HBI)** is a measure of the invertebrate community’s tolerance to organic pollution. It ranges between 0 and 10 with 0 being the most pollution sensitive. The index used in the RBP Manual is based on the pollution tolerance of invertebrates from the upper Midwest. The Index used here is calculated the same way, but used tolerance values of North Carolina invertebrates (Plafkin et al. 1989).
- (3) The **EPT Index** is the number of different taxa from the orders Ephemeroptera, Plecoptera, and Trichoptera, the mayflies, stoneflies, and caddis flies respectively. With few exceptions, these insects are more sensitive to pollution than any other groups. As a stream deteriorates in quality, members of this group will be the first to disappear. This robust metric allows discrimination between all but the worst of streams (Plafkin et al. 1989).
- (4) The **percent EPT** is a measure of how many individuals in the sample are members of the EPT group. This metric helps to separate high quality streams from those of moderately high quality. The highest quality streams will have many individuals of many different taxa of EPT. As conditions deteriorate, animals will begin to die or to drift downstream. At this point, the community will still have many taxa of EPT, but there will be fewer individuals (Plafkin et al. 1989).
- (5) **Percent dominant two taxa** is the percentage of the collection composed of the most common two taxa. As more and more species are excluded by increasing pollution, the remaining species can increase in numbers due to the unused resources left by the excluded animals. This metric helps to separate the high quality streams from those of moderate quality (Plafkin et al., 1989).
- (6) The **Shannon-Weaver Species Diversity Index** measures the evenness of the species distribution. It increases as more and more taxa are found in the collection and as individual taxa become less dominant. The metric increases with increasing biotic quality (Plafkin et al. 1989).

Descriptive statistics of each season-specific sample type (e.g., summer riffle, winter vegetation, summer woody) for each site were determined via *Minitab V. 14* and were compared to the average respective metric of high-quality streams in the ecoregion. A Bioassessment score was calculated similarly to the IBI score for fish. For each site, scores of 6, 4, 2, or 0 were assigned for each metric (according to the criteria in Table 5, below) and then summed to get a total bioassessment score for each site, with a maximum of 36 points. For taxa richness and EPT taxa richness, the percentages used

to assign scores were obtained by dividing each monitoring site metric by the average high quality site metric in a particular ecoregion. For the HBI metric, the high quality site value was divided by the monitoring site value (high quality site metric / monitoring site metric). For the remaining metrics, the score was based on the actual values obtained instead of being relative to the high quality site metric. Each monitoring site's total score was then compared to the average high quality sites' total score (in that ecoregion) and classified according to the condition gradient outlined in Table 6 (adapted from Plafkin et al. 1989).

Table 5. Bioassessment scoring criteria for macroinvertebrates.

Metrics	6	4	2	0
Taxa Richness**	>80%	60-80%	40-60%	<40%
Modified HBI* (**)	>85%	70-85%	50-70%	<50%
EPT/Total***	>30%	20-30%	10-20%	<10%
EPT Taxa**	>90%	80-90%	70-80%	<70%
% Dominant 2 Taxa**	<20%	20-30%	30-40%	>40%
Shannon-Weaver***	>3.5	2.5-3.5	1.5-2.5	<1.5

*Modified HBI Using North Carolina Tolerance Values

**RBP for Use in Streams and Rivers 1989

***Modified by OCC

Table 6. Bioassessment score interpretation for macroinvertebrates.

% Comparison to the Reference Score	Biological Condition	Characteristics
>83%	Non-Impaired	Comparable to the best situation expected within the ecoregion. Balanced trophic and community structure for stream size.
54-79%	Slightly Impaired	Community structure less than expected. Species richness is less than expected due to loss of some intolerant forms. Percent contribution of tolerant forms is increased.
21-50%	Moderately Impaired	Fewer species due to the loss of most intolerant forms. Reduction in EPT index.
<17%	Severely Impaired	Few species present. If high densities of organisms occur, they are dominated by 1 or 2 taxa.

2.6 WATERSHED ASSESSMENT

To investigate potential sources of NPS pollution for streams showing beneficial use impairment, relevant data layers were explored using ArcView 3.2 Geographic Information System (GIS) software. Data explored included the 2006 USGS National Land Cover Dataset (NLCD), oil and gas wells, confined animal feeding operations, national pollution discharge elimination system permit holders, total retention sites, biosolid land application sites, and other data layers. The NLCD was explored to

determine percent occurrence of particular landuse types such as bare rock/sand/clay, vegetation (broken into several categories, both natural and agricultural), open water, and residential/commercial/industrial uses (divided into several categories).

2.7 BENEFICIAL USE SUPPORT ASSESSMENT

Each fixed site's assigned beneficial uses were evaluated following the protocols outlined in the state's *Continuing Planning Process, Integrated Water Quality Report Listing Methodology* (Oklahoma Department of Environmental Quality 2012) and per *Oklahoma Administrative Code 785, Chapter 46: Implementation of Oklahoma's Water Quality Standards, Subchapter 15: Use Support Assessment Protocols* (OWRB 2011). Streams were considered non-supporting when Oklahoma Water Quality Standards were violated as determined by criteria and rules listed in these documents. Parameters not addressed in OAC 785:46-15 were assessed using applicable state and federal rules and regulations to determine support status. Assessment results were submitted to the ODEQ for final assimilation in the state's 2010 and 2012 Integrated Reports submitted to EPA Region VI.

3.0 RESULTS AND DISCUSSION

3.1 WATER QUALITY MONITORING

All chemical and physical water quality data collected for the project are included in Appendix A.1; Appendix A.2 contains the bacteria data. Table 7 gives the mean values of all water quality parameters collected in-situ for each fixed site, regardless of elevated or base flow. Table 8 provides the means for all chemical analytes assessed, regardless of flow. Descriptive statistics for water quality parameters are presented by site in Appendix A.3

Table 7. Mean *in-situ* water quality values for Basin Group 4 Fixed Monitoring Sites, 2009-2011.

SiteName	WBID	DO (mg/L)	DO % Sat	Turbidity (NTU)	Alkalinity (CaCO ₃)	Hardness (mg/L)	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Flow (cfs)
Barnitz Creek	OK310830-03-0200C	9.99	96.90	19.34	168.2	1880.0	16.0	2755.9	8.03	31.19
Beaver Creek (Custer Co.)	OK310830-03-0190C	9.99	96.17	16.70	163.9	1729.6	15.4	2492.5	7.79	10.97
Beaver Creek (Jefferson Co.)	OK311200-00-0030L	8.47	85.40	76.41	212.3	288.1	18.8	741.2	8.30	16.67
Big Sandy Creek	OK310800-01-0090G	9.01	93.18	3.35	160.0	165.7	19.4	365.8	7.95	8.62
Boggy Creek	OK310830-03-0100C	10.17	99.15	56.77	240.7	954.2	16.1	1691.8	8.05	12.26
Buffalo Creek	OK311510-02-0090D	9.57	91.36	56.90	260.0	1010.5	14.3	3145.1	8.20	10.29
Caddo Creek	OK310800-03-0010F	7.98	79.69	43.82	160.5	191.6	17.4	523.5	8.00	12.60
Cavalry Creek	OK310830-03-0070D	10.13	97.06	37.21	215.5	1784.0	15.6	2825.3	7.94	4.95
Chigley Sandy Creek	OK310800-02-0190D	8.66	86.87	5.83	273.2	256.5	17.3	631.0	7.78	10.75
Cobb Creek	OK310830-06-0050M	9.10	88.94	32.80	197.9	443.0	16.0	831.2	8.04	25.84
Cow Creek	OK311200-00-0060L	9.45	97.76	53.98	246.1	317.6	18.1	912.8	8.40	6.40
Deep Red Creek	OK311310-03-0010D	7.30	72.70	211.43	225.3	505.9	17.1	2059.9	7.96	6.17
Delaware Creek	OK310830-01-0030G	11.06	117.32	12.77	212.8	1122.1	19.5	2470.7	8.05	4.07
East Barnitz Creek	OK310830-03-0210C	10.19	99.74	15.01	162.8	1880.3	16.2	2714.0	8.04	6.67
East Cache Creek: Lower	OK311300-01-0020G	8.40	81.90	132.72	184.4	231.3	18.3	715.6	8.11	25.23
East Cache Creek: Upper	OK311300-02-0010M	7.24	69.28	22.49	214.7	280.1	16.9	734.7	7.63	7.37
Elk Creek	OK311500-03-0010G	8.88	81.62	46.82	248.4	785.2	16.3	1873.7	8.18	17.73
Finn Creek	OK310810-02-0020D	7.85	76.40	33.81	385.7	405.1	15.2	760.9	8.03	9.26
Fish Creek	OK311800-00-0130G	10.65	106.23	30.83	172.9	2967.3	14.8	13879.8	7.88	1.14
Fivemile Creek	OK310830-06-0080D	9.16	89.05	40.12	228.9	259.2	15.8	535.4	8.10	7.96
Fleetwood Creek	OK311100-01-0300D	7.33	67.98	54.13	342.2	327.1	16.1	794.0	7.79	1.18
Gypsum Creek	OK311600-01-0020F	12.89	138.35	12.43	136.6	3820.8	19.1	14227.6	8.11	5.14
Haystack Creek	OK311800-00-0040D	8.36	84.78	51.07	170.1	1867.9	17.9	5039.5	7.89	0.72
Hickory Creek	OK311100-02-0010M	9.34	99.35	16.40	179.0	250.3	20.2	633.1	8.10	7.66
Ionine Creek	OK310820-01-0160L	11.56	127.85	22.92	271.0	1650.3	18.5	2736.2	7.94	4.87
Kickapoo Sandy Creek	OK310810-01-0050G	9.60	96.14	15.39	230.1	193.8	16.7	581.9	7.85	5.53
Lake Creek	OK311510-01-0040D	11.59	120.34	26.54	260.0	514.6	17.9	1478.9	8.18	0.54
Little Beaver Creek	OK311210-00-0050D	8.93	86.30	31.29	278.4	507.4	17.0	951.0	8.21	14.84
Little Deep Red Creek	OK311310-03-0040D	7.03	72.47	72.02	280.0	1144.6	18.4	5481.8	7.97	2.97
Little Elk Creek	OK311500-03-0040D	8.52	83.96	35.16	275.8	591.4	16.8	1651.0	8.02	1.22
Medicine Creek	OK311300-04-0060H	8.89	86.95	2.88	155.3	148.7	16.3	370.8	8.02	17.69
Mill Creek	OK310800-01-0190G	8.99	88.94	22.70	183.1	217.6	18.0	419.3	8.09	36.06
Mud Creek	OK311100-04-0010G	7.21	64.63	93.15	236.0	284.6	17.2	969.6	7.84	7.45

SiteName	WBID	DO (mg/L)	DO % Sat	Turbidity (NTU)	Alkalinity (CaCO ₃)	Hardness (mg/L)	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Flow (cfs)
North Elm Creek	OK311800-00-0170G	8.39	75.26	17.69	101.1	3157.5	14.3	13636.7	7.94	2.40
Oil Creek	OK310800-01-0240P	7.97	81.16	4.76	227.9	257.4	18.0	487.7	7.93	8.68
Otter Creek	OK311500-01-0080F	8.19	81.56	43.05	210.5	316.7	17.9	1366.0	7.88	5.59
Pennington Creek	OK310800-01-0120G	8.68	91.46	3.83	245.0	247.4	19.1	430.8	8.31	32.27
Quartermaster Creek	OK310840-01-0060L	11.78	115.76	40.92	263.5	2344.8	17.5	3682.5	8.08	0.50
Rainy Mountain Creek	OK310830-02-0060G	9.29	96.38	81.88	245.2	666.1	20.0	2023.6	8.15	8.34
Red Creek	OK311100-01-0290D	7.36	67.03	120.98	145.5	216.5	17.3	547.6	7.72	3.54
Rush Creek	OK310810-05-0010D	8.84	87.24	45.17	317.0	431.3	17.0	1223.5	8.13	23.51
Salt Creek	OK310810-03-0080G	9.03	86.75	70.31	360.0	472.4	15.3	1129.8	8.14	20.55
Sandstone Creek	OK310840-02-0020C	9.68	139.37	21.86	263.4	1369.7	15.6	2522.8	7.98	1.88
Sandy Creek	OK311600-01-0040G	8.65	79.97	31.04	178.1	3248.1	16.0	14691.0	7.71	19.79
Spring Creek (Caddo Co.)	OK310830-04-0010G	10.71	108.50	18.93	202.0	1324.4	16.6	2506.4	8.01	8.34
Spring Creek (Roger Mills Co.)	OK310840-02-0240D	8.18	82.95	11.29	291.7	246.4	16.9	650.3	8.06	0.37
Station Creek	OK311800-00-0060G	8.18	82.83	26.90	131.9	2116.6	16.1	4764.6	7.73	0.20
Stinking Creek (Kiowa Co.)	OK310830-02-0020D	8.39	125.60	51.70	254.6	462.7	17.8	1451.3	7.96	5.67
Stinking Creek (Caddo Co.)	OK310830-04-0030K	9.55	101.77	14.94	245.4	1613.3	19.4	2442.7	7.92	3.74
Sugar Creek	OK310830-05-0010D	9.32	91.31	39.38	232.5	1173.8	15.4	2422.1	8.01	37.87
Suttle Creek	OK311310-01-0070H	8.71	89.24	90.29	379.5	786.5	17.6	3931.5	7.99	1.66
Sweetwater Creek	OK311510-02-0120D	9.61	94.67	92.44	244.6	654.6	14.5	1575.5	8.30	16.29
Tepee Creek	OK311500-01-0110D	9.48	91.21	16.18	151.5	1156.3	15.9	3263.2	7.92	1.84
Timber Creek	OK311510-01-0090G	8.18	74.29	11.60	348.8	572.2	13.1	1262.5	7.99	1.82
Trail Creek	OK311500-03-0070D	11.18	116.25	40.83	286.6	887.1	18.1	1726.1	8.12	2.55
Turkey Creek	OK311600-02-0060J	7.63	71.24	61.73	161.8	2498.9	15.8	5239.9	7.72	4.30
Walnut Bayou	OK311100-03-0010G	9.24	92.20	66.88	190.2	264.7	19.2	846.3	8.09	23.02
Washington Creek	OK310810-01-0190G	8.06	74.01	45.91	269.9	231.8	14.4	640.7	7.86	0.73
West Barnitz Creek	OK310830-03-0230C	10.19	97.19	18.77	161.1	1931.5	15.7	2824.7	7.98	4.31
West Cache Creek	OK311310-02-0010M	7.27	75.08	34.52	125.3	118.4	17.8	427.1	7.95	15.04
Wildhorse Creek (Davis)	OK310810-01-0020G	9.66	99.60	52.90	275.5	376.2	18.3	979.8	8.23	29.63
Wildhorse Creek (Duncan)	OK310810-04-0140D	8.21	81.14	32.31	306.7	388.7	16.1	659.5	7.83	13.69
Wildhorse Creek (Tatums)	OK310810-03-0010R	8.97	88.59	90.47	293.5	461.4	16.8	1148.8	8.17	37.01

Table 8. Mean water quality values for Basin Group 4 Fixed Monitoring Sites, 2009-2011.

SiteName	WBID	Chloride (mg/L)	Sulfate (mg/L)	TotDisSolids (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)
Barnitz Creek	OK310830-03-0200C	29.25	2015.96	2715.1	0.0335	0.1525	0.0211	0.7340	0.0350	0.0734	29.9
Beaver Creek (Custer Co.)	OK310830-03-0190C	28.45	1708.13	2436.0	0.0610	0.2295	0.0221	0.7315	0.0301	0.0663	15.6
Beaver Creek (Jefferson Co.)	OK311200-00-0030L	69.25	74.16	435.2	0.0498	1.2932	0.0355	0.9665	0.3996	0.4812	35.0
Big Sandy Creek	OK310800-01-0090G	11.07	21.71	217.5	0.0214	0.0421	0.0200	0.2820	0.0315	0.0406	17.9
Boggy Creek	OK310830-03-0100C	470.61	867.46	1390.1	0.0529	1.1360	0.0300	0.6886	0.0407	0.0876	67.8
Buffalo Creek	OK311510-02-0090D	355.84	914.80	2039.1	0.0365	0.8785	0.0247	0.7360	0.0574	0.0964	74.6
Caddo Creek	OK310800-03-0010F	62.68	43.53	335.9	0.1296	1.0505	0.0232	0.7010	0.3991	0.4794	40.5
Cavalry Creek	OK310830-03-0070D	95.78	1740.88	2543.6	0.0574	1.1360	0.0232	0.9815	0.0501	0.1114	44.9
Chigley Sandy Creek	OK310800-02-0190D	46.06	14.44	386.7	0.0234	0.2185	0.0200	0.2495	0.0270	0.0445	10.3
Cobb Creek	OK310830-06-0050M	19.81	299.30	604.5	0.0671	1.3020	0.0742	0.5650	0.0927	0.1337	52.1
Cow Creek	OK311200-00-0060L	108.60	93.06	574.8	0.1087	4.4920	0.2055	2.8625	1.0217	1.0846	64.5
Deep Red Creek	OK311310-03-0010D	497.09	173.67	1279.3	0.0353	0.3175	0.0255	0.9540	0.1611	0.2351	95.3
Delaware Creek	OK310830-01-0030G	236.05	873.48	1671.2	0.0608	0.1635	0.0200	0.7605	0.0493	0.0935	17.1
East Barnitz Creek	OK310830-03-0210C	34.15	1922.04	2636.9	0.0409	0.1355	0.0205	0.7405	0.0452	0.0957	25.2
East Cache Creek: Lower	OK311300-01-0020G	61.72	83.12	426.8	0.0501	1.6005	0.0483	1.0574	0.5192	0.5995	78.8
East Cache Creek: Upper	OK311300-02-0010M	31.47	162.39	470.2	0.0522	0.5100	0.0332	0.4800	0.0298	0.0558	19.4
Elk Creek	OK311500-03-0010G	436.03	764.98	1392.8	0.0238	0.4620	0.0200	0.9110	0.0539	0.1216	36.0
Finn Creek	OK310810-02-0020D	36.42	33.71	469.8	0.0426	0.3465	0.0300	0.5590	0.0970	0.1365	32.4
Fish Creek	OK311800-00-0130G	4244.41	2655.52	9497.4	0.0583	0.1174	0.0200	0.7545	0.0173	0.0525	32.0
Fivemile Creek	OK310830-06-0080D	14.67	83.43	376.8	0.0847	0.8315	0.0795	0.5850	0.1000	0.1386	67.4
Fleetwood Creek	OK311100-01-0300D	49.35	39.90	526.4	0.2717	0.8084	0.0726	1.1926	0.1540	0.2192	16.5
Gypsum Creek	OK311600-01-0020F	4786.84	2401.56	9825.7	0.0668	1.1900	0.0200	0.7535	0.0153	0.0444	22.6
Haystack Creek	OK311800-00-0040D	1114.16	1966.91	4345.1	0.0221	0.2460	0.0200	0.9935	0.1032	0.1505	181.4
Hickory Creek	OK311100-02-0010M	79.53	48.03	382.0	0.0232	0.0540	0.0200	0.3565	0.0154	0.0376	13.0

SiteName	WBID	Chloride (mg/L)	Sulfate (mg/L)	TotDisSolids (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)
Ionine Creek	OK310820-01-0160L	71.52	1656.52	2487.7	0.0974	0.8816	0.0200	0.8200	0.0410	0.0723	30.1
Kickapoo Sandy Creek	OK310810-01-0050G	53.78	34.46	377.0	0.0524	0.5060	0.0263	0.5465	0.0660	0.0988	16.3
Lake Creek	OK311510-01-0040D	261.77	441.59	933.6	0.0388	0.9610	0.0350	0.7875	0.0333	0.0872	13.4
Little Beaver Creek	OK311210-00-0050D	44.54	230.09	652.4	0.0416	0.1925	0.0232	0.5700	0.0511	0.1083	60.2
Little Deep Red Creek	OK311310-03-0040D	1633.71	677.81	3467.8	0.0387	0.2405	0.0574	1.1458	0.1109	0.1951	53.2
Little Elk Creek	OK311500-03-0040D	131.12	357.98	937.0	0.0734	0.4935	0.0394	0.7555	0.0666	0.1278	19.1
Medicine Creek	OK311300-04-0060H	20.50	19.48	213.2	0.0192	0.0430	0.0200	0.2670	0.0101	0.0234	10.0
Mill Creek: Lower	OK310800-01-0190G	13.51	35.03	258.2	0.0335	0.1375	0.0200	0.3340	0.0344	0.0535	22.5
Mud Creek	OK311100-04-0010G	132.92	49.82	556.6	0.0469	0.0940	0.0200	1.0195	0.1570	0.2381	59.4
North Elm Creek	OK311800-00-0170G	5396.54	2395.98	9442.0	0.0728	0.1776	0.0200	0.8494	0.0198	0.0462	29.2
Oil Creek	OK310800-01-0240P	21.04	28.38	293.0	0.0287	0.6870	0.0232	0.3740	0.0447	0.0836	10.2
Otter Creek	OK311500-01-0080F	282.84	264.38	796.6	0.0706	0.6390	0.0240	0.9665	0.1577	0.2128	21.9
Pennington Creek	OK310800-01-0120G	4.43	8.71	241.2	0.0217	0.1230	0.0222	0.1890	0.0098	0.0201	10.3
Quartermaster Creek	OK310840-01-0060L	66.66	2567.54	3271.4	0.0714	0.2979	0.0274	1.0310	0.0713	0.1284	57.3
Rainy Mountain Creek	OK310830-02-0060G	232.07	701.11	1521.5	0.0302	0.1358	0.0200	0.8421	0.0935	0.1513	67.9
Red Creek	OK311100-01-0290D	99.79	14.26	415.7	0.0706	0.2895	0.0280	1.2395	0.0877	0.1847	32.4
Rush Creek	OK310810-05-0010D	136.69	162.75	732.0	0.0616	0.1185	0.0253	0.5380	0.0305	0.0892	51.9
Salt Creek	OK310810-03-0080G	163.90	83.92	702.3	0.0240	0.1430	0.0200	0.7195	0.0684	0.1359	366.6
Sandstone Creek	OK310840-02-0020C	50.64	1327.44	2039.7	0.0505	0.1800	0.0200	0.4755	0.0228	0.0489	16.3
Sandy Creek	OK311600-01-0040G	5160.84	2281.20	9986.8	0.0829	1.7280	0.0200	0.8730	0.0233	0.0644	47.3
Spring Creek (Caddo Co.)	OK310830-04-0010G	54.89	1224.27	1898.5	0.0670	0.2284	0.0372	0.7711	0.0529	0.0899	44.3
Spring Creek (Roger Mills Co.)	OK310840-02-0240D	29.08	60.47	390.1	0.1607	0.1450	0.0616	0.6395	0.0504	0.0792	11.7
Station Creek	OK311800-00-0060G	1068.89	2249.49	4047.0	0.0457	1.6725	0.0200	0.8555	0.0140	0.0411	18.5
Stinking Creek (Kiowa Co.)	OK310830-02-0020D	179.71	321.66	930.2	0.0534	0.3363	0.0339	0.7216	0.0871	0.1327	35.6
Stinking Creek (Caddo Co.)	OK310830-04-0030K	42.48	1455.46	2236.1	0.0468	0.1772	0.0200	0.6194	0.0321	0.0565	46.3
Sugar Creek	OK310830-05-0010D	105.73	1213.25	1961.7	0.1813	0.3989	0.0389	0.9489	0.1483	0.2178	86.3

SiteName	WBID	Chloride (mg/L)	Sulfate (mg/L)	TotDisSolids (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)
Suttle Creek	OK311310-01-0070H	932.40	576.53	2501.7	0.0800	0.2635	0.0253	1.4690	0.2662	0.3768	63.6
Sweetwater Creek	OK311510-02-0120D	134.94	404.11	940.3	0.0445	0.4165	0.0253	0.7083	0.1274	0.1876	117.6
Tepee Creek	OK311500-01-0110D	808.93	879.86	2397.6	0.0497	0.3758	0.0242	0.7747	0.0901	0.2772	13.7
Timber Creek	OK311510-01-0090G	67.17	365.77	877.2	0.0757	0.2910	0.0353	0.4965	0.0337	0.0632	11.6
Trail Creek	OK311500-03-0070D	73.36	809.98	1460.8	0.0710	1.5230	0.0389	0.6595	0.0416	0.0831	21.4
Turkey Creek	OK311600-02-0060J	1417.13	2075.17	4394.8	0.0681	1.7435	0.0200	0.8045	0.0414	0.0853	48.7
Walnut Bayou	OK311100-03-0010G	137.97	65.38	483.2	0.0502	0.0560	0.0200	0.5495	0.0370	0.0685	62.8
Washington Creek	OK310810-01-0190G	30.31	33.43	391.0	0.0366	0.0450	0.0247	0.6333	0.0422	0.0794	24.5
West Barnitz Creek	OK310830-03-0230C	29.58	2024.51	2762.9	0.0596	0.1310	0.0200	0.7865	0.0289	0.0521	29.4
West Cache Creek	OK311310-02-0010M	53.98	15.90	249.4	0.0250	0.2210	0.0300	0.5955	0.0855	0.1269	18.2
Wildhorse Creek (Davis)	OK310810-01-0020G	131.03	94.25	604.1	0.0204	0.0415	0.0226	0.4565	0.0250	0.0634	49.9
Wildhorse Creek (Duncan)	OK310810-04-0140D	14.41	67.47	403.2	0.0749	0.2450	0.0253	0.5355	0.0228	0.0795	33.1
Wildhorse Creek (Tatums)	OK310810-03-0010R	174.20	114.32	715.5	0.0230	0.0695	0.0237	0.6990	0.0548	0.1269	276.2

Tables 9 and 10 give the sample values for the Probabilistic sites.

Table 9. In-situ water quality values for Basin Group 4 Probabilistic Sites, 2009-2011.

Site Name	WBID	DO (mg/L)	DO % Sat	Turbidity (NTU)	Alkalinity (CaCO ₃)	Hardness (mg/L)	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Flow (cfs)
Armstrong Creek	OKR09730-095	7.53	88.60	4.05	370.0	419.0	23.5	812.0	8.15	0.70
Barnitz Creek	OKR09730-106	7.85	98.10	47.85	181.5	1725.0	22.05	2904.0	8.02	4.09
Beaver Creek	OKR09730-091	9.96	129.80	21.55	154.5	217.0	28.2	551.0	8.04	16.31
Bitter Creek	OKR09730-005	4.735	56.25	158.50	134.5	1770.0	24.9	3326.0	7.57	7.95
Buffalo Creek	OKR09730-012	8.335	93.25	14.10	333.5	750.0	20.8	1587.0	8.03	1.04
Cavalry Creek	OKR09730-058	11.62	133.55	14.13	156.0	1850.0	26.2	2893.0	7.97	5.32
Chandler Creek	OKR09730-085	5.18	62.60	0.99	185.0	246.0	24.5	558.0	7.56	2.70
Cow Creek	OKR09730-098	8.7	112.10	18.90	2.3	335.0	28.5	1011.0	8.32	3.40
East Winter Creek	OKR09730-046	7.75	92.15	16.80	324.5	400.0	24.1	601.5	6.46	3.64
East Winter Creek	OKR09730-119	7.66	88.90	4.68	336.0	426.0	22.7	717.0	7.92	0.80
Elk Creek	OKR09730-041	3.865	45.45	10.77	162.0	552.0	24.8	1887.5	7.68	0.12
Elk Creek	OKR09730-057	4.22	51.00	41.25	102.5	1246.0	25.4	2173.5	7.26	2.14
Lafin Creek	OKR09730-003	7.44	97.10	27.41	291.5	300.0	29.6	2332.5	8.12	5.03
Lake Creek	OKR09730-080	8.06	88.30	18.40	266.5		19.8	525.1	8.14	4.18
Little Turkey Creek	OKR09730-069	1.67	19.3	13.30	254.0	910.0	11.5	1955.0	7.55	0.70
Medicine Creek	OKR09730-026	5.01	63.40	5.71	108.0	141.0	27.2	302.7	7.14	0.05
Mud Creek	OKR09730-031	4.37	55.70	67.20	392.0	397.0	28.3	1320.0	8.03	3.45
Mud Creek	OKR09730-110	3.76	48.00	77.90	337.0	508.0	28.2	1609.0	7.97	3.20
North Fork Red River	OKR09730-025	7.595	96.30	6.21	89.5	1286.0	27.5	4015.5	8.15	3.36
North Fork Red River	OKR09730-075	9.42	115.30	2.74	100.0	1182.0	25.7	3330.0	8.01	5.35
North Fork Red River	OKR09730-096	6.68	78.35	67.35	177.5	800.0	22.6	2757.5	8.18	58.01
Owens Creek	OKR09730-059	3.36	40.70	64.50	387.0	605.0	25.1	1093.0	7.78	1.10
Pennington Creek	OKR09730-124	8.04	101.15	3.46	231.0	275.0	26.8	521.5	8.07	34.36
Quartermaster Creek	OKR09730-116	3.85	43.60	79.61	315.0	3000.0	21.3	3245.5	7.43	0.00
Rabbit Creek	OKR09730-045	6.53	78.30	62.70	330.0	570.0	24.0	4461.5	7.83	0.00
Rainy Mountain Creek	OKR09730-014	7.055	87.55	11.50	209.5	690.0	26.5	3304.0	8.17	0.05
Rainy Mountain Creek	OKR09730-071	3.59	44.00	64.50	227.0	720.0	25.1	3081.5	8.07	0.50
Rush Creek	OKR09730-019	7.83	94.20	6.77	169.0	601.0	24.7	1100.0	7.92	3.07
Rush Creek	OKR09730-084	6.40	78.30	9.65	184.0	443.0	26.9	918.0	7.97	5.59
Salt Creek	OKR09730-062	8.59	110.25	36.75	332.0	760.0	26.7	1662.0	8.01	1.07
Sand Creek	OKR09730-139	2.93	8.95	6.07	238.5	215.0	23.1	495.4	7.14	0.00
Sandstone Creek	OKR09730-060	5.71	27.29	6.23	424.5	416.0	17.0	1005.0	7.64	0.09

Site Name	WBID	DO (mg/L)	DO % Sat	Turbidity (NTU)	Alkalinity (CaCO ₃)	Hardness (mg/L)	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Flow (cfs)
Station Creek	OKR09730-123	5.435	65.65	15.75	122.5	2140.0	25.3	5312.0	7.74	0.10
Timber Creek	OKR09730-136	3.205	35.30	86.25	417.0	430.0	22.4	972.0	7.82	0.10
Turkey Creek	OKR09730-109	9.055	119.70	66.15	70.5	1829.0	30.6	6245.0	8.41	0.28
Walnut Bayou	OKR09730-027	2.99	38.20	48.70	177.0	251.0	27.6	531.0	7.67	0.05
Washita River	OKR09730-020	7.09	86.85	14.85	180.0	1300.0	25.5	1784.0	7.74	38.36
Washita River	OKR09730-047	4.81	63.90	40.30	150.5	127.0	32.5	751.8	7.89	0.05
Washita River	OKR09730-074	7.015	83.80	8.73	167.5	1110.0	23.8	2382.5	7.96	47.29
Washita River	OKR09730-078	7.655	90.15	76.65	211.0	915.0	23.4	2239.0	7.97	23.49
Washita River	OKR09730-081	8.42	117.65	51.65	105.0	806.0	32.5	1514.0	8.43	572.52
Washita River	OKR09730-127	5.8	76.20	55.35	171.0	452.0	28.5	2167.5	8.02	252.06
White Shield Creek	OKR09730-052	7.31	43.16	22.50	426.0	505.0	19.3	964.0	8.19	0.41
White Shield Creek	OKR09730-094	7.595	86.85	38.80	335.5	1250.0	21.6	2207.5	8.01	1.22
Wild Horse Creek	OKR09730-008	7.405	82.30	9.56	216.0	2510.0	20.3	2497.0	8.00	1.40
AVERAGE		6.42	75.94	33.93	227.9	849.5	24.8	1947.2	7.87	24.77

Table 10. Water quality values for Basin Group 4 Probabilistic Sites.

SiteName	WBID	Chloride (mg/L)	Sulfate (mg/L)	TotDisSolids (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)
Armstrong Creek	OKR09730-095	33.50	66.30	454.0	0.0150	0.1800	0.0200	0.4700	0.0260	0.0310	10.0
Barnitz Creek	OKR09730-106	28.40	2402.90	2899.0	0.0150	0.2300	0.0200	0.7600	0.0430	0.0950	116.0
Beaver Creek	OKR09730-091	31.20	82.50	324.0	0.0340	0.0300	0.0200	0.1100	0.0450	0.0700	10.0
Bitter Creek	OKR09730-005	523.20	1057.60	2358.0	0.1770	2.4200	0.0200	1.0400	0.0570	0.1820	135.0
Buffalo Creek	OKR09730-012	96.70	755.90	1272.0	0.0150	0.3400	0.0200	0.5800	0.0240	0.0310	10.0
Cavalry Creek	OKR09730-058	126.50	2033.20	2828.0	0.0170	0.0200	0.0200	1.3600	0.0150	0.1000	59.0
Chandler Creek	OKR09730-085	32.50	19.70	321.0	0.0150	0.1200	0.0200	0.1100	0.0150	0.0350	10.0
Cow Creek	OKR09730-098	83.20	172.10	606.0	0.0910	9.2100	0.0200	0.6200	2.0040	1.7610	13.0
East Winter Creek	OKR09730-046	18.20	105.40	371.0	0.0150	0.4100	0.1400	0.7700	0.0630	0.1240	79.0
East Winter Creek	OKR09730-119	14.50	42.10	401.0	0.0150	0.3800	0.0200	0.2200	0.0190	0.0190	10.0
Elk Creek	OKR09730-041	39.20	486.00	898.0	0.1550	0.2000	0.1300	0.8000	0.0890	0.1850	18.0
Elk Creek	OKR09730-057	226.50	1443.80	2368.0	0.0160	0.0200	0.0200	0.9200	0.0070	0.0870	26.0
Lafin Creek	OKR09730-003	11.80	32.90	325.0	0.0150	0.2100	0.0200	0.6800	0.0410	0.0980	54.0
Lake Creek	OKR09730-080	14.80	264.70	393.0	0.0880	0.6900	0.1200	0.4300	0.0950	0.1390	18.0
Little Turkey Creek	OKR09730-069	87.20	950.60	1588.0	0.0150	0.7200	0.2100	0.8700	0.0220	0.1840	10.0

SiteName	WBID	Chloride (mg/L)	Sulfate (mg/L)	TotDisSolids (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSusSolids (mg/L)
Medicine Creek	OKR09730-026	5.40	14.30	177.0	0.0260	0.0200	0.0200	0.1600	0.0070	0.0180	10.0
Mud Creek	OKR09730-031	237.90	143.80	698.0	0.0150	0.0200	0.0200	0.7400	0.0610	0.0610	44.0
Mud Creek	OKR09730-110	283.80	105.40	869.0	0.0150	0.0200	0.0200	0.7500	0.0590	0.0700	47.0
North Fork Red River	OKR09730-025	803.10	1305.30	2940.0	0.0150	0.0200	0.0200	0.7100	0.0050	0.0740	10.0
North Fork Red River	OKR09730-075	831.80	1576.50	3042.0	0.0470	0.0200	0.0200	0.6600	0.0050	0.0980	10.0
North Fork Red River	OKR09730-096	457.60	876.00	1848.0	0.0150	0.4300	0.0200	0.9800	0.0540	0.0920	103.0
Owens Creek	OKR09730-059	13.40	91.10	621.0	0.1380	0.2700	0.1200	0.7900	0.0620	0.1420	166.0
Pennington Creek	OKR09730-124	3.50	6.30	255.0	0.0260	0.3000	0.0200	0.1100	0.0050	0.0770	10.0
Quartermaster Creek	OKR09730-116	54.10	2644.50	4407.0	0.1760	0.0200	0.0200	1.9600	0.0430	0.1250	52.0
Rabbit Creek	OKR09730-045	1407.10	488.20	2828.0	0.0840	0.0200	0.0200	1.0500	0.0420	0.2860	77.0
Rainy Mountain Creek	OKR09730-014	513.50	1009.50	2239.0	0.0210	0.0200	0.0200	1.0600	0.0160	0.0490	12.0
Rainy Mountain Creek	OKR09730-071	420.50	838.10	2008.0	0.0270	0.0200	0.0200	1.1200	0.0330	0.0810	57.0
Rush Creek	OKR09730-019	10.20	435.60	817.0	0.0220	0.2100	0.0700	0.3700	0.1060	0.1220	10.0
Rush Creek	OKR09730-084	68.30	183.10	579.0	0.0150	0.0500	0.0200	0.5300	0.0150	0.0890	13.0
Salt Creek	OKR09730-062	77.10	768.00	1180.0	0.0150	0.3200	0.0200	0.8900	0.1390	0.1450	41.0
Sand Creek	OKR09730-139	11.90	22.30	315.0	0.4790	0.0200	0.0200	1.3500	0.8030	0.8590	10.0
Sandstone Creek	OKR09730-060	41.50	54.30	561.0	0.0150	0.0700	0.0200	0.4700	0.0180	0.0320	10.0
Station Creek	OKR09730-123	1048.00	2018.00	4424.0	0.0730	1.3900	0.0200	0.5100	0.0050	0.0290	10.0
Timber Creek	OKR09730-136	57.40	39.40	559.0	0.2290	0.1200	0.1400	1.1000	0.1510	0.2200	79.0
Turkey Creek	OKR09730-109	1199.10	2507.10	4836.0	0.0380	0.1800	0.0200	1.3600	0.0220	0.1490	99.0
Walnut Bayou	OKR09730-027	241.10	99.70	644.0	0.0940	0.0200	0.0200	0.1100	0.0350	0.0880	44.0
Washita River	OKR09730-020	41.70	1631.40	1949.0	0.0150	0.4900	0.0200	0.6000	0.0540	0.0760	27.0
Washita River	OKR09730-047	6.70	9.20	167.0	0.0630	0.0200	0.0200	1.0610	0.0130	0.0790	12.0
Washita River	OKR09730-074	49.30	1337.80	2120.0	0.0810	0.4100	0.0200	1.0600	0.0190	0.0550	21.0
Washita River	OKR09730-078	75.10	1066.30	1556.0	0.0150	1.2700	0.0200	1.0900	0.0770	0.1300	135.0
Washita River	OKR09730-081	88.40	1011.00	1368.0	0.0150	0.0200	0.0200	0.9900	0.0390	0.1750	107.0
Washita River	OKR09730-127	82.10	1021.90	1604.0	0.0150	0.0800	0.0200	0.8900	0.0550	0.1710	115.0
White Shield Creek	OKR09730-052	46.60	260.60	696.0	0.0150	0.2900	0.0200	0.6300	0.1760	0.1960	16.0
White Shield Creek	OKR09730-094	47.10	1495.50	2028.0	0.0150	1.5900	0.1400	0.6200	0.1110	0.1140	10.0
Wild Horse Creek	OKR09730-008	46.40	2404.40	3480.0	0.0730	0.3300	0.1100	1.2700	0.1040	0.1740	74.0
AVERAGE		214.16	786.23	1516.0	0.0576	0.5164	0.0422	0.7718	0.1089	0.1604	44.6

Most of the fixed sites are designated as Warm Water Aquatic Communities (WWAC) and have a critical dissolved oxygen (DO) level of 5.0 mg/L most of the year (6.0 mg/L from April 1 – June 15). Sandy Creek has a Habitat Limited Aquatic Community (HLAC) designation, with a critical DO level of 3.0 mg/L most of the year (4.0 mg/L from April 1 – June 15). Pennington Creek has a Cool Water Aquatic Community (CWAC) designation, with a critical DO level of 6.0 mg/L most of the year (7.0 mg/L March 1 – May 31). Table 11 shows all instances of criteria exceedance; nearly 60% of the streams in this rotation exceeded the DO standard at least once. Beaver, Big Sandy, Deep Red, Upper East Cache, Finn, Fleetwood, Haystack, Little Deep Red, Little Elk, Lower Mill, Mud, North Elm, Oil, Otter, Red, Spring, Stinking, Timber, Turkey, Washington, and West Cache Creeks all had more than 10% of the samples in this monitoring cycle below the criteria, representing 33% of the streams. Twenty percent of the probabilistic sites had DO values (in Table 9) below the WWAC standard.

Table 11. Low dissolved oxygen values (based on OAC 785:46-15; OWRB 2011).

% Samples with Low DO	Site Name	WBID	Date	DO
14%	Beaver Creek (Jefferson Co.)	OK311200-00-0030L	6/30/2009	3.61
			9/13/2010	3.67
			4/25/2011	4.61
26%	Big Sandy Creek	OK310800-01-0090G	6/24/2009	4.76
			7/27/2009	4.28
			9/1/2009	4.32
			7/26/2010	3.21
			9/8/2010	3.05
5%	Cavalry Creek	OK310830-03-0070D	9/8/2010	4.93
5%	Chigley Sandy Creek	OK310800-02-0190D	9/7/2010	1.9
10%	Cobb Creek	OK310830-06-0050M	6/29/2009	4.84
			7/20/2010	4.45
29%	Deep Red Creek	OK311310-03-0010D	6/29/2009	4.52
			6/28/2010	4.35
			9/23/2010	4.62
			10/18/2010	4.73
			4/25/2011	4.09

% Samples with Low DO	Site Name	WBID	Date	DO
10%	Delaware Creek	OK310830-01-0030G	6/25/2009	4.18
			7/24/2009	4.95
5%	East Cache Creek: Lower	OK311300-01-0020G	4/25/2011	3.79
48%	East Cache Creek: Upper	OK311300-02-0010M	6/11/2009	4.65
			6/29/2009	4.51
			8/3/2009	4.38
			9/15/2009	4.4
			4/12/2010	5.23
			5/24/2010	4.64
			6/28/2010	4.4
			8/2/2010	4.75
			9/13/2010	4.43
			4/25/2011	2.21
5%	Elk Creek	OK311500-03-0010G	4/26/2011	5.96
14%	Finn Creek	OK310810-02-0020D	8/11/2009	4.63
			8/31/2009	4.88
			4/19/2011	2.32

% Samples with Low DO	Site Name	WBID	Date	DO
5%	Fish Creek	OK311800-00-0130G	6/22/2010	3.38
5%	Fivemile Creek	OK310830-06-0080D	7/20/2010	4.01
45%	Fleetwood Creek	OK311100-01-0300D	7/1/2009	0.56
			7/15/2009	0.73
			10/13/2009	3.71
			4/13/2010	5.71
			5/25/2010	5.09
			6/28/2010	3.19
			8/3/2010	0.39
			3/22/2011	4.46
			4/26/2011	2.95
11%	Haystack Creek	OK311800-00-0040D	8/10/2009	4.84
			9/8/2010	4.63
5%	Ionine Creek	OK310820-01-0160L	10/19/2010	4.91
20%	Little Deep Red Creek	OK311310-03-0040D	6/29/2009	4.86
			6/28/2010	3.6
			3/21/2011	4.22
			4/25/2011	3.51
11%	Little Elk Creek	OK311500-03-0040D	7/20/2009	4.78
			9/8/2010	4.11
19%	Mill Creek	OK310800-01-0190G	5/19/2009	3.91
			6/23/2009	4.77
			7/27/2009	4.62
			9/1/2009	4.72

% Samples with Low DO	Site Name	WBID	Date	DO
38%	Mud Creek	OK311100-04-0010G	7/1/2009	4.96
			8/4/2009	3.76
			9/9/2009	2.28
			6/29/2010	3.96
			8/3/2010	2.98
			10/18/2010	3.66
			11/30/2010	3.44
			4/26/2011	1.63
13%	North Elm Creek	OK311800-00-0170G	7/28/2009	4.94
			6/22/2010	2.27
14%	Oil Creek	OK310800-01-0240P	6/10/2009	5.7
			7/26/2010	4.7
			9/8/2010	3.67
29%	Otter Creek	OK311500-01-0080F	5/26/2009	5.49
			8/3/2009	4.32
			8/10/2009	4.42
			5/24/2010	5.64
			10/18/2010	4.78
4/25/2011	3.53			
5%	Pennington Creek	OK310800-01-0120G	7/29/2009	4.9
5%	Rainy Mountain Creek	OK310830-02-0060G	9/3/2009	4.88

% Samples with Low DO	Site Name	WBID	Date	DO
52%	Red Creek	OK311100-01-0290D	5/27/2009	3.09
			7/1/2009	2.07
			8/4/2009	4.09
			8/25/2009	2.22
			9/9/2009	3.33
			11/17/2009	4.25
			4/13/2010	4.79
			5/25/2010	4.96
			6/28/2010	4.8
			8/3/2010	3.3
			10/19/2010	3.55
5%	Rush Creek	OK310810-05-0010D	4/19/2011	5.11
20%	Spring Creek (Roger Mills Co.)	OK310840-02-0240D	6/2/2009	5.54
			10/5/2009	4.8
			11/2/2009	3.68
			6/21/2010	4.04
5%	Station Creek	OK311800-00-0060G	9/8/2010	4.35
15%	Stinking Creek (Kiowa Co.)	OK310830-02-0020D	5/25/2010	5.99
			9/14/2010	4.92
			10/19/2010	4.59

% Samples with Low DO	Site Name	WBID	Date	DO
10%	Suttle Creek	OK311310-01-0070H	6/28/2010	4.96
			10/18/2010	0.94
15%	Timber Creek	OK311510-01-0090G	7/27/2009	3.77
			10/5/2009	4.52
			9/7/2010	3.46
29%	Turkey Creek	OK311600-02-0060J	5/27/2009	5.7
			6/30/2009	3.53
			8/4/2009	4.44
			4/13/2010	4.64
			6/29/2010	2.71
			8/3/2010	3.86
5%	Walnut Bayou	OK311100-03-0010G	8/3/2010	3.41
16%	Washington Creek	OK310810-01-0190G	6/22/2009	3.99
			9/7/2010	4.61
			4/19/2011	4.44
19%	West Cache Creek	OK311310-02-0010M	6/29/2009	3.66
			8/3/2009	4.5
			6/28/2010	4.86
			4/25/2011	4.9
5%	Wildhorse Creek (Duncan)	OK310810-04-0140D	4/25/2011	5.3

Table 12 shows the geometric mean of *Enterococcus* and *E. coli* bacteria samples for each site over the two-year monitoring period. Creeks highlighted in yellow are designated Secondary Body Contact Recreation (SBCR), which allows for a higher bacteria concentration: Beaver, Delaware, North Elm, Rainy Mountain, Sandy, Sugar, and Suttle. All other sites are designated Primary Body Contact Recreation (PBCR). Only Pennington meets the *Enterococcus* standard, while about half of the streams meet the *E. coli* standard, as denoted by the asterisk in Table 12. Only Pennington is fully attaining the Recreation designated use, meeting the standards for both types of bacteria. To be listed on the state’s 303(d) list, the geometric mean must exceed the set criteria for at least one of the bacteria types (OWRB 2011).

Table 12. Geometric mean of bacteria values for Basin Group 4 fixed monitoring sites, 2009-2010 OCC data. An asterisk (*) indicates that the stream meets state standards for that bacteria type. Most streams are impaired by bacteria, and these streams either will be added to the state 303(d) list, are currently on the 303(d) list, or have been moved to Category 4 for bacteria after a TMDL has been produced. Those highlighted in yellow have a SBCR designation, allowing higher bacteria concentrations.

SiteName	WBID	<i>E. coli</i>	<i>Enterococcus</i>	Comments	SiteName	WBID	<i>E. coli</i>	<i>Enterococcus</i>	Comments
Barnitz Creek	OK310830-03-0200C	177.19	496.05	Geometric Mean	East Barnitz Creek	OK310830-03-0210C	144.81	400.40	Geometric Mean
Beaver Creek (Custer Co.)	OK310830-03-0190C	109.29*	297.28	Geometric Mean	East Cache Creek: Lower	OK311300-01-0020G	275.50	336.59	Geometric Mean
Beaver Creek (Jefferson Co.)	OK311200-00-0030L	101.14*	108.60	Geometric Mean	East Cache Creek: Upper	OK311300-02-0010M	40.15*	102.07	Geometric Mean
Big Sandy Creek	OK310800-01-0090G	18.58*	99.28	Geometric Mean	Elk Creek	OK311500-03-0010G	156.79	323.69	Geometric Mean
Boggy Creek	OK310830-03-0100C	188.60	390.34	Geometric Mean	Finn Creek	OK310810-02-0020D	85.43*	414.83	Geometric Mean
Buffalo Creek	OK311510-02-0090D	431.73	661.25	Geometric Mean	Fish Creek	OK311800-00-0130G	41.86*	69.77	Geometric Mean
Caddo Creek	OK310800-03-0010F	160.97	146.03	Geometric Mean	Fivemile Creek	OK310830-06-0080D	567.83	911.57	Geometric Mean
Cavalry Creek	OK310830-03-0070D	330.11	448.75	Geometric Mean	Fleetwood Creek	OK311100-01-0300D	496.25	1790.58	Geometric Mean
Chigley Sandy Creek	OK310800-02-0190D	53.41*	258.47	Geometric Mean	Gypsum Creek	OK311600-01-0020F	36.83*	147.91	Geometric Mean
Cobb Creek	OK310830-06-0050M	376.50	436.06	Geometric Mean	Haystack Creek	OK311800-00-0040D	73.95*	157.93	Geometric Mean
Cow Creek	OK311200-00-0060L	446.02	509.62	Geometric Mean	Hickory Creek	OK311100-02-0010M	37.03*	76.34	Geometric Mean
Deep Red Creek	OK311310-03-0010D	198.47	309.58	Geometric Mean	Ionine Creek	OK310820-01-0160L	40.66*	53.62	Geometric Mean
Delaware Creek	OK310830-01-0030G	80.96*	108.16	Geometric Mean	Kickapoo Sandy Creek	OK310810-01-0050G	435.28	602.51	Geometric Mean

SiteName	WBID	E. coli	Enterococcus	Comments
Lake Creek	OK311510-01-0040D	135.56	83.49	Geometric Mean
Little Beaver Creek	OK311210-00-0050D	212.26	363.16	Geometric Mean
Little Deep Red Creek	OK311310-03-0040D	128.14	425.29	Geometric Mean
Little Elk Creek	OK311500-03-0040D	53.10*	198.21	Geometric Mean
Medicine Creek	OK311300-04-0060H	64.36*	144.10	Geometric Mean
Mill Creek	OK310800-01-0190G	102.94*	181.29	Geometric Mean
Mud Creek	OK311100-04-0010G	166.25	422.89	Geometric Mean
North Elm Creek	OK311800-00-0170G	57.59*	311.63	Geometric Mean
Oil Creek	OK310800-01-0240P	37.77*	96.00	Geometric Mean
Otter Creek	OK311500-01-0080F	131.99	168.67	Geometric Mean
Pennington Creek	OK310800-01-0120G	12.23*	28.57*	Geometric Mean
Quartermaster Creek	OK310840-01-0060L	64.49*	411.54	Geometric Mean
Rainy Mountain Creek	OK310830-02-0060G	139.15*	305.82	Geometric Mean
Red Creek	OK311100-01-0290D	192.43	344.34	Geometric Mean
Rush Creek	OK310810-05-0010D	189.24	189.91	Geometric Mean
Salt Creek	OK310810-03-0080G	157.78	433.08	Geometric Mean
Sandstone Creek	OK310840-02-0020C	46.56*	158.36	Geometric Mean
Sandy Creek	OK311600-01-0040G	41.76*	93.49	Geometric Mean
Spring Creek (Caddo Co.)	OK310830-04-0010G	188.16	349.57	Geometric Mean

SiteName	WBID	E. coli	Enterococcus	Comments
Spring Creek (Roger Mills)	OK310840-02-0240D	149.19	251.37	Geometric Mean
Station Creek	OK311800-00-0060G	56.13*	103.95	Geometric Mean
Stinking Creek	OK310830-02-0020D	124.92*	253.30	Geometric Mean
Stinking Creek	OK310830-04-0030K	42.66*	175.63	Geometric Mean
Sugar Creek	OK310830-05-0010D	103.96*	229.74	Geometric Mean
Suttle Creek	OK311310-01-0070H	478.92	896.27	Geometric Mean
Sweetwater Creek	OK311510-02-0120D	455.85	737.46	Geometric Mean
Tepee Creek	OK311500-01-0110D	187.66	545.38	Geometric Mean
Timber Creek	OK311510-01-0090G	311.53	339.56	Geometric Mean
Trail Creek	OK311500-03-0070D	24.89*	116.73	Geometric Mean
Turkey Creek	OK311600-02-0060J	149.53	863.92	Geometric Mean
Walnut Bayou	OK311100-03-0010G	46.46*	112.09	Geometric Mean
Washington Creek	OK310810-01-0190G	430.02	748.29	Geometric Mean
West Barnitz Creek	OK310830-03-0230C	133.23	544.51	Geometric Mean
West Cache Creek	OK311310-02-0010M	63.05*	141.55	Geometric Mean
Wildhorse Creek (Davis)	OK310810-01-0020G	63.18*	38.45	Geometric Mean
Wildhorse Creek (Duncan)	OK310810-04-0140D	463.71	743.33	Geometric Mean
Wildhorse Creek (Tatums)	OK310810-03-0010R	122.73*	149.11	Geometric Mean

Based on a single grab sample at each of the 45 probabilistic sites (results in Table 13, below), the geomean of the probabilistic sites is 58.8 colonies per 100 mL for *E. coli* and 140.2 colonies per 100 mL for *Enterococcus*. This indicates that streams in this basin are attaining for *E. coli* bacteria (standard is 126 colonies/100 mL) but are impaired by *Enterococcus* bacteria (standard is 33 colonies/100 mL). It should be noted that all the probabilistic samples were taken at base flow, whereas samples at fixed sites are taken regardless of flow, which could result in higher bacteria levels being observed at the fixed sites.

Table 13. Bacteria values for probabilistic sites.

Site Name	WBID	<i>E. coli</i>	<i>Enterococcus</i>	Comments
Armstrong Creek	OKR09730-095	225	325	One-time Sample
Barnitz Creek	OKR09730-106	15*	340	One-time Sample
Beaver Creek	OKR09730-091	60*	90	One-time Sample
Bitter Creek	OKR09730-005	140*	425	One-time Sample
Buffalo Creek	OKR09730-012	590	630	One-time Sample
Cavalry Creek	OKR09730-058	10*	60	One-time Sample
Chandler Creek	OKR09730-085	20*	290	One-time Sample
Cow Creek	OKR09730-098	55*	50	One-time Sample
East Winter Creek	OKR09730-046	10000	10000	One-time Sample
East Winter Creek	OKR09730-119	55*	490	One-time Sample
Elk Creek	OKR09730-041	10*	305	One-time Sample
Elk Creek	OKR09730-057	15*	25*	One-time Sample
Laflin Creek	OKR09730-003	860	450	One-time Sample
Lake Creek	OKR09730-080	470	560	One-time Sample
Little Turkey Creek	OKR09730-069	400	740	One-time Sample
Medicine Creek	OKR09730-026	10*	10*	One-time Sample
Mud Creek	OKR09730-031	370	100	One-time Sample

Site Name	WBID	<i>E. coli</i>	<i>Enterococcus</i>	Comments
Mud Creek	OKR09730-110	30*	30*	One-time Sample
North Fork Red River	OKR09730-025	5*	65	One-time Sample
North Fork Red River	OKR09730-075	5*	5*	One-time Sample
North Fork Red River	OKR09730-096	160	450	One-time Sample
Owens Creek	OKR09730-059	255	355	One-time Sample
Pennington Creek	OKR09730-124	25*	25*	One-time Sample
Quartermaster Creek	OKR09730-116	40*	120	One-time Sample
Rabbit Creek	OKR09730-045	210	160	One-time Sample
Rainy Mountain Creek	OKR09730-014	10*	160	One-time Sample
Rainy Mountain Creek	OKR09730-071	10*	40	One-time Sample
Rush Creek	OKR09730-019	10*	320	One-time Sample
Rush Creek	OKR09730-084	5*	85	One-time Sample
Salt Creek	OKR09730-062	90*	50	One-time Sample
Sand Creek	OKR09730-139	360	570	One-time Sample
Sandstone Creek	OKR09730-060	30*	200	One-time Sample
Station Creek	OKR09730-123	5*	105	One-time Sample
Timber Creek	OKR09730-136	180	880	One-time Sample

Site Name	WBID	<i>E. coli</i>	<i>Enterococcus</i>	Comments
Turkey Creek	OKR09730-109	160	190	One-time Sample
Walnut Bayou	OKR09730-027	15*	5*	One-time Sample
Washita River	OKR09730-020	70*	275	One-time Sample
Washita River	OKR09730-047	5*	5*	One-time Sample
Washita River	OKR09730-074	110*	200	One-time Sample
Washita River	OKR09730-078	185	200	One-time Sample

Site Name	WBID	<i>E. coli</i>	<i>Enterococcus</i>	Comments
Washita River	OKR09730-081	25*	20*	One-time Sample
Washita River	OKR09730-127	55*	80	One-time Sample
White Shield Creek	OKR09730-052	280	500	One-time Sample
White Shield Creek	OKR09730-094	40*	460	One-time Sample
Wild Horse Creek	OKR09730-008	640	190	One-time Sample

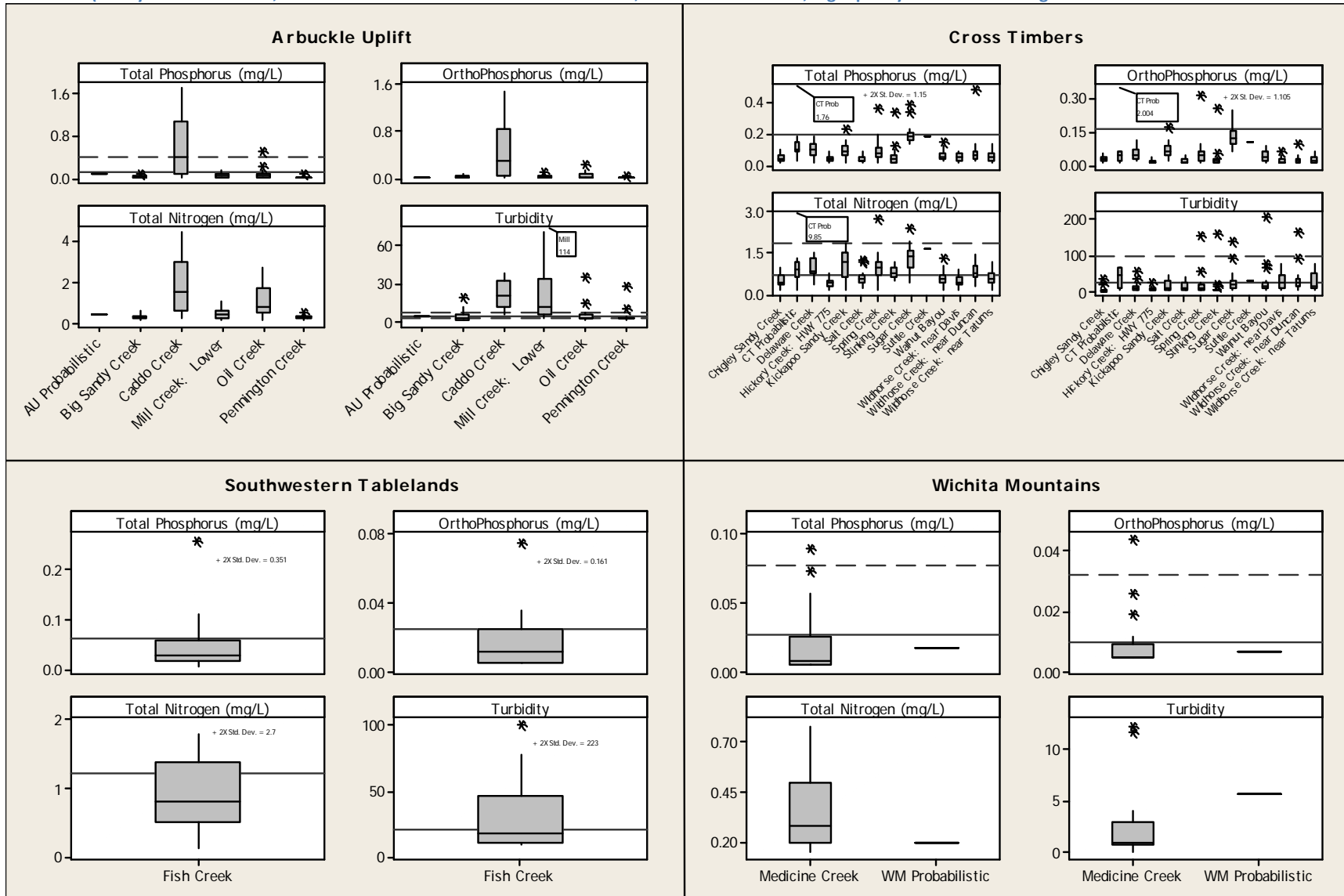
Select water quality parameters are summarized by box plots in Figure 2, below. To account for natural differences, sites were collated and analyzed by Level III ecoregions (Woods et al. 2005). Additionally, sites were compared to streams determined to be “high quality” sites in each ecoregion to determine general stream condition. Figure 2 shows interquartile range plots by site for four important indicators of pollution: orthophosphorus, total phosphorus, estimated total nitrogen (TKN plus nitrate/nitrite), and turbidity. All elevated flow data were omitted in these analyses in order to standardize the results. The probabilistic samples were composited by ecoregion as if they were samples from a single site in order to show the range and mean of those sites. These values are shown in each boxplot labeled “probabilistic.”

Regarding boxplot composition, the median of each site is shown by a line within the box with most outliers denoted by asterisks. The extreme outliers are denoted by values within a box on the graph. The mean of the high quality stream sites in a particular ecoregion is represented by a solid horizontal line, while dashed lines indicate +/- two standard deviations (representing 95% of the high quality data) for high quality site parameters. In instances where only one dashed line is present, the lower value was below zero.

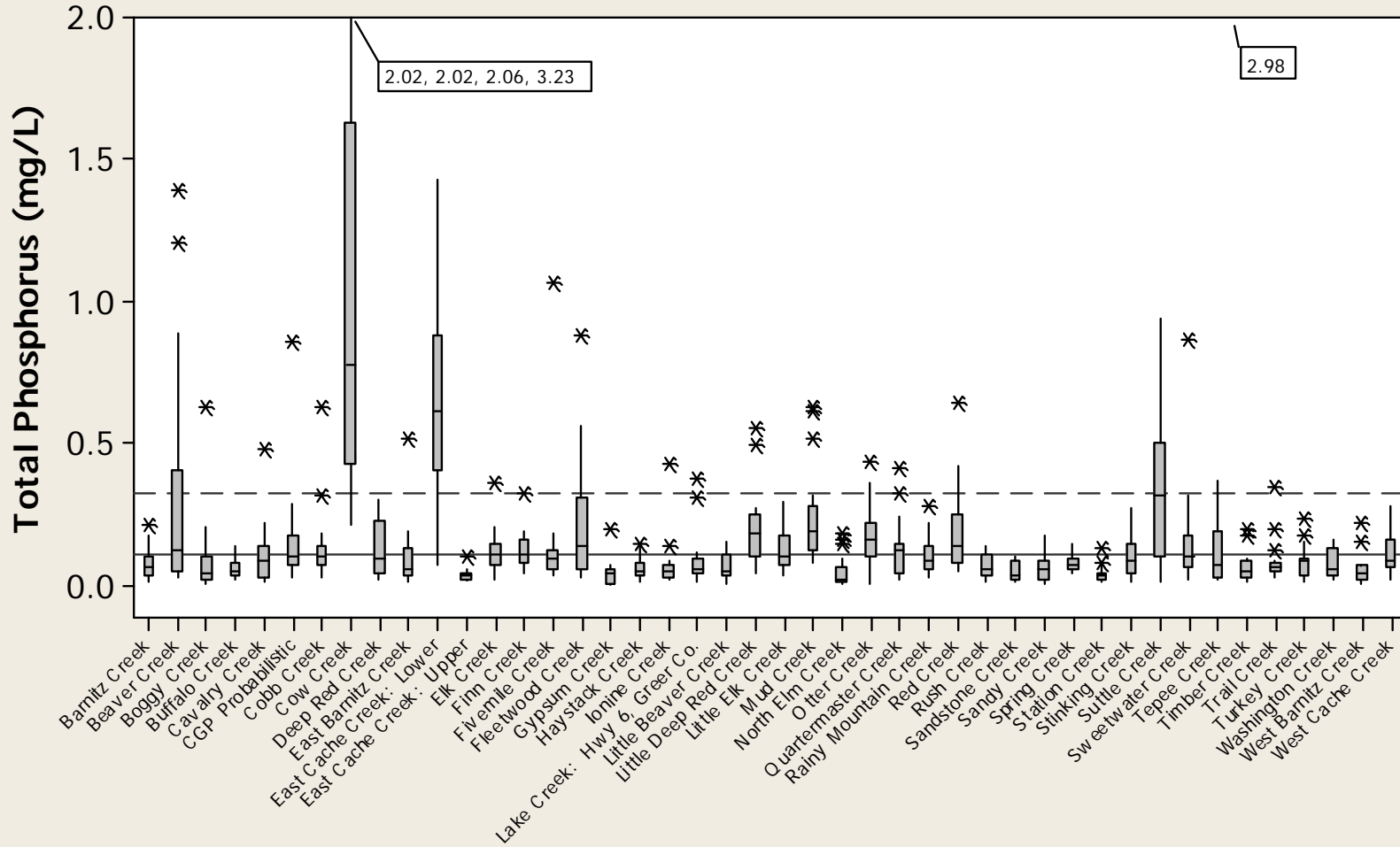
In the Arbuckle Uplift, Caddo Creek had high nutrient values and turbidity relative to the high quality sites for that ecoregion. Mill Creek had high turbidity, but the nutrient values were low. In the Central Great Plains ecoregion, Cow Creek, Lower East Cache Creek, and Suttle Creek had high nutrient values relative to the high quality sites. All of the sites in the Cross Timbers, Southwestern Tablelands, and Wichita Mountains ecoregions and most of the sites in the Central Great Plains were within two standard deviations of the high quality sites in the ecoregions, indicating no significant difference from the high quality sites.

None of the probabilistic averages were significantly greater than the high quality sites for turbidity; fifteen sites had turbidity values above the state standard of 50 NTU for turbidity. This represents 33% of the samples. Many of the fixed sites in the basin are also above the 50 NTU state standard, though not significantly greater than the high quality sites. The mean high quality value for turbidity in the Central Great Plains ecoregion is 58.8 NTU. Turbidity is an issue in this basin. The average nutrient values of probabilistic sites compare favorably with the high quality nutrient values.

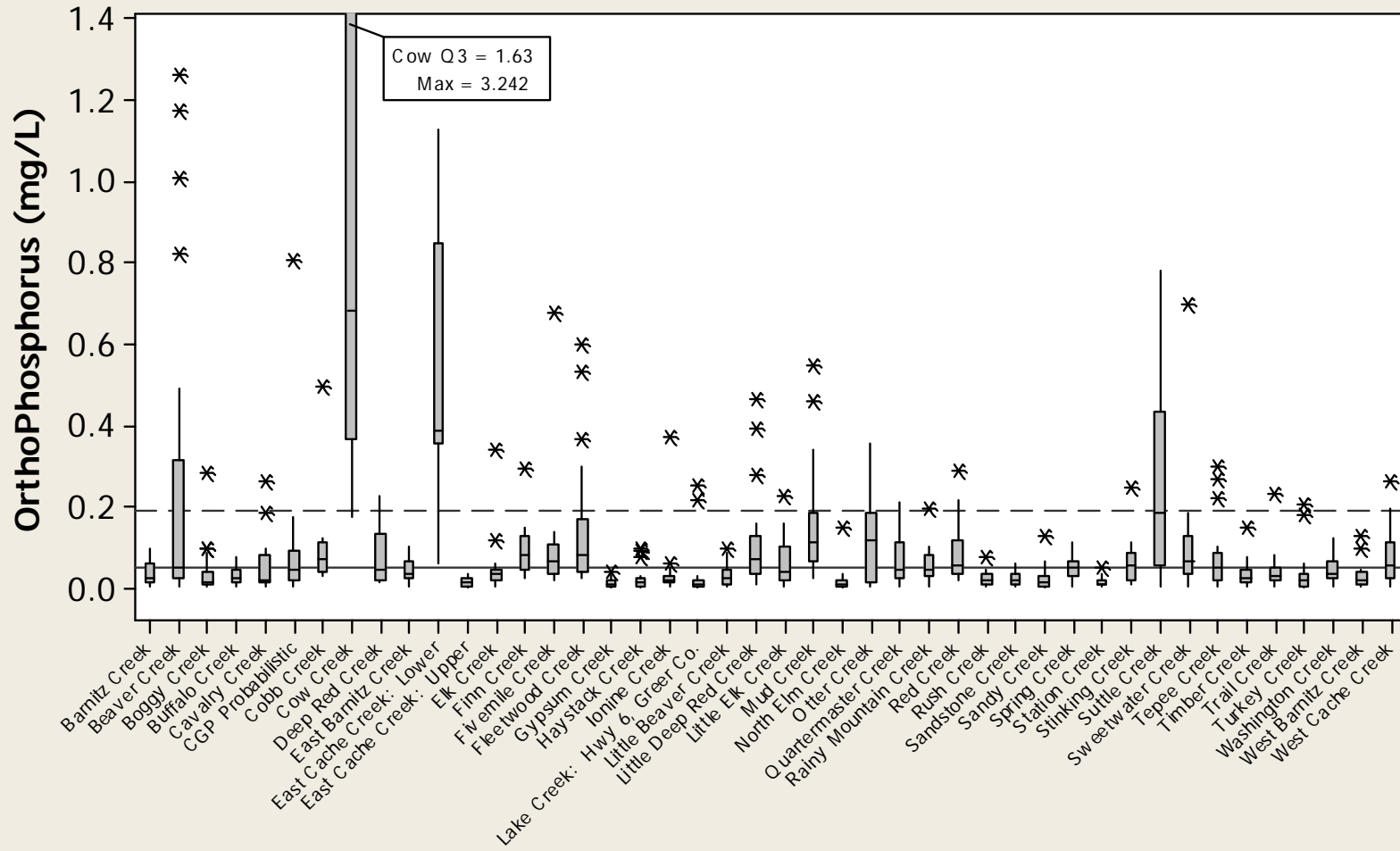
Figure 2. Select parameters for each site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations (if only one dashed line, the lower standard deviation was below zero; if no horizontal lines, high quality site values are higher than the scale shown).



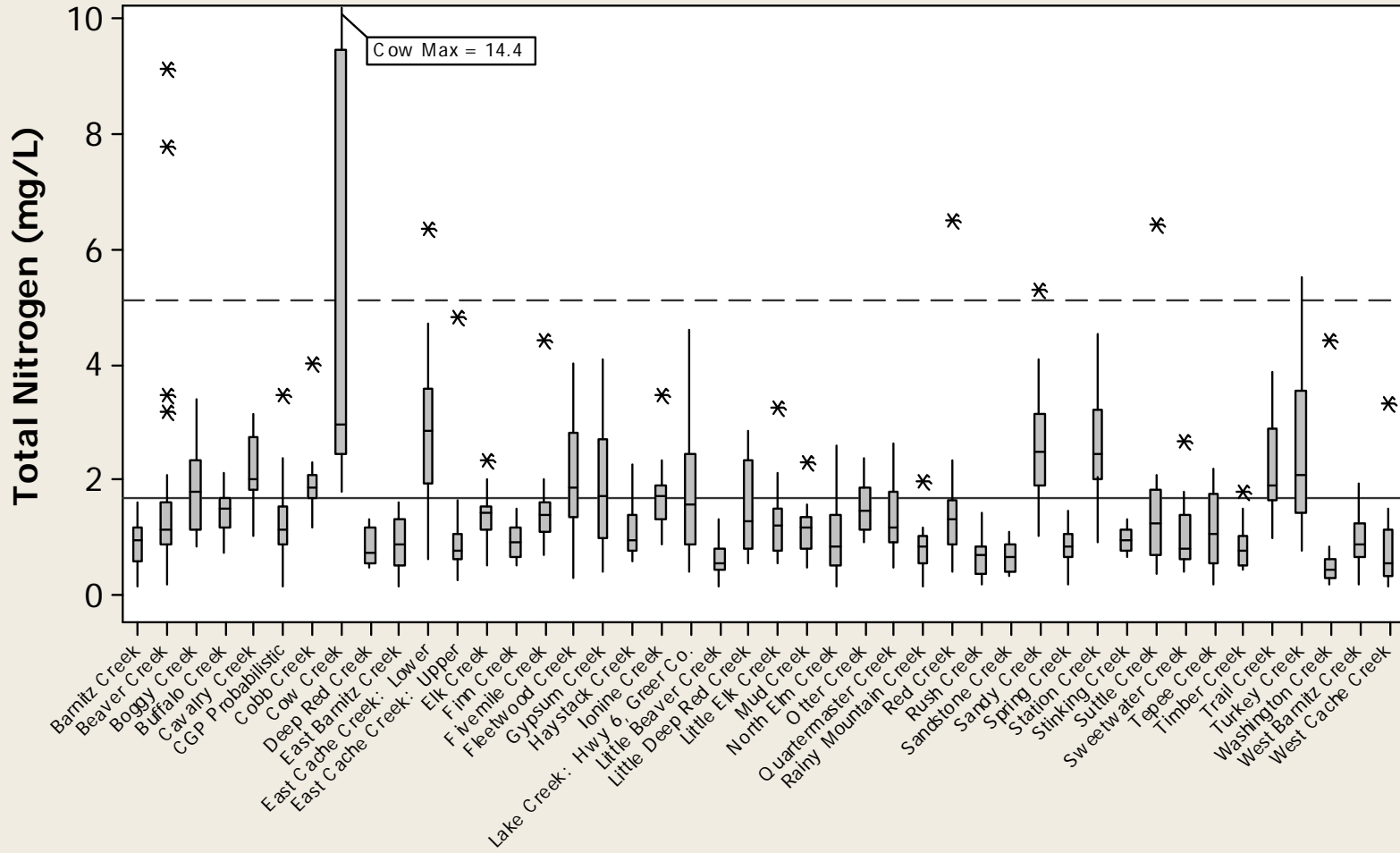
Central Great Plains



Central Great Plains



Central Great Plains



Central Great Plains

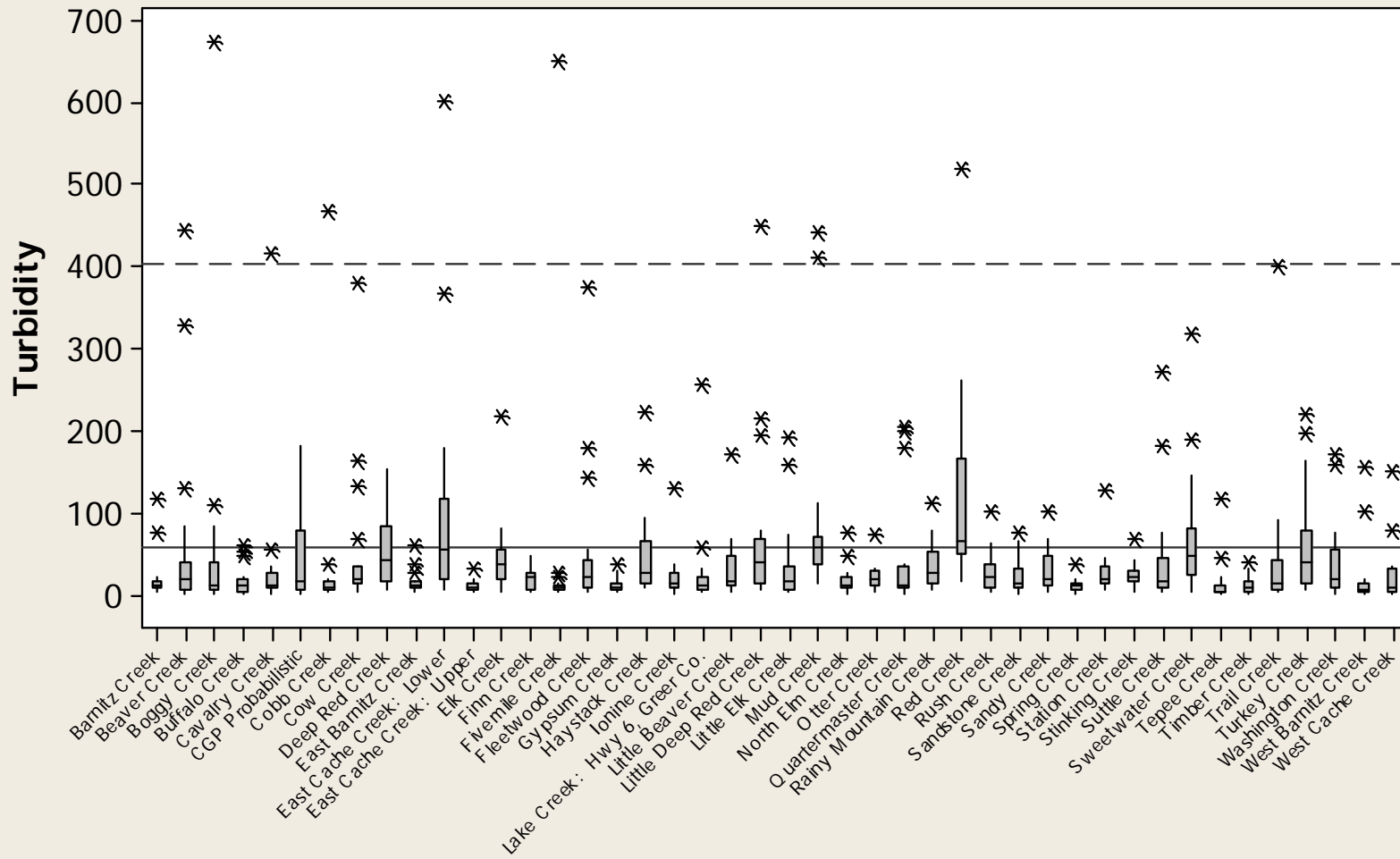


Table 14 shows a comparison between base flow water quality data (high flow data omitted) collected for the same site in the previous rotating basin cycle and the second cycle in order to examine whether water conditions have improved, worsened, or remained the same at a particular site. One-way ANOVAs were performed for each set of data. Only statistically significant differences between the means of each parameter are shown in the table. Seven streams had no significant changes in any parameter between monitoring cycles. Level of significance is indicated by p-values, with any $p < 0.050$ considered significant and $0.050 < p < 0.100$ considered marginally significant.

Three streams were not monitored in cycle 1: Big Sandy Creek, East Cache Creek (Upper), and North Elm Creek. Two streams had significantly higher levels of dissolved oxygen (DO), but four streams had reduced DO. Ammonia was increased in nine streams and other forms of nitrogen were significantly increased in 24 streams. Eleven streams showed significant decreases in nitrogen. Phosphorus decreased in eleven streams and increased in only two streams. Turbidity and/or total suspended solids (TSS) was significantly lower in eleven streams and higher in two streams; alkalinity and/or hardness was significantly higher in 15 streams and reduced in six streams; 20 streams exhibited increased salt concentrations (sulfate, chloride, or total dissolved solids) while twelve showed lower salt concentrations.

Table 14. Statistical comparisons of cycle one and cycle two Rotating Basin Project water quality data. "N" is the number of base flow samples included in the analyses.

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result
OK310830-03-0200C	Barnitz Creek	Ammonia	2004-2006	9	0.08044	0.022	Decreased
			2009-2011	20	0.0335		
		Nitrate	2004-2006	9	0.3178	0.094	Decreased
			2009-2011	20	0.1525		
		Nitrite	2004-2006	9	0.03778	0.027	Decreased
			2009-2011	20	0.02105		
		Total phosphorus	2004-2006	9	0.12389	0.033	Decreased
			2009-2011	20	0.0734		
		Chloride	2004-2006	9	24.144	0.052	Increased
			2009-2011	20	29.25		
Sulfate	2004-2006	9	1542.3	0.000	Increased		
	2009-2011	20	2016				
OK310830-03-0190C	Beaver Creek (Custer Co.)	TKN	2004-2006	20	0.468	0.017	Increased
			2009-2011	20	0.7315		
		Chloride	2004-2006	20	115.86	0.015	Decreased
			2009-2011	20	69.25		
		Sulfate	2004-2006	20	1524.4	0.020	Increased
			2009-2011	20	1708.1		
		TDS	2004-2006	20	560.1	0.029	Decreased
			2009-2011	20	435.2		
		Alkalinity	2004-2006	21	194.48	0.043	Decreased
			2009-2011	20	163.85		
OK310830-03-0100C	Boggy Creek	Sulfate	2004-2006	20	663.8	0.016	Increased
			2009-2011	20	867.5		

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result
OK311510-02-0090D	Buffalo Creek	Chloride	2004-2006	20	519.7	0.007	Decreased
			2009-2011	20	355.8		
		TDS	2004-2006	20	2650.4	0.000	Decreased
			2009-2011	20	2039.1		
		Alkalinity	2004-2006	21	228.81	0.084	Increased
			2009-2011	21	260.05		
Hardness	2004-2006	20	1243.5	0.003	Decreased		
	2009-2011	20	1010.5				
OK310800-03-0010F	Caddo Creek	Ammonia	2004-2006	20	1.782	0.001	Decreased
			2009-2011	20	0.13		
		Nitrite	2004-2006	20	0.134	0.000	Decreased
			2009-2011	19	0.02316		
		TKN	2004-2006	20	2.001	0.010	Decreased
			2009-2011	20	0.701		
		Chloride	2004-2006	20	101.51	0.006	Decreased
			2009-2011	20	62.68		
		Sulfate	2004-2006	20	154.25	0.000	Decreased
			2009-2011	20	43.53		
		TDS	2004-2006	20	588.3	0.000	Decreased
			2009-2011	20	335.9		
Conductivity	2004-2006	21	973.4	0.000	Decreased		
	2009-2011	21	523.5				
OK310830-03-0070D	Cavalry Creek	Chloride	2004-2006	9	70.84	0.006	Increased
			2009-2011	20	95.78		
		Sulfate	2004-2006	9	1121.3	0.000	Increased
			2009-2011	20	1740.9		
		TDS	2004-2006	9	1970.7	0.009	Increased
			2009-2011	20	2543.6		
Hardness	2004-2006	21	1422.7	0.027	Increased		
	2009-2011	20	1784				
Conductivity	2004-2006	21	2105.5	0.000	Increased		
	2009-2011	19	2825.3				
OK310800-02-0190D	Chigley Sandy Creek	Ammonia	2004-2006	20	0.01565	0.044	Increased
			2009-2011	20	0.02335		
		Nitrate	2004-2006	20	0.342	0.006	Decreased
			2009-2011	20	0.2185		
		Chloride	2004-2006	20	30.51	0.025	Increased
			2009-2011	20	46.06		
Conductivity	2004-2006	19	530.4	0.091	Increased		
	2009-2011	20	635.3				

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result		
OK310830-06-0050M	Cobb Creek	Ammonia	2004-2006	20	0.03685	0.047	Increased		
			2009-2011	20	0.06705				
		TKN	2004-2006	20	0.2147	0.008	Increased		
			2009-2011	20	0.565				
		Sulfate	2004-2006	20	213.55	0.001	Increased		
			2009-2011	20	299.3				
OK311200-00-0060L	Cow Creek	Ammonia	2004-2006	20	0.04145	0.033	Increased		
			2009-2011	20	0.10865				
		Nitrite	2004-2006	20	0.057	0.019	Increased		
			2009-2011	20	0.2055				
		TKN	2004-2006	20	0.801	0.091	Increased		
			2009-2011	19	1.0837				
		Sulfate	2004-2006	20	70.23	0.043	Increased		
			2009-2011	20	93.06				
		OK311310-03-0010D	Deep Red Creek	TKN	2004-2006	20	0.726	0.074	Increased
					2009-2011	20	0.954		
OK310830-01-0030G	Delaware Creek	TKN	2004-2006	20	0.535	0.025	Increased		
			2009-2011	20	0.7605				
		Sulfate	2004-2006	20	709.5	0.026	Increased		
			2009-2011	20	873.5				
OK310830-03-0210C	East Barnitz Creek	TKN	2004-2006	20	0.448	0.023	Increased		
			2009-2011	20	0.7405				
		Alkalinity	2004-2006	20	193.55	0.011	Decreased		
			2009-2011	20	162.75				
		Hardness	2004-2006	20	2059.7	0.033	Decreased		
			2009-2011	20	1880.3				
OK311300-01-0020G	East Cache Creek: Lower	Nitrate	2004-2006	20	2.363	0.066	Decreased		
			2009-2011	19	1.601				
		Ortho-phosphorus	2004-2006	20	1.0176	0.004	Decreased		
			2009-2011	19	0.5192				
		Total phosphorus	2004-2006	20	1.2606	0.000	Decreased		
			2009-2011	19	0.5995				
		Hardness	2004-2006	20	190.27	0.070	Increased		
			2009-2011	19	231.32				
		OK311500-03-0010G	Elk Creek	Chloride	2004-2006	20	180.6	0.005	Increased
					2009-2011	20	436		
Sulfate	2004-2006			20	408.9	0.000	Increased		
	2009-2011			20	765				
TDS	2004-2006			20	1010.2	0.001	Increased		
	2009-2011			19	1392.8				
Hardness	2004-2006			20	566.5	0.005	Increased		
	2009-2011			20	785.2				
Conductivity	2004-2006			20	1562.6	0.063	Increased		
	2009-2011			19	1873.7				

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result
OK310810-02-0020D	Finn Creek	Dissolved Oxygen	2004-2006	21	6.257	0.058	Increased
			2009-2011	21	7.906		
		TKN	2004-2006	20	0.303	0.002	Increased
			2009-2011	20	0.559		
		Ortho-phosphorus	2004-2006	20	0.16515	0.037	Decreased
			2009-2011	20	0.097		
		Total phosphorus	2004-2006	20	0.2268	0.022	Decreased
			2009-2011	19	0.1365		
Chloride	2004-2006	20	25.01	0.002	Increased		
	2009-2011	20	36.42				
Alkalinity	2004-2006	21	338.67	0.093	Increased		
	2009-2011	22	385.73				
OK311800-00-0130G	Fish Creek	Ammonia	2004-2006	19	0.2287	0.049	Decreased
			2009-2011	20	0.0583		
		Chloride	2004-2006	19	13614	0.057	Decreased
			2009-2011	20	4244		
		Alkalinity	2004-2006	18	124.53	0.011	Increased
			2009-2011	20	172.91		
Conductivity	2004-2006	18	33084	0.082	Decreased		
	2009-2011	17	13880				
OK310830-06-0080D	Fivemile Creek	Nitrite	2004-2006	20	0.0305	0.012	Increased
			2009-2011	19	0.07947		
		TKN	2004-2006	20	0.245	0.065	Increased
			2009-2011	20	0.585		
		Sulfate	2004-2006	20	44.27	0.065	Increased
			2009-2011	20	83.43		
Alkalinity	2004-2006	20	252.45	0.048	Decreased		
	2009-2011	21	228.9				
Conductivity	2004-2006	20	622.8	0.037	Decreased		
	2009-2011	21	535.4				
OK311100-01-0300D	Fleetwood Creek	Dissolved Oxygen	2004-2006	19	9.633	0.042	Decreased
			2009-2011	20	6.48		
		TSS	2004-2006	17	69.25	0.015	Decreased
			2009-2011	19	16.47		
OK311600-01-0020F	Gypsum Creek	Nitrite	2004-2006	20	0.1935	0.017	Decreased
			2009-2011	20	0.02		
		TKN	2004-2006	20	0.408	0.004	Increased
			2009-2011	20	0.7535		
		Ortho-phosphorus	2004-2006	20	0.0488	0.083	Decreased
			2009-2011	20	0.01525		
		Chloride	2004-2006	20	3814	0.022	Increased
			2009-2011	20	4787		
TDS	2004-2006	20	8810	0.071	Increased		
	2009-2011	19	9826				

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result
OK311600-01-0020F	Gypsum Creek (cont.)	Turbidity	2004-2006	19	69.41	0.039	Decreased
			2009-2011	21	12.43		
		TSS	2004-2006	20	101.3	0.072	Decreased
			2009-2011	20	22.6		
		Alkalinity	2004-2006	21	111.63	0.028	Increased
			2009-2011	21	136.57		
		Hardness	2004-2006	20	3051.7	0.003	Increased
			2009-2011	21	3820.8		
Conductivity	2004-2006	20	7066	0.000	Increased		
	2009-2011	21	14228				
OK311800-00-0040D	Haystack Creek	TKN	2004-2006	20	0.4925	0.012	Increased
			2009-2011	20	0.9935		
		Sulfate	2004-2006	20	1400.7	0.070	Increased
			2009-2011	20	1966.9		
OK311100-02-0010M	Hickory Creek	TKN	2004-2006	20	0.2095	0.006	Increased
			2009-2011	20	0.3565		
		Conductivity	2004-2006	21	509.8	0.070	Increased
			2009-2011	22	633.1		
OK310820-01-0160L	Ionine Creek	Nitrate	2004-2006	13	0.3362	0.001	Increased
			2009-2011	19	0.8816		
		TKN	2004-2006	13	0.4662	0.003	Increased
			2009-2011	19	0.82		
		Chloride	2004-2006	13	91.05	0.027	Decreased
			2009-2011	19	71.52		
		Alkalinity	2004-2006	13	203.3	0.011	Increased
			2009-2011	20	271		
OK310810-01-0050G	Kickapoo Sandy Creek	TSS	2004-2006	20	71.8	0.059	Decreased
			2009-2011	20	16.25		
OK311510-01-0040D	Lake Creek	TDS	2004-2006	19	1194.1	0.055	Decreased
			2009-2011	20	933.6		
OK311210-00-0050D	Little Beaver Creek	Sulfate	2004-2006	20	166.73	0.003	Increased
			2009-2011	20	230.09		
		Alkalinity	2004-2006	20	233.95	0.037	Increased
			2009-2011	20	278.4		
		Hardness	2004-2006	20	409.3	0.019	Increased
			2009-2011	20	507.4		
OK311310-03-0040D	Little Deep Red Creek	Ortho-phosphorus	2004-2006	17	0.4884	0.055	Decreased
			2009-2011	19	0.1109		
		Total phosphorus	2004-2006	17	0.591	0.063	Decreased
			2009-2011	18	0.1951		
		Chloride	2004-2006	17	1187.4	0.072	Increased
			2009-2011	19	1633.7		

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result
OK311310-03-0040D	Little Deep Red Creek (Cont.)	Sulfate	2004-2006	17	486.5	0.089	Increased
			2009-2011	19	677.8		
OK311500-03-0040D	Little Elk Creek	Ammonia	2004-2006	20	0.03065	0.027	Increased
			2009-2011	20	0.07335		
		TKN	2004-2006	20	0.465	0.026	Increased
			2009-2011	20	0.7555		
OK311300-04-0060H	Medicine Creek	Ammonia	2004-2006	17	0.015	0.094	Increased
			2009-2011	20	0.0192		
		TDS	2004-2006	17	244.35	0.083	Decreased
			2009-2011	19	213.21		
		Hardness	2004-2006	17	177.04	0.073	Decreased
			2009-2011	20	148.65		
OK310800-01-0190G	Mill Creek	Ammonia	2004-2006	20	0.0184	0.009	Increased
			2009-2011	20	0.0335		
		TKN	2004-2006	20	0.1975	0.013	Increased
			2009-2011	20	0.334		
OK311100-04-0010D	Mud Creek	TKN	2004-2006	9	0.5111	0.001	Increased
			2009-2011	20	1.0195		
OK311500-01-0080F	Otter Creek	Total phosphorus	2004-2006	19	0.3394	0.075	Decreased
			2009-2011	19	0.2128		
		TDS	2004-2006	19	1128.2	0.073	Decreased
			2009-2011	19	796.6		
		TSS	2004-2006	19	104	0.043	Decreased
			2009-2011	20	21.9		
OK310800-01-0120G	Pennington Creek	Alkalinity	2004-2006	21	214.57	0.020	Increased
			2009-2011	21	245.05		
OK310840-01-0060L	Quartermaster Creek	TKN	2004-2006	9	0.5022	0.013	Increased
			2009-2011	20	1.031		
OK311100-01-0290D	Red Creek	Ammonia	2004-2006	20	0.02495	0.067	Increased
			2009-2011	20	0.07055		
		TKN	2004-2006	20	0.587	0.002	Increased
			2009-2011	20	1.2395		
		Chloride	2004-2006	20	178	0.092	Decreased
			2009-2011	20	99.8		
		TDS	2004-2006	20	567.8	0.076	Decreased
			2009-2011	20	415.7		
		TSS	2004-2006	20	134.3	0.061	Decreased
			2009-2011	20	32.4		
		Alkalinity	2004-2006	21	216.76	0.018	Decreased
			2009-2011	21	145.52		
		Conductivity	2004-2006	21	962.1	0.033	Decreased
			2009-2011	20	547.6		

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result		
OK310810-05-0010D	Rush Creek	TKN	2004-2006	19	0.3088	0.009	Increased		
			2009-2011	20	0.538				
		Ortho-phosphorus	2004-2006	19	0.08558	0.059	Decreased		
			2009-2011	20	0.0305				
		TSS	2004-2006	19	218.5	0.097	Decreased		
			2009-2011	20	51.9				
OK310840-02-0020C	Sandstone Creek	Nitrate	2004-2006	20	0.384	0.000	Decreased		
			2009-2011	20	0.18				
		TKN	2004-2006	20	0.271	0.005	Increased		
			2009-2011	20	0.4755				
		Total phosphorus	2004-2006	20	0.07525	0.077	Decreased		
			2009-2011	19	0.04895				
		Chloride	2004-2006	20	44.84	0.084	Increased		
			2009-2011	20	50.64				
		Sulfate	2004-2006	20	935.6	0.003	Increased		
			2009-2011	20	1327.4				
		TDS	2004-2006	20	1729.7	0.046	Increased		
			2009-2011	20	2039.7				
		TSS	2004-2006	20	48.8	0.005	Decreased		
			2009-2011	20	16.3				
		Hardness	2004-2006	19	1155.6	0.055	Increased		
			2009-2011	18	1369.7				
		OK311600-01-0040G	Sandy Creek	Dissolved Oxygen	2004-2006	21	10.123	0.079	Decreased
					2009-2011	21	8.648		
Nitrite	2004-2006			20	0.3365	0.002	Decreased		
	2009-2011			20	0.02				
Alkalinity	2004-2006			21	136.1	0.021	Increased		
	2009-2011			21	178.1				
Conductivity	2004-2006	20	9405	0.005	Increased				
	2009-2011	20	14691						
OK310830-04-0010G	Spring Creek (Caddo Co.)	Ammonia	2004-2006	20	0.08	0.023	Increased		
			2009-2011	20	0.1607				
		Nitrite	2004-2006	20	0.022	0.017	Increased		
			2009-2011	19	0.06158				
		TKN	2004-2006	20	0.378	0.007	Increased		
			2009-2011	20	0.6395				
		Ortho-phosphorus	2004-2006	20	0.0305	0.006	Increased		
			2009-2011	20	0.0504				
		Total phosphorus	2004-2006	19	0.1634	0.067	Decreased		
			2009-2011	19	0.0899				
		Chloride	2004-2006	19	86.5	0.057	Decreased		
			2009-2011	19	54.89				
		TSS	2004-2006	20	18.45	0.016	Decreased		
			2009-2011	20	11.7				

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result
OK311800-00-0060G	Station Creek	Dissolved Oxygen	2004-2006	22	10.1	0.010	Decreased
			2009-2011	19	8.045		
		TKN	2004-2006	20	0.4515	0.001	Increased
			2009-2011	20	0.8555		
		Chloride	2004-2006	20	568.4	0.000	Increased
			2009-2011	20	1068.9		
Sulfate	2004-2006	20	1758.4	0.002	Increased		
	2009-2011	20	2249.5				
OK310830-02-0020D	Stinking Creek (Kiowa Co.)	Dissolved Oxygen	2004-2006	21	7.469	0.043	Increased
			2009-2011	19	9.546		
		TKN	2004-2006	20	0.404	0.000	Increased
			2009-2011	19	0.7216		
		Sulfate	2004-2006	20	247.6	0.061	Increased
			2009-2011	19	321.7		
		TDS	2004-2006	19	2220.7	0.080	Decreased
			2009-2011	18	2236		
		Conductivity	2004-2006	20	2718.1	0.014	Decreased
			2009-2011	19	2442.7		
OK310830-05-0010D	Sugar Creek	Ammonia	2004-2006	20	0.08475	0.002	Increased
			2009-2011	19	0.18132		
		TKN	2004-2006	20	0.662	0.013	Increased
			2009-2011	19	0.9489		
		Ortho-phosphorus	2004-2006	20	0.0871	0.013	Increased
			2009-2011	19	0.14832		
		Total phosphorus	2004-2006	20	0.1554	0.058	Increased
			2009-2011	19	0.21784		
TSS	2004-2006	20	29	0.084	Increased		
	2009-2011	19	86.3				
OK311310-01-0070H	Suttle Creek	Nitrate	2004-2006	13	0.7031	0.064	Decreased
			2009-2011	20	0.2635		
		Alkalinity	2004-2006	14	242.1	0.012	Increased
			2009-2011	21	379.5		
OK311510-02-0120D	Sweetwater Creek	Nitrate	2004-2006	20	0.255	0.077	Increased
			2009-2011	20	0.4165		
		TKN	2004-2006	20	0.409	0.017	Increased
			2009-2011	20	0.7083		
		Ortho-phosphorus	2004-2006	20	0.03	0.022	Increased
			2009-2011	20	0.1274		
		Total phosphorus	2004-2006	20	0.079	0.044	Increased
			2009-2011	19	0.1876		
		TDS	2004-2006	20	1748	0.069	Decreased
			2009-2011	20	940.3		
		Turbidity	2004-2006	20	40.4	0.095	Increased
			2009-2011	21	92.44		

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result
OK311500-01-0110D	Tepee Creek	Nitrate	2004-2006	20	0.7505	0.075	Decreased
			2009-2011	19	0.3758		
		Alkalinity	2004-2006	20	200.85	0.001	Decreased
			2009-2011	20	151.45		
OK311510-01-0090G	Timber Creek	TKN	2004-2006	20	0.349	0.085	Increased
			2009-2011	20	0.4965		
OK311500-03-0070D	Trail Creek	TKN	2004-2006	8	0.2938	0.002	Increased
			2009-2011	20	0.6595		
		Chloride	2004-2006	8	50.16	0.005	Increased
			2009-2011	20	73.36		
		Sulfate	2004-2006	8	571	0.048	Increased
			2009-2011	20	810		
OK311600-02-0060H	Turkey Creek	Chloride	2004-2006	19	866.7	0.001	Increased
			2009-2011	20	1417.1		
		Sulfate	2004-2006	19	1459.9	0.018	Increased
			2009-2011	20	2075.2		
		Conductivity	2004-2006	19	3791	0.071	Increased
			2009-2011	19	5240		
OK311100-03-0010G	Walnut Bayou	TKN	2004-2006	20	0.274	0.000	Increased
			2009-2011	20	0.5495		
OK310810-01-0190G	Washington Creek	Nitrate	2004-2006	12	0.11333	0.017	Decreased
			2009-2011	18	0.045		
		Total phosphorus	2004-2006	12	0.1968	0.052	Decreased
			2009-2011	17	0.0794		
		Chloride	2004-2006	12	19.7	0.063	Increased
			2009-2011	18	30.31		
		Sulfate	2004-2006	12	16.75	0.002	Increased
			2009-2011	18	33.43		
		TDS	2004-2006	12	307.2	0.092	Increased
			2009-2011	18	391		
		TSS	2004-2006	12	110.3	0.043	Decreased
			2009-2011	18	24.5		
		Alkalinity	2004-2006	13	192	0.043	Increased
			2009-2011	19	269.9		
Hardness	2009-2011	12	180.37	0.089	Increased		
	2009-2011	18	231.83				
OK310830-03-0230C	West Barnitz Creek	Total phosphorus	2004-2006	20	0.1203	0.033	Decreased
			2009-2011	20	0.05205		
		Hardness	2004-2006	20	2116	0.072	Decreased
			2009-2011	20	1931.5		
		Conductivity	2004-2006	20	3049.3	0.031	Decreased
			2009-2011	20	2824.7		

WBID	Site	Variable	RB Cycle	N	Mean	p value	Result
OK311310-02-0010M	West Cache Creek	Dissolved Oxygen	2004-2006	14	8.762	0.050	Decreased
			2009-2011	21	7.147		
		TSS	2004-2006	13	119.7	0.033	Decreased
			2009-2011	20	18.2		
		Turbidity	2004-2006	13	198.4	0.029	Decreased
			2009-2011	21	34.5		
OK310810-04-0140D	Wildhorse Creek (Duncan)	Nitrate	2004-2006	20	0.424	0.001	Decreased
			2009-2011	20	0.245		
		Nitrite	2004-2006	20	0.0425	0.076	Decreased
			2009-2011	19	0.052526		
		TKN	2004-2006	20	0.406	0.085	Increased
			2009-2011	20	0.5355		
		Ortho-phosphorus	2004-2006	20	0.1608	0.001	Decreased
			2009-2011	20	0.0228		
		Total phosphorus	2004-2006	20	0.2094	0.020	Decreased
			2009-2011	19	0.0795		
		Chloride	2004-2006	20	15.98	0.025	Decreased
			2009-2011	20	14.41		
		Sulfate	2004-2006	20	23.39	0.000	Increased
			2009-2011	20	67.47		
		Turbidity	2004-2006	20	84.69	0.060	Decreased
			2009-2011	20	32.31		
		TSS	2004-2006	20	60.8	0.033	Decreased
			2009-2011	20	33.05		
Alkalinity	2004-2006	21	368.2	0.053	Decreased		
	2009-2011	21	306.7				
OK310810-03-0010R	Wildhorse Creek (Tatums)	Conductivity	2004-2006	21	1452.2	0.064	Decreased
			2009-2011	19	1148.8		

3.2 BIOLOGICAL MONITORING

3.2.1 Habitat Assessment

Total habitat scores for each site and computed metric scores are listed below (Table 15). Pennington and Medicine Creeks had the highest habitat scores, while Lake Creek in Greer County had the lowest habitat score. Table 16 presents the habitat scores for the probabilistic sites.

Table 15. Habitat assessment metric values for fixed monitoring sties in the Rotating Basin Group 4, Cycle 2.

Site Name	WBID	Instream Cover	Pool Bottom Substrate	Pool Variability	Canopy Cover Shading	Presence of Rocky Runs or Riffles	Flow	Channel Alteration	Channel Sinuosity	Bank Stability	Bank Vegetation Stability	Streamside Cover	Total Points
Barnitz Creek	OK310830-03-0200C	6.4	1.4	14.6	19.9	0	0	1.4	1.5	5.4	5.2	8.7	64.5
Beaver Creek (Custer Co.)	OK310830-03-0190C	6.5	1.4	14.6	19	0	16.9	2.8	3.8	6.7	5	9.7	86.4
Beaver Creek (Jefferson Co.)	OK311200-00-0030L	9.7	3.4	13.3	5.8	4.1	20	0.7	2.2	6.9	4.4	4	74.5
Big Sandy Creek	OK310800-01-0090G	7.4	10.2	20	19.7	15.2	0.4	0.4	0.8	10	7.2	10	101.3
Boggy Creek	OK310830-03-0100C	9.7	14.8	14.6	18.3	0	17	5.8	2.4	5.7	5.7	9.5	103.5
Buffalo Creek	OK311510-02-0090D	1.5	0.4	0	2.7	0	16.2	11.1	0	8.9	8	8.7	57.5
Caddo Creek	OK310800-03-0010F	3	2.7	19.7	4.4	4.1	15.7	0.7	1.6	2.1	4.7	9.3	68
Cavalry Creek	OK310830-03-0070D	8.9	1.9	17.2	19.7	0	10.6	0.4	5.3	6.3	4.4	8.7	83.4
Chigley Sandy Creek	OK310800-02-0190D	1.8	6.2	0	20	14.7	17.1	0.5	1.8	10	4.6	9.9	86.6
Cobb Creek	OK310830-06-0050M	10.6	4.3	0	16.8	0	15.8	0.5	2.2	7.9	7.5	8.9	74.5
Cow Creek	OK311200-00-0060L	0.8	0.4	14.6	15.1	0	10.3	0.5	3.1	3	2.7	8.7	59.2
Deep Red Creek	OK311310-03-0010D	2.3	1.2	13.6	14.3	0	12.7	15.1	1.9	5.9	0.7	10	77.7
Delaware Creek	OK310830-01-0030G	8.2	0.9	14.4	13.1	0	4.4	0.4	1.7	6.4	5.1	4	58.6
East Barnitz Creek	OK310830-03-0210C	7.5	0.4	20.2	19.9	0	15.6	0.4	9.6	6.2	5.5	8.7	94
East Cache Creek: Lower	OK311300-01-0020G	2.5	6.4	14.6	2.6	0	0	7.7	3.1	2.8	2	9.5	51.2
East Cache Creek: Upper	OK311300-02-0010M	1	6.7	18.8	19.1	9	15.7	6.7	2	9.1	2.8	9.7	100.6
Elk Creek	OK311500-03-0010G	1.3	0.8	13.6	3.6	0	9.5	9.9	0.8	8.9	3.9	5	57.3
Finn Creek	OK310810-02-0020D	1.8	3.9	18.8	17.5	4.1	16	9.9	1.1	7.2	1.7	10	92
Fish Creek	OK311800-00-0130G	19.6	0.4	0	1	0	0.8	2.3	0	4.8	7.2	3.6	39.7
Fivemile Creek	OK310830-06-0080D	12	1.4	0	19.7	2.2	11.4	0.4	2.1	4.6	4.3	9.2	67.3
Fleetwood Creek	OK311100-01-0300D	0.2	0.4	17.2	15.3	0	0	13.7	0.1	7.2	0.1	4.8	58.8
Gypsum Creek	OK311600-01-0020F	0.7	0.4	0	11	0	15.4	16.5	3.1	9.2	4.4	5	65.7
Haystack Creek	OK311800-00-0040D	3.7	7.2	1.1	9.3	5.9	0.2	4.2	2.4	4.5	5	10	53.5
Hickory Creek	OK311100-02-0010M	1.7	0.9	15.6	9.7	2.2	15.6	0.7	1.7	9.4	6.1	9.6	73.2
Ionine Creek	OK310820-01-0160L	5.4	1.4	0	16.2	0	11.2	0.5	1.1	8.7	7.3	4.4	56.2
Kickapoo Sandy Creek	OK310810-01-0050G	1	0.4	0	19.4	15.6	19.7	9.9	0.6	9.2	5.3	9.5	90.6
Lake Creek	OK311510-01-0040D	0.9	1	1.2	3.4	0	0.6	1.4	0.9	3.9	4.3	3.6	21.2
Little Beaver Creek	OK311210-00-0050D	3.3	2.7	15.4	1.4	2.2	9.3	1.4	2	3.1	5.3	9.3	55.4
Little Deep Red Creek	OK311310-03-0040D	1.8	1.5	0	20	5.9	3.3	7.7	0.1	7.2	1.5	10	59

Site Name	WBID	Instream Cover	Pool Bottom Substrate	Pool Variability	Canopy Cover Shading	Presence of Rocky Runs or Riffles	Flow	Channel Alteration	Channel Sinuosity	Bank Stability	Bank Vegetation Stability	Streamside Cover	Total Points
Little Elk Creek	OK311500-03-0040D	2.3	7.2	4.1	16.4	4.1	0	1	0	0	3.6	9.7	48.4
Medicine Creek	OK311300-04-0060H	12	16.3	9.9	6.3	16.1	20	1.8	2.1	10	9.1	10	113.6
Mill Creek	OK310800-01-0190G	1	0.7	19.7	19.1	0	0	16.5	0.2	7.8	4.2	10	79.2
Mud Creek	OK311100-04-0010G	2.1	0.8	14	13	0	19	8.7	3.8	0	2.1	9.2	72.7
North Elm Creek	OK311800-00-0170G	15.4	12.8	3.5	1.7	0	0	1.4	0.6	6.4	6.3	10	58.1
Oil Creek	OK310800-01-0240P	11.3	10	14.6	5.7	10.3	15.8	16.5	2.4	8.4	3.7	9.5	108.2
Otter Creek	OK311500-01-0080F	1.8	1.2	20	14.3	0	12.7	4.2	0.8	7.7	3.3	9.7	75.7
Pennington Creek	OK310800-01-0120G	1.7	6.5	13.4	5.8	9	20	0.7	2.1	10	6.2	10	85.4
Quartermaster Creek	OK310840-01-0060L	12	0.4	0	15.5	0	0.9	1.8	0	4.5	6.4	9.1	50.6
Rainy Mountain Creek	OK310830-02-0060G	12	2	5.5	17.7	0	10.1	0.5	8.3	3.9	2.1	9.1	71.2
Red Creek	OK311100-01-0290D	1.6	2	14.4	1.7	0	0	7.7	2	7.7	6.3	3.8	47.2
Rush Creek	OK310810-05-0010D	5.7	2.7	17.9	3.4	4.1	20	5	0.5	8.7	3.9	3.2	75.1
Salt Creek	OK310810-03-0080G	2.4	3.9	18.8	2	4.1	10.5	1.8	0.4	8.5	4.5	9.7	66.6
Sandy Creek	OK311600-01-0040G	1.4	0.4	0	5.1	0	17.4	16.5	0.5	8.6	5.4	4.8	60.1
Spring Creek (Caddo Co.)	OK310830-04-0010G	4.6	2.4	0	19.5	0	6.6	0.4	0.4	6.3	3.5	3	46.7
Spring Creek (Roger Mills Co.)	OK310840-02-0240D	9	0.4	0	20	0	1.4	15.1	1.9	9.9	8.1	10	75.8
Station Creek	OK311800-00-0060G	3.6	2.9	0	10.5	4.1	0.2	7.7	1.7	5	6.1	3.6	45.4
Stinking Creek (Kiowa Co.)	OK310830-02-0020D	10.1	0.8	17.2	19.8	2.2	11.9	9.9	2.8	6	4.4	9.6	94.7
Stinking Creek (Caddo Co.)	OK310830-04-0030K	4	3.6	0	6.3	0	8.4	0.4	1.6	7.9	5.3	5	42.5
Sugar Creek	OK310830-05-0010D	5.7	1.8	0	5.7	0	20	0.4	1.6	9.5	7.6	3.6	55.9
Suttle Creek	OK311310-01-0070H	0.9	0.4	0	19.9	0	0.6	7.7	2	4.8	0.6	9.9	46.8
Sweetwater Creek	OK311510-02-0120D	1.9	6.8	0	15.4	0	6	1.4	0	5.6	6.2	10	53.3
Tepee Creek	OK311500-01-0110D	1.1	1.9	0	17.1	0	12.5	0.7	1.5	5.7	2.6	10	53.1
Timber Creek	OK311510-01-0090G	18.6	0.4	14.6	14.6	0	3.4	2.3	0	2.2	4.2	9.7	70
Trail Creek	OK311500-03-0070D	6.4	1.7	0	10.5	0	0.7	3.5	2.4	4	5.6	9.9	44.7
Turkey Creek	OK311600-02-0060J	1.6	1.7	19.4	20	5.9	15.9	16.5	0.9	8.4	5	10	105.3
Walnut Bayou	OK311100-03-0010G	3	0.4	7.7	0.8	0	0.9	0.7	0	4.7	6.1	9.7	34
Washington Creek	OK310810-01-0190G	1.2	2.7	0	19.2	5.9	0.8	0.5	1	6.3	1.5	10	49.1
West Barnitz Creek	OK310830-03-0230C	6.4	1.1	0	19.1	0	10.3	0.4	2.1	8.1	6.3	4	57.8
West Cache Creek	OK311310-02-0010M	0.8	3.1	19.9	17.7	0	7.8	0.4	0.8	8.5	3.7	9.9	72.6
Wildhorse Creek (Davis)	OK310810-01-0020G	2.7	2.4	14.6	1.6	4.1	20	1.8	2.7	4.8	3	10	67.7
Wildhorse Creek (Duncan)	OK310810-04-0140D	1.1	1	0	6.2	0	4	0.4	0.6	2.6	4.6	5	25.5
Wildhorse Creek (Tatums)	OK310810-03-0010R	0.9	0.4	0	1.9	0	15.9	8.7	0.1	8.1	4.2	10	50.2

Table 16. Habitat assessment metric values for probabilistic monitoring sites in the Rotating Basin Group 4, Cycle 2.

Site Name	WBID	Instream Cover	Pool Bottom Substrate	Pool Variability	Canopy Cover Shading	Presence of Rocky Runs or Riffles	Flow	Channel Alteration	Channel Sinuosity	Bank Stability	Bank Vegetation Stability	Streamside Cover	Total Points
Deep Fork River	OKR08715-007	1.6	1.3	14.6	4.9	0	20	16.5	0.1	6.1	3.9	9.1	77.9
Lafin Creek	OKR09730-003	0.3	0.4	0	5.1	0	5.2	2.8	0.1	6.8	1.2	5	26.9
Bitter Creek	OKR09730-005	7.7	0.4	0	8.4	0	16.7	13.7	1.1	9.2	8.2	4	69.4
Wild Horse Creek	OKR09730-008	6.4	0.4	0	18	0	10.3	0.7	3.2	3.3	6.3	8.7	57.3
Buffalo Creek	OKR09730-012	10.4	1.4	20.2	19	0	5.4	0.4	1.3	5.7	4.7	4.8	73.3
Rainy Mountain Creek	OKR09730-014	15	6.5	2.2	17	2.2	0.5	3.5	3.2	6.8	5.4	9.5	71.8
Rush Creek	OKR09730-019	0.9	1	19.4	18.9	0	11.8	6.7	6	7	2.4	6	80.1
Washita River	OKR09730-020	6.6	0.4	0	11.3	0	20	4.2	2.8	8.5	6.6	8.9	69.3
North Fork Red River	OKR09730-025	3	0.4	4.1	6.2	0	11.2	0.4	1.7	9.1	6.4	9.6	52.1
Medicine Creek	OKR09730-026	4.3	3.6	14.6	6.2	4.1	0	16.5	0.1	9.7	7.8	10	76.9
Walnut Bayou	OKR09730-027	0.8	0.4	14.6	8.4	0	0	8.7	1.1	6.8	1.6	9.9	52.3
Mud Creek	OKR09730-031	0.7	0.6	13.6	4.9	0	12.4	15.1	4.1	5	0.5	2.6	59.5
Elk Creek	OKR09730-041	10.7	1.5	0	19.8	0	0.3	0.4	7.1	6.2	5.5	3.4	54.9
Rabbit Creek	OKR09730-045	1.3	1.9	4.1	19.7	0	0	13.7	0.5	4.8	1.8	10	57.8
East Winter Creek	OKR09730-046	0.6	0.4	0	15.5	4.1	6	16.5	0.4	9.4	2.4	9.6	64.9
Washita River	OKR09730-047	12.7	8.3	13.2	5.7	11.4	0	0.7	0.6	9.7	6.3	10	78.6
White Shield Creek	OKR09730-052	7.8	1	9.9	18.6	0	2.9	0.5	4.7	5.4	2.8	9.6	63.2
Elk Creek	OKR09730-057	8.5	2.1	14	5.5	2.2	4.2	1.4	3.2	7.9	7.2	3.4	59.6
Cavalry Creek	OKR09730-058	7.4	1.9	20.2	16.2	0	10.4	5.8	2.7	6.3	5.9	3.2	80
Owens Creek	OKR09730-059	0.5	0.4	1.8	17.7	0	5.5	16.5	0.3	9.4	1.9	9.6	63.6
Sandstone Creek	OKR09730-060	11.6	4.4	0	18.9	11.4	0.2	0.7	1.6	3.6	4.7	8.9	66
Salt Creek	OKR09730-062	1	0.7	13	15.9	0	3.5	16.5	7.8	7.7	2.3	3.2	71.6
Little Turkey Creek	OKR09730-069	5.6	1.6	18.1	17.1	0	3.5	5	2	6.6	3.7	9.5	72.7
Rainy Mountain Creek	OKR09730-071	3.1	0.5	16.3	17	0	0.2	4.2	1.4	6.2	5.4	9.1	63.4
Washita River	OKR09730-074	9.1	0.4	0	8.3	2.2	20	2.8	1.4	9	6.4	8.7	68.3
North Fork Red River	OKR09730-075	6.8	0.4	0	3.6	0	15.1	0.4	1.4	9.7	7.1	10	54.5
Washita River	OKR09730-078	4.8	0.4	0	19.1	0	19.2	2.8	2	7.7	4.6	10	70.6
Lake Creek	OKR09730-080	9.9	1.4	0	7.4	0	15.3	0.5	1.9	7.4	5.7	4.8	54.3
Washita River	OKR09730-081	3.2	0.4	0	3.1	0	0	0.4	0.9	8.9	4.4	10	31.3
Rush Creek	OKR09730-084	1.6	0.7	13.3	3	0	14.3	8.7	1.1	6.9	3	8.8	61.4
Chandler Creek	OKR09730-085	11.6	10.8	13	13.8	12.4	11.2	6.7	2.4	8.7	5.4	10	106
Beaver Creek	OKR09730-091	10.4	2.4	14.6	12.3	2.2	18.8	2.3	6.5	7.6	4.7	8.9	90.7
White Shield Creek	OKR09730-094	6	0.4	0	0.7	0	8.8	0.5	0.7	2.5	2.8	3.2	25.6
Armstrong Creek	OKR09730-095	0.5	0.4	13	16.7	0	3.5	2.8	2.6	6.1	3	9.6	58.2
North Fork Red River	OKR09730-096	1.3	0.4	0	2.1	0	20	1	0.5	10	8.3	8.8	52.4

Site Name	WBID	Instream Cover	Pool Bottom Substrate	Pool Variability	Canopy Cover Shading	Presence of Rocky Runs or Riffles	Flow	Channel Alteration	Channel Sinuosity	Bank Stability	Bank Vegetation Stability	Streamside Cover	Total Points
Cow Creek	OKR09730-098	0.4	0.9	13.2	0	0	12.3	3.5	1.3	2.8	0.5	5	39.9
Barnitz Creek	OKR09730-106	3.4	0.4	20.2	18.7	0	15.5	0.7	3.2	7.6	6.5	3.8	80
Turkey Creek	OKR09730-109	9.7	1.6	7.7	17.5	5.9	1.2	0.7	1.9	3.7	3.6	4.2	57.7
Mud Creek	OKR09730-110	3.4	2.2	13.5	17.7	0	12	15.1	3.3	6.3	1.5	6.8	81.8
Quartermaster Creek	OKR09730-116	13.9	2.9	17.2	19.4	0	0	16.5	0.1	5.9	6.1	5	86.8
East Winter Creek	OKR09730-119	0.8	0.4	0	16.6	2.2	4	11.1	0.7	7.3	2.5	9.2	54.8
Station Creek	OKR09730-123	13.3	3.4	1.6	19.1	4.1	0.7	5.8	2	2.4	4.6	8.7	65.7
Pennington Creek	OKR09730-124	6.9	13.1	13.5	12.3	5.9	20	16.5	0	10	7.9	10	116.1
Washita River	OKR09730-127	9	5.9	14.6	3.8	2.2	20	0.4	0.1	7.6	6.1	9.6	79.1
Negro Sandy Creek	OKR09730-130	0.3	0.4	0	19	0	11.5	0.4	1	7.1	3.7	9.1	52.5
Timber Creek	OKR09730-136	12.4	2.5	9	19.9	2.2	0.5	7.7	7.7	6.9	4.2	9.1	82.1
Sand Creek	OKR09730-139	12.2	4.8	9.9	14.3	0	0	16.5	2.2	9.9	2.9	9.3	82

Sites were compared relative to the mean total habitat score of high quality sites in the respective ecoregion and a range determined by +/- two standard deviations (Figure3). Sites with scores that are within +/- two standard deviations of the mean of the high quality sites do not necessarily have “reference” conditions; rather, sites outside of these values have either extremely good or extremely poor conditions which merit further investigation. Low habitat scores could be the result of anthropogenic activities, could be naturally occurring, or could indicate an unrepresentative reach.

Fixed sites: Medicine Creek in the Wichita Mountains is the only site in this basin with extremely good habitat conditions. In the Central Great Plains ecoregion, Lake Creek has extremely poor conditions. Six sites in the Cross Timbers have poor conditions: Spring Creek (Caddo Co.), StinkingCreek (Caddo Co.), Walnut Bayou, Washington Creek, Wildhorse Creek (Duncan), and Wildhorse Creek (Tatums). Caddo Creek in the Arbuckle Uplift and Fish Creek in the Southwestern Tablelands also have extremely poor habitat.

Probabilistic sites: None of the probabilistic sites has a habitat score higher than the range determined by +/- two standard deviations from the mean total habitat score of high quality sites in the respective ecoregion, though Pennington Creek in the Cross Timbers ecoregion was at the top. Three creeks in the Cross Timbers have very poor habitat: Cow Creek, Laflin Creek, and the Washita River (081). White Shield Creek (094) in the Central Great Plains also has very poor habitat.

Figure 3. Total habitat score for each fixed site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

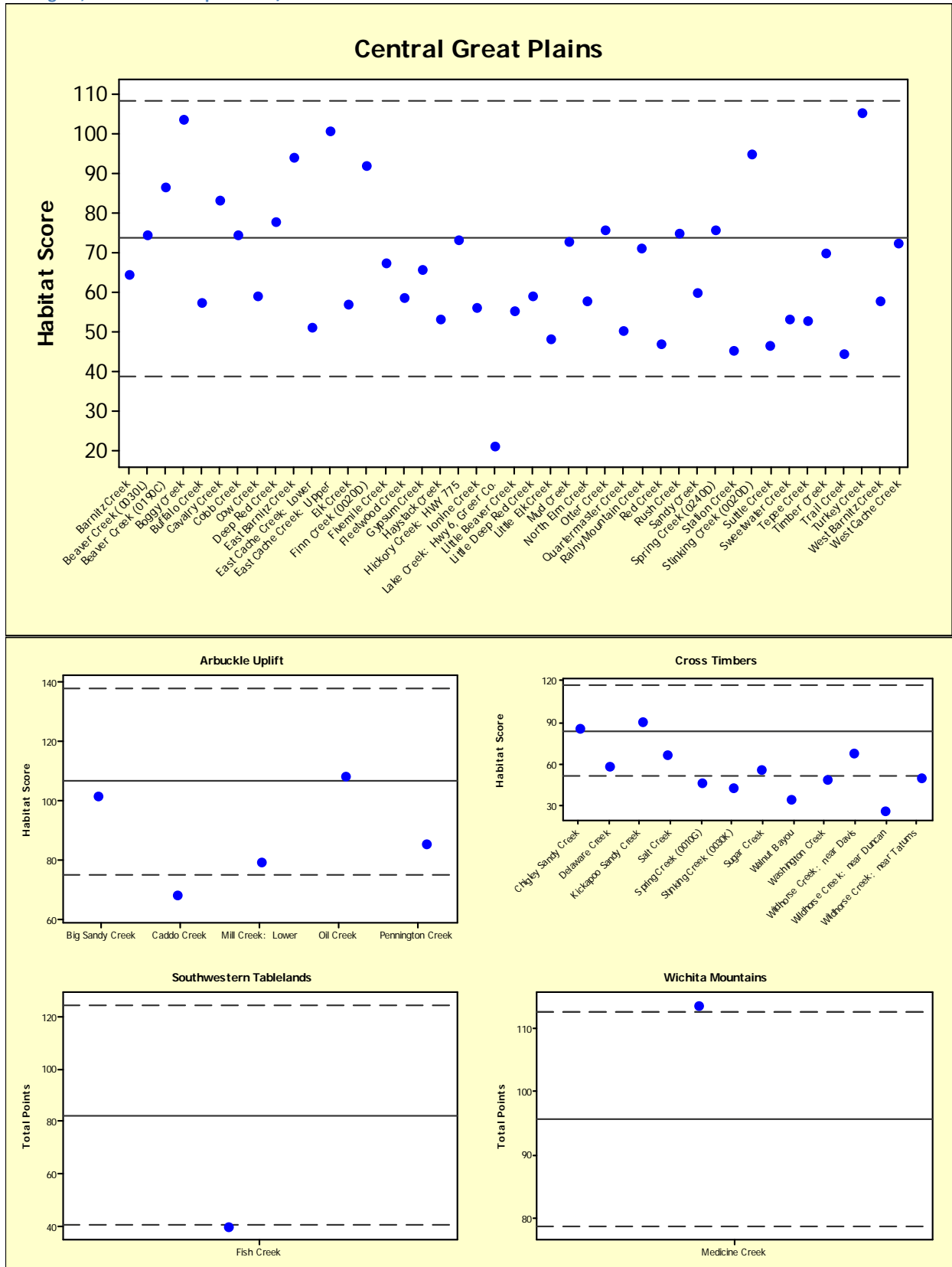
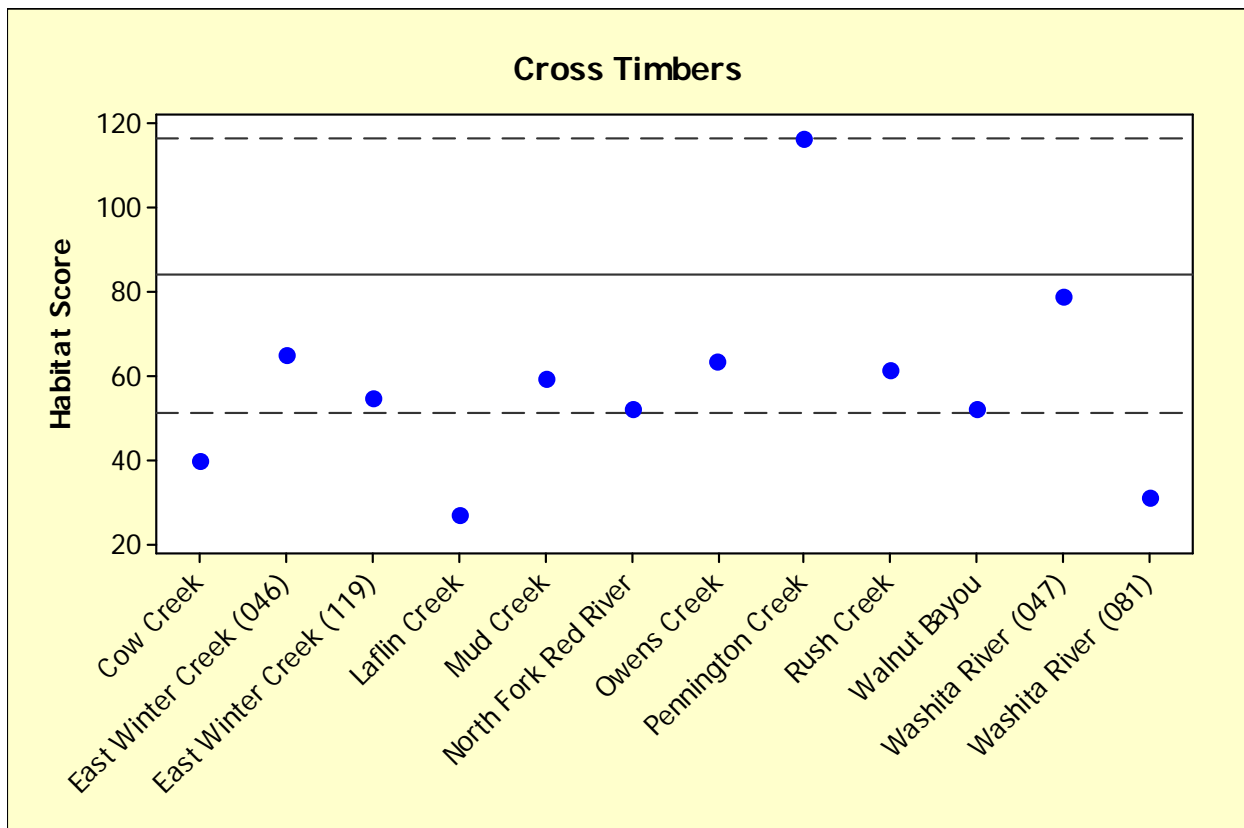
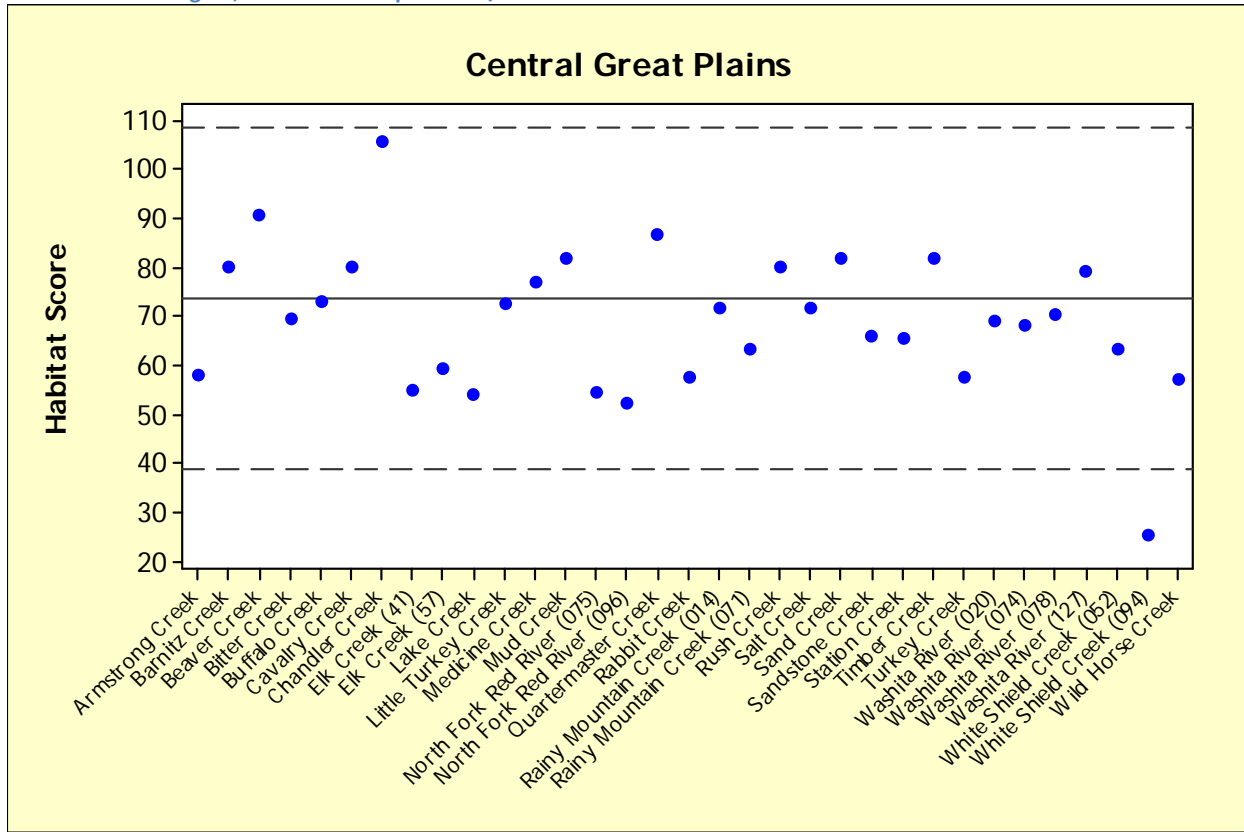


Figure 4. Total habitat score for each probabilistic site by Level III ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.



3.2.2 Fish Collections

Fish metrics used to compute IBI scores for the Rotating Basin sites using the OCC method are listed in Tables 17 and 18. Use of this IBI method allows assessment of streams which lack definite support assignment using the state biocriteria method. For a complete listing of fish collection data, including species and numbers caught, consult Appendix B. All data was compared relative to the same mean of the high quality sites for the respective ecoregion in order to obtain the IBI score (OCC method). Although, ideally, one would use collections from the same years for comparison, multiyear collections at sites deemed “high quality” were not available.

Table 17. Metric values for calculation of fish IBI scores (OCC method) for Rotating Basin Group 4, Cycle 2 fixed monitoring sites.

Site Name	WBID	Date	Total Number	Total Spp	Sensitive Benthic Spp	Sunfish Spp	Intolerant Spp	Percent Tolerant	Percent Insectivorous Cyprinids	Percent Lithophilic Spawners
Barnitz Creek	OK310830-03-0200C	6/18/2009	219	4	0	0	0	1.00	0.00	0.00
Beaver Creek	OK310830-03-0190C	5/20/2010	1378	7	1	1	1	1.00	0.00	0.00
Beaver Creek	OK311200-00-0030L	7/25/2010	360	26	2	7	1	0.94	0.06	0.00
Big Sandy Creek	OK310800-01-0090G	6/24/2009	244	16	2	6	0	0.59	0.03	0.37
Boggy Creek	OK310830-03-0100C	5/27/2010	710	8	3	1	2	0.99	0.00	0.00
Buffalo Creek	OK311510-02-0090D	6/3/2009	487	10	1	1	1	0.92	0.14	0.00
Caddo Creek	OK310800-03-0010F	8/24/2009	608	22	4	3	2	0.74	0.21	0.01
Cavalry Creek	OK310830-03-0070D	7/29/2009	229	8	2	1	1	0.94	0.05	0.00
Chigley Sandy Creek	OK310800-02-0190D	6/9/2009	535	20	4	8	2	0.87	0.04	0.08
Cobb Creek	OK310830-06-0050M	7/28/2009	280	13	1	3	0	1.00	0.00	0.00
Cow Creek	OK311200-00-0060L	8/11/2009	655	12	1	3	1	0.97	0.03	0.00
Deep Red Creek	OK311310-03-0010D	9/23/2010	25	12	1	3	1	0.64	0.36	0.00
Delaware Creek	OK310830-01-0030G	7/24/2009	536	8	0	2	0	1.00	0.00	0.00
East Barnitz Creek	OK310830-03-0210C	6/18/2009	392	6	0	2	0	1.00	0.00	0.00
East Cache Creek: Lower	OK311300-01-0020G	8/26/2009	106	13	0	2	0	0.80	0.25	0.00
East Cache Creek: Upper	OK311300-02-0010M	6/11/2009	866	21	2	8	0	0.65	0.33	0.01
Elk Creek	OK311500-03-0010G	6/18/2009	190	9	1	2	1	0.99	0.01	0.00
Finn Creek	OK310810-02-0020D	6/8/2009	615	18	4	6	2	0.95	0.00	0.02
Fish Creek	OK311800-00-0130G	6/9/2009	209	5	0	0	0	0.44	0.00	0.00
Fivemile Creek	OK310830-06-0080D	7/28/2009	633	10	0	3	0	0.98	0.02	0.00
Fleetwood Creek	OK311100-01-0300D	7/15/2009	354	9	0	4	0	1.00	0.00	0.00
Gypsum Creek	OK311600-01-0020F	5/29/2009	116	7	0	0	0	0.96	0.00	0.00
Haystack Creek	OK311800-00-0040D	8/10/2009	219	13	1	3	1	0.93	0.07	0.00
Hickory Creek	OK311100-02-0010M	6/14/2010	645	35	4	14	0	0.81	0.33	0.02
Ionine Creek	OK310820-01-0160L	6/25/2009	635	10	0	4	0	1.00	0.00	0.00
Kickapoo Sandy Creek	OK310810-01-0050G	6/9/2009	430	10	1	4	0	0.94	0.05	0.01
Lake Creek	OK311510-01-0040D	8/10/2009	473	13	1	6	1	0.68	0.31	0.01
Little Beaver Creek	OK311210-00-0050D	8/11/2009	153	16	1	5	1	0.97	0.03	0.00
Little Deep Red Creek	OK311310-03-0040D	6/17/2009	135	8	0	3	0	1.00	0.00	0.00
Little Elk Creek	OK311500-03-0040D	7/20/2009	1262	11	1	3	1	0.70	0.30	0.00
Medicine Creek	OK311300-04-0060H	6/1/2009	680	12	4	4	0	0.42	0.39	0.18
Mill Creek	OK310800-01-0190G	7/29/2009	549	24	1	8	0	0.83	0.04	0.00
Mud Creek	OK311100-04-0010G	6/3/2010	421	16	0	6	0	0.99	0.01	0.00
North Elm Creek	OK311800-00-0170G	8/5/2009	261	4	0	0	0	0.61	0.00	0.00
Oil Creek	OK310800-01-0240P	6/10/2009	828	13	4	4	1	0.50	0.32	0.50
Otter Creek	OK311500-01-0080F	8/10/2009	1139	23	1	5	1	0.99	0.01	0.00
Pennington Creek	OK310800-01-0120G	7/29/2009	841	30	6	10	3	0.58	0.20	0.17

Site Name	WBID	Date	Total Number	Total Spp	Sensitive Benthic Spp	Sunfish Spp	Intolerant Spp	Percent Tolerant	Percent Insectivorous Cyprinids	Percent Lithophytic Spawners
Quartermaster Creek	OK310840-01-0060L	6/4/2009	373	5	0	0	0	0.99	0.01	0.00
Rainy Mountain Creek	OK310830-02-0060G	9/3/2009	435	12	2	3	2	0.94	0.05	0.00
Red Creek	OK311100-01-0290D	8/25/2009	469	19	1	7	0	1.00	0.00	0.00
Rush Creek	OK310810-05-0010D	7/7/2009	438	13	1	4	1	0.99	0.00	0.00
Salt Creek	OK310810-03-0080G	6/16/2009	268	10	0	5	0	0.94	0.06	0.00
Sandy Creek	OK311600-01-0040G	5/28/2009	106	9	0	0	1	0.94	0.07	0.00
Spring Creek	OK310830-04-0010G	7/9/2009	374	4	0	2	0	1.00	0.00	0.00
Spring Creek	OK310840-02-0240D	6/2/2009	20	5	1	3	0	0.70	0.00	0.30
Station Creek	OK311800-00-0060G	8/6/2009	306	12	0	5	0	1.00	0.00	0.00
Stinking Creek	OK310830-02-0020D	7/23/2009	116	12	3	2	2	0.90	0.05	0.01
Stinking Creek	OK310830-04-0030K	7/9/2009	316	4	0	0	0	1.00	0.00	0.00
Sugar Creek	OK310830-05-0010D	7/24/2009	105	9	1	1	1	0.81	0.01	0.00
Suttle Creek	OK311310-01-0070H	6/18/2009	160	10	0	3	0	1.00	0.00	0.00
Sweetwater Creek	OK311510-02-0120D	7/16/2009	1562	21	1	4	1	0.90	0.11	0.00
Tepee Creek	OK311500-01-0110D	5/21/2009	264	10	1	3	1	0.97	0.03	0.00
Timber Creek	OK311510-01-0090G	6/4/2009	59	9	1	5	1	0.92	0.05	0.03
Trail Creek	OK311500-03-0070D	8/6/2009	1062	11	1	1	1	0.79	0.21	0.00
Turkey Creek	OK311600-02-0060J	5/28/2009	434	7	0	2	0	1.00	0.00	0.00
Walnut Bayou	OK311100-03-0010G	8/12/2009	342	19	1	3	1	0.94	0.06	0.00
Washington Creek	OK310810-01-0190G	6/8/2009	614	9	0	4	0	1.00	0.00	0.00
West Barnitz Creek	OK310830-03-0230C	6/18/2009	290	8	1	2	1	0.99	0.01	0.00
West Cache Creek	OK311310-02-0010M	6/17/2009	698	15	1	4	1	0.68	0.32	0.00
Wildhorse Creek (Davis)	OK310810-03-0010D	7/8/2009	491	18	1	6	1	0.98	0.02	0.00
Wildhorse Creek (Duncan)	OK310810-04-0140D	7/23/2009	849	14	2	4	1	1.00	0.00	0.00
Wildhorse Creek (Tatums)	OK310810-03-0010R	6/25/2009	239	7	1	2	1	0.99	0.01	0.00

Table 18. Metric values for calculation of fish IBI scores (OCC method) for Rotating Basin Group 4, Cycle 2 probabilistic monitoring sites.

Site Name	WBID	Date	Total Number	Total Spp	Sensitive Benthic Spp	Sunfish Spp	Intolerant Spp	Percent Tolerant	Percent Insectivorous Cyprinids	Percent Lithophilic Spawners
Armstrong Creek	OKR09730-095	6/30/2009	361	15	0	8	0	0.96	0.00	0.00
Barnitz Creek	OKR09730-106	5/21/2009	655	5	0	0	0	1.00	0.00	0.00
Beaver Creek	OKR09730-091	7/28/2010	135	19	0	5	0	0.98	0.02	0.00
Bitter Creek	OKR09730-005	7/15/2009	159	7	0	2	0	1.00	0.00	0.00
Buffalo Creek	OKR09730-012	6/16/2009	673	9	1	2	1	0.77	0.23	0.00
Cavalry Creek	OKR09730-058	7/29/2009	227	10	1	1	1	0.99	0.01	0.00
Chandler Creek	OKR09730-085	6/25/2009	331	12	3	5	0	0.57	0.00	0.41
Cow Creek	OKR09730-098	6/30/2009	1301	12	1	5	1	0.99	0.01	0.00
East Winter Creek	OKR09730-046	6/24/2009	194	9	1	4	0	0.68	0.21	0.11
East Winter Creek	OKR09730-119	6/24/2009	37	7	1	2	0	0.43	0.43	0.14
Elk Creek	OKR09730-041	7/14/2009	716	10	1	2	1	0.99	0.01	0.00
Elk Creek	OKR09730-057	8/12/2009	384	17	0	4	0	1.00	0.00	0.00
Lafin Creek	OKR09730-003	6/22/2009	243	5	1	0	0	0.96	0.03	0.01
Lake Creek	OKR09730-080	5/27/2010	2292	14	0	5	0	0.96	0.04	0.00
Little Turkey Creek	OKR09730-069	6/16/2009	15	8	0	6	0	1.00	0.00	0.00
Medicine Creek	OKR09730-026	8/4/2009	541	13	4	5	1	0.57	0.34	0.08
Mud Creek	OKR09730-031	6/29/2009	163	9	0	2	0	0.82	0.18	0.00
Mud Creek	OKR09730-110	6/29/2009	65	12	1	6	0	0.95	0.03	0.00
North Fork Red River	OKR09730-025	7/16/2009	377	9	0	3	1	0.98	0.00	0.00
North Fork Red River	OKR09730-075	7/21/2009	325	12	1	1	1	0.97	0.03	0.00
North Fork Red River	OKR09730-096	6/16/2009	732	9	0	0	0	0.91	0.12	0.00
Owens Creek	OKR09730-059	6/23/2009	231	8	0	4	0	1.00	0.00	0.00
Pennington Creek	OKR09730-124	6/17/2009	814	17	4	5	2	0.35	0.60	0.62
Quartermaster Creek	OKR09730-116	5/28/2009	3	2	0	1	0	1.00	0.00	0.00
Rainy Mountain Creek	OKR09730-014	7/1/2009	578	11	1	3	1	0.99	0.01	0.00
Rainy Mountain Creek	OKR09730-071	7/1/2009	530	9	0	4	0	1.00	0.00	0.00
Rush Creek	OKR09730-019	6/18/2009	468	13	1	6	1	0.96	0.04	0.00
Rush Creek	OKR09730-084	6/22/2009	523	12	1	2	1	0.99	0.01	0.00
Salt Creek	OKR09730-062	6/23/2009	205	12	1	4	1	0.99	0.01	0.00
Sand Creek	OKR09730-139	6/17/2009	15	3	0	1	0	1.00	0.00	0.00
Sandstone Creek	OKR09730-060	5/29/2009	442	11	0	5	0	1.00	0.00	0.00
Station Creek	OKR09730-123	7/14/2009	547	11	0	4	0	1.00	0.00	0.00
Timber Creek	OKR09730-136	6/17/2009	150	8	0	4	0	1.00	0.00	0.00
Turkey Creek	OKR09730-109	7/15/2009	766	10	1	1	1	0.99	0.01	0.00
Walnut Bayou	OKR09730-027	7/22/2009	438	21	2	4	1	0.94	0.04	0.00
Washita River	OKR09730-020	8/13/2009	760	15	3	3	2	0.96	0.01	0.03
Washita River	OKR09730-047	8/12/2010	851	20	4	5	3	0.95	0.00	0.04
Washita River	OKR09730-074	8/14/2009	713	15	2	1	1	0.98	0.00	0.01
Washita River	OKR09730-078	7/29/2010	644	12	1	3	1	0.98	0.02	0.00
Washita River	OKR09730-081	8/12/2010	216	9	0	1	0	1.00	0.00	0.00
Washita River	OKR09730-127	6/24/2010	1157	20	4	4	3	0.99	0.00	0.00
White Shield Creek	OKR09730-052	6/3/2009	579	9	2	2	1	0.92	0.00	0.07
White Shield Creek	OKR09730-094	6/3/2009	262	7	1	2	1	0.99	0.01	0.00
Wild Horse Creek	OKR09730-008	5/28/2009	79	8	1	2	1	0.96	0.04	0.00

Table 19 presents the results of the fixed site fish assessment based on the OCC’s modified RBP method compared with the fish assessment based on Oklahoma state biocriteria (as described in Oklahoma Water Resource Board, *Implementation of Oklahoma’s Water Quality Standards, Subchapter 15: Use Support Assessment Protocols* (USAP), OAC 785:46-15). The state biocriteria are based on older delineations of the level III ecoregions and different metrics are used for calculating IBI values, so there were some differences in scoring based on the differences in grouping of sites. The OCC method allowed greater discrimination of the biological condition among sites. Table 20 shows the results of the probabilistic site fish assessments.

Table 19. IBI scores for fixed sites based on Use Support Assessment Protocol biocriteria (OWRB 2011) and OCC’s modified RBP method. WWAC = warm water aquatic community, CWAC = cool water aquatic community. S = supporting, N = not supporting, U = undetermined.

Site Name	WBID	Use	IBI Score (USAP)	FWP Propagation (USAP)	IBI Total Score (OCC)	% of Reference	Score Interpretation (OCC)
Barnitz Creek	OK310830-03-0200C	WWAC	17	N	7	0.32	very poor
Beaver Creek (Custer Co.)	OK310830-03-0190C	WWAC	17	N	15	0.68	fair
Beaver Creek (Jefferson Co.)	OK311200-00-0030L	WWAC	31	S	23	1.04	excellent
Big Sandy Creek	OK310800-01-0090G	WWAC	31	S	21	0.84	good
Boggy Creek	OK310830-03-0100C	WWAC	17	N	17	0.77	fair
Buffalo Creek	OK311510-02-0090D	WWAC	17	N	17	0.77	fair
Caddo Creek	OK310800-03-0010F	WWAC	27	S	23	0.92	excellent
Cavalry Creek	OK310830-03-0070D	WWAC	17	N	17	0.77	fair
Chigley Sandy Creek	OK310800-02-0190D	WWAC	27	S	23	1.01	excellent
Cobb Creek	OK310830-06-0050M	WWAC	21	U	17	0.77	fair
Cow Creek	OK311200-00-0060L	WWAC	23	U	21	0.95	excellent
Deep Red Creek	OK311310-03-0010D	WWAC	23	S	23	1.04	excellent
Delaware Creek	OK310830-01-0030G	WWAC	19	U	9	0.39	very poor
East Barnitz Creek	OK310830-03-0210C	WWAC	19	U	11	0.50	poor
East Cache Creek: Lower	OK311300-01-0020G	WWAC	25	S	15	0.68	fair
East Cache Creek: Upper	OK311300-02-0010M	WWAC	27	S	21	0.95	excellent
Elk Creek	OK311500-03-0010G	WWAC	17	N	19	0.86	good
Finn Creek	OK310810-02-0020D	WWAC	25	S	23	1.04	excellent
Fish Creek	OK311800-00-0130G	WWAC	19	U	9	0.38	very poor
Fivemile Creek	OK310830-06-0080D	WWAC	21	U	15	0.68	fair
Fleetwood Creek	OK311100-01-0300D	WWAC	23	U	15	0.68	fair
Gypsum Creek	OK311600-01-0020F	WWAC	15	N	9	0.41	poor
Haystack Creek	OK311800-00-0040D	WWAC	25	S	21	0.95	excellent
Hickory Creek	OK311100-02-0010M	WWAC	29	S	19	0.84	good
Ionine Creek	OK310820-01-0160L	WWAC	23	S	15	0.68	fair
Kickapoo Sandy Creek	OK310810-01-0050G	WWAC	23	U	11	0.48	poor
Lake Creek	OK311510-01-0040D	WWAC	27	S	23	1.04	excellent
Little Beaver Creek	OK311210-00-0050D	WWAC	27	S	21	0.95	excellent
Little Deep Red Creek	OK311310-03-0040D	WWAC	17	N	13	0.59	poor
Little Elk Creek	OK311500-03-0040D	WWAC	25	S	23	1.04	excellent
Medicine Creek	OK311300-04-0060H	WWAC	29	S	21	0.81	good
Mill Creek	OK310800-01-0190G	WWAC	31	S	17	0.68	fair
Mud Creek	OK311100-04-0010G	WWAC	21	U	15	0.68	fair

Site Name	WBID	Use	IBI Score (USAP)	FWPropagation (USAP)	IBI Total Score (OCC)	% of Reference	Score Interpretation (OCC)
North Elm Creek	OK311800-00-0170G	WWAC	17	N	7	0.32	very poor
Oil Creek	OK310800-01-0240P	WWAC	33	S	25	1.00	excellent
Otter Creek	OK311500-01-0080F	WWAC	31	S	21	0.95	excellent
Pennington Creek	OK310800-01-0120G	CWAC	29	S	23	0.92	excellent
Quartermaster Creek	OK310840-01-0060L	WWAC	17	U	9	0.41	poor
Rainy Mountain Creek	OK310830-02-0060G	WWAC	20	U	23	1.04	excellent
Red Creek	OK311100-01-0290D	WWAC	27	S	17	0.77	fair
Rush Creek	OK310810-05-0010D	WWAC	23	U	21	0.95	excellent
Salt Creek	OK310810-03-0080G	WWAC	21	U	13	0.57	poor
Sandy Creek	OK311600-01-0040G	WWAC	17	N	15	0.68	fair
Spring Creek	OK310830-04-0010G	WWAC	19	U	7	0.31	very poor
Spring Creek	OK310840-02-0240D	WWAC	17	N	17	0.77	fair
Station Creek	OK311800-00-0060G	WWAC	27	S	15	0.68	fair
Stinking Creek	OK310830-02-0020D	WWAC	23	S	21	0.95	excellent
Stinking Creek	OK310830-04-0030K	WWAC	17	N	7	0.31	very poor
Sugar Creek	OK310830-05-0010D	WWAC	19	U	11	0.48	poor
Suttle Creek	OK311310-01-0070H	WWAC	23	S	15	0.68	fair
Sweetwater Creek	OK311510-02-0120D	WWAC	27	S	21	0.95	excellent
Tepee Creek	OK311500-01-0110D	WWAC	19	U	21	0.95	excellent
Timber Creek	OK311510-01-0090G	WWAC	21	U	21	0.95	excellent
Trail Creek	OK311500-03-0070D	WWAC	21	U	19	0.86	good
Turkey Creek	OK311600-02-0060J	WWAC	19	U	11	0.50	poor
Walnut Bayou	OK311100-03-0010G	WWAC	25	U	15	0.66	fair
Washington Creek	OK310810-01-0190G	WWAC	23	S	15	0.68	fair
West Barnitz Creek	OK310830-03-0230C	WWAC	19	U	17	0.77	fair
West Cache Creek	OK311310-02-0010M	WWAC	27	S	23	1.04	excellent
Wildhorse Creek (Davis)	OK310810-03-0010D	WWAC	25	U	17	0.75	fair
Wildhorse Creek (Duncan)	OK310810-04-0140D	WWAC	23	U	17	0.75	fair
Wildhorse Creek (Tatums)	OK310810-03-0010R	WWAC	19	N	11	0.48	poor

Table 20. IBI scores for probabilistic sites based on Use Support Assessment Protocol biocriteria (OWRB 2011) and OCC's modified RBP method. WWAC = warm water aquatic community, CWAC = cool water aquatic community. S = supporting, N = not supporting, U = undetermined.

Site Name	WBID	Use	IBI Score (USAP)	FWP Propagation (USAP)	IBI Total Score (OCC)	% of Reference	Score Interpretation (OCC)
Lafin Creek	OKR09730-003	WWAC	17	N	7	0.31	very poor
Bitter Creek	OKR09730-005	WWAC	17	N	11	0.50	poor
Wild Horse Creek	OKR09730-008	WWAC	17	U	17	0.77	fair
Buffalo Creek	OKR09730-012	WWAC	19	U	21	0.95	excellent
Rainy Mountain Creek	OKR09730-014	WWAC	19	U	21	0.95	excellent
Rush Creek	OKR09730-019	WWAC	25	S	21	0.95	excellent
Washita River	OKR09730-020	WWAC	25	S	23	1.04	excellent
North Fork Red River	OKR09730-025	WWAC	19	U	19	0.86	good
Medicine Creek	OKR09730-026	WWAC	27	S	25	1.13	excellent
Walnut Bayou	OKR09730-027	WWAC	29	S	17	0.75	fair
Mud Creek	OKR09730-031	WWAC	21	U	9	0.39	very poor
Elk Creek	OKR09730-041	WWAC	19	U	19	0.86	good
East Winter Creek	OKR09730-046	WWAC	23	U	19	0.86	good
Washita River	OKR09730-047	WWAC	29	S	23	1.01	excellent
White Shield Creek	OKR09730-052	HLAC	21	U	13	0.57	poor
Elk Creek	OKR09730-057	WWAC	27	S	15	0.68	fair
Cavalry Creek	OKR09730-058	WWAC	17	N	17	0.77	fair
Owens Creek	OKR09730-059	WWAC	23	U	13	0.59	poor
Sandstone Creek	OKR09730-060	WWAC	27	S	13	0.57	poor
Salt Creek	OKR09730-062	WWAC	23	S	21	0.95	excellent
Little Turkey Creek	OKR09730-069	WWAC	21	U	13	0.59	poor
Rainy Mountain Creek	OKR09730-071	WWAC	21	U	15	0.68	fair
Washita River	OKR09730-074	WWAC	23	S	19	0.86	good
North Fork Red River	OKR09730-075	WWAC	19	U	17	0.77	fair
Washita River	OKR09730-078	WWAC	21	U	21	0.95	excellent
Lake Creek	OKR09730-080	WWAC	23	S	15	0.68	fair
Washita River	OKR09730-081	WWAC	17	N	9	0.39	very poor
Rush Creek	OKR09730-084	WWAC	21	U	11	0.48	poor
Chandler Creek	OKR09730-085	WWAC	29	S	23	1.04	excellent
Beaver Creek	OKR09730-091	WWAC	27	S	15	0.68	fair
White Shield Creek	OKR09730-094	HLAC	19	U	17	0.77	good
Armstrong Creek	OKR09730-095	WWAC	29	S	15	0.68	fair
North Fork Red River	OKR09730-096	WWAC	17	N	11	0.50	poor
Cow Creek	OKR09730-098	WWAC	23	U	15	0.66	fair
Barnitz Creek	OKR09730-106	WWAC	17	N	9	0.41	poor
Turkey Creek	OKR09730-109	WWAC	17	N	17	0.77	fair
Mud Creek	OKR09730-110	WWAC	21	U	17	0.77	fair
Quartermaster Creek	OKR09730-116	WWAC	13	N	7	0.32	very poor
East Winter Creek	OKR09730-119	WWAC	17	N	11	0.48	poor
Station Creek	OKR09730-123	WWAC	21	U	15	0.68	fair
Pennington Creek	OKR09730-124	CWAC	29	S	31	1.36	excellent
Washita River	OKR09730-127	WWAC	25	S	23	1.04	excellent

Site Name	WBID	Use	IBI Score (USAP)	FW Propagation (USAP)	IBI Total Score (OCC)	% of Reference	Score Interpretation (OCC)
Timber Creek	OKR09730-136	WWAC	19	U	13	0.59	poor
Sand Creek	OKR09730-139	WWAC	13	N	7	0.32	very poor

Twenty-one fixed sites had fish communities that were “excellent” relative to high quality sites in the ecoregion, 5 sites had fish communities that were “good,” 21 sites were “fair,” 9 sites were “poor”, and 6 were “very poor” relative to high quality sites in the ecoregion.

Eleven of the 44 probabilistic sites had “excellent” fish communities, 5 were “good,” 13 were “fair,” 10 were “poor,” and 5 were “very poor.” Overall, this indicates that approximately 36% of the streams in the basin have at least good fish communities, 30% are in “fair” condition, and 34% have poor or very poor communities relative to high quality sites in the ecoregions of this basin. The fixed sites had a similar breakdown to the probabilistic sites, with 42% of sites being either excellent or good, 34% are fair, and 24% are poor or very poor.

The state USAP method indicated that 42% of fixed sites were supporting criteria, 37% were undetermined, and 21% were not supporting fish biocriteria, values similar to the OCC method. For probabilistic sites, 34% were supporting state biocriteria, 43% were undetermined, and 23% were not supporting.

Figure 5 shows the IBI score for each fixed site (indicated by a red dot) relative to the mean value for the high quality sites in that ecoregion (indicated by a solid line), while Figure 6 shows the probabilistic site scores. The dashed lines in each graph represent +/- two standard deviations of the mean IBI score of the high quality sites in that ecoregion. The general trends within each ecoregion were similar between probabilistic and fixed sites, with more than 50% of sites in the Cross Timbers ecoregion having sites significantly below the high quality average, and most sites in the Central Great Plains falling within the high quality range.

Figure 5. IBI score (fish) for each fixed site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

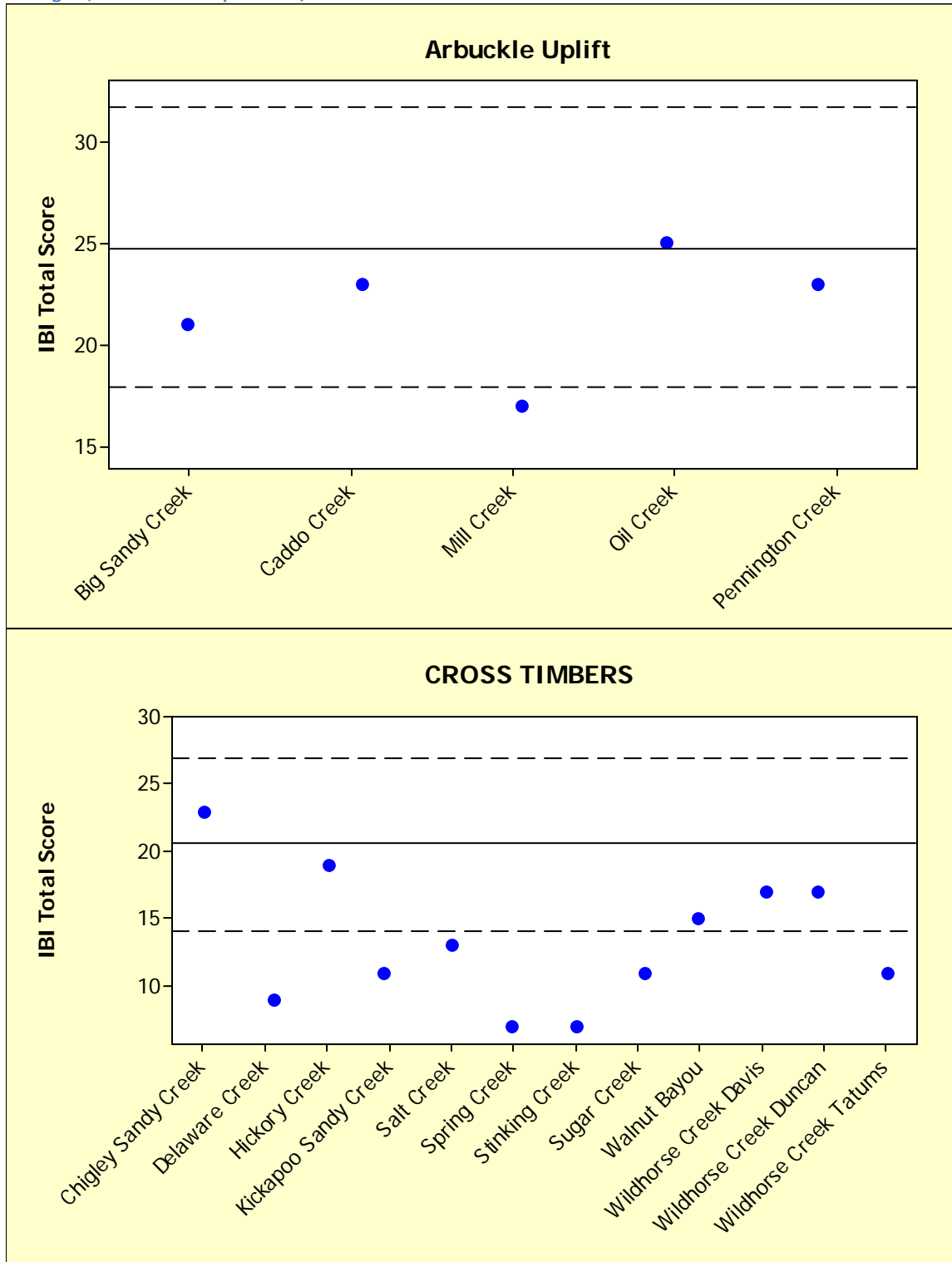


Figure 5, cont. IBI score (fish) for each fixed site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

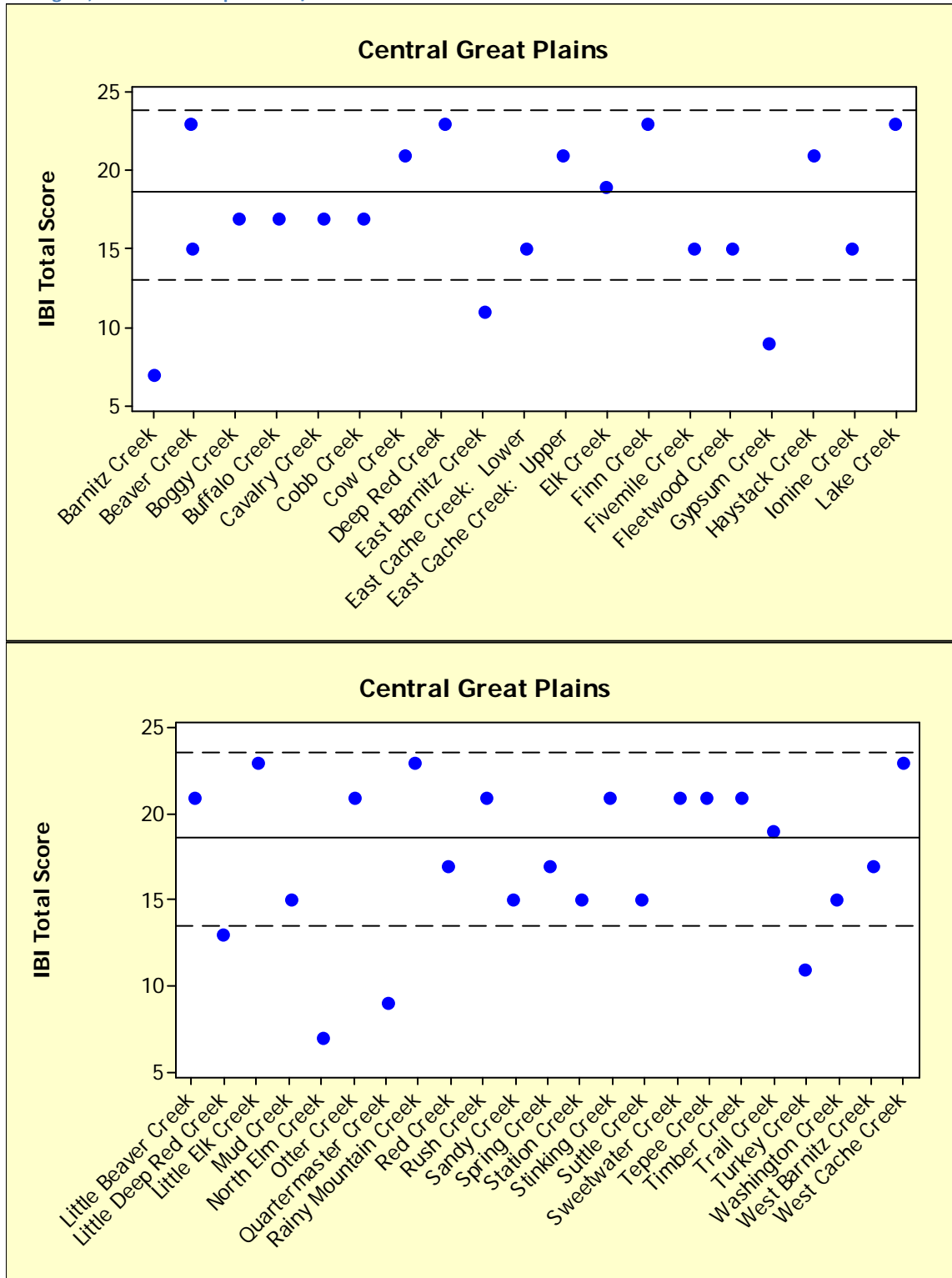


Figure 5, cont. IBI score (fish) for each fixed site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

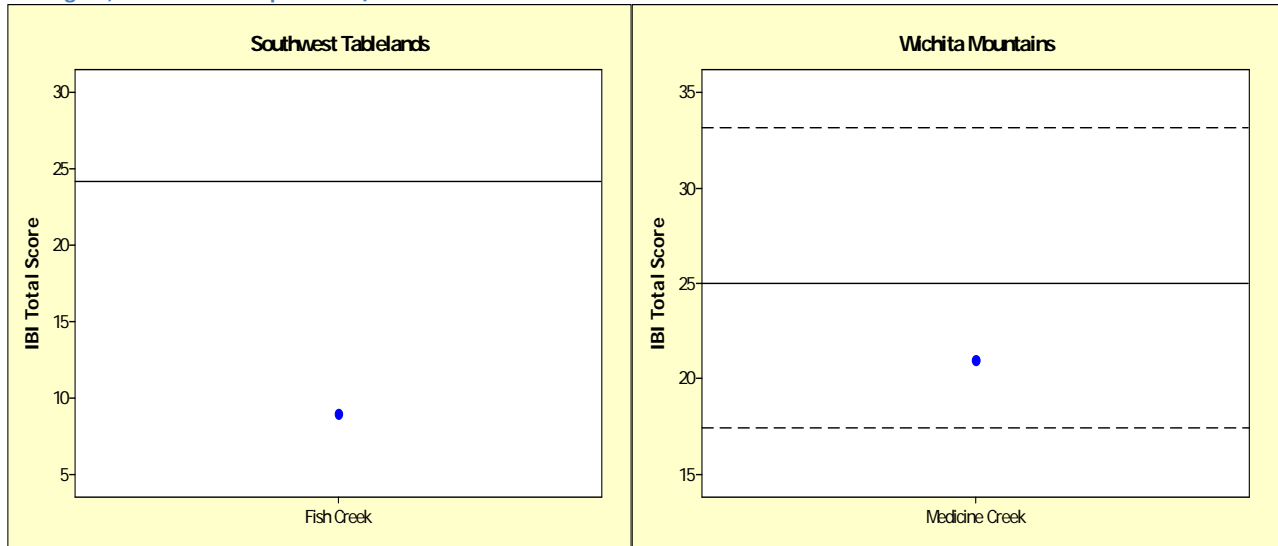


Figure 6. IBI score (fish) for each probabilistic site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

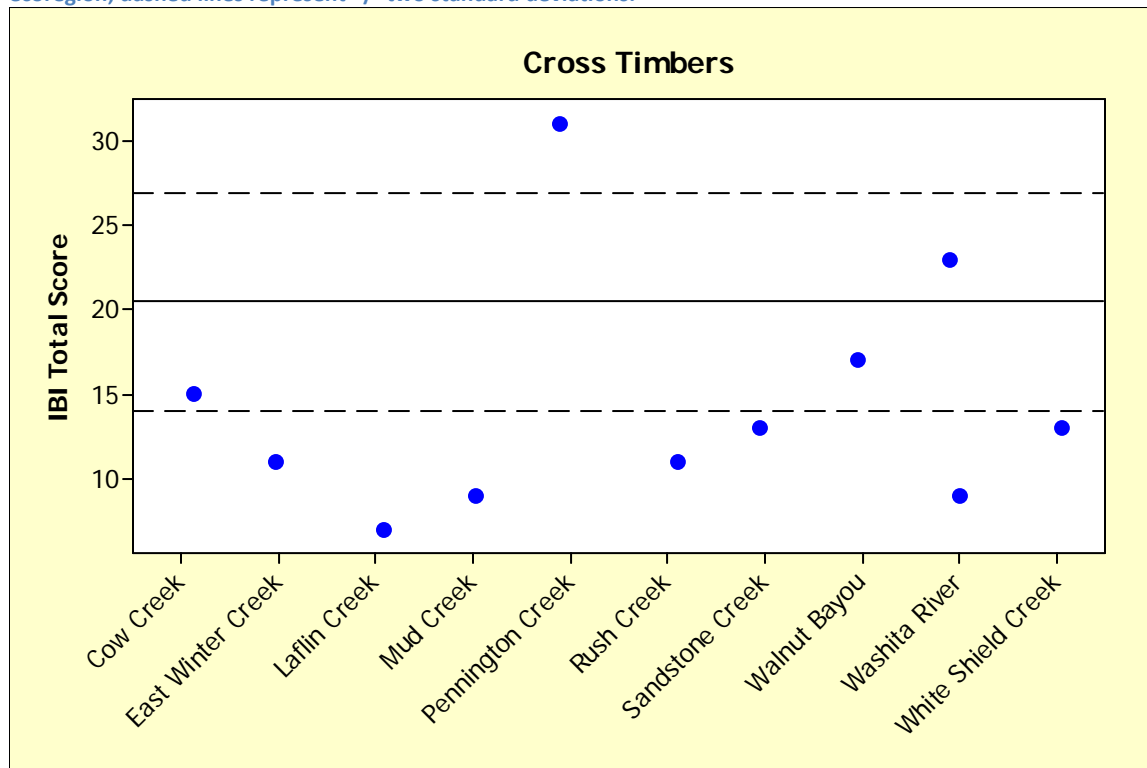


Figure 6, cont. IBI score (fish) for each probabilistic site by ecoregion. Solid lines indicate the mean value of high quality sites in each ecoregion; dashed lines represent +/- two standard deviations.

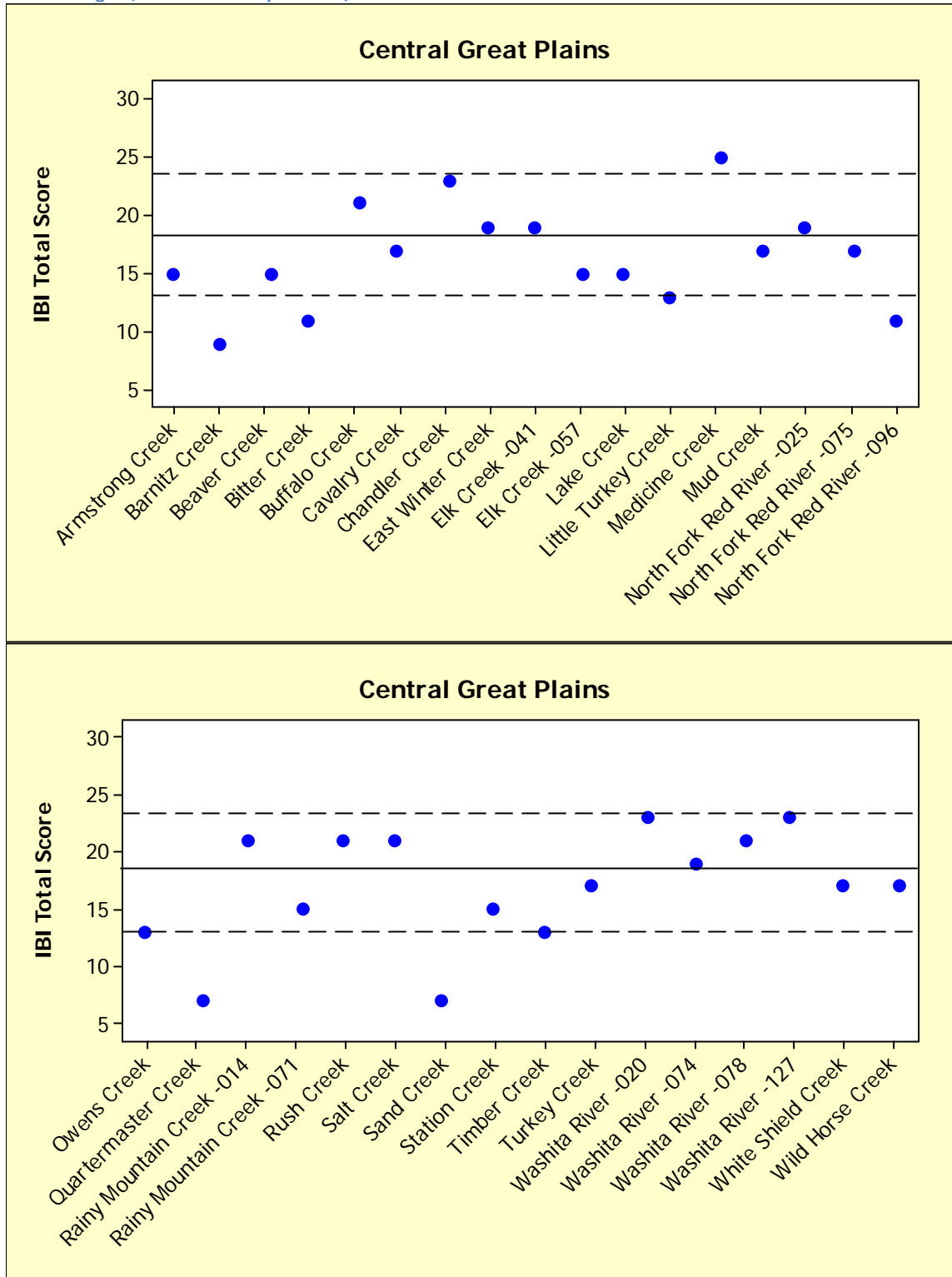


Table 21 shows a comparison between fish data collected in cycle 1 (2004 or 2005) and cycle 2 (2009 or 2010) of the rotating basin project in order to examine whether biological conditions have improved, worsened, or remained the same at a particular site. IBI scores were calculated relative to the same high quality sites data for both cycles, so any change in condition is due only to a change in the rotating basin cycle 2 collection, not to a change in the high quality sites. The fish community remained in the same condition for 29 of the 61 sites compared. Twenty streams had worse fish community conditions in cycle 2 relative to cycle 1, while 12 streams had improved fish communities. This region began to experience drought conditions in 2009, so it is likely that the lack of rain contributed to the decline in fish community health at some sites relative to the previous cycle.

Table 21. Comparison of fish data from Cycle 1 (2004-2005) to Cycle 2 (2009-2010).

Site Name	WBID	Year	IBI Total Score (OCC)	% of Reference	Condition
Barnitz Creek	OK310830-03-0200C	2004	19	0.86	Good
Barnitz Creek	OK310830-03-0200C	2009	7	0.32	Very Poor
Beaver Creek (Custer Co.)	OK310830-03-0190C	2004	21	0.95	Excellent
Beaver Creek(Custer Co.)	OK310830-03-0190C	2010	15	0.68	Fair
Beaver Creek (Jefferson Co.)	OK311200-00-0030L	2005	23	1.04	Excellent
Beaver Creek (Jefferson Co.)	OK311200-00-0030L	2010	23	1.04	Excellent
Big Sandy Creek	OK310800-01-0090G	2004	25	1.00	Excellent
Big Sandy Creek	OK310800-01-0090G	2009	21	0.84	Good
Boggy Creek	OK310830-03-0100C	2004	21	0.95	Excellent
Boggy Creek	OK310830-03-0100C	2010	17	0.77	Fair
Buffalo Creek	OK311510-02-0090D	2004	9	0.41	Very Poor
Buffalo Creek	OK311510-02-0090D	2009	17	0.77	Fair
Caddo Creek	OK310800-03-0010F	2004	23	0.92	Excellent
Caddo Creek	OK310800-03-0010F	2009	23	0.92	Excellent
Cavalry Creek	OK310830-03-0070D	2004	15	0.68	Fair
Cavalry Creek	OK310830-03-0070D	2009	17	0.77	Fair
Chigley Sandy Creek	OK310800-02-0190D	2004	23	1.01	Excellent
Chigley Sandy Creek	OK310800-02-0190D	2009	23	1.01	Excellent
Cobb Creek	OK310830-06-0050M	2004	23	1.04	Excellent
Cobb Creek	OK310830-06-0050M	2009	17	0.77	Fair
Cow Creek	OK311200-00-0060L	2004	15	0.68	Fair
Cow Creek	OK311200-00-0060L	2009	21	0.95	Excellent
Deep Red Creek	OK311310-03-0010D	2005	15	0.68	Fair
Deep Red Creek	OK311310-03-0010D	2010	23	1.04	Excellent
Delaware Creek	OK310830-01-0030G	2004	9	0.40	Very Poor
Delaware Creek	OK310830-01-0030G	2009	9	0.40	Very Poor
East Barnitz Creek	OK310830-03-0210C	2004	21	0.95	Excellent
East Barnitz Creek	OK310830-03-0210C	2009	11	0.50	Poor

Site Name	WBID	Year	IBI Total Score (OCC)	% of Reference	Condition
East Cache Creek: Lower	OK311300-01-0020G	2004	21	0.95	Excellent
East Cache Creek: Lower	OK311300-01-0020G	2009	15	0.68	Fair
East Cache Creek: Upper	OK311300-02-0010M	2004	19	0.86	Good
East Cache Creek: Upper	OK311300-02-0010M	2009	21	0.95	Excellent
Elk Creek	OK311500-03-0010G	2004	13	0.59	Poor
Elk Creek	OK311500-03-0010G	2009	19	0.86	Good
Finn Creek	OK310810-02-0020D	2004	21	0.95	Excellent
Finn Creek	OK310810-02-0020D	2009	23	1.04	Excellent
Fish Creek	OK311800-00-0130G	2004	9	0.38	Very Poor
Fish Creek	OK311800-00-0130G	2009	9	0.38	Very Poor
Fivemile Creek	OK310830-06-0080D	2004	15	0.68	Fair
Fivemile Creek	OK310830-06-0080D	2009	15	0.68	Fair
Fleetwood Creek	OK311100-01-0300D	2004	13	0.59	Poor
Fleetwood Creek	OK311100-01-0300D	2009	15	0.68	Fair
Gypsum Creek	OK311600-01-0020F	2004	15	0.68	Fair
Gypsum Creek	OK311600-01-0020F	2009	9	0.41	Poor
Haystack Creek	OK311800-00-0040D	2004	23	1.04	Excellent
Haystack Creek	OK311800-00-0040D	2009	21	0.95	Excellent
Hickory Creek	OK311100-02-0010M	2004	21	0.92	Excellent
Hickory Creek	OK311100-02-0010M	2010	19	0.84	Good
Ionine Creek	OK310820-01-0160L	2004	9	0.41	Very Poor
Ionine Creek	OK310820-01-0160L	2009	15	0.68	Fair
Kickapoo Sandy Creek	OK310810-01-0050G	2004	17	0.75	Fair
Kickapoo Sandy Creek	OK310810-01-0050G	2009	11	0.48	Poor
Lake Creek	OK311510-01-0040D	2004	21	0.95	Excellent
Lake Creek	OK311510-01-0040D	2009	23	1.04	Excellent
Little Beaver Creek	OK311210-00-0050D	2004	21	0.95	Excellent
Little Beaver Creek	OK311210-00-0050D	2009	21	0.95	Excellent
Little Deep Red Creek	OK311310-03-0040D	2004	7	0.32	Very Poor
Little Deep Red Creek	OK311310-03-0040D	2009	13	0.59	Fair
Little Elk Creek	OK311500-03-0040D	2004	23	1.04	Excellent
Little Elk Creek	OK311500-03-0040D	2009	20	1.25	Excellent
Medicine Creek	OK311300-04-0060H	2005	27	1.04	Excellent
Medicine Creek	OK311300-04-0060H	2009	21	0.81	Good
Mill Creek	OK310800-01-0190G	2004	23	0.92	Excellent
Mill Creek	OK310800-01-0190G	2009	17	0.68	Fair
Mud Creek	OK311100-04-0010D	2004	17	0.77	Fair
Mud Creek	OK311100-04-0010G	2010	15	0.68	Fair
Oil Creek	OK310800-01-0240P	2004	25	1.00	Excellent

Site Name	WBID	Year	IBI Total Score (OCC)	% of Reference	Condition
Oil Creek	OK310800-01-0240P	2009	25	1.00	Excellent
Otter Creek	OK311500-01-0080F	2004	15	0.68	Fair
Otter Creek	OK311500-01-0080F	2009	21	0.95	Excellent
Pennington Creek	OK310800-01-0120G	2004	27	1.08	Excellent
Pennington Creek	OK310800-01-0120G	2009	23	0.92	Excellent
Quartermaster Creek	OK310840-01-0060L	2004	21	0.95	Excellent
Quartermaster Creek	OK310840-01-0060L	2009	9	0.41	Poor
Rainy Mountain Creek	OK310830-02-0060G	2004	21	0.95	Excellent
Rainy Mountain Creek	OK310830-02-0060G	2009	23	1.04	Excellent
Red Creek	OK311100-01-0290D	2004	17	0.77	Fair
Red Creek	OK311100-01-0290D	2009	17	0.77	Fair
Rush Creek	OK310810-05-0010D	2004	25	1.13	Excellent
Rush Creek	OK310810-05-0010D	2009	21	0.95	Excellent
Salt Creek	OK310810-03-0080G	2004	13	0.57	Poor
Salt Creek	OK310810-03-0080G	2009	13	0.57	Poor
Sandy Creek	OK311600-01-0040G	2004	17	0.77	Fair
Sandy Creek	OK311600-01-0040G	2009	15	0.68	Fair
Spring Creek (Caddo Co.)	OK310830-04-0010G	2004	7	0.31	Very Poor
Spring Creek (Caddo Co.)	OK310830-04-0010G	2009	7	0.31	Very Poor
Spring Creek (Roger Mills Co.)	OK310840-02-0240D	2004	17	0.77	Fair
Spring Creek (Roger Mills Co.)	OK310840-02-0240D	2009	17	0.77	Fair
Station Creek	OK311800-00-0060G	2004	15	0.68	Fair
Station Creek	OK311800-00-0060G	2009	15	0.68	Fair
Stinking Creek (Kiowa Co.)	OK310830-02-0020D	2004	21	0.95	Excellent
Stinking Creek (Kiowa Co.)	OK310830-02-0020D	2009	21	0.95	Excellent
Stinking Creek (Caddo Co.)	OK310830-04-0030K	2004	11	0.48	Poor
Stinking Creek (Caddo Co.)	OK310830-04-0030K	2009	7	0.31	Very Poor
Sugar Creek	OK310830-05-0010D	2004	9	0.40	Very Poor
Sugar Creek	OK310830-05-0010D	2009	11	0.48	Poor
Suttle Creek	OK311310-01-0070H	2004	21	0.95	Excellent
Suttle Creek	OK311310-01-0070H	2009	15	0.68	Fair
Sweetwater Creek	OK311510-02-0120D	2004	23	1.04	Excellent
Sweetwater Creek	OK311510-02-0120D	2009	21	0.95	Excellent
Tepee Creek	OK311500-01-0110D	2004	9	0.41	Very Poor
Tepee Creek	OK311500-01-0110D	2009	21	0.95	Excellent
Timber Creek	OK311510-01-0090G	2004	25	1.13	Excellent
Timber Creek	OK311510-01-0090G	2009	21	0.95	Excellent
Trail Creek	OK311500-03-0070D	2004	21	0.95	Excellent
Trail Creek	OK311500-03-0070D	2009	19	0.86	Good

Site Name	WBID	Year	IBI Total Score (OCC)	% of Reference	Condition
Turkey Creek	OK311600-02-0060H	2004	21	0.95	Excellent
Turkey Creek	OK311600-02-0060J	2009	11	0.50	Poor
Walnut Bayou	OK311100-03-0010G	2004	19	0.84	Good
Walnut Bayou	OK311100-03-0010G	2009	15	0.66	Fair
Washington Creek	OK310810-01-0190G	2004	13	0.59	Poor
Washington Creek	OK310810-01-0190G	2009	15	0.68	Fair
West Barnitz Creek	OK310830-03-0230C	2004	15	0.68	Fair
West Barnitz Creek	OK310830-03-0230C	2009	17	0.77	Fair
West Cache Creek	OK311310-02-0010M	2004	25	1.13	Excellent
West Cache Creek	OK311310-02-0010M	2009	23	1.04	Excellent
Wildhorse Creek (Davis)	OK310810-01-0020G	2004	19	0.84	Good
Wildhorse Creek (Davis)	OK310810-01-0020G	2009	17	0.75	Fair
Wildhorse Creek (Duncan)	OK310810-04-0140D	2004	19	0.84	Good
Wildhorse Creek (Duncan)	OK310810-04-0140D	2009	17	0.75	Fair
Wildhorse Creek (Tatums)	OK310810-03-0010R	2004	11	0.48	Poor
Wildhorse Creek (Tatums)	OK310810-03-0010R	2009	11	0.48	Poor

3.2.3 Macroinvertebrate Collections

The complete macroinvertebrate dataset, including species and numbers captured per site, can be found in Appendix C. Macroinvertebrates were collected for most sites at least once during the project period. Lack of flow during the macroinvertebrate collection index periods prevented collection of all planned samples over the cycle, and four sites never had macroinvertebrates collected.

Tables 22 and 23 present the mean values, by season and sample type, for each metric at each site for the two-year cycle 2 monitoring period. Riffle samples were collected at most sites and, generally, best reflect the macroinvertebrate community as a single habitat (Plafkin et al. 1989).

Table 22. Macroinvertebrate metric values determined for each fixed monitoring site, averaged per season and habitat. NI = non-impaired, SI = slightly impaired, MI = moderately impaired.

Site Name	WBID	Sample Type	Winter or summer	Number of Samples	Total Species	EPT Taxa	Percent EPT	HBI	Percent dominant 2 taxa	Shannon Diversity	Total Points	% of Reference	Condition
Barnitz Creek	OK310830-03-0200C	Riffle	W	1	8	1	0.11	5.48	0.70	1.51	14	0.70	SI
		Woody	S	1	13	5	0.43	5.85	0.73	1.64	20	0.77	SI
		Woody	W	1	6	1	0.03	6.02	0.92	0.75	8	0.40	MI
Beaver Creek (Custer Co.)	OK310830-03-0190C	SVeg	W	1	9	1	0.03	6.34	0.84	1.02	12	0.60	SI
		Woody	S	1	13	5	0.42	5.75	0.59	1.90	20	0.77	SI
		Woody	W	1	14	3	0.25	5.54	0.64	1.78	20	1.00	NI
Beaver Creek (Jefferson Co.)	OK311200-00-0030L	Riffle	S	2	18	8	0.59	4.83	0.57	2.04	26	1.00	NI
		Riffle	W	1	12	2	0.23	4.98	0.66	1.65	20	1.00	NI
		Woody	S	1	18	6	0.40	5.94	0.50	2.16	26	1.00	NI
Big Sandy Creek	OK310800-01-0090G	Riffle	S	2	17	7	0.78	4.57	0.66	1.77	22	0.85	NI
		Riffle	W	1	11	6	0.33	4.79	0.82	1.27	20	0.77	SI
Boggy Creek	OK310830-03-0100C	Riffle	S	1	17	8	0.47	4.84	0.51	2.16	26	1.00	NI
		Riffle	W	1	9	3	0.04	5.93	0.74	1.46	16	0.80	SI
		Woody	S	1	15	6	0.38	3.23	0.20	1.89	26	1.00	NI
		Woody	W	1	9	2	0.04	6.08	0.83	1.05	10	0.50	MI
Buffalo Creek	OK311510-02-0090D	SVeg	S	2	23	6	0.19	6.12	0.46	2.38	25	1.04	NI
		SVeg	W	1	6	2	0.02	6.04	0.97	0.37	12	0.60	SI
		Woody	S	1	18	7	0.54	5.12	0.43	2.37	26	1.00	NI
		Woody	W	1	9	5	0.13	5.78	0.86	0.84	18	0.90	NI
Caddo Creek	OK310800-03-0010F	Riffle	S	2	20	9	0.50	5.01	0.35	2.49	29	1.12	NI
		Riffle	W	1	11	4	0.20	5.52	0.85	1.12	12	0.46	MI
		Woody	S	2	15	7	0.25	6.36	0.59	1.96	24	0.92	NI
		Woody	W	1	4	1	0.01	5.96	0.98	0.16	6	0.23	MI
Cavalry Creek	OK310830-03-0070D	SVeg	S	1	17	3	0.06	7.44	0.66	1.88	14	0.58	SI
		Woody	S	1	18	5	0.11	6.63	0.55	2.07	18	0.69	SI
		Woody	W	1	9	1	0.04	5.97	0.90	0.94	10	0.50	MI
Chigley Sandy Creek	OK310800-02-0190D	Riffle	S	2	15	5	0.36	5.00	0.61	1.84	18	0.69	SI
		Riffle	W	1	9	5	0.36	4.37	0.90	1.07	18	0.75	SI
		SVeg	S	2	19	6	0.17	6.84	0.58	2.02	17	0.65	SI
		Woody	S	2	17	7	0.41	5.84	0.53	2.02	25	0.96	NI
		Woody	W	1	11	4	0.53	3.53	0.87	1.25	20	1.00	NI
Cobb Creek	OK310830-06-0050M	SVeg	S	1	19	5	0.10	6.48	0.46	2.26	20	0.83	NI
		SVeg	W	1	18	1	0.01	6.46	0.47	2.22	14	0.70	SI
		Woody	S	1	16	8	0.56	4.96	0.39	2.09	26	1.00	NI
		Woody	W	1	10	1	0.03	6.60	0.61	1.75	14	0.70	SI

Site Name	WBID	Sample Type	Winter or summer	Number of Samples	Total Species	EPT Taxa	Percent EPT	HBI	Percent dominant 2 taxa	Shannon Diversity	Total Points	% of Reference	Condition
Cow Creek	OK311200-00-0060L	Woody	S	2	18	6	0.37	5.96	0.56	1.99	23	0.88	NI
		Woody	W	1	12	2	0.05	6.00	0.68	1.66	14	0.70	SI
Deep Red Creek	OK311310-03-0010D	Woody	S	1	25	10	0.44	5.26	0.39	2.68	30	1.15	NI
		Woody	W	1	7	1	0.06	5.98	0.92	0.59	10	0.50	MI
Delaware Creek	OK310830-01-0030G	Woody	S	1	13	2	0.01	7.80	0.86	0.91	12	0.46	MI
		Woody	W	1	17	2	0.04	6.65	0.72	1.76	14	0.70	SI
East Barnitz Creek	OK310830-03-0210C	Riffle	S	1	11	5	0.45	5.74	0.74	1.56	22	0.85	NI
		Riffle	W	1	11	2	0.15	5.66	0.79	1.15	16	0.80	SI
		Woody	S	1	11	3	0.21	6.83	0.78	1.27	14	0.54	SI
		Woody	W	1	5	1	0.01	6.01	0.97	0.59	8	0.40	MI
East Cache Creek: Upper	OK311300-02-0010M	Riffle	S	1	19	8	0.64	5.13	0.46	2.32	26	1.00	NI
		SVeg	S	1	26	9	0.31	6.31	0.40	2.55	28	1.17	NI
Elk Creek	OK311500-03-0010G	Riffle	W	1	11	3	0.35	5.39	0.60	1.75	26	1.30	NI
Finn Creek	OK310810-02-0020D	Riffle	S	1	16	7	0.41	5.49	0.45	2.25	27	1.04	NI
		Riffle	W	1	12	4	0.10	5.66	0.77	1.27	20	1.00	NI
		Woody	S	2	12	4	0.21	6.62	0.72	1.48	17	0.65	SI
Fivemile Creek	OK310830-06-0080D	Riffle	W	1	14	4	0.12	6.09	0.64	1.67	22	1.10	NI
		Woody	S	1	18	9	0.79	5.05	0.47	2.33	24	0.92	NI
		Woody	W	1	13	5	0.14	5.99	0.72	1.47	20	1.00	NI
Fleetwood Creek	OK311100-01-0300D	Woody	W	1	8	0	0.00	6.50	0.76	1.42	10	0.50	MI
Gypsum Creek	OK311600-01-0020F	Riffle	S	1	7	0	0.00	5.95	0.74	1.44	8	0.31	MI
		Riffle	W	1	6	0	0.00	6.08	0.97	0.23	8	0.40	MI
Haystack Creek	OK311800-00-0040D	Riffle	S	2	14	3	0.78	4.42	0.82	1.12	18	0.69	SI
		Riffle	W	1	9	2	0.38	4.98	0.58	1.67	20	1.00	NI
		SVeg	W	1	7	0	0.00	6.11	0.93	0.54	10	0.50	MI
Hickory Creek	OK311100-02-0010M	SVeg	S	1	7	1	0.06	6.75	0.69	1.60	8	0.31	MI
		Woody	W	1	21	2	0.18	6.56	0.45	2.26	16	0.80	SI
Ionine Creek	OK310820-01-0160L	SVeg	S	1	14	2	0.11	6.48	0.49	1.94	16	0.67	SI
		SVeg	W	1	9	3	0.05	6.00	0.85	1.12	18	0.90	NI
		Woody	W	1	9	2	0.02	6.25	0.78	1.39	10	0.50	MI
Kickapoo Sandy Creek	OK310810-01-0050G	Riffle	S	2	15	6	0.35	5.97	0.61	1.83	19	0.73	SI
		Riffle	W	1	11	3	0.60	3.09	0.83	1.33	12	0.50	MI
		SVeg	S	2	19	5	0.09	6.76	0.49	2.34	16	0.62	SI
Lake Creek	OK311510-01-0040D	Riffle	S	1	25	4	0.13	7.10	0.47	2.38	16	0.62	SI
		Riffle	W	1	8	1	0.01	6.17	0.92	0.65	10	0.50	MI
		SVeg	W	1	9	1	0.01	5.99	0.92	0.52	12	0.60	SI

Site Name	WBID	Sample Type	Winter or summer	Number of Samples	Total Species	EPT Taxa	Percent EPT	HBI	Percent dominant 2 taxa	Shannon Diversity	Total Points	% of Reference	Condition
Little Beaver Creek	OK311210-00-0050D	Riffle	S	2	15	6	0.47	5.40	0.48	2.08	27	1.04	
		Riffle	W	1	13	3	0.05	6.37	0.62	1.72	20	1.00	NI
		SVeg	S	1	14	5	0.20	6.52	0.60	1.96	24	1.00	NI
		Woody	S	2	15	8	0.55	5.55	0.59	1.89	24	0.92	NI
		Woody	W	1	11	1	0.07	5.93	0.79	1.19	12	0.60	SI
Little Deep Red Creek	OK311310-03-0040D	Riffle	S	1	20	5	0.20	6.50	0.53	2.17	20	0.77	SI
		Riffle	W	1	5	0	0.00	6.42	0.82	1.12	8	0.40	MI
Little Elk Creek	OK311500-03-0040D	Riffle	S	1	17	7	0.26	6.00	0.51	2.12	24	0.92	NI
		Riffle	W	1	11	2	0.05	5.90	0.83	1.08	14	0.70	SI
		Woody	S	1	12	5	0.08	7.40	0.82	1.11	12	0.46	MI
		Woody	W	1	3	0	0.00	6.04	0.99	0.15	6	0.30	MI
Medicine Creek	OK311300-04-0060H	Riffle	S	1	16	8	0.81	4.28	0.37	2.34	26	1.00	NI
Mill Creek	OK310800-01-0190G	Riffle	S	1	18	7	0.43	5.06	0.33	2.44	26	1.00	NI
		Riffle	W	1	15	6	0.09	5.82	0.83	1.09	16	0.62	SI
North Elm Creek	OK311800-00-0170G	Riffle	S	1	12	2	0.16	6.31	0.56	1.87	14	0.54	SI
		Riffle	W	1	6	1	0.02	6.00	0.95	0.59	8	0.40	MI
		SVeg	S	1	12	1	0.02	7.40	0.72	1.59	12	0.50	MI
Oil Creek	OK310800-01-0240P	Riffle	S	2	20	9	0.37	5.02	0.42	2.35	27	1.04	NI
		Riffle	W	1	16	9	0.38	5.11	0.67	1.77	26	1.00	NI
		SVeg	S	2	28	6	0.20	5.40	0.25	2.98	24	0.92	NI
Otter Creek	OK311500-01-0080F	Riffle	S	1	19	6	0.24	5.99	0.32	2.45	26	1.00	NI
		Riffle	W	1	23	4	0.21	5.38	0.39	2.51	28	1.40	NI
		Woody	W	1	17	2	0.03	7.63	0.57	1.87	14	0.70	SI
Pennington Creek	OK310800-01-0120G	SVeg	S	1	20	1	0.07	6.60	0.37	2.54	16	0.62	SI
		Woody	S	2	18	7	0.24	5.91	0.45	2.29	24	0.92	NI
		Woody	W	1	18	10	0.46	5.08	0.67	1.90	26	1.00	NI
Quartermaster Creek	OK310840-01-0060L	Riffle	S	2	13	3	0.06	7.30	0.70	1.54	12	0.46	MI
		Riffle	W	1	11	1	0.01	6.59	0.67	1.40	12	0.60	SI
		SVeg	S	1	12	2	0.03	7.79	0.87	1.26	10	0.42	MI
Red Creek	OK311100-01-0290D	Woody	W	1	9	0	0.00	6.76	0.62	1.80	12	0.60	SI
Rush Creek	OK310810-05-0010D	Riffle	S	2	14	4	0.11	6.07	0.56	1.90	18	0.69	SI
		Riffle	W	1	9	2	0.02	6.00	0.92	0.68	12	0.60	SI
		Woody	S	1	10	1	0.01	7.19	0.88	1.16	10	0.38	MI
Salt Creek	OK310810-03-0080G	Riffle	S	2	15	7	0.56	4.99	0.52	2.08	23	0.88	NI
		Riffle	W	1	9	2	0.02	6.03	0.92	0.53	8	0.33	MI
		SVeg	S	1	20	6	0.34	6.23	0.53	2.18	24	0.92	NI

Site Name	WBID	Sample Type	Winter or summer	Number of Samples	Total Species	EPT Taxa	Percent EPT	HBI	Percent dominant 2 taxa	Shannon Diversity	Total Points	% of Reference	Condition
Sandstone Creek	OK310840-02-0020C	SVeg	S	2	17	4	0.15	7.22	0.59	2.03	20	0.83	NI
		SVeg	W	1	8	2	0.05	6.11	0.86	0.89	14	0.70	SI
		Woody	S	2	18	6	0.37	6.16	0.62	1.95	23	0.88	NI
		Woody	W	1	8	3	0.05	5.95	0.93	0.50	12	0.60	SI
Sandy Creek	OK311600-01-0040G	Riffle	S	1	9	0	0.00	5.56	0.56	1.75	10	0.38	MI
		Riffle	W	1	3	0	0.00	5.98	0.99	0.23	6	0.30	MI
		SVeg	S	1	16	0	0.00	6.51	0.46	2.17	14	0.58	SI
		SVeg	W	1	2	0	0.00	6.03	0.99	0.06	6	0.30	MI
		Woody	S	1	10	1	0.01	5.88	0.63	1.66	12	0.46	MI
		Woody	W	1	2	0	0.00	6.00	0.98	0.08	6	0.30	MI
Spring Creek (Caddo Co.)	OK310830-04-0010G	SVeg	S	1	20	3	0.16	6.71	0.35	2.57	20	0.77	SI
		SVeg	W	1	15	1	0.05	6.04	0.78	1.30	12	0.55	SI
		Woody	S	1	16	5	0.36	6.03	0.49	2.12	22	0.85	NI
Spring Creek (Roger Mills Co.)	OK310840-02-0240D	Riffle	S	1	5	0	0.00	7.87	0.97	0.26	6	0.23	MI
		Riffle	W	1	8	0	0.00	6.69	0.85	1.16	10	0.50	MI
		SVeg	S	2	13	2	0.04	7.56	0.79	1.14	11	0.46	MI
		SVeg	W	1	10	1	0.02	5.96	0.85	0.93	12	0.60	SI
		Woody	S	1	17	1	0.23	6.59	0.65	1.93	18	0.69	SI
		Woody	W	1	6	0	0.00	6.03	0.96	0.46	8	0.40	MI
Station Creek	OK311800-00-0060G	Riffle	S	1	16	2	0.36	6.17	0.54	1.99	20	0.77	SI
		SVeg	W	1	11	1	0.01	6.22	0.91	0.74	12	0.60	SI
		Woody	W	1	18	2	0.06	6.38	0.70	1.68	14	0.70	SI
Stinking Creek	OK310830-02-0020D	Woody	S	1	14	7	0.44	5.65	0.53	2.07	26	1.00	NI
Stinking Creek (Caddo Co.)	OK310830-04-0030K	SVeg	S	1	10	4	0.16	6.65	0.77	1.47	10	0.38	MI
		SVeg	W	1	8	0	0.00	6.02	0.90	1.04	8	0.36	MI
		Woody	S	1	11	5	0.17	6.62	0.72	1.57	16	0.62	SI
Sugar Creek	OK310830-05-0010D	Woody	S	1	16	5	0.37	6.11	0.72	1.64	22	0.85	NI
		Woody	W	1	5	1	0.06	9.57	1.51	0.73	8	0.40	MI
Suttle Creek	OK311310-01-0070H	Riffle	S	1	8	1	0.23	6.88	0.67	1.45	12	0.46	MI
Sweetwater Creek	OK311510-02-0120D	Riffle	S	2	20	6	0.73	4.99	0.63	1.88	26	1.00	NI
		SVeg	W	1	7	4	0.53	4.89	0.53	1.77	22	1.10	NI
		Woody	S	2	18	9	0.56	5.22	0.35	2.47	29	1.12	NI
Tepee Creek	OK311500-01-0110D	Riffle	S	2	26	6	0.32	5.14	0.38	2.62	30	1.15	NI
		Riffle	W	1	2	0	0.00	6.01	0.99	0.05	6	0.30	MI

Site Name	WBID	Sample Type	Winter or summer	Number of Samples	Total Species	EPT Taxa	Percent EPT	HBI	Percent dominant 2 taxa	Shannon Diversity	Total Points	% of Reference	Condition
Timber Creek	OK311510-01-0090G	Riffle	S	1	15	4	0.25	6.46	0.49	2.05	18	0.69	SI
		SVeg	S	1	18	4	0.14	6.67	0.56	2.08	20	0.83	NI
		SVeg	W	1	13	2	0.02	6.58	0.73	1.47	14	0.70	SI
		Woody	W	1	9	1	0.02	6.53	0.92	0.94	10	0.50	MI
Trail Creek	OK311500-03-0070D	Riffle	S	3	17	6	0.21	6.69	0.61	1.79	22	0.85	NI
		Riffle	W	1	11	2	0.02	5.51	0.90	1.08	14	0.70	SI
		SVeg	S	2	17	4	0.06	6.93	0.59	1.92	16	0.67	SI
		Woody	W	1	10	1	0.01	6.12	0.91	0.70	12	0.60	SI
Turkey Creek	OK311600-02-0060J	Riffle	S	1	12	2	0.13	4.46	0.82	1.20	12	0.46	MI
		Riffle	W	1	17	3	0.17	5.16	0.57	1.95	22	1.10	NI
		SVeg	S	1	10	1	0.03	7.70	0.72	1.46	10	0.42	MI
		Woody	S	1	15	1	0.04	6.57	0.60	1.82	14	0.54	SI
Walnut Bayou	OK311100-03-0010G	Riffle	S	2	21	11	0.53	5.12	0.33	2.53	29	1.12	NI
		Woody	S	2	6	1	0.12	7.06	0.71	1.32	8	0.31	MI
		Woody	S	2	13	8	0.39	5.96	0.54	1.97	26	1.00	NI
		Woody	W	1	18	6	0.12	6.03	0.57	2.01	22	1.10	NI
Washington Creek	OK310810-01-0190G	Riffle	S	2	15	5	0.48	5.31	0.62	1.79	23	0.88	NI
West Barnitz Creek	OK310830-03-0230C	Riffle	W	1	11	1	0.06	5.85	0.76	1.36	12	0.60	SI
		Woody	S	1	10	5	0.40	5.35	0.44	1.96	20	0.77	SI
		Woody	W	1	11	3	0.05	5.95	0.88	1.14	14	0.70	SI
West Cache Creek	OK311310-02-0010M	Riffle	S	2	13	4	0.35	5.30	0.62	1.83	17	0.65	MI
		Riffle	W	1	13	8	0.16	5.98	0.70	1.65	22	1.10	NI
		Woody	S	1	14	6	0.41	6.31	0.59	1.86	26	1.00	NI
Wildhorse Creek (Duncan)	OK310810-04-0140D	Riffle	S	1	20	8	0.31	6.47	0.45	2.23	26	1.00	NI
		SVeg	S	1	15	4	0.06	7.02	0.66	1.78	12	0.46	MI
		Woody	S	2	13	4	0.23	6.56	0.63	1.68	17	0.65	SI
		Woody	W	1	10	1	0.01	6.69	0.87	1.25	12	0.60	SI
Wildhorse Creek (Tatums)	OK310810-03-0010R	Riffle	S	2	18	9	0.67	4.93	0.45	2.25	24	0.92	NI
		Riffle	W	1	4	1	0.01	6.01	0.98	0.15	6	0.25	MI
		Woody	S	1	12	6	0.78	4.49	0.65	1.71	22	0.85	NI

Most fixed sites had either non-impaired or slightly impaired macroinvertebrate communities overall (when averaging the scores across sample types). The following sites were moderately impaired overall: Fleetwood, Gypsum, North Elm, Quartermaster, Sandy, Spring, Stinking, and Suttle Creeks. Results for the fixed sites indicate non-impaired macroinvertebrate communities in 36% of the sites, slightly impaired communities in 50% of the sites, and moderately impaired communities in 14% of the sites. The overall results for the probabilistic sites are shown in Table 23. Most of the probabilistic sites were scored using

only one macroinvertebrate collection. Three of the 33 sites indicated a moderately impaired macroinvertebrate community (9%): Bitter Creek, Owens Creek, and Turkey Creek. Forty-eight percent of the probabilistic sites indicated non-impaired communities and 42% indicated slightly impaired communities. Poor macroinvertebrate scores could indicate water quality problems where habitat scores are acceptable; however, it is possible that the macroinvertebrate collection was not taken at a time which would best represent the community there (i.e., drought influences).

Table 23. Macroinvertebrate metric values determined for each probabilistic monitoring site. NI = non-impaired, SI = slightly impaired, MI = moderately impaired.

Site Name	WBID	Sample Type	Winter or summer	Number of Samples	Total Species	EPT Taxa	Percent EPT	HBI	Percent dominant 2 taxa	Shannon Diversity	Total Points	% of Reference	Condition
Armstrong Creek	OKR09730-095	Woody	S	1	24	8	0.32	5.51	0.34	2.58	30	1.15	NI
Barnitz Creek	OKR09730-106	Woody	S	1	11	3	0.25	6.41	0.70	1.56	16	0.62	SI
Bitter Creek	OKR09730-005	SVeg	S	1	9	2	0.06	7.64	0.75	1.49	8	0.33	MI
Buffalo Creek	OKR09730-012	SVeg	S	1	20	5	0.09	5.96	0.60	2.02	20	0.83	NI
Cavalry Creek	OKR09730-058	Woody	S	1	14	5	0.18	6.59	0.69	1.64	18	0.69	SI
Chandler Creek	OKR09730-085	Riffle	S	1	16	6	0.80	4.23	0.70	1.70	24	0.92	NI
Cow Creek	OKR09730-098	Woody	S	1	18	5	0.33	6.17	0.56	2.03	22	0.85	NI
East Winter Creek	OKR09730-046	Riffle	S	1	13	2	0.22	3.07	0.59	1.79	12	0.46	MI
		SVeg	S	1	12	3	0.45	5.18	0.56	1.96	16	0.62	SI
East Winter Creek	OKR09730-119	SVeg	S	1	16	1	0.02	4.36	0.51	2.20	10	0.38	MI
		Woody	S	1	17	5	0.43	4.39	0.41	2.34	20	0.77	SI
Elk Creek	OKR09730-041	Woody	S	1	13	6	0.15	6.96	0.76	1.29	18	0.69	SI
Laffin Creek	OKR09730-003	SVeg	S	1	13	4	0.38	4.85	0.44	2.03	18	0.69	SI
Lake Creek	OKR09730-080	SVeg	S	1	12	4	0.13	6.22	0.67	1.73	18	0.75	SI
Medicine Creek	OKR09730-026	Riffle	S	1	21	6	0.48	4.73	0.48	2.40	26	1.00	NI
Mud Creek	OKR09730-031	Woody	S	1	17	10	0.61	5.24	0.32	2.51	30	1.15	NI
Mud Creek	OKR09730-110	Woody	S	1	16	10	0.84	4.66	0.33	2.33	26	1.00	NI
Negro Sandy Creek	OKR09730-130	Woody	S	1	11	4	0.50	5.33	0.33	2.29	20	0.77	SI
North Fork Red River	OKR09730-025	Woody	S	1	15	8	0.28	5.84	0.51	2.06	24	0.92	NI
North Fork Red River	OKR09730-096	SVeg	S	1	15	10	0.87	4.84	0.52	2.08	24	1.00	NI
Owens Creek	OKR09730-059	SVeg	S	1	13	2	0.10	7.65	0.65	1.65	12	0.46	MI
Pennington Creek	OKR09730-124	Riffle	S	1	28	11	0.40	4.17	0.26	3.00	30	1.15	NI
		SVeg	S	1	26	10	0.51	5.25	0.31	2.89	30	1.15	NI
Rush Creek	OKR09730-019	Woody	S	1	19	7	0.28	6.53	0.55	2.09	24	0.92	NI
Rush Creek	OKR09730-084	SVeg	S	1	14	5	0.35	6.11	0.41	2.15	18	0.69	SI
		Woody	S	1	17	8	0.15	6.69	0.71	1.72	22	0.85	NI

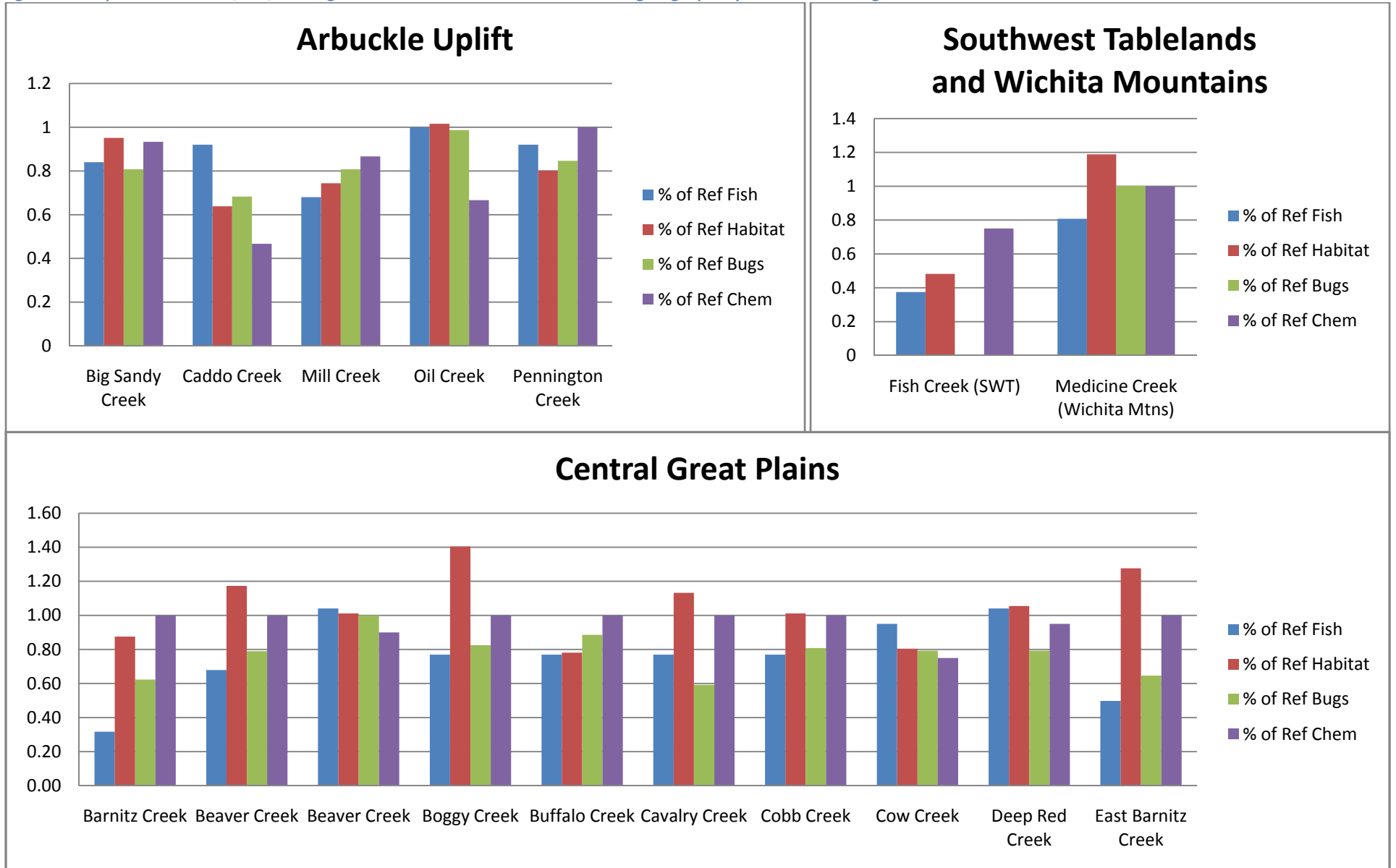
Site Name	WBID	Sample Type	Winter or summer	Number of Samples	Total Species	EPT Taxa	Percent EPT	HBI	Percent dominant 2 taxa	Shannon Diversity	Total Points	% of Reference	Condition
Salt Creek	OKR09730-062	Riffle	S	1	17	2	0.33	6.18	0.55	2.13	20	0.77	SI
		Woody	S	1	6	1	0.23	6.85	0.88	1.00	10	0.38	MI
Sandstone Creek	OKR09730-060	Riffle	S	1	16	5	0.51	4.96	0.53	2.03	24	0.92	NI
		SVeg	S	1	15	4	0.61	5.19	0.53	2.08	22	0.92	NI
Station Creek	OKR09730-123	Riffle	S	1	10	2	0.82	4.59	0.82	1.07	16	0.62	SI
		SVeg	S	1	17	3	0.04	6.96	0.47	2.27	14	0.58	SI
Timber Creek	OKR09730-136	Woody	S	1	18	4	0.36	5.88	0.45	2.28	20	0.77	SI
Turkey Creek	OKR09730-109	Riffle	S	1	12	2	0.05	4.35	0.86	0.88	10	0.38	MI
Washita River	OKR09730-020	Woody	S	1	14	7	0.49	4.49	0.43	2.27	24	0.92	NI
Washita River	OKR09730-074	Woody	S	1	11	7	0.79	4.58	0.62	1.79	22	0.85	NI
Washita River	OKR09730-078	SVeg	S	1	14	9	0.90	5.63	0.66	1.67	26	1.08	NI
		Woody	S	1	17	9	0.81	4.84	0.51	2.13	24	0.92	NI
White Shield Creek	OKR09730-052	Riffle	S	1	9	3	0.64	4.55	0.63	1.59	16	0.62	SI
		SVeg	S	1	11	3	0.05	6.14	0.78	1.31	10	0.42	MI
		Woody	S	1	12	6	0.32	5.64	0.56	1.85	24	0.92	NI
White Shield Creek	OKR09730-094	Woody	S	1	19	6	0.24	6.06	0.56	2.00	24	0.92	NI
Wild Horse Creek	OKR09730-008	Woody	S	1	17	4	0.19	6.75	0.52	2.11	16	0.62	SI

3.2.4 Overall Biological Assessment

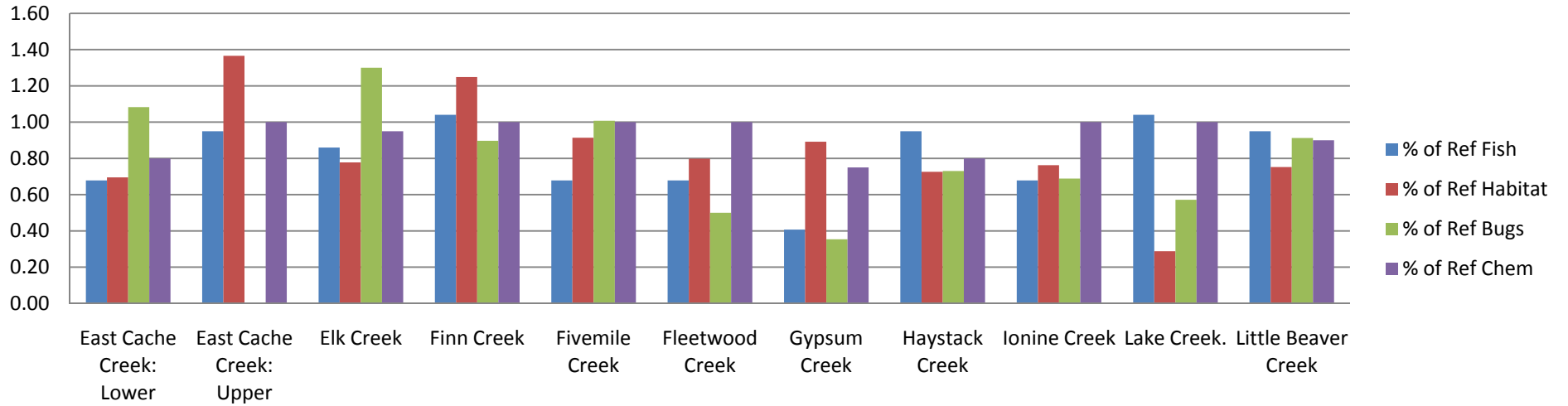
In order to synthesize the biological findings into a meaningful representation of the overall quality of each site, the biological assessments were compared with the habitat and water chemistry results. For the fixed sites, a water quality score was computed similarly to the other index scores by comparing rotating basin site values relative to high quality site values. The parameters included in this score were phosphorus, nitrogen, DO, turbidity, and salts (TDS, chloride, and sulfate). Then, the habitat, fish, macroinvertebrate, and water quality scores (relative to the mean of high quality sites in the respective ecoregions) were examined in concert with one another (Figure 7). The water quality index score was not calculated for the probabilistic sites since only a single sample was obtained; Figure 7 shows the habitat, fish, and macroinvertebrate scores for each site relative to the average score of high quality sites in that ecoregion.

A determination of “good” or “excellent” stream health is indicated by a relatively high score for all categories. Most streams had relatively good agreement among the categories, but there are instances where one score is quite different than the others. It is generally recognized that fish communities are especially sensitive to habitat degradation and that macroinvertebrates more quickly integrate effects of water quality decline. Thus, sites with a high habitat and fish score yet a low macroinvertebrate and water chemistry score could indicate potential water quality impairment.

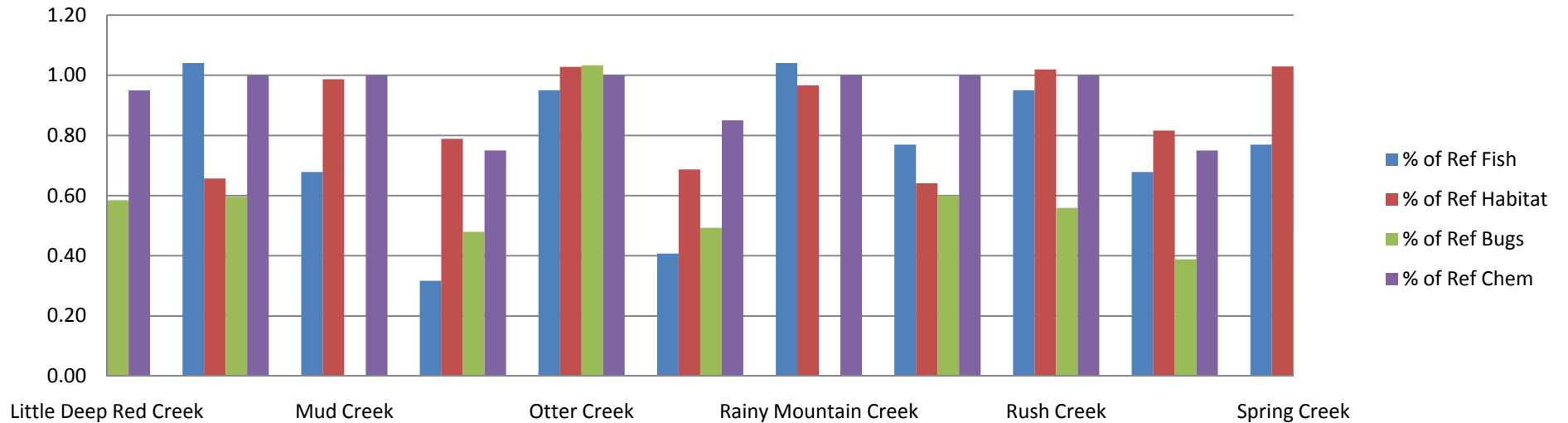
Figure 7. Comparison of habitat, fish, and bug scores for fixed sites relative to the average high quality site in each ecoregion.



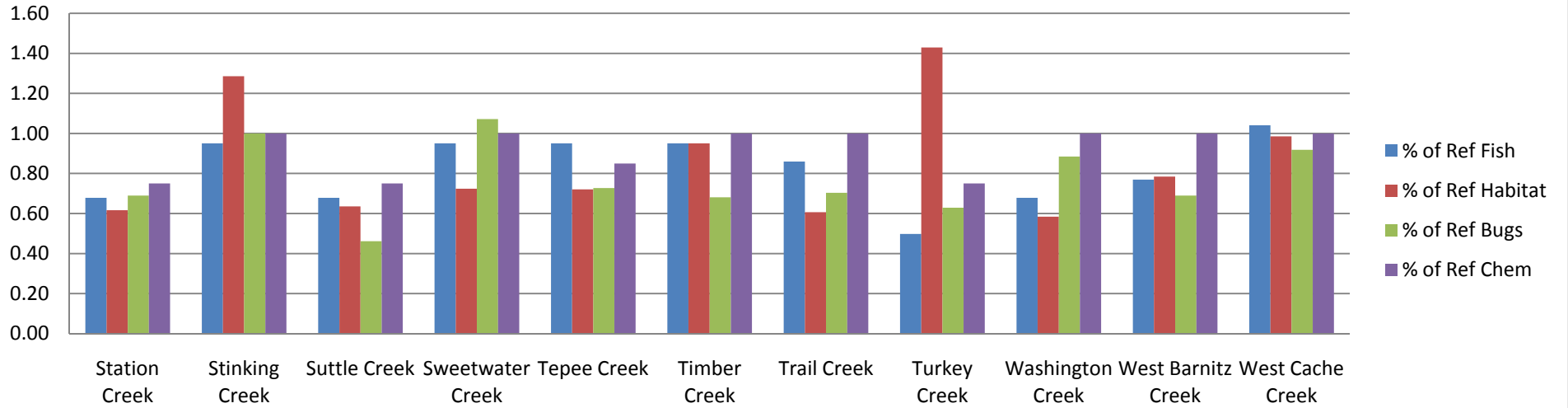
Central Great Plains



Central Great Plains



Central Great Plains



Cross Timbers

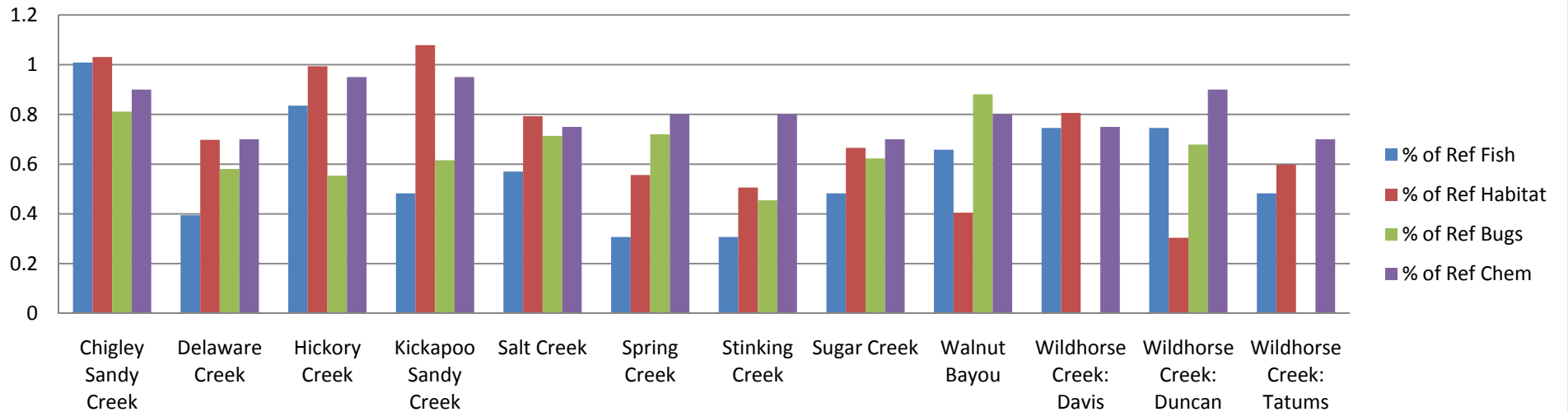
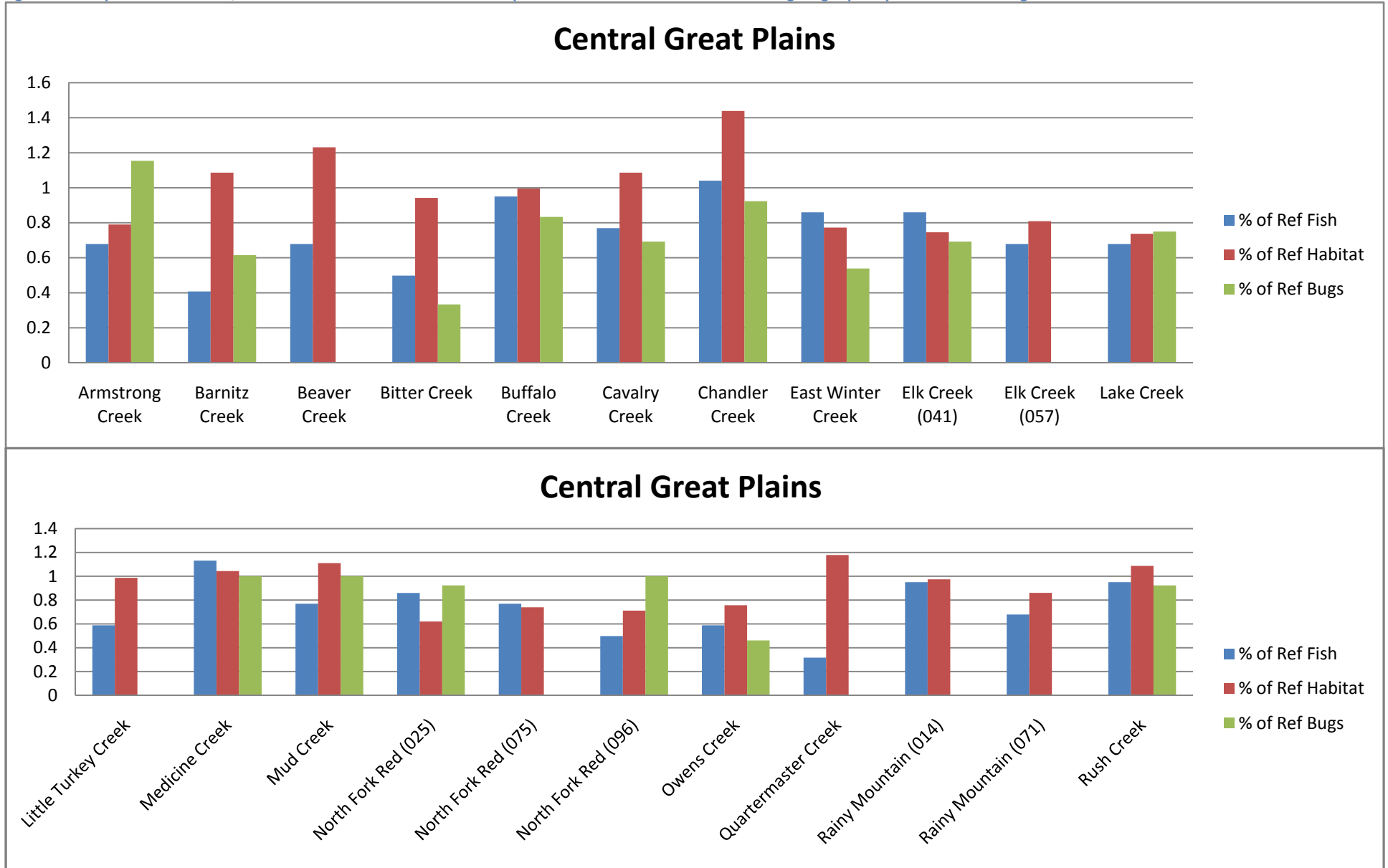
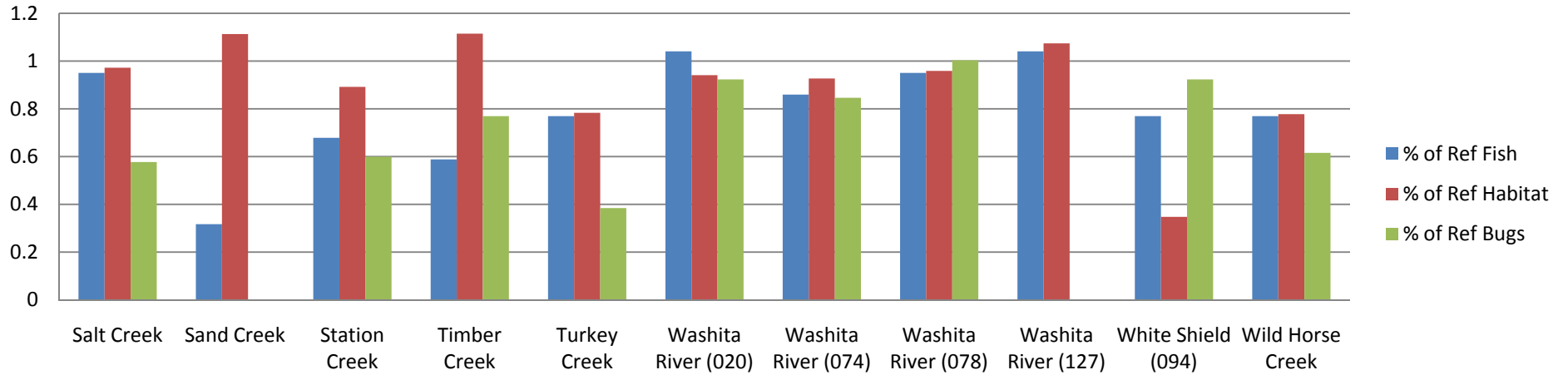


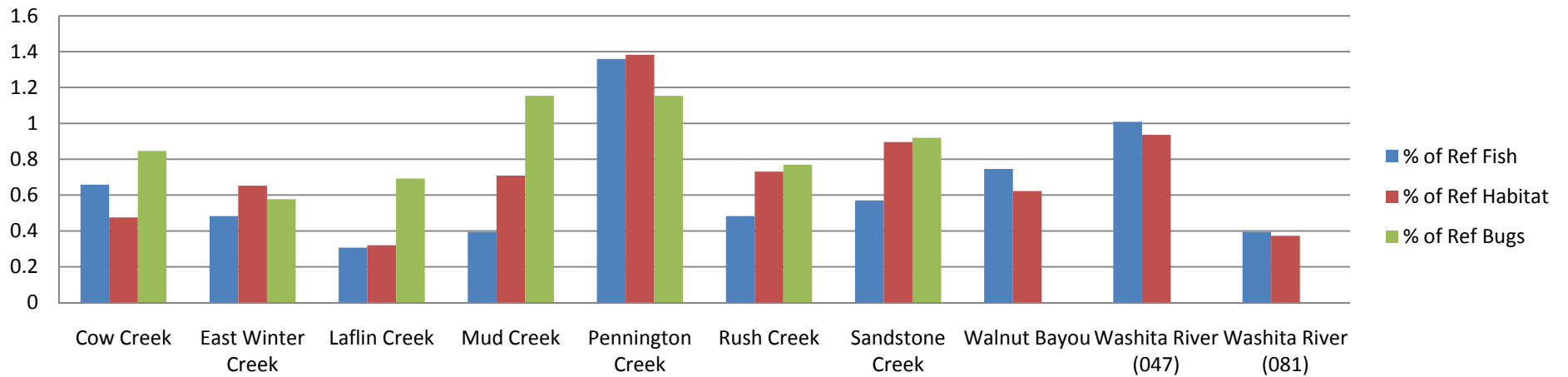
Figure 8. Comparison of habitat, fish and macroinvertebrate scores for probabilistic sites relative to the average high quality site in each ecoregion.



Central Great Plains



Cross Timbers



3.3 WATERSHED ASSESSMENT

Table 24 shows the landuse upstream of each monitoring site as obtained through GIS using the 2001 NRCS National Land Cover Dataset. Table 25 presents the types and number of permitted activities that occur upstream of each site. The watershed sizes and landuses vary widely, with Washington Creek and Spring Creek in Roger Mills Co. having the smallest watershed areas, each less than 5,000 acres, while the Beaver Creek watershed in Jefferson Co. includes more than 500,000 acres. Grasslands make up the largest percentage of landuse, on average, in this basin, followed by cultivated crops. Watersheds range from having 1.5% grasslands to having 76.5% in grasslands, and from having no cultivated crops in the watershed to having 82.8% of the watershed in cultivated crops. Medicine and Pennington Creeks each had only one oil and gas permit and no other permitted landuse. Big Sandy Creek had no permitted landuse. Elk Creek, on the other hand, had at least one permit in each category.

Table 24. Watershed landuse (% of total watershed area) for each Group 4 fixed monitoring site based on the most recent NLCD (USGS 2006).

SiteName	Total Acres	% Barren Land (Rock/Sand/Clay)	% Cultivated Crops	% Deciduous Forest	% Developed High Intensity	% Developed Low Intensity	% Developed Medium Intensity	% Developed Open Space	% Emergent Herbaceous Wetlands	% Evergreen Forest	% Grassland/Herbaceous	% Mixed Forest	% Open Water	% Pasture/Hay	% Shrub/Scrub	% Woody Wetlands
Barnitz Creek	177,334	0.0	22.7	0.1	0.0	0.0	0.0	4.1	0.0	1.5	61.8	0.5	0.4	0.0	8.7	0.0
Beaver Creek (Custer Co.)	50,400	0.0	34.9	1.1	0.0	0.6	0.1	5.5	0.0	0.3	56.8	0.1	0.8	0.0	0.0	0.0
Beaver Creek (Jefferson Co.)	536,553	0.0	21.9	8.3	0.1	0.9	0.3	4.9	0.2	0.0	60.8	0.0	2.2	0.2	0.1	0.0
Big Sandy Creek	15,855	0.3	2.0	30.3	0.0	0.0	0.0	3.9	0.0	0.7	33.8	0.0	0.8	28.1	0.0	0.0
Boggy Creek	74,948	0.0	55.6	0.1	0.0	0.2	0.0	4.8	0.0	0.2	25.1	1.4	0.4	0.0	12.2	0.0
Buffalo Creek	58,021	0.5	7.7	0.0	0.0	0.1	0.1	3.8	0.0	0.0	58.7	1.1	0.1	0.0	27.8	0.0
Caddo Creek	207,580	0.0	4.8	23.2	0.1	1.3	0.3	3.6	0.0	0.0	52.9	0.0	1.3	12.4	0.0	0.0
Cavalry Creek	66,554	0.0	52.2	0.2	0.0	0.8	0.1	5.0	0.0	0.0	20.0	2.4	0.5	0.0	18.7	0.1
Chigley Sandy Creek	28,164	0.0	4.0	21.4	0.1	1.2	0.1	3.5	0.0	0.1	53.9	0.0	1.2	14.5	0.0	0.0
Cobb Creek	54,192	0.0	53.6	1.2	0.0	0.1	0.0	4.7	0.0	0.8	38.8	0.2	0.6	0.0	0.0	0.0
Cow Creek	103,164	0.0	14.3	13.5	0.6	3.0	1.2	6.5	0.0	0.0	60.0	0.0	0.5	0.3	0.0	0.0
Deep Red Creek	399,883	0.0	48.2	1.0	0.0	0.4	0.1	4.4	0.0	0.0	38.6	0.0	0.8	0.0	6.4	0.0
Delaware Creek	25,747	0.2	13.1	11.2	0.1	0.3	0.2	7.5	0.0	1.2	65.5	0.0	0.2	0.5	0.1	0.0
East Barnitz Creek	74,238	0.0	25.4	0.1	0.0	0.0	0.0	4.8	0.0	2.9	64.9	0.1	0.5	0.1	1.2	0.0
East Cache Creek: Upper	178,302	0.4	37.5	3.7	0.0	0.4	0.2	4.8	0.2	0.0	49.5	0.0	2.5	0.2	0.5	0.0
East Cache Creek: Lower	481,554	0.2	26.2	6.2	0.5	2.4	1.2	5.2	0.2	0.3	54.8	0.2	1.7	0.1	0.9	0.0
Elk Creek	373,310	0.0	54.3	0.0	0.1	0.9	0.2	4.9	0.0	0.1	16.0	1.9	0.4	0.0	21.1	0.1
Finn Creek	41,549	0.0	16.6	12.3	0.0	0.1	0.0	4.0	0.0	0.0	51.7	0.0	1.3	14.0	0.0	0.0
Fish Creek	20,121	0.0	0.3	0.0	0.0	0.0	0.0	1.0	0.0	0.0	32.8	0.4	0.0	0.0	65.5	0.0
Fivemile Creek	26,848	0.0	57.2	1.2	0.0	0.0	0.0	5.0	0.0	0.6	34.7	0.1	0.5	0.7	0.0	0.0
Fleetwood Creek	7,069	0.0	36.5	9.9	0.0	0.0	0.0	3.2	0.0	0.0	45.5	0.0	0.1	1.4	3.5	0.0
Gypsum Creek	66,195	0.2	33.4	0.0	0.0	0.4	0.0	3.8	0.0	0.0	2.4	0.2	0.3	0.0	59.2	0.0
Haystack Creek	87,288	1.1	17.1	0.0	0.0	0.0	0.0	3.0	0.0	0.0	14.6	0.4	0.1	0.0	63.5	0.2
Hickory Creek	73,440	0.4	1.3	23.6	0.5	3.9	1.0	6.0	0.0	0.0	43.5	0.0	0.4	19.4	0.0	0.0
Ionine Creek	17,120	0.0	29.5	5.7	0.0	0.1	0.0	3.5	0.0	3.2	57.6	0.0	0.1	0.0	0.2	0.0
Kickapoo Sandy Creek	11,610	0.0	3.1	19.0	0.0	0.3	0.0	4.3	0.0	0.0	56.9	0.0	0.9	15.4	0.0	0.0

SiteName	Total Acres	% Barren Land (Rock/Sand/Clay)	% Cultivated Crops	% Deciduous Forest	% Developed High Intensity	% Developed Low Intensity	% Developed Medium Intensity	% Developed Open Space	% Emergent Herbaceous Wetlands	% Evergreen Forest	% Grassland/Herbaceous	% Mixed Forest	% Open Water	% Pasture/Hay	% Shrub/Scrub	% Woody Wetlands
Lake Creek	25,619	0.1	50.1	0.0	0.0	0.1	0.0	5.5	0.0	0.0	7.1	3.1	0.0	0.0	33.8	0.3
Little Beaver Creek	117,040	0.0	22.3	9.4	0.1	0.5	0.3	4.7	0.0	0.0	61.9	0.0	0.6	0.3	0.0	0.0
Little Deep Red Creek	87,406	0.0	57.7	0.2	0.1	1.1	0.1	4.4	0.1	0.0	33.5	0.0	1.6	0.0	1.1	0.0
Little Elk Creek	67,903	0.0	67.0	0.0	0.2	0.8	0.2	6.1	0.0	0.0	5.4	2.3	0.6	0.0	17.2	0.1
Medicine Creek	28,256	0.0	2.3	18.0	0.0	0.0	0.0	1.5	0.0	3.1	70.7	2.6	0.1	0.0	1.7	0.0
Mill Creek	60,995	2.4	2.2	21.1	0.0	0.3	0.1	3.0	0.0	2.0	50.1	0.0	1.1	17.7	0.0	0.0
Mud Creek	413,953	0.0	13.4	14.8	0.0	0.1	0.0	2.4	0.0	0.0	62.8	0.0	0.5	5.8	0.1	0.0
North Elm Creek	16,079	0.2	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	30.9	0.3	0.1	0.0	67.8	0.0
Oil Creek	13,586	0.1	15.4	8.9	0.0	0.1	0.0	3.3	0.0	0.3	50.7	0.0	0.1	21.1	0.0	0.0
Otter Creek	177,732	0.0	46.9	1.0	0.0	0.4	0.0	5.2	0.6	0.2	17.6	1.9	2.9	0.0	22.9	0.2
Pennington Creek	59,702	0.0	0.5	27.5	0.0	0.1	0.0	2.6	0.0	0.8	50.8	0.0	0.4	17.4	0.0	0.0
Quartermaster Creek	67,549	0.1	7.3	0.0	0.0	0.0	0.0	2.6	0.0	0.3	67.9	1.0	0.3	0.0	20.5	0.0
Rainy Mountain Creek	201,381	0.1	44.4	0.4	0.0	0.1	0.0	4.7	0.0	0.3	19.8	1.7	0.5	0.3	27.6	0.0
Red Creek	38,830	0.0	11.8	4.5	0.0	0.0	0.0	1.9	0.0	0.0	76.5	0.0	0.4	2.5	2.3	0.0
Rush Creek	180,170	0.0	12.6	17.9	0.0	0.5	0.1	4.9	0.0	0.0	59.8	0.0	0.9	3.3	0.0	0.0
Salt Creek	46,355	0.0	4.4	30.5	0.0	0.1	0.0	3.9	0.0	0.0	54.6	0.0	0.4	6.0	0.0	0.0
Sandstone Creek	60,941	0.5	5.4	0.0	0.0	0.0	0.0	2.1	0.0	0.3	64.1	1.0	0.3	0.0	26.1	0.0
Sandy Creek	181,994	0.0	53.8	0.0	0.0	0.3	0.0	5.3	0.0	0.0	3.7	0.9	0.1	0.0	35.8	0.0
Spring Creek (Caddo Co.)	21,836	0.0	12.5	10.6	0.0	0.0	0.0	4.1	0.1	12.1	59.9	0.0	0.1	0.6	0.0	0.0
Spring Creek (Roger Mills Co.)	4,908	0.1	5.0	0.0	0.0	0.1	0.0	2.9	0.0	0.0	56.2	1.1	0.7	0.0	33.8	0.0
Station Creek	8,750	0.1	34.0	0.0	0.0	0.1	0.0	3.8	0.0	0.0	18.2	0.4	0.0	0.0	43.4	0.1
Stinking Creek (Caddo Co.)	13,700	0.0	13.6	9.7	0.0	0.0	0.0	3.8	0.1	6.0	66.1	0.0	0.0	0.6	0.1	0.0
Stinking Creek (Kiowa Co.)	65,266	0.0	44.7	2.3	0.0	0.0	0.0	4.2	0.0	0.1	45.1	0.4	0.4	0.3	2.5	0.0
Sugar Creek	148,177	0.0	24.7	5.7	0.0	0.3	0.0	4.7	0.0	16.0	47.5	0.0	0.6	0.3	0.0	0.0
Suttle Creek	62,745	0.1	82.8	0.2	0.2	1.0	0.2	5.2	0.0	0.0	9.6	0.0	0.2	0.1	0.5	0.0
Sweetwater Creek	50,240	1.1	5.5	0.0	0.0	0.1	0.3	3.3	0.0	0.0	56.2	0.9	0.1	0.0	32.5	0.0
Tepee Creek	43,111	0.0	69.0	0.0	0.0	0.2	0.0	4.6	0.0	0.0	1.5	3.6	0.1	0.0	20.8	0.1
Timber Creek	38,585	0.1	18.5	0.0	0.0	0.2	0.0	4.5	0.0	0.1	54.4	1.5	0.3	0.0	20.4	0.0
Trail Creek	55,773	0.0	57.9	0.0	0.0	0.0	0.0	4.0	0.0	0.0	13.0	2.0	0.2	0.0	22.6	0.1
Turkey Creek	186,295	0.1	44.5	0.0	0.0	0.1	0.0	4.2	0.0	0.0	3.7	1.0	0.2	0.0	45.9	0.1
Walnut Bayou	209,312	0.0	3.1	34.2	0.0	0.9	0.2	3.4	0.0	0.0	45.6	0.0	0.7	11.7	0.0	0.0
Washington Creek	4,841	0.0	5.8	26.3	0.0	0.0	0.0	2.9	0.0	0.0	57.1	0.0	1.5	6.4	0.0	0.0
West Barnitz Creek	83,816	0.0	16.8	0.0	0.0	0.0	0.0	3.3	0.0	0.6	62.3	0.9	0.4	0.0	15.6	0.0
West Cache Creek	289,565	0.0	24.0	5.4	0.0	0.6	0.1	4.2	0.0	0.6	61.1	0.3	0.5	0.0	3.2	0.0
Wildhorse Creek (Davis)	403,740	0.1	9.4	22.2	0.0	0.4	0.1	4.0	0.0	0.7	56.5	0.0	1.6	4.9	0.0	0.0
Wildhorse Creek (Duncan)	25,815	0.0	18.9	18.7	0.2	1.1	0.4	5.2	0.0	0.0	50.5	0.0	4.0	0.8	0.0	0.0
Wildhorse Creek (Tatums)	217,503	0.0	11.6	22.5	0.1	0.4	0.2	3.6	0.0	0.0	55.4	0.0	2.5	3.7	0.0	0.0

Table 25. Permitted landuse for each Group 4 fixed monitoring site. For the NPDES category, the total number of NPDES in the watershed is given, followed by the number of major NPDES in parentheses, if applicable.

SiteName	# Oil and Gas	# CAFO	# NPDES	# Tot. Retention Lagoons	# Landfill	# Land Apps.	SiteName	# Oil and Gas	# CAFO	# NPDES	# Tot. Retention Lagoons	# Landfill	# Land Apps.
Barnitz Creek	502						Mud Creek	7,820	2	4	8		
Beaver Creek (Custer Co.)	148	1		6			North Elm Creek	63					
Beaver Creek (Jefferson Co.)	5,575	1	9 (1 M)	21		4	Oil Creek	7	1				
Big Sandy Creek							Otter Creek	63	1	3	5		1
Boggy Creek	130			3			Pennington Creek	1					
Buffalo Creek	345		1				Quartermaster Creek	235					
Caddo Creek	5,598		7 (2 M)	2		4	Rainy Mountain Creek	2,815	2	2	1		1
Cavalry Creek	60		3				Red Creek	340					
Chigley Sandy Creek	347			1			Rush Creek	2,792		1	1		1
Cobb Creek	110						Salt Creek	1,334		1			
Cow Creek	1,677		8 (1 M)	1			Sandstone Creek	272					
Deep Red Creek	194		2	4	1	1	Sandy Creek	103		2	1		
Delaware Creek	950		1				Spring Creek (Caddo Co.)	44					
East Barnitz Creek	203						Spring Creek (Roger Mills Co.)	9					
East Cache Creek: Upper	642		7	12			Station Creek	11					
East Cache Creek: Lower	2,515		19 (2 M)	33	3	5	Stinking Creek (Caddo Co.)	59					
Elk Creek	595	3	6 (1 M)	14	2	7	Stinking Creek (Kiowa Co.)	284					
Finn Creek	467						Sugar Creek	591	1	2			
Fish Creek	44						Suttle Creek	312	2	3	1		1
Fivemile Creek	64	2					Sweetwater Creek	169					
Fleetwood Creek	10						Tepee Creek	38			2		1
Gypsum Creek	30						Timber Creek	175					
Haystack Creek	253						Trail Creek	269					
Hickory Creek	1,043		7	1		3	Turkey Creek	68		2		1	
Ionine Creek	146						Walnut Bayou	5,973		8	1		
Kickapoo Sandy Creek	58						Washington Creek	14					
Lake Creek	186			1			West Barnitz Creek	249					
Little Beaver Creek	1,408			7		1	West Cache Creek	461		8	14		
Little Deep Red Creek	224		1	4		1	Wildhorse Creek (Davis)	10,394		14	20		
Little Elk Creek	152		1	6			Wildhorse Creek (Duncan)	22,856					
Medicine Creek	1						Wildhorse Creek (Tatums)	7,027		3	7		
Mill Creek	29	1	16	2									

3.4 DESIGNATED USE SUPPORT ASSESSMENT

The designated uses assessed for the monitoring sites are presented in Table 26 below, along with the current attainment status of each use based on the 2010 Integrated Report (ODEQ 2010). The causes and potential source(s) (if known) of any impairments can be found in the Integrated Report. Pennington Creek is the only stream in this basin that is in full attainment of all its designated uses; all others are on the 303(d) list for at least one impairment.

Table 26. Designated use support assessment. F=fully supporting, N=not supporting, I=insufficient information, X=use not assessed, *=antidegradation designation.

SITENAME	WBID	AESTHETICS	AGRICULTURE	COOL WATER AQ.COMM.	HABITAT LIMITED AQ. COMM.	WARM WATER AQ.COMM.	FISH CONSUMPTION	PRIMARY CONTACT (RECR)	SECONDARY CONTACT (RECR)	PUBLIC/ PRIVATE WATER SUP.	EMERGENCY WATER SUPPLY	HIGH QUALITY WATER*	SENSITIVE WATER SUPPLY*
Big Sandy Creek	OK310800-01-0090G	F	F			N	X	N					
Pennington Creek	OK310800-01-0120G	F	F	F			X	F		I		*	
Mill Creek: Lower	OK310800-01-0190G	I	F			I	X	N		I			
Oil Creek	OK310800-01-0240P	F	F			I	X	N		I			
Chigley Sandy Creek	OK310800-02-0190D	I	F			F	X	N		I			
Caddo Creek	OK310800-03-0010F	I	F			F	X	N		I			
Kickapoo Sandy Creek	OK310810-01-0050G	I	F			F	X	N		I			
Washington Creek	OK310810-01-0190G	F	F			N	X	N		I			*
Finn Creek	OK310810-02-0020D	F	F			N	X	N		I			
Wildhorse Creek	OK310810-03-0010D	I	N			F	X	N		I			
Salt Creek	OK310810-03-0080G	I	N			F	X	N		I			
Wildhorse Creek: near Duncan	OK310810-04-0140D	I	F			I	X	X		I			
Rush Creek	OK310810-05-0010D	F	F			I	X	X					
Ionine Creek	OK310820-01-0160L	I	N			F	X	N		I			
Delaware Creek	OK310830-01-0030G	I	N			F	X		F				
Stinking Creek	OK310830-02-0020D	F	N			I	X	N		I			
Rainy Mountain Creek	OK310830-02-0060G	F	N			N	X		I				
Cavalry Creek	OK310830-03-0070D	F	N			F	X	I		I			
Boggy Creek	OK310830-03-0100C	F	F			F	X	N					
Beaver Creek	OK310830-03-0190C	F	N			F	X		I				
Barnitz Creek	OK310830-03-0200C	F	N			N	X	N		I			
East Barnitz Creek	OK310830-03-0210C	I	N			F	X	N		X			
West Barnitz Creek	OK310830-03-0230C	F	N			N	X	N		I			
Spring Creek	OK310830-04-0010G	I	N			F	X	N		I			
Stinking Creek	OK310830-04-0030K	F	N			N	X	N		I			
Sugar Creek	OK310830-05-0010D	I	N			N	X		I				
Cobb Creek	OK310830-06-0050M	F	F			F	X	N		I			*
Fivemile Creek	OK310830-06-0080D	F	F			F	X	N		I			*
Quartermaster Creek	OK310840-01-0060L	I	N			N	X	N		I			
Sandstone Creek	OK310840-02-0020C	F	N			F	X	N		I			
Spring Creek	OK310840-02-0240D	I	F			N	X	N					
Red Creek	OK311100-01-0290D	F	F			N	X	N		I			
Fleetwood Creek	OK311100-01-0300D	I	F			N	X	N		I			
Hickory Creek: HWY 775	OK311100-02-0010M	I	F			F	I	N		I			
Walnut Bayou	OK311100-03-0010G	I	I			X	X	I		X			
Mud Creek	OK311100-04-0010G	I	F			N	N	N		I			
Beaver Creek	OK311200-00-0030L	F	F			N	X	N		I			
Cow Creek	OK311200-00-0060L	F	F			F	I	N		F			
Little Beaver Creek	OK311210-00-0050D	F	F			F	X	N		I			*
East Cache Creek: Lower	OK311300-01-0020G	F	N			N	F	N		I			*

SITENAME	WBID	AESTHETICS	AGRICULTURE	COOL WATER AQ.COMM.	HABITAT LIMITED AQ.COMM.	WARM WATER AQ.COMM.	FISH CONSUMPTION	PRIMARY CONTACT (RECR)	SECONDARY CONTACT (RECR)	PUBLIC/ PRIVATE WATER SUP.	EMERGENCY WATER SUPPLY	HIGH QUALITY WATER*	SENSITIVE WATER SUPPLY*
East Cache Creek: Upper	OK311300-02-0010M	F	N			N	X	N		X			
Medicine Creek	OK311300-04-0060H	F	F			F	X	N		I			*
Suttle Creek	OK311310-01-0070H	I	N			N	X		I				
West Cache Creek	OK311310-02-0010M	I	N			N	F	N		I			
Deep Red Creek	OK311310-03-0010D	F	N			N	X	N		I			
Little Deep Red Creek	OK311310-03-0040D	I	N			N	X	N		I			
Otter Creek	OK311500-01-0080F	I	N			N	X	N		I			
Tepee Creek	OK311500-01-0110D	I	N			F	X	N					
Elk Creek	OK311500-03-0010G	I	F			N	N	N		I			
Little Elk Creek	OK311500-03-0040D	F	F			F	X	N		I			
Trail Creek	OK311500-03-0070D	F	N			I	X	N		I			
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	F	F			F	X	N					
Timber Creek	OK311510-01-0090G	F	F			N	X	N		I			
Buffalo Creek	OK311510-02-0090D	F	N			F	X	N		I			
Sweetwater Creek	OK311510-02-0120D	F	N			F	X	N		I			
Gypsum Creek	OK311600-01-0020F	I	N			N	X	N		I			
Sandy Creek	OK311600-01-0040G	I	N		N		F		N	N	F		
Turkey Creek	OK311600-02-0060J	I	N			N	X	N		I			
Haystack Creek	OK311800-00-0040D	F	N			N	X	N		I			
Station Creek	OK311800-00-0060G	F	N			F	X	N					
Fish Creek	OK311800-00-0130G	F	N			F	X	N		I			
North Elm Creek	OK311800-00-0170G	F	I			I	X	N		I			

SUMMARY

In general, the Rotating Basin Group 4 fixed monitoring sites showed some changes compared to the first cycle, most likely due to the onset of drought conditions. Only 12% of the sites had no significant difference between the two cycles in water chemistry parameters. Nitrogen measures were significantly higher at 55% of the sites, while 18% showed lower values. In contrast, only 3% of the sites had significantly higher phosphorus, and 11% had significantly lower phosphorus. Turbidity was also higher at 3% and lower at 11% of sites, while salts were significantly higher at 33% of the sites and lower at 20%. Many of these differences could be indicative of lower flow conditions, where point source inputs play a larger role in water quality than nonpoint source, as evident by higher nitrogen and salts and lower phosphorus and turbidity. For the fish collections, 50% of the sites had the same biological condition as in the first cycle, while 20 scored worse, and 12 had higher conditions.

When looking at the probabilistic sites as one population of data to assess the entire basin, the results corroborated the fixed site results which indicate that low dissolved oxygen is a problem: 20% of the probabilistic values were below state criteria, while 33% of the fixed sites were below the state criteria. The probabilistic bacteria results also showed similar results to the findings based on the fixed sites. The

Enterococcus geomean of the probabilistic sites was above the state standard, but the *E. coli* geomean was supporting the state standard. For the fixed sites, only one stream was attaining the *Enterococcus* standard, while approximately 50% were attaining the *E. coli* standard. Since the fixed site data is obtained across a range of environmental conditions, and the probabilistic data is only obtained at base flow, it is logical that the fixed sites would be likely to have higher geomeans.

When examining the probabilistic sites within level 3 ecoregions, average nutrient concentrations from the probabilistic sites were within two standard deviations of high quality sites in each ecoregion. This correlates to the values observed at most of the fixed sites in that ecoregion. The results of the fish assessments also showed very high concordance between the fixed and probabilistic sites. Both fixed and probabilistic sites had about the same numbers of sites that ranked excellent and fair. Overall, approximately 34% of all fixed sites scored excellent, 8% were good, 34% were fair, 15% were poor, and 9% were very poor. For the probabilistic sites, 25% were excellent, 11% were good, 30% were fair, 23% were poor, and 11% were very poor. Approximately 50% of both fixed and probabilistic sites in the Cross Timbers ecoregion scored significantly lower than the high quality sites, while most sites in the Central Great Plains were within the high quality sites range for fish IBI scores. One fixed site and one probabilistic site had significantly lower habitat scores than high quality in the Central Great Plains ecoregion, while in the Cross Timbers, 50% of fixed sites and 25% of probabilistic sites were significantly lower than the high quality sites.

Thirty-six percent of fixed sites were non-impaired for macroinvertebrate communities overall (when averaging the scores across sample types), while 48% of the probabilistic sites were non-impaired. Slightly impaired macroinvertebrate conditions were observed for 50% of fixed sites and 42% of probabilistic sites, and 14% of fixed sites and 9% of probabilistic sites were moderately impaired.

Probabilistic monitoring was completed for all basins in the state in the summer of 2012, so more in-depth analysis is planned for this data. Specifically, the R statistical program will be used to explore relative risk with all probabilistic data collected across the state. Based on the initial, rather cursory analyses described in this report, the probabilistic sampling in Rotating Basin Group 4 supported the results obtained from the fixed monitoring sites, and, overall, the results suggest that the Small Watershed Rotating Basin program is accurately capturing the water quality conditions in the larger basins as a whole.

4.0 LITERATURE CITED

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APPENDICES

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)
Barnitz Creek	OK310830-03-0200C	5/26/2009	43576	9.05	103.90	116.00	Inorganics	211.0	22.2	2183.0	7.74	28.8	2077.5	0.072	0.29	0.04	1.27	0.402	1.60	2687	1780.0	0.077	0.215	195	23.74
Barnitz Creek	OK310830-03-0200C	6/18/2009	43905	9.3	118.1	15.4	Inorganics	159	27.7	2796	8.04														
Barnitz Creek	OK310830-03-0200C	6/29/2009	43897	8.34	100.60	12.80	Inorganics	158.0	25.3	2797.0	8.02	28.5	1861.8	< 0.015	< 0.02	< 0.02	0.99	0.055	1.03	2619	1290.0	0.018	0.068	25	3.94
Barnitz Creek	OK310830-03-0200C	7/27/2009	44284	5.92	71.20	21.50	Inorganics	121.0	24.6	2897.0	7.73	25.4	2204.6	0.072	0.07	< 0.02	0.82	0.162	0.91	2806	2050.0	0.037	0.061	25	1.39
Barnitz Creek	OK310830-03-0200C	9/9/2009	44531	8.62	105.50	9.69	Organics	167.0	25.0	2715.0	8.07	25.1	2074.6	0.041	0.08	< 0.02	0.17	0.141	0.27	2943	1760.0	0.035	0.12	19	7.02
Barnitz Creek	OK310830-03-0200C	10/6/2009	44693	9.32	93.50	11.50	Inorganics	164.0	15.5	2914.0	8.06	25.2	2040.9	0.015	0.21	< 0.02	0.51	0.245	0.74	2928	1960.0	0.032	0.036	12	6.48
Barnitz Creek	OK310830-03-0200C	11/3/2009	45101	9.69	90.90	76.80	Inorganics	186.0	12.4	2338.0	8.10	26.5	1859.1	0.024	0.22		0.86	0.244	1.08	2148	1500.0	0.095	0.171	88	28.03
Barnitz Creek	OK310830-03-0200C	12/14/2009	45248	12.89	97.50	6.74	Inorganics	228.0	3.7	2868.0	8.29	30.8	2526.9	0.017	0.3	< 0.02	0.61	0.337	0.93	2755	1850.0	0.02	0.018	10	
Barnitz Creek	OK310830-03-0200C	1/26/2010	45426	14.10	108.50	5.34	Inorganics	209.0	4.3	2850.0	8.30	31	2441.4	0.082	0.05	< 0.02	0.89	0.152	0.96	2670	1800.0	0.015	0.039	< 10	19.13
Barnitz Creek	OK310830-03-0200C	3/2/2010	46116	12.08	95.30	9.43	Inorganics	199.0	5.3	2920.0	8.33	34.6	2430.1	0.015	0.07	< 0.02	0.11	0.105	0.20	2789	2200.0	0.009	0.011	16	21.72
Barnitz Creek	OK310830-03-0200C	4/6/2010	46180	9.45	106.80	10.40	Inorganics	174.0	21.4	2955.0	8.05	36	2376.7	0.015	< 0.02	< 0.02	0.11	0.055	0.15	2856	1920.0	0.016	0.065	18	14.68
Barnitz Creek	OK310830-03-0200C	4/6/2010	46267	7.50	81.70	22.10	Inorganics	178.0	19.6	2582.0	8.07	26.2	2012.5	0.067	0.16	< 0.02	0.25	0.247	0.43	2416	1820.0	0.068	0.098	62	15.17
Barnitz Creek	OK310830-03-0200C	6/22/2010	46459	6.74	82.90	11.40	Inorganics	129.0	25.9	2620.0	8.08	30.3	2102.8	0.015	0.26	< 0.02	1.18	0.295	1.46	2501	1920.0	0.056	0.096	19	9.23
Barnitz Creek	OK310830-03-0200C	7/20/2010	46326	7.33	92.30	10.30	Inorganics	162.0	27.4	2624.0	8.04	27.7	1631	0.015	0.15	< 0.02	1.35	0.185	1.52	2447	1900.0	0.059	0.118	17	9.96
Barnitz Creek	OK310830-03-0200C	9/8/2010	46617	6.22	72.70	6.01	Inorganics	127.0	23.1	2964.0	7.82	25	1784.1	0.017	< 0.02	< 0.02	0.97	0.057	1.01	2836	1900.0	0.025	0.047	< 10	
Barnitz Creek	OK310830-03-0200C	10/13/2010	46721	9.81	100.30	5.40	Inorganics	16.4	2863.0	7.95	32.4	1770.4	0.015	0.08	0.02	0.85	0.115	0.95	2888	2060.0	0.005	0.026	10	2.68	
Barnitz Creek	OK310830-03-0200C	11/17/2010	46784	10.49	89.30	9.13	Inorganics	178.0	8.3	2507.0	7.88	28.8	1456.2	0.047	0.41	0.02	0.79	0.477	1.22	2387	1670.0	0.068	0.085	11	317.67
Barnitz Creek	OK310830-03-0200C	1/5/2011	46847	14.60	105.50	9.35	Inorganics	181.0	1.9	2993	8.09	30.9	1984.3	0.068	0.28	0.02	1.17	0.368	1.47	2915	2070.0	0.021	0.038	19	10.98
Barnitz Creek	OK310830-03-0200C	2/7/2011	46977	16.04	109.80	20.40	Inorganics	172.0	0.1	2729	8.13	29	1729.5	0.028	0.32	< 0.02	0.63	0.368	0.97	2773	2060.0	0.024	0.091	12	
Barnitz Creek	OK310830-03-0200C	3/7/2011	47042	13.58	119.50	2.75	Inorganics	151.0	9.8	2919.0	8.20	32.8	1862.3	0.015	0.02	< 0.02	0.52	0.055	0.56	2917	2070.0	< 0.005	0.019	< 10	
Barnitz Creek	OK310830-03-0200C	4/20/2011	47098	8.80	89.20	13.70	Inorganics	109.0	16.6	3051.0	7.71	30	2092.5	0.015	< 0.02	< 0.02	0.63	0.055	0.67	3020	2020.0	0.015	0.046	< 10	7.22
Beaver Creek	OK310830-03-0190C	5/26/2009	43575	8.89	97.90	38.30	Inorganics	190.0	21.3	2406.0	7.67	28.4	2025.7	0.074	0.43	< 0.02	0.84	0.524	1.29	2478	1440.0	0.055	0.15	44	16.05
Beaver Creek	OK310830-03-0190C	6/29/2009	43900	7.94	95.40	129.00	Inorganics	193.0	25.8	2654.0	8.12	30.5	1992.2	0.036	< 0.02	< 0.02	0.66	0.076	0.70	2601	2260.0	0.047	0.089	< 10	3.77
Beaver Creek	OK310830-03-0190C	7/27/2009	44285	5.30	64.00	3.30	Inorganics	188.0	23.7	2724.0	7.64	26.8	2042.4	0.186	0.19	< 0.02	0.68	0.396	0.89	2555	1345.0	0.048	0.056	< 10	3.03
Beaver Creek	OK310830-03-0190C	9/9/2009	44534	9.70	117.60	4.79	Organics	132.0	24.7	2256.0	7.98	20.7	1649.8	0.051	0.04	< 0.02	0.11	0.111	0.17	2131	1520.0	0.013	0.128	11	3.65
Beaver Creek	OK310830-03-0190C	10/6/2009	44696	10.73	107.80	2.51	Inorganics	174.0	15.6	2431.0	8.03	22	1768.2	0.015	0.23	< 0.02	0.35	0.265	0.60	2318	1620.0	0.036	0.034	< 10	4.23
Beaver Creek	OK310830-03-0190C	11/3/2009	45100	9.94	93.80	17.00	Inorganics	153.0	12.7	2230.0	8.00	23.4	1569	0.015	0.15	< 0.02	0.89	0.165	1.04	1914	1500.0	0.035	0.103	13	9.91
Beaver Creek	OK310830-03-0190C	12/14/2009	45245	12.31	93.60	9.21	Inorganics	205.0	3.8	2522.0	8.05	37	1342.4	0.032	0.37	0.06	0.64	0.462	1.07	2385	1710.0	0.023	0.044	< 10	
Beaver Creek	OK310830-03-0190C	1/26/2010	45423	12.82	96.20	6.84	Inorganics	184.0	3.4	2323.0	8.07	29.9	2021.8	0.102	0.37	< 0.02	0.39	0.492	0.78	2412	1800.0	0.017	0.062	< 10	7.33
Beaver Creek	OK310830-03-0190C	3/2/2010	46113	11.31	89.20	13.20	Inorganics	195.0	5.2	2513.0	8.15	29.7	1587.5	0.083	0.4	< 0.02	0.59	0.503	1.01	2315	1800.0	0.023	0.066	17	13.25
Beaver Creek	OK310830-03-0190C	4/6/2010	46183	14.47	169.40	6.66	Organics	141.0	23.2	2655.0	5.19	30.3	1931.4	0.02	< 0.02	< 0.02	0.32	0.060	0.36	2503	1920.0	0.014	0.061	14	9.48
Beaver Creek	OK310830-03-0190C	5/18/2010	46264	7.42	78.90	32.10	Inorganics	188.0	18.3	2546.0	8.01	29.3	1627.6	0.076	0.31	< 0.02	0.35	0.406	0.68	2370	1616.0	0.052	0.113	48	10.13
Beaver Creek	OK310830-03-0190C	5/20/2010	46407	7.26	77.30	41.90	Inorganics	186.0	18.3	2555.0	8.00														10.62
Beaver Creek	OK310830-03-0190C	6/22/2010	46456	5.97	71.60	10.90	Inorganics	119.0	24.5	2504.0	7.85	38.8	1666.9	0.03	0.26	< 0.02	1.19	0.310	1.47	2466	1670.0	0.039	0.109	11	6.44
Beaver Creek	OK310830-03-0190C	7/20/2010	46323	5.40	65.60	6.50	Inorganics	130.0	25.7	1967.0	7.77	27.3	1426.6	0.082	0.36	< 0.02	1.08	0.462	1.46	2273	1870.0	0.053	0.049	11	68.45
Beaver Creek	OK310830-03-0190C	9/8/2010	46620	6.50	75.30	4.81	Inorganics	122.0	22.7	2655.0	7.73	25	1556.4	0.113	0.22	0.02	0.98	0.333	1.20	2430	1620.0	0.038	0.047		
Beaver Creek	OK310830-03-0190C	10/13/2010	46724	10.25	104.50	5.93	Inorganics	16.3	2183.0	7.88	26.7	1617	0.015	0.11	0.02	0.79	0.145	0.92	2578	1760.0	0.006	0.027	< 10	1.77	
Beaver Creek	OK310830-03-0190C	11/17/2010	46787	10.28	88.00	1.39	Inorganics	183.0	8.6	2481.0	7.75	28.4	1444.9	0.021	0.17	0.02	1.38	0.211	1.57	2356	1750.0	0.037	0.048		
Beaver Creek	OK310830-03-0190C	1/5/2011	46850	14.84	110.80	3.07	Inorganics	136.0	3.2	2741.0	7.85	26.4	1550.8	0.031	0.28	0.02	0.93	0.331	1.23	2640	1780.0	0.013	0.027	< 10	2.92
Beaver Creek	OK310830-03-0190C	2/7/2011	46978	15.31	106.30	4.59	Inorganics	157.0	0.5	2741.0	8.01	26.2	1627.9	0.067	0.38	< 0.02	1.07	0.467	1.47	2496	1900.0	0.014	0.026	< 10	
Beaver Creek	OK310830-03-0190C	3/7/2011	47045	16.19	148.30	1.80	Inorganics	159.0	11.2	2656.0	8.44	27.5	1739.9	0.036	0.13	< 0.02	0.76	0.186	0.91	2677	1710.0	0.008	0.039	< 10	
Beaver Creek	OK310830-03-0190C	4/20/2011	47095	6.95	68.80	6.83	Inorganics	142.0	14.3	2848.0	7.49	34.7	1974.2	0.134	0.07	< 0.02	0.63	0.324	0.82	2821	1990.0	0.031	0.047	< 10	4.44
Beaver Creek	OK311200-00-0030L	5/26/2009	43597	8.84	99.60	66.60	Inorganics	166.0	21.2	587.0	8.13	33.3	88.6	0.015	0.26	< 0.02	0.92	0.295	1.20	354	220.0	0.094	0.119	111	
Beaver Creek	OK311200-00-0030L	6/30/2009	43923	3.61	46.80	29.70	Organics	239.0	31.1	794.0	8.33	76.3	86.1	< 0.015	< 0.02	< 0.02	0.7	0.055	0.74	442	154.0	0.07	0.114	11	
Beaver Creek	OK311200-00-0030L	13-Jul-09	44053				Inorganics																		
Beaver Creek	OK311200-00-0030L	8/3/2009	44299	6.44	85.30	32.60	Inorganics	259.0	31.0	894.0	8.31	83.8	110.4	0.015	0.13	< 0.02	0.94	0.165							

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBRID	DateActivityStart	SampleID	DO (mg/L)	DOPercSat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)				
Big Sandy Creek	OK310800-01-0090G	3/1/2010	46093	11.10	95.50	5.33	Inorganics	157.0	8.6	345.7	8.27	9	16.7	0.015		<	0.02	0.21	0.035	0.23	194	165.0	<	0.005	0.024	<	10	15.09	
Big Sandy Creek	OK310800-01-0090G	4/5/2010	46156	8.79	96.80	2.32	Organics	131.0	20.0	315.0	8.03	16.6	22.7	0.031	<	0.02	0.3	0.071	0.34	189	141.0	0.022	0.027	<	10	5.53			
Big Sandy Creek	OK310800-01-0090G	5/17/2010	46244	8.43	102.60	2.27	Organics	163.0	25.3	331.0	8.05	8.9	12.2	0.033	0.06	<	0.02	0.11	0.113	0.19	183	150.0	0.015	0.026	<	10	12.99		
Big Sandy Creek	OK310800-01-0090G	6/21/2010	46435	12.40	175.50	1.76	Organics	160.0	34.3	397.0	8.45	12	24.9	0.025	0.1	<	0.02	0.33	0.145	0.45	251	183.0	0.037	0.029	<	10	0.05		
Big Sandy Creek	OK310800-01-0090G	7/26/2010	46520	3.21	40.80	0.49	Organics	159.0	27.7	381.0	7.53	10.1	19.1	0.029	0.03	<	0.02	0.22	0.079	0.27	222	174.0	0.019	0.026	<	10			
Big Sandy Creek	OK310800-01-0090G	9/8/2010	46599	3.05	35.90	10.50	Inorganics	160.0	24.2	421.0	7.33	9.9	26.2	0.034	0.11	0.02	0.35	0.164	0.48	218	183.0	0.037	0.051	<	10				
Big Sandy Creek	OK310800-01-0090G	10/12/2010	46703	5.40	62.10	1.11	Organics	202.0	22.4	460.0	7.63	13.8	38.2	0.033	0.02	0.02	0.38	0.073	0.42	270	224.0	0.032	0.022	<	15				
Big Sandy Creek	OK310800-01-0090G	11/15/2010	46766	7.78	76.20	0.76	Organics	210.0	14.6	548.0	7.93	16.7	55.8	0.015	0.03	0.02	0.32	0.065	0.37	337	275.0	0.022	0.022	<	10				
Big Sandy Creek	OK310800-01-0090G	1/3/2011	46823	11.71	94.50	2.49	Organics	136.0	6.1	298.6	8.06	12.8	17.6	0.015	0.04	0.02	0.31	0.075	0.37	181	127.0	0.016	0.021	<	10				
Big Sandy Creek	OK310800-01-0090G	2/7/2011	46996	13.07	101.00	6.58	Inorganics	135.0	4.5	319.4	8.19	11.8	13.2	0.015	<	0.02	0.31	0.055	0.35	191	142.0	0.016	0.02	<	10	2.40			
Big Sandy Creek	OK310800-01-0090G	3/14/2011	47052	10.17	95.80	6.30	Organics	165.0	12.6	387.0	8.42	16.1	18.6	0.015	<	0.02	0.35	0.055	0.39	234	176.0	0.006	0.031	<	15	3.16			
Big Sandy Creek	OK310800-01-0090G	4/18/2011	47075	13.59	162.60	0.94	Organics	162.0	24.4	364.0	8.61	14.8	20.7	0.015	<	0.02	0.29	0.055	0.33	214	170.0	<	0.005	<	10				
Boggy Creek	OK310830-03-0100C	5/26/2009	43574	8.03	91.80	675.00	Inorganics	121.0	20.7	2050.0	7.62	84.7	850.1	0.135	1.16	0.14	2.1	1.435	3.40	1682	1129.0	0.281	0.628	714	44.71				
Boggy Creek	OK310830-03-0100C	6/29/2009	43896	8.47	100.80	39.90	Organics	190.0	24.0	1777.0	8.07	82.1	885.7	<	0.015	0.37	<	0.02	1.94	0.405	2.33	1315	725.0	0.017	0.118	53	4.49		
Boggy Creek	OK310830-03-0100C	7/27/2009	44281	6.03	73.40	83.70	Inorganics	207.0	24.8	1290.0	8.04	44.1	519.6	0.022	0.61	<	0.02	1.79	0.652	2.42	865	510.0	0.094	0.205	80	12.50			
Boggy Creek	OK310830-03-0100C	9/8/2009	44530	9.18	108.60	40.80	Organics	214.0	23.8	1180.0	8.31	38.2	<	0.015	0.71	<	0.02	1.12	0.85	0.85	808	525.0	0.042	0.175	104	14.14			
Boggy Creek	OK310830-03-0100C	10/6/2009	44692	10.46	105.50	5.72	Inorganics	242.0	15.8	1891.0	8.14	70.4	912.8	0.015	2.03	<	0.02	1.15	2.065	2.20	1515	980.0	0.008	0.009	<	10	9.43		
Boggy Creek	OK310830-03-0100C	11/3/2009	45099	9.92	93.00	62.70	Inorganics	241.0	12.5	1366.0	8.21	48.8	572	0.015	1.11	<	0.02	0.82	1.125	1.93	1017	760.0	0.087	0.144	44	27.08			
Boggy Creek	OK310830-03-0100C	12/14/2009	45249	13.20	103.40	2.79	Inorganics	326.0	5.0	1934.0	8.30	63.4	1299.9	<	0.015	2.13	<	0.02	1.17	2.165	2.32	1533	1120.0	0.008	<	0.005	<	10	
Boggy Creek	OK310830-03-0100C	1/26/2010	45427	14.89	119.90	3.66	Inorganics	296.0	6.1	1944.0	8.27	66.5	1052.7	0.082	1.75	<	0.02	0.22	1.852	1.99	1499	990.0	0.008	0.03	<	10	12.10		
Boggy Creek	OK310830-03-0100C	3/2/2010	46118	14.06	161.18	9.61	Inorganics	276.0	7.7	1518.0	8.36	59.1	857.6	0.091	1.41	0.09	<	0.11	1.591	1.61	1101	870.0	0.006	0.006	18	17.54			
Boggy Creek	OK310830-03-0100C	4/6/2010	46179	9.24	101.20	12.40	Inorganics	281.0	19.8	1866.0	8.02	77.8	1115.8	0.045	0.99	<	0.02	<	0.011	1.055	1.02	1433	890.0	0.012	0.035	14	12.62		
Boggy Creek	OK310830-03-0100C	5/18/2010	46268	8.15	89.40	109.00	Inorganics	311.0	19.9	1557.0	8.18	50.4	715.9	0.079	1.25	<	0.02	<	0.11	1.349	1.38	1133		0.095	0.06	127	20.95		
Boggy Creek	OK310830-03-0100C	5/27/2010	46409	10.04	123.80	30.50	Inorganics	292.0	26.7	1559.0	7.99																10.94		
Boggy Creek	OK310830-03-0100C	6/22/2010	46460	7.26	90.60	22.10	Inorganics	213.0	26.6	1612.0	8.06	62.4	851.8	0.079	0.42	<	0.02	0.51	0.519	0.95	1193	1010.0	0.014	0.04	19	4.17			
Boggy Creek	OK310830-03-0100C	7/20/2010	46327	6.39	83.80	10.10	Inorganics	199.0	28.0	1615.0	7.99	62.7	664.4	0.027	0.56	<	0.02	0.67	0.607	1.25	1186	980.0	0.017	0.054	14	5.36			
Boggy Creek	OK310830-03-0100C	9/8/2010	46616	5.41	63.50	25.70	Inorganics	149.0	23.2	2051.0	7.79	109.9	1015.5	0.105	0.53	0.02	1.07	0.655	1.62	1537	900.0	0.037	0.053	30					
Boggy Creek	OK310830-03-0100C	10/13/2010	46720	8.20	82.80	8.04	Organics	159.0	25.9	2264.0	7.78	132.0	1021.0	0.020	0.94	0.02	0.53	0.980	1.49	1843	1290.0	0.008	0.014	10	1.13				
Boggy Creek	OK310830-03-0100C	11/17/2010	46783	11.20	96.80	10.10	Inorganics	243.0	8.9	1712.0	7.98	59.9	693.3	0.025	1.54	0.02	0.78	1.585	2.34	1360	900.0	0.037	0.054	10	4.11				
Boggy Creek	OK310830-03-0100C	1/5/2011	46846	15.39	111.00	7.15	Inorganics	264.0	1.9	1796.0	7.96	80.7	808.4	0.015	2.07	0.02	1.07	2.105	3.16	1653	1180.0	0.009	0.035	52	2.51				
Boggy Creek	OK310830-03-0100C	2/8/2011	46982	14.06	98.50	21.20	Inorganics	273.0	0.8	8.07	8034	926	0.015	2.18	<	0.02	0.5	2.215	2.70	1662	1070.0	0.013	0.041	17					
Boggy Creek	OK310830-03-0100C	3/7/2011	47041	15.49	138.20	1.87	Inorganics	233.0	10.3	2075.0	8.09	89.9	962.9	0.015	0.68	<	0.02	0.41	0.715	1.11	1684	1010.0	<	0.005	0.009	<	10		
Boggy Creek	OK310830-03-0100C	4/20/2011	47099	8.59	88.10	10.40	Inorganics	242.0	16.6	884.0	7.84	95.1	996.7	0.158	0.28	<	0.02	0.69	0.458	0.99	1783	1290.0	0.015	0.037	<	10	4.63		
Buffalo Creek	OK311510-02-0090D	5/18/2009	43542	9.14	95.80	21.00	Inorganics	295.0	17.7	2092.0	8.15	207.1	671.3	0.058	0.53	<	0.02	1.15	0.608	1.70	1459	800.0	0.021	0.082	52	12.43			
Buffalo Creek	OK311510-02-0090D	6/3/2009	43659	7.51	81.00	51.70	Inorganics	278.0	19.0	2139.0	8.09																8.52		
Buffalo Creek	OK311510-02-0090D	6/22/2009	43851	8.40	107.00	8.54	Organics	237.0	27.8	3385.0	8.15	565	1266.8	0.029	0.79	<	0.02	0.77	0.839	1.58	2575	652.0	0.049	0.138	27	4.76			
Buffalo Creek	OK311510-02-0090D	7/27/2009	44145	5.36	62.50	867.00	Inorganics	98.0	22.9	958.0	7.74	29.1	421.5	0.169	0.43	0.11	4.59	0.709	5.13	686	478.0	0.584	0.828	896					
Buffalo Creek	OK311510-02-0090D	8/31/2009	44456	8.44	94.40	46.40	Inorganics	240.0	21.0	3314.0	8.19	544	1302.6	0.026	0.79	<	0.02	0.26	0.836	1.07	2752	1254.0	0.074	0.074	97	2.53			
Buffalo Creek	OK311510-02-0090D	10/5/2009	44677	8.74	85.90	0.46	Inorganics	227.0	14.7	3316.0	8.19	380	1286.3	0.015	1.13	<	0.02	0.36	1.165	1.51	2586	1400.0	0.012	0.043	<	10	3.80		
Buffalo Creek	OK311510-02-0090D	11/2/2009	45083	9.73	87.70	16.60	Inorganics	270.0	10.6	2167.0	8.16	221	945	0.015	0.84	<	0.02	0.44	0.855	1.28	1696	916.0	0.034	0.065	16	6.00			
Buffalo Creek	OK311510-02-0090D	12/14/2009	45222	11.10	87.40	12.30	Organics	301.0	5.1	2577.0	8.37	253.9	919.5	0.023	1.18	<	0.02	0.34	1.223	1.54	1864	1062.0	0.019	<	10	6.41			
Buffalo Creek	OK311510-02-0090D	1/25/2010	45398	11.78	93.60	12.20	Inorganics	293.0	6.0	2105.0	8.37	235.1	835.3	0.058	0.85	<	0.02	0.3	0.928	1.17	1651	908.0	0.014	0.039	25	2.96			
Buffalo Creek	OK311510-02-0090D	3/3/2010	46101	10.40	84.10	9.89	Organics	287.0	6.2	12480.0	8.32	310.8	869.5	0.024	0.84	<	0.02	0.52	0.884	1.38	1884	1230.0	0.026	0.051	29	9.40			
Buffalo Creek	OK311510-02-0090D	4/5/2010	46164	11.68	124.50	3.21	Organics	232.0	18.3	2839.0	8.19	330.1	1020.1	0.02	0.38	<	0.02	0.35	0.420	0.75	2015	1140.0	0.02	0.027	10	54.28			
Buffalo Creek	OK311510-02-0090D	5/17/2010	46252	8.05	83.80	60.20	Inorganics	334.0	17.3	1958.0	8.26	154.8	573.5	0.054	0.52	<	0.02	0.58	0.594	1.12	1363	805.0	0.058	0.128					

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPencat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)				
Caddo Creek	OK310800-03-0010F	3/10/2011	47048	8.10	76.40	9.81	Organics	179.0	12.7	581.0	8.08	50.3	43.8	0.023	0.34	<	0.02	0.56	0.383	0.92	364	207.0	0.049	0.074	<	10	4.97		
Caddo Creek	OK310800-03-0010F	4/18/2011	47071	6.18	66.50	11.30	Organics	163.0	18.9	571.0	7.76	94.4	52.1	0.055	0.67	<	0.02	0.94	0.745	1.63	378	184.0	0.116	0.149	<	10	15.91		
Cavalry Creek	OK310830-03-0070D	5/26/2009	43573	8.76	95.20	417.00	Inorganics	281.0	19.7	2305.0	7.75	61.9	1297.1	0.094	1.11	0.08	1.79	1.284	2.98	2024	1195.0	0.261	0.479	350	17.32				
Cavalry Creek	OK310830-03-0070D	6/29/2009	43895	7.15	83.50	25.50	Inorganics	193.0	23.1	3087.0	7.86	96.1	2084.5	0.042	0.57	<	0.02	1.3	0.632	1.89	2847	1950.0	0.018	0.105	51	1.08			
Cavalry Creek	OK310830-03-0070D	7/27/2009	44280	5.26	63.00	21.40	Inorganics	146.0	24.1	2805.0	7.68	100.3	1713.8	0.063	0.52	<	0.02	1.36	0.603	1.90	2522	1650.0	0.054	0.098	30	1.77			
Cavalry Creek	OK310830-03-0070D	7/29/2009	44160	9.45	115.00	8.34	Inorganics	218.0	25.2	2810.0	7.97															2.34			
Cavalry Creek	OK310830-03-0070D	9/9/2009	44529	7.10	81.40	11.20	Inorganics	206.0	22.8	2584.0	7.84	85.7	<	1751.2	0.11	0.88	<	0.02	<	0.11	1.010	1.01	2409	1560.0	0.019	0.084	20	1.89	
Cavalry Creek	OK310830-03-0070D	10/6/2009	44691	9.31	93.60	8.98	Inorganics	219.0	15.6	2971.0	8.06	97.8	2098.1	0.015	2.12	<	0.02	0.6	2.155	2.74	2719	2150.0	0.01	0.029	13	3.98			
Cavalry Creek	OK310830-03-0070D	11/3/2009	45098	9.93	91.00	25.10	Inorganics	259.0	11.5	2437.0	8.03	84.5	1650.8	0.023	1.89	<	0.02	0.85	1.913	2.74	2121	1500.0	0.184	0.218	19	5.78			
Cavalry Creek	OK310830-03-0070D	12/14/2009	45250	15.36	121.20	2.34	Organics	320.0	5.2	2848.0	8.27	99.1	1920.1	<	0.015	2.66	<	0.02	0.33	2.695	3.01	2529	1720.0	0.018	0.014	<	10	5.78	
Cavalry Creek	OK310830-03-0070D	1/26/2010	45428	15.66	126.10	1.76	Organics	258.0	6.1	2824.0	8.19	98.1	2156.4	0.081	1.63	<	0.02	0.37	1.731	2.02	2469	1840.0	0.024	0.059	<	10	5.99		
Cavalry Creek	OK310830-03-0070D	3/2/2010	46117	18.90	156.00	2.48	Organics	242.0	7.1	2805.0	8.13	90.3	1923.5	0.02	1.17	<	0.02	0.11	1.210	1.30	2494	1830.0	0.017	0.011	<	10	6.92		
Cavalry Creek	OK310830-03-0070D	4/6/2010	46178	6.68	72.90	27.80	Inorganics	214.0	19.6	2870.0	7.83	98.6	1737.3	0.331	0.8	<	0.02	0.75	1.151	1.57	2562	1870.0	0.085	0.137	42	6.31			
Cavalry Creek	OK310830-03-0070D	5/18/2010	46269	8.99	92.10	56.60	Inorganics	294.0	20.1	2666.0	8.16	97.1	1543.9	0.017	1.52	<	0.02	0.42	1.557	1.96	2324	1885.0	0.079	0.16	89	7.88			
Cavalry Creek	OK310830-03-0070D	6/22/2010	46461	9.84	121.30	24.50	Inorganics	163.0	26.2	3011.0	8.15	100.9	2077.3	0.015	<	0.02	0.02	2.58	0.055	2.62	2742	2060.0	0.012	0.163	55	6.30			
Cavalry Creek	OK310830-03-0070D	7/20/2010	46328	7.40	94.90	9.17	Inorganics	160.0	28.0	2624.0	8.18	94.8	1775.2	0.015	<	0.02	<	0.02	1.79	0.055	1.83	2459	1630.0	0.01	0.136	30	1.04		
Cavalry Creek	OK310830-03-0070D	9/8/2010	46615	4.93	57.80	35.40	Inorganics	134.0	23.3	3560.0	7.70	116.8	2384.5	0.189	0.8	<	0.02	1.46	1.009	2.28	3228	2080.0	0.039	0.089	42				
Cavalry Creek	OK310830-03-0070D	10/13/2010	46719	6.38	64.20	13.00	Inorganics	155	35	3480.0	7.76	121.1	1913.9	0.031	0.99	<	0.02	0.93	1.041	1.94	3320	2240.0	0.015	0.04	20	2.74			
Cavalry Creek	OK310830-03-0070D	11/17/2010	46782	9.43	80.00	31.70	Inorganics	186.0	8.2	1962.0	7.70	55.9	902.4	0.027	1.11	0.02	0.89	1.157	2.02	1644	1170.0	0.098	0.135	29	2.74				
Cavalry Creek	OK310830-03-0070D	1/5/2011	46845	12.41	87.80	7.55	Inorganics	254.0	1.2	7.88	96.1	1279.2	0.015	1.95	0.02	0.56	1.985	2.53	2503	1910.0	0.012	0.019	10	2.84					
Cavalry Creek	OK310830-03-0070D	2/8/2011	46981	13.97	96.20	11.40	Inorganics	196.0	0.2	8.05	93.3	1313.4	0.015	2.45	<	0.02	0.67	2.485	3.14	2406	1650.0	0.011	0.021	<	10				
Cavalry Creek	OK310830-03-0070D	3/7/2011	47040	13.17	114.70	2.93	Inorganics	165.0	9.2	2804.0	7.91	97.4	1418	0.015	0.29	<	0.02	0.86	0.325	1.17	2542	1740.0	<	0.005	0.044	<	10		
Cavalry Creek	OK310830-03-0070D	4/20/2011	47100	8.93	90.40	37.30	Inorganics	201.0	15.9	3228.0	7.71	129.8	1876.9	0.015	0.22	<	0.02	1.9	0.255	2.14	3008	2050.0	0.031	0.186	48				
Chigley Sandy Creek	OK310800-02-0190D	5/18/2009	43533	7.48	81.90	22.90	Inorganics	135.0	19.8	310.0		9.3	6.3	0.015	0.11	<	0.02	0.6	0.145	0.73	199	140.0	0.025	0.109	16	70.73			
Chigley Sandy Creek	OK310800-02-0190D	6/9/2009	43794	6.98	84.00	37.30	Inorganics	240.0	24.7	544.0	7.76															11.38			
Chigley Sandy Creek	OK310800-02-0190D	6/22/2009	43841	7.23	89.50	1.38	Organics	282.0	26.3	650.0	7.78	49.1	<	13.4	0.015	0.32	<	0.02	<	0.11	0.355	0.45	375	262.0	0.05	0.077	<	10	1.67
Chigley Sandy Creek	OK310800-02-0190D	7/28/2009	44142	6.42	76.40	1.19	Organics	290.0	24.2	797.0	7.65	81.9	<	16.6	0.015	0.32	<	0.02	0.32	0.355	0.66	464	280.0	<	0.005	0.093	<	10	0.54
Chigley Sandy Creek	OK310800-02-0190D	8/31/2009	44446	7.45	92.90	2.38	Organics	329.0	24.6	875.0	7.46	88.4	19.1	0.046	<	0.02	<	0.11	0.086	0.15	535	300.0	0.039	0.051	<	10	0.03		
Chigley Sandy Creek	OK310800-02-0190D	10/5/2009	44667	8.57	89.10	0.87	Organics	269.0	17.2	682.0	7.92	47	14.4	0.015	0.25	<	0.02	<	0.11	0.285	0.38	373	255.0	0.029	0.047	<	10	1.09	
Chigley Sandy Creek	OK310800-02-0190D	11/3/2009	45081	8.99	86.90	13.10	Inorganics	177.0	13.8	334.0	7.91	11.3	6.9	0.015	0.08	<	<	0.11	0.095	0.19	220	150.0	0.023	0.046	<	10	24.43		
Chigley Sandy Creek	OK310800-02-0190D	12/15/2009	45220	11.58	90.90	0.66	Organics	274.0	5.1	590.0	8.09	26.6	12.6	0.027	0.18	<	0.02	0.18	0.227	0.38	366	260.0	0.025	0.066	<	10	3.27		
Chigley Sandy Creek	OK310800-02-0190D	1/26/2010	45395	12.05	96.00	21.80	Inorganics	217.0	5.7	507.0	8.01	13.3	10.2	0.016	0.08	<	0.02	0.24	0.116	0.34	284	235.0	0.026	0.042	<	10	34.87		
Chigley Sandy Creek	OK310800-02-0190D	3/2/2010	46098	11.00	93.50	2.85	Inorganics	310.0	8.7	616.0	8.23	22.7	11.4	0.017	0.17	<	0.02	<	0.11	0.207	0.30	369	274.0	0.021	0.024	<	10	12.91	
Chigley Sandy Creek	OK310800-02-0190D	4/6/2010	46161	9.27	98.40	1.80	Organics	267.0	18.2	489.0	8.02	21.5	13.1	0.03	0.08	<	0.02	<	0.11	0.130	0.21	325	240.0	0.016	0.019	<	10	13.62	
Chigley Sandy Creek	OK310800-02-0190D	5/18/2010	46250	8.02	87.40	4.28	Inorganics	233.0	20.0	499.0	7.79	18.7	10.1	0.016	0.21	<	0.02	<	0.11	0.246	0.34	289	207.0	0.025	0.029	<	10	22.06	
Chigley Sandy Creek	OK310800-02-0190D	6/22/2010	46440	7.08	88.50	1.56	Organics	237.0	26.8	500.0	7.84	30.3	10.8	0.015	0.44	<	0.02	0.49	0.475	0.95	327	231.0	0.036	0.033	<	10	2.87		
Chigley Sandy Creek	OK310800-02-0190D	7/27/2010	46525	5.52	67.00	0.98	Organics	294.0	25.3	746.0	7.58	64.4	17	0.029	0.41	<	0.02	0.27	0.459	0.70	409	287.0	0.028	0.031	<	10	0.56		
Chigley Sandy Creek	OK310800-02-0190D	9/7/2010	46588	1.90	22.00	2.21	Organics	329.0	23.1	873.0	7.16	80.9	18.9	0.081	0.02	0.02	0.39	0.121	0.43	503	316.0	0.041	0.035	10					
Chigley Sandy Creek	OK310800-02-0190D	10/11/2010	46695	6.10	67.10	0.50	Organics	320.0	20.0	784.0	7.32	63.9	19.5	0.016	0.25	0.02	0.31	0.286	0.58	451	298.0	0.03	0.026	10	0.40				
Chigley Sandy Creek	OK310800-02-0190D	11/9/2010	46758	6.98	71.80	0.33	Organics	326.0	16.8	817.0	7.83	62.6	20.3	0.015	0.11	0.02	0.11	0.145	0.24	489	302.0	0.023	0.026	10	0.62				
Chigley Sandy Creek	OK310800-02-0190D	1/4/2011	46825	10.49	84.00	0.55	Organics	328.0	5.9	497.0	7.83	58	17.1	0.015	0.53	0.02	0.37	0.565	0.92	473	310.0	0.015	0.018	10	0.68				
Chigley Sandy Creek	OK310800-02-0190D	2/8/2011	47001	11.60	87.40	4.05	Inorganics	272.0	3.5	572.0	7.73	34	13.6	0.015	0.37	<	0.02	0.39	0.405	0.78	346	225.0	0.052	0.067	<	10	2.28		
Chigley Sandy Creek	OK310800-02-0190D	3/15/2011	47057	11.76	105.80	0.51	Organics	295.0	10.7	780.0	7.87	61.2	19	0.015	0.32	<	0.02	0.22	0.355	0.56	468	294.0	<	0.005	0.013	<	10		
Chigley Sandy Creek	OK310800-02-0190D	4/19/2011	47080	8.34	98.80	1.20	Organics	314.0	23.9	788.0	7.73	76.1	18.4	0.039	0.1	<	0.02	0.33	0.159	0.45	468	262.0	0.025	0.039	<	10	0.30		
Cobb Creek	OK310830-06-0050M	5/26/2009	43571	7.04	76.00	468.00	Inorganics	171.0	19.3	671.0																			

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)		
Cow Creek	OK311200-00-0060L	1/4/2010	45342	14.72	107.00		Inorganics	192.0	2.2	644.0	8.32	48.7	73.4	0.035	2.07	<	0.02	0.7	2.125	2.79	405	310.0	0.229	0.366	<	10	6.47
Cow Creek	OK311200-00-0060L	2/8/2010	46066	11.48	91.10	68.10	Inorganics	247.0	5.5	896.0	8.29	75.3	88.8	0.134	1.3	<	0.02	0.49	1.454	1.81	498	368.0	0.254	0.261	<	10	
Cow Creek	OK311200-00-0060L	3/3/2010	46132	11.17	95.50	20.30	Organics	349.0	8.8	1287.0	8.64	150.4	125	0.022	2.13	<	0.02	0.11	2.172	2.26	734	458.0	0.174	0.214	<	10	
Cow Creek	OK311200-00-0060L	4/12/2010	46207	8.22	91.40	17.60	Organics	366.0	20.6	1420.0	8.34	201.7	113.3	0.172	1.57	0.21	0.63	1.952	2.41	771	500.0	0.552	0.59	10	5.20		
Cow Creek	OK311200-00-0060L	5/24/2010	46295	8.80	110.30	18.40	Organics	338.0	26.4	1251.0	8.47	190	93.4	0.025	2.46	<	0.02	0.11	2.505	2.59	707	400.0	0.622	0.718	14	11.58	
Cow Creek	OK311200-00-0060L	6/28/2010	46319	5.51	66.40	68.70	Inorganics	184.0	25.1	677.0	7.97	73.4	59.5	0.354	3.45	0.35	36.66	4.154	40.46	375	230.0	0.948	1.23	973			
Cow Creek	OK311200-00-0060L	8/2/2010	46556	10.95	148.50	35.20	Organics	261.0	30.6	868.0	8.71	123.7	110.8	0.3	3.56	0.74	1.92	4.600	6.22	600	310.0	0.681	0.699	14	5.03		
Cow Creek	OK311200-00-0060L	9/13/2010	46644	5.87	71.30	380.00	Inorganics	58.0	25.3	153.8	7.40	15.8	10.9	0.044	0.53	0.07	1.84	0.644	2.44	243	125.0	0.542	0.777	88			
Cow Creek	OK311200-00-0060L	10/18/2010	46748	9.53	102.30	18.10	Organics	240.0	18.7	976.0	8.56	113.1	94.3	0.016	8.3	0.02	1.15	8.336	9.47	717	240.0	1.967	2.02	10			
Cow Creek	OK311200-00-0060L	11/29/2010	46811			9.96	Organics	264.0	11.1	1053.0	8.70	115.2	95.2	0.024	10.25	0.02	0.8	10.294	11.07	620	390.0	2.017	2.06	10	2.05		
Cow Creek	OK311200-00-0060L	1/10/2011	46876	13.49	98.90	10.30	Organics	248.0	2.5	1046.0	8.65	104	90.8	0.054	12.27	0.32	1.81	12.644	14.40	622	200.0	2.011	2.02	10	1.64		
Cow Creek	OK311200-00-0060L	1/27/2011	47060				Organics																				
Cow Creek	OK311200-00-0060L	2/14/2011	47022	13.75	119.50	163.00	Organics	230.0	9.3	1012.0	8.81	106.6	86.3	0.015	8.53	<	0.02	2.15	8.565	10.70	571	365.0	1.248	1.381	23	3.56	
Cow Creek	OK311200-00-0060L	3/21/2011	46962	9.57	103.00	17.00	Organics	281.0	18.9	1016.0	8.80	115.4	97.8	0.147	5.75	0.68	1.32	6.577	7.75	671	365.0	1.185	1.275	10	3.59		
Cow Creek	OK311200-00-0060L	4/25/2011	47126	7.02	72.60	34.80	Inorganics	211.0	17.0	1026.0	7.99	108.5	149.1	0.494	9.64	0.83	2	10.964	12.47	637	325.0	3.242	3.233	<	10	7.59	
Deep Red Creek	OK311310-03-0010D	5/26/2009	43585	6.68	80.40	121.00	Inorganics	227.0	24.8	1870.0	8.09	481.6	178.8	0.015	0.34	<	0.02	1.26	0.375	1.62	1162	405.0	0.123	0.18	10	72	
Deep Red Creek	OK311310-03-0010D	6/29/2009	43909	4.52	58.00	88.90	Inorganics	286.0	26.5	2763.0	7.99	704	238.3	<	0.015	<	0.02	0.81	0.055	0.85	1657	810.0	0.043	0.092	47		
Deep Red Creek	OK311310-03-0010D	8/3/2009	44309	5.70	72.60	189.00	Inorganics	137.0	28.0	1776.0	7.97	481.3	129.9	0.13	0.59	<	0.02	0.11	0.740	0.72	1074	313.0	0.176	0.274	109		
Deep Red Creek	OK311310-03-0010D	9/15/2009	44596	6.50	73.60	1000.00	Inorganics	116.0	21.5	530.0	7.76	86.7	37.5	0.04	1.14	0.13	1.27	1.310	2.54	350	350.0	0.435	0.467	850			
Deep Red Creek	OK311310-03-0010D	10/12/2009	44720	8.85	84.80	746.00	Inorganics	72.0	13.2	234.8	7.85	41.6	25.6	0.037	0.82	<	0.02	1.47	0.877	2.31	589	89.0	0.492	0.656	167		
Deep Red Creek	OK311310-03-0010D	11/16/2009	45172	6.64	64.00	41.50	Inorganics	210.0	13.5	1366.0	7.98	270.4	98.8	0.016	<	0.02	0.58	0.056	0.62	786	287.0	0.064		13	5.82		
Deep Red Creek	OK311310-03-0010D	12/21/2009	45308	11.35	87.80	6.60	Organics	327.0	4.5	3129.0	8.19	729.9	35.8	0.015	<	0.02	0.5	0.055	0.54		825.0	0.013	0.017	<	10	1.95	
Deep Red Creek	OK311310-03-0010D	2/8/2010	46053	12.15	95.50	1000.00	Inorganics	247.0	5.1	1162.0	8.16	198.2	98.6	0.144	0.64	<	0.02	1.05	0.804	1.71	739	391.0	0.211	0.273	136		
Deep Red Creek	OK311310-03-0010D	3/8/2010	46141	10.38	95.10	127.00	Inorganics	309.0	11.7	3253.0	8.34	795.4	331.3	0.018	0.37	<	0.02	0.84	0.408	1.23	1983	670.0	0.047	0.119	96		
Deep Red Creek	OK311310-03-0010D	4/12/2010	46194	7.02	76.90	21.50	Organics	330.0	19.8	4016.0	8.07	964.2	406	0.022	<	0.02	0.44	0.062	0.48	2431	970.0	0.012	0.044	15	7.91		
Deep Red Creek	OK311310-03-0010D	5/24/2010	46282	6.00	71.30	77.00	Inorganics	208.0	24.2	2090.0	8.00	562.1	215.1	0.034	0.23	<	0.02	0.31	0.284	0.56	1260	415.0	0.144	0.259	53	16.47	
Deep Red Creek	OK311310-03-0010D	6/28/2010	46304	4.35	54.20	118.00	Inorganics	155.0		1077.0	7.73	161.1	71.2	0.046	0.05	<	0.02	1.25	0.116	1.32	647	224.0	0.226	0.302	58	6.57	
Deep Red Creek	OK311310-03-0010D	8/2/2010	46543	5.71	73.60	60.80	Inorganics	260.0	28.5	2738.0	8.22	641.6	221.1	0.015	0.02	0.02	1.12	0.055	1.16	1544	496.0	0.046	0.113	48	12.48		
Deep Red Creek	OK311310-03-0010D	9/13/2010	46631	5.67	69.70	234.00	Inorganics	96.0	25.9	612.0	7.65	94.5	43.9	0.055	1.75	0.02	1.78	1.825	3.55	445	128.0	0.272	0.364	77			
Deep Red Creek	OK311310-03-0010D	9/23/2010	46690	4.62	55.90	153.00	Inorganics	150.0	24.7	703.0	7.64															3.64	
Deep Red Creek	OK311310-03-0010D	10/18/2010	46735	4.73	48.80	44.10	Inorganics	221.0	16.9	1068.0	7.74	181.9	66.2	0.015	0.02	0.02	1.13	0.055	1.17	600	212.0	0.099	0.163	10	1.16		
Deep Red Creek	OK311310-03-0010D	11/29/2010	46798	6.95	59.80	29.50	Organics	195.0	8.7	1089.0	7.71	189.8	77.3	0.015	0.02	0.02	1.01	0.055	1.05	599	230.0	0.183	0.226	10	3.94		
Deep Red Creek	OK311310-03-0010D	1/10/2011	46861	11.64	88.70	8.18	Organics	363.0	4.0	3886.0	8.20	913.3	262.9	0.015	0.02	0.02	0.55	0.055	0.59	2314	1040.0	0.035	0.053	10	4.00		
Deep Red Creek	OK311310-03-0010D	2/14/2011	47029	13.08	100.80	12.00	Inorganics	351.0	4.4	4184.0	8.20	1026.7	356.3	0.015	0.05	<	0.02	0.55	0.085	0.62	2514	843.0	0.014	0.039	<	10	6.41
Deep Red Creek	OK311310-03-0010D	3/21/2011	46949	6.77	72.80	19.00	Organics	310.0	18.8	4325.0	8.08	1097.9	481	0.015	0.02	0.02	1.26	0.055	1.30	2689	980.0	0.035	0.094	10	3.64		
Deep Red Creek	OK311310-03-0010D	4/25/2011	47113	4.09	42.40	343.00	Inorganics	162.0	17.0	1387.0	7.51	319.5	97.7	0.028	0.19	<	0.02	1.79	0.238	2.00	923	284.0	0.551	0.731	104		
Delaware Creek	OK310830-01-0030G	5/19/2009	43556	7.83	92.30	21.60	Organics	214.0	23.4	1548.0	7.93	165.8	875.9	0.13	0.3	<	0.02	1.12	0.450	1.44	1638	1330.0	0.044	0.126	24	9.76	
Delaware Creek	OK310830-01-0030G	6/22/2009	43830	12.01	153.80	10.40	Organics	232.0	27.9	2351.0	8.02	233.3	1061.4	0.064	0.22	<	0.02	1.06	0.304	1.30	1817	1125.0	0.087	0.119	<	10	0.85
Delaware Creek	OK310830-01-0030G	6/25/2009	43874	4.18	51.30		Organics			2262.0	7.52																
Delaware Creek	OK310830-01-0030G	7/24/2009	44119	4.95	58.20	10.10	Inorganics	120.0	23.4	2311.0	7.62															0.88	
Delaware Creek	OK310830-01-0030G	8/3/2009	44275	6.42	75.40	16.20	Inorganics	193.0	28.2	2390.0	7.90	265.5	985.1	0.06	0.16	<	0.02	0.96	0.240	1.14	1875	1125.0	0.065	0.143	17	0.91	
Delaware Creek	OK310830-01-0030G	9/1/2009	44501	12.78	156.00	14.00	Organics	174.0	25.5	2304.0	8.13	265.9	982.3	0.031	<	0.02	0.92	0.071	0.96	1734	1080.0	0.047	0.109	<	10	0.87	
Delaware Creek	OK310830-01-0030G	10/13/2009	44701	9.13	92.40	26.80	Inorganics	224.0	16.0	2101.0	8.10	243.4	1000.3	0.076	0.44	<	0.02	0.96	0.516	1.40	1550	1090.0	0.04	0.174	17	4.55	
Delaware Creek	OK310830-01-0030G	10/17/2009	45108	13.88	122.60	7.26	Inorganics	241.0	9.8	2225.0	8.19	233.4	860.4	0.044	0.18	<	0.02	0.16	0.244	0.36	1677	1180.0	0.028	0.064	<	10	4.28
Delaware Creek	OK310830-01-0030G	12/18/2009	45257	13.62	103.80	33.90	Inorganics	242.0	4.0	2300.0	8.19	277.5	953.1	0.111	0.37	<	0.02	1.02	0.501	1.41	1668	1170.0	0.047	0.116	38		
Delaware Creek	OK310830-01-0030G	3/9/2010	46125	9.79	95.90	58.00	Inorganics	248.0	14.4	1816.0	8.05	148.7	612	0.09	0.28	<	0.02	1.23	0.390	1.53	1315	920.0	0.112	0.174	89	25.47	
Delaware Creek	OK310830-01-0030G	4/13/2010	46188	12.04	138.30																						

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)		
East Barnitz Creek	OK310830-03-0210C	1/5/2011	46849	14.77	111.90	4.13	Inorganics	150.0	3.7	2898.0	7.97	28.9	1679.9	0.015	0.18	0.02	1.15	0.215	1.35	2880	2030.0	0.017	0.036	10	5.61		
East Barnitz Creek	OK310830-03-0210C	2/7/2011	46976	15.18	104.80	11.30	Inorganics	198.0	0.3		8.10	30.4	1667.9	0.05	0.21	<	0.93	0.280	1.16	2618	1860.0	0.032	0.038	15			
East Barnitz Creek	OK310830-03-0210C	3/7/2011	47044	13.74	123.00	7.18	Inorganics	177.0	10.5	2884.0	8.27	30.5	1779.9	0.015	<	0.02	<	0.68	0.055	0.72	2847	2000.0	0.007	0.035	11		
East Barnitz Creek	OK310830-03-0210C	4/20/2011	47096	8.31	81.20	9.93	Inorganics	101.0	14.4	2986.0	7.65	29.6	1992.7	0.043	<	0.02	<	0.5	0.083	0.54	2967	2210.0	0.025	0.035	<	10	3.94
East Cache Creek: Lower	OK311300-01-0020G	5/26/2009	43596	6.29	74.00	395.00	Inorganics	128.0	23.3	363.3	7.60	18.6	33.9	0.077	0.3	0.08	1.44	0.457	1.82	260	131.0	0.361	0.446	332			
East Cache Creek: Lower	OK311300-01-0020G	6/30/2009	43922	7.09	90.70	66.20	Inorganics	256.0	29.1	843.0	8.02	86.1	103.2	0.033	0.38	<	0.99	0.433	1.39	510	254.0	0.411	0.447	65	25.23		
East Cache Creek: Lower	OK311300-01-0020G	8/3/2009	44298	5.87	74.30	133.00	Inorganics	130.0	27.7	477.0	7.99	33.3	83.7	0.041	1.13	<	0.02	0.74	1.191	1.89	309	160.0	0.059	0.073	101		
East Cache Creek: Lower	OK311300-01-0020G	8/26/2009	43676	7.20	94.70	57.00	Inorganics	287.0	29.7	1121.0	8.20																
East Cache Creek: Lower	OK311300-01-0020G	9/3/2009	44519	8.05	98.80	49.90	Inorganics	189.0	25.7	884.0	8.47	83	<	133.8	0.015	2.64	<	0.17	2.675	2.83	525	230.0	0.365	0.645	61		
East Cache Creek: Lower	OK311300-01-0020G	14 Sep-09	44563				Inorganics																				
East Cache Creek: Lower	OK311300-01-0020G	10/12/2009	44731	8.60	83.00	368.00	Inorganics	89.0	13.8	320.4	7.95	13.9	33.5	0.055	1.42	<	0.99	1.475	2.41	279	160.0	0.357	0.446	222			
East Cache Creek: Lower	OK311300-01-0020G	11/16/2009	45131	7.88	75.00	21.50	Inorganics	216.0	13.6	878.0	8.07	81.5	119.4	0.016	2.36	<	0.67	2.396	3.05	523	260.0	1.123	1.071	<	10		
East Cache Creek: Lower	OK311300-01-0020G	1/4/2010	45340	13.65	98.80		Inorganics	131.0	2.0	591.0	8.10	61.4	55.9	0.086	1.88	0.13	0.98	2.096	2.99	367	262.0	0.359	0.585	16			
East Cache Creek: Lower	OK311300-01-0020G	2/8/2010	46064	11.32	9.01	154.00	Inorganics	130.0	5.6	426.8	8.09	26.2	61.3	0.258	0.78	0.06	0.51	1.098	1.35	303	288.0	0.302	0.297	127			
East Cache Creek: Lower	OK311300-01-0020G	4/12/2010	46205	8.51	92.50	18.80	Inorganics	232.0	19.1	909.0	8.33	76.8	112.7	0.028	1.73	0.06	0.27	1.818	2.06	521	275.0	0.657	0.659	21			
East Cache Creek: Lower	OK311300-01-0020G	5/24/2010	46293	8.00	96.70	58.20	Inorganics	206.0	24.6	770.0	8.10	60.6	101.8	0.015	0.5	<	0.12	0.535	0.64	457	210.0	0.358	0.45	56			
East Cache Creek: Lower	OK311300-01-0020G	6/28/2010	46315	6.11	76.60	179.00	Inorganics	195.0	27.0	821.0	8.14	69.3	102.2	0.02	2.46	<	1.08	2.500	3.56	479	240.0	0.757	0.798	91			
East Cache Creek: Lower	OK311300-01-0020G	8/2/2010	46554	6.57	85.70	68.40	Inorganics	218.0	29.3	772.0	8.00	75.8	100	0.038	2.64	0.02	0.92	2.698	3.58	472	20.0	0.356	0.38	49			
East Cache Creek: Lower	OK311300-01-0020G	9/13/2010	46642	6.02	73.90	242.00	Inorganics	103.0	25.8	326.2	7.64	19.5	25.4	0.039	1.12	0.02	1	1.179	2.14	242	185.0	0.372	0.418	61			
East Cache Creek: Lower	OK311300-01-0020G	10/18/2010	46746	7.74	81.90	25.50	Inorganics	248.0	18.0	788.0	8.21	59.6	86.4	0.015	0.02	0.02	1.02	0.055	1.06	413	175.0	0.1	0.145	14			
East Cache Creek: Lower	OK311300-01-0020G	11/29/2010	46809	9.69	85.70	6.82	Organics	211.0	8.8	904.0	8.10	79.8	112.6	0.015	3.35	0.02	1.34	3.385	4.71	533	250.0	0.873	0.892	10			
East Cache Creek: Lower	OK311300-01-0020G	1/10/2011	46872	11.98	89.40	6.09	Organics	221.0	3.1	850.0	8.32	78.1	97.1	0.015	2.85	0.02	1.09	2.885	3.96	500	425.0	0.95	0.99	10			
East Cache Creek: Lower	OK311300-01-0020G	2/14/2011	47018	12.06	94.90	14.30	Organics	126.0	5.3	979.0	8.39	126.8	94.4	0.015	1.88	<	0.97	1.915	2.87	520	205.0	0.357	0.392	<	10		
East Cache Creek: Lower	OK311300-01-0020G	3/21/2011	46960	11.49	123.10	56.00	Organics	249.0	18.7	1037.0	9.07	103	117	0.04	2.46	0.28	3.63	2.780	6.37	658	335.0	1.1	1.426	42			
East Cache Creek: Lower	OK311300-01-0020G	4/25/2011	47124	3.79	39.20	602.00	Organics	123.0	16.3	251.8	7.44	19.3	18	0.131	0.51	<	2.16	0.661	2.69	238	330.0	0.647	0.831	200			
East Cache Creek: Upper	OK311300-02-0010M	5/26/2009	43582	7.01	80.70	104.00	Inorganics	171.0	22.3	465.0	8.04	16.8	86.3	0.015	0.27	0.07	0.49	0.355	0.83	304	187.0	0.094	0.129	96			
East Cache Creek: Upper	OK311300-02-0010M	6/11/2009	43796	4.65	51.80	19.20	Inorganics	187.0	22.3	605.0	7.44														7.21		
East Cache Creek: Upper	OK311300-02-0010M	6/29/2009	43906	4.51	55.70	19.00	Organics	275.0	26.1	730.0	8.03	40.3	283.7	0.038	0.19	<	0.41	0.248	0.62	453	325.0	0.026	0.031	15			
East Cache Creek: Upper	OK311300-02-0010M	8/3/2009	44306	4.38	54.90	30.90	Organics	178.0	26.4	597.0	7.24	33.2	97.3	0.106	0.09	<	0.85	0.216	0.96	396	235.0	0.032	0.1	22			
East Cache Creek: Upper	OK311300-02-0010M	9/15/2009	44593	4.40	49.50	8.25	Organics	241.0	21.2	706.0	7.22	17.5	<	165.6	0.077	0.36	0.06	0.23	0.507	0.65	436	175.0	0.015	0.023	<	10	3.92
East Cache Creek: Upper	OK311300-02-0010M	10/12/2009	44717	6.92	65.50	102.00	Inorganics	179.0	12.9	405.7	7.16	11	59.4	0.066	0.54	<	0.62	0.626	1.18	305	186.0	0.205	0.27	21	3.44		
East Cache Creek: Upper	OK311300-02-0010M	11/16/2009	45169	7.12	66.40	7.98	Organics	243.0	12.1	834.0	7.31	22.1	207	0.015	0.14	<	0.79	0.175	0.95	533	350.0	<	0.005	<	10	1.67	
East Cache Creek: Upper	OK311300-02-0010M	12/21/2009	45305	10.57	81.50	8.42	Organics	286.0	4.5	873.0	7.68	27.6	442	0.015	<	0.02	0.24	0.035	0.26	532	366.0	0.006	0.023	<	10		
East Cache Creek: Upper	OK311300-02-0010M	2/8/2010	46050	12.70	96.40	51.90	Inorganics	129.0	3.8	495.0	8.25	18	94.3	0.109	0.17	<	0.51	0.299	0.70	295	211.0	0.051	0.079	73			
East Cache Creek: Upper	OK311300-02-0010M	3/8/2010	46139	10.56	90.10	18.20	Inorganics	170.0	8.5	530.0	8.31	20.2	84.2	0.024	0.13	<	0.4	0.174	0.55	322	215.0	0.018	0.047	13	64.90		
East Cache Creek: Upper	OK311300-02-0010M	4/12/2010	46191	5.23	57.00	6.62	Organics	265.0	19.4	835.0	7.53	42.4	162.1	0.052	0.25	<	0.21	0.322	0.48	536	350.0	0.01	0.022	10	4.55		
East Cache Creek: Upper	OK311300-02-0010M	4/24/2010	46279	4.64	55.40	17.20	Organics	244.0	24.3	894.0	7.53	43.4	194.4	0.083	0.25	<	0.11	0.353	0.38	581	318.0	0.017	0.05	17	3.40		
East Cache Creek: Upper	OK311300-02-0010M	6/28/2010	46301	4.40	55.60	12.30	Inorganics	223.0	26.9	741.0	7.20	37	123.2	0.037	0.06	<	0.61	0.117	0.69	464	248.0	0.019	0.044	<	10	0.60	
East Cache Creek: Upper	OK311300-02-0010M	8/2/2010	46541	4.75	61.60	4.36	Organics	19.3	28.9	744.0	7.67	31.5	133.3	0.097	0.3	0.02	0.49	0.417	0.81	421	283.0	0.017	0.033	10	1.67		
East Cache Creek: Upper	OK311300-02-0010M	9/13/2010	46628	4.43	54.20	8.74	Organics	148.0	25.5	549.0	7.45	17.3	96.6	0.101	0.31	0.07	0.71	0.481	1.09	349	191.0	0.027	0.04	10	3.00		
East Cache Creek: Upper	OK311300-02-0010M	10/18/2010	46733	7.41	77.90	11.20	Organics	152.0	17.8	964.0	7.88	20.1	289	0.015	4.42	0.13	0.27	4.565	4.82	638	185.0	0.005	0.019	10	9.08		
East Cache Creek: Upper	OK311300-02-0010M	11/29/2010	46795	10.58	90.70	7.44	Organics	255.0	8.6	906.0	7.64	27	184.8	0.015	1.05	0.02	0.59	1.085	1.66	573	346.0	0.005	0.018	10	2.33		
East Cache Creek: Upper	OK311300-02-0010M	1/10/2011	46858	11.33	86.10	7.64	Organics	285.0	3.9	943.0	7.83	33.4	150.5	0.015	1.02	0.02	0.41	1.055	1.45	620	435.0	0.005	0.018	10	5.41		
East Cache Creek: Upper	OK311300-02-0010M	2/14/2011	47026	14.09	110.00	9.29	Organics	322.0	4.8	870.0	7.73	86.1	145.7	0.015	0.53	<	0.39	0.565	0.94	560	350.0	0.006	0.018	<	10	3.33	
East Cache Creek: Upper	OK311300-02-0010M	3/21/2011	46946	7.22	77.10	10.60	Organics	230.0	18.5	870.0	7.63	39.5	138	0.034	0.05	0.02	0.63	0.104	0.70	532	316.0	0.01	0.041	10	2.21		
East Cache Creek: Upper	OK311300-02-0010M	4/25/2011	47110	2.21	22.40	7.00	Organics	306.0	16.0	871.0	7.39	45	110.3	0.105	0.05	<	0.64	0.175	0.71	554	312.0	0.023	0.055	<	10	1.20	
Elk Creek	OK311500-03-0010G	5/27/2009	43592	9.39	106.80	46.70	Inorganics	254.0	21.7	1820.0	8.34	205.5	635	0.015	<	0.02	<	1.25	0.055	1.29	1329						

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthophos (mg/L)	TotPhosphorus (mg/L)	TotSulphides (mg/L)	Flow (cfs)		
Finn Creek	OK310810-02-0020D	11/3/2009	45077	8.88	83.40	36.80	Inorganics	266.0	12.5	564.0	7.90	22.4	20.8	0.015	0.38	<	0.59	0.395	0.97	328	330.0	0.131	0.163	<	10	4.74	
Finn Creek	OK310810-02-0020D	12/15/2009	45216	12.75	94.40	3.26	Organics	456.0	2.9	1016.0	8.16	41.9	37.3	0.022	0.33	<	0.26	0.372	0.61	545	480.0	0.022	0.033	<	10	0.94	
Finn Creek	OK310810-02-0020D	1/26/2010	45391	10.75	83.00	5.62	Organics	365.0	4.5	895.0	7.98	33.5	33.6	0.035	0.29	<	0.2	0.345	0.51	460	478.0	0.036	0.039	<	10	2.27	
Finn Creek	OK310810-02-0020D	3/2/2010	46094	11.64	91.50	34.50	Inorganics	382.0	5.1	746.0	8.26	24.6	33.6	0.044	0.34	<	0.47	0.404	0.83	422	360.0	0.068	0.091	<	17	12.52	
Finn Creek	OK310810-02-0020D	4/6/2010	46157	7.20	76.50	26.90	Organics	429.0	18.4	843.0	7.96	30.1	36.7	0.064	0.24	<	0.42	0.324	0.68	465	465.0	0.063	0.078	39	2.23		
Finn Creek	OK310810-02-0020D	5/18/2010	46246	7.81	84.70	144.00	Inorganics	178.0	19.2	431.1	7.84	16.1	24.8	0.099	0.2	0.04	0.4	0.339	0.64	281	200.0	0.143	0.242		186		
Finn Creek	OK310810-02-0020D	6/22/2010	46436	6.38	78.20	40.20	Inorganics	278.0	25.6	625.0	7.94	20.5	25.9	0.097	0.42	0.14	0.93	0.657	1.49	376	297.0	0.12	0.144	24	15.91		
Finn Creek	OK310810-02-0020D	7/27/2010	46521	5.84	71.40	39.60	Inorganics	402.0	25.4	7.8	7.96	32.2	32.1	0.034	0.47	<	0.78	0.524	1.27	452	267.0	0.097	0.15	17	10.20		
Finn Creek	OK310810-02-0020D	9/7/2010	46592	7.29	87.50	24.00	Inorganics	416.0	2.6	925.0	8.16	42.4	40.8	0.056	0.22	0.02	0.71	0.296	0.95	526	440.0	0.07	0.104	17	1.21		
Finn Creek	OK310810-02-0020D	10/11/2010	46691	6.28	66.00	26.60	Inorganics	414.0	17.6	890.0	8.04	35.9	37.9	0.015	0.38	0.02	0.7	0.415	1.10	499	442.0	0.042	0.088	10	11.64		
Finn Creek	OK310810-02-0020D	11/9/2010	46754		70.40	6.07	Organics	491.0	12.4	983.0	8.08	38.5	37.6	0.015	0.33	0.02	0.51	0.365	0.86	550	529.0	0.054	0.058	10	1.29		
Finn Creek	OK310810-02-0020D	1/4/2011	46829	13.43	103.20	4.24	Organics	448.0	4.3	958.0	8.18	38.8	36.9	0.025	0.52	0.02	0.36	0.565	0.90	538	550.0	0.034	0.046	10	2.05		
Finn Creek	OK310810-02-0020D	2/8/2011	46997	13.79	95.20	15.40	Inorganics	422.0	0.4	7.99	7.99	32.6	34.1	0.021	0.52	<	0.81	0.561	1.35	481	400.0	0.291	0.323	<	10	4.41	
Finn Creek	OK310810-02-0020D	3/15/2011	47053	8.70	73.00	7.60	Organics	453.0	7.7	944.0	8.15	42.4	35	0.015	0.19	<	0.38	0.225	0.59	531	456.0	0.05	0.076	<	10		
Finn Creek	OK310810-02-0020D	4/19/2011	47076	2.32	27.00	10.60	Organics	447.0	21.8	914.0	7.79	51.8	36	0.02	0.05	<	0.53	0.090	0.60	496	437.0	0.079	0.105	<	10	2.13	
Fish Creek	OK311800-00-0130G	5/19/2009	43547	7.86	86.80	101.00	Inorganics	191.0	19.2	8320.0	7.60	1860	2483.7	0.015	<	0.02	0.77	0.055	0.81	6040		0.025	0.109	86	1.07		
Fish Creek	OK311800-00-0130G	6/19/2009	43662	14.78	194.80	17.30	Inorganics	150.0	29.9	1265.0	8.12										2752.0					0.17	
Fish Creek	OK311800-00-0130G	6/23/2009	43857	13.40	179.90	10.30	Organics	128.0	13.1	8.04	2862.7	<	2504.2	0.015	0.13	<	0.51	0.165	0.66	7913	2900.0	0.007	0.027	<	10	0.35	
Fish Creek	OK311800-00-0130G	7/28/2009	44151	13.50	180.40	13.60	Organics	111.0	30.8	20460.0	7.97	10356.1	3885.3	0.015	<	0.02	1.39	0.055	1.43	13016		<	0.005	0.113	33	0.05	
Fish Creek	OK311800-00-0130G	9/1/2009	44462	7.46	81.80	9.75	Organics	78.0	20.0	24980.0	8.10	1044	2607.5	0.027	1.51	<	0.11	1.557	1.64	16336	3060.0	0.009	0.027	16			
Fish Creek	OK311800-00-0130G	10/6/2009	44683	9.19	89.40	11.90	Organics	198.0	14.2	20300.0	7.75	6538	3056	0.015	<	0.02	0.55	0.035	0.57	13455	3455.0	<	0.005	<	0.013	26	
Fish Creek	OK311800-00-0130G	11/3/2009	45090	8.92	83.20	31.40	Inorganics	263.0	12.3	18770.0	7.73	6970.8	3189.4	0.015	<	0.02	<	0.11	0.035	0.13	11705	2720.0	0.016	0.028	32		
Fish Creek	OK311800-00-0130G	12/15/2009	45229	14.52	106.30	17.80	Inorganics	273.0	2.6	18720.0	8.06	5235.2	2720.8	0.111	<	0.02	<	0.35	0.151	0.39	11996		0.009		13		
Fish Creek	OK311800-00-0130G	1/26/2010	45404	15.06	111.10	11.20	Organics	250.0	2.7	17600.0	8.03	6045.1	3067.6	0.145	<	0.02	<	0.11	0.185	0.15	11359	3300.0	<	0.005	0.011	12	
Fish Creek	OK311800-00-0130G	3/2/2010	46107	13.49	105.10	10.20	Organics	2.1	4.8	14730.0	6.99	9831.8	2842.7	0.116	<	0.02	1.62	0.136	1.64	15278		<	0.005	0.261	22		
Fish Creek	OK311800-00-0130G	4/6/2010	46170	10.10	117.80	9.74	Inorganics	174.0	23.7	21460.0	7.80	8745	3706.3	0.031	<	0.02	<	0.11	0.071	0.15	15303	3880.0	0.012	<	0.005	11	
Fish Creek	OK311800-00-0130G	5/18/2010	46258	9.00	98.90	21.00	Inorganics	180.0	19.8	4122.0	8.10	480.5	2092.9	0.02	<	0.02	0.44	0.060	0.48	3453	2090.0	0.075	0.108	128	2.87		
Fish Creek	OK311800-00-0130G	6/22/2010	46450	3.38	39.20	12.50	Inorganics	131.0	22.8	28140.0	7.35	11159.9	3579.7	0.521	<	0.02	0.72	0.561	0.76	19322	5015.0	0.036	0.036	38	0.04		
Fish Creek	OK311800-00-0130G	7/27/2010	46534			57.70	Inorganics	181.0		5520.0	7.90	1638.6	2689.9	0.015	0.02	0.02	0.55	0.055	0.59	4262	2255.0	0.024	0.049	43	3.60		
Fish Creek	OK311800-00-0130G	9/8/2010	46607	6.03	69.50	71.00	Inorganics	199.0	22.6	6690.0	7.70	1507.3	1995.1	0.015	0.02	0.02	0.93	0.055	0.97	5194	2580.0	0.035	0.052	38			
Fish Creek	OK311800-00-0130G	10/12/2010	46711	9.30	92.40	36.30	Inorganics	185.0	15.1	7.84	2293.6	2235	0.015	0.02	0.02	1.03	0.055	1.07	6490	2690.0	0.015	0.033	23				
Fish Creek	OK311800-00-0130G	11/16/2010	46774	11.48	92.70	69.50	Inorganics	195.0	6.2	5390.0	8.22	1022.6	1902.9	0.015	0.02	0.02	1.19	0.055	1.23	4157	2355.0	0.015	0.015	14	2.07		
Fish Creek	OK311800-00-0130G	1/4/2011	46837	12.91	90.50	19.10	Inorganics	214.0	0.1	1.82	882	1413.7	0.015	0.2	0.02	1.58	0.235	1.80	5115	2935.0	0.011	0.014	17	0.80			
Fish Creek	OK311800-00-0130G	26-Jan-11	46927				Inorganics																				
Fish Creek	OK311800-00-0130G	2/8/2011	47010			11.20	Inorganics	182.0		8.09	1024.8	1873.3	0.015	0.09	<	0.02	1.41	0.125	1.52	4290	2305.0	<	0.005	0.017	20		
Fish Creek	OK311800-00-0130G	3/15/2011	46940	9.26	78.80	26.10	Inorganics	173.0	7.0	7970.0	8.05	1888	2462.4	0.015	0.02	0.02	0.83	0.055	0.87	6087	3185.0	0.007	0.021	10	0.36		
Fish Creek	OK311800-00-0130G	4/19/2011	47089	9.59	95.40	78.90	Inorganics	15.2	12770.0	7.98	3511.2	2802	0.015	<	0.02	0.78	0.055	0.82	9177		0.025	0.058	47				
Fivemile Creek	OK310830-06-0080D	5/26/2009	43572	7.29	76.60	651.00	Inorganics	229.0	18.2	289.3	7.67	9.7	29	0.503	0.41	0.21	3.8	1.123	4.42	308	251.0	0.674	1.068	1129	58.75		
Fivemile Creek	OK310830-06-0080D	6/29/2009	43894	7.99	89.80	8.67	Inorganics	240.0	21.4	603.0	8.20	13.6	69.5	0.039	0.88	0.15	0.3	1.069	1.33	370	198.0	0.108	0.182	<	10	1.80	
Fivemile Creek	OK310830-06-0080D	7/27/2009	44279	6.51	75.80	10.10	Inorganics	179.0	23.0	616.0	7.86	12.9	<	0.619	0.88	0.23	0.63	1.297	1.74	352	420.0	0.124	0.125	<	10	1.85	
Fivemile Creek	OK310830-06-0080D	7/28/2009	44157	7.05	81.40	10.90	Inorganics	143.0	22.4	573.0	8.03															2.85	
Fivemile Creek	OK310830-06-0080D	9/9/2009	44527	7.35	83.70	4.18	Inorganics	240.0	21.8	565.0	8.13	11.9	<	40.4	0.061	0.84	0.13	0.18	1.031	1.15	347	221.0	0.057	0.119	<	10	4.27
Fivemile Creek	OK310830-06-0080D	10/6/2009	44689	8.55	86.70	5.66	Inorganics	225.0	16.0	586.0	8.16	19.1	152.9	0.016	1.2	<	0.25	1.236	1.47	366	261.0	0.072	0.065	<	10	5.28	
Fivemile Creek	OK310830-06-0080D	11/3/2009	45096	9.70	88.60	13.20	Inorganics	280.0	11.3	609.0	8.17	11.9	72.1	0.025	0.88		0.37	0.905	1.25	371	280.0	0.124	0.113	<	10	6.95	
Fivemile Creek	OK310830-06-0080D	12/14/2009	45251	13.09	109.20	4.44	Inorganics	161.0	7.5	880.0	8.47	18.6	453.1	0.021	1.57	0.06	0.37	1.651	2.00	642	468.0	0.017	0.036	<	10		
Fivemile Creek	OK310830-06-0080D	1/26/2010	45430	13.08	110.20	5.15	Inorganics	271.0	7.9	602.0	8.38	11	72.4	0.09	0.85	<	0.02	0.24	0.960	1.11	362	284.0	0.032	0.063	<	10	6.25
Fivemile Creek	OK310830-06-0080D	3/2/2010	46120	12.20	106.30	5.46	Inorganics	258.0	9.3	622.0	8.38	13.2	45.1	0.042	0.72												

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)
Fleetwood Creek	OK311100-01-0300D	11/30/2010	46812	8.00	63.90	4.32	Organics	428.0	5.8	948.0	7.93	38.1	44	0.032	2.21	0.02	0.6	2.262	2.83	555	340.0	0.022	0.026	10	0.14
Fleetwood Creek	OK311100-01-0300D	1/10/2011	46874	12.83	97.90	8.25	Organics	419.0	4.0	919.0	8.01	38.8	42.4	0.031	2.95	0.16	0.91	3.141	4.02	551	225.0	0.042	0.055	10	
Fleetwood Creek	OK311100-01-0300D	2/14/2011	47020	15.44	142.30	6.23	Organics	481.0	11.7	1080.0	8.31	70.5	56	0.015	1.59	< 0.02	0.6	1.625	2.21	644	810.0	0.035	0.048	< 10	0.50
Fleetwood Creek	OK311100-01-0300D	3/22/2011	46963	4.46	46.10	42.90	Organics	450.0	16.9	1092.0	7.71	70.5	45.5	0.334	0.77	0.26	1.84	1.364	2.87	660	320.0	0.103	0.138	14	
Fleetwood Creek	OK311100-01-0300D	4/26/2011	47127	2.95	30.30	31.40	Organics	457.0	16.6	989.0	7.82	48.1	35.7	1.413	0.13	< 0.02	2.6	1.563	2.75	568	350.0	0.365	0.379	20	0.17
Gypsum Creek	OK311600-01-0020F	5/27/2009	43591	6.55	71.30	13.80	Organics	182.0	19.5	11720.0	8.02	3432.7	1927.1	0.015	0.37	< 0.02	1.25	0.405	1.64	8143	3380.0	0.022	0.052	24	6.59
Gypsum Creek	OK311600-01-0020F	5/29/2009	43680	6.33	69.50	28.70	Organics	119.0	19.9	14100.0	7.63										3420.0				6.14
Gypsum Creek	OK311600-01-0020F	6/29/2009	43913	12.43	150.20	11.00	Inorganics	137.0	25.0	14350.0	8.15	4887.4	2603.4	< 0.015	0.42	< 0.02	0.53	0.455	0.97	10130	3580.0	0.015	0.048	20	
Gypsum Creek	OK311600-01-0020F	8/3/2009	44313	13.15	184.00	9.56	Organics	108.0	33.4	12620.0	8.32	4519.9	2266	0.016	0.14	< 0.02	0.26	0.176	0.42	8961	3100.0	0.017	0.196	17	4.20
Gypsum Creek	OK311600-01-0020F	8/18/2009	44392	5.55	66.00				24.0																
Gypsum Creek	OK311600-01-0020F	9/15/2009	44600	15.85	187.70	8.91	Organics	123.0	23.8	13260.0	8.30	4287.6	1820.4	0.049	0.92	< 0.02	1.23	0.989	2.17	9231	3450.0	0.01	0.039	32	4.66
Gypsum Creek	OK311600-01-0020F	10/12/2009	44724	13.45	132.20	8.20	Inorganics	128.0	14.7	15030.0	8.13	5686.3	2808.1	0.015	2.19	< 0.02	3.37	2.225	2.58	10223	3800.0	< 0.005	< 0.005	< 10	2.48
Gypsum Creek	OK311600-01-0020F	11/16/2009	45176	13.29	121.20	7.74	Organics	136.0	11.2	15410.0	8.18	7011.8	3438.8	0.015	1.95	< 0.02	0.24	1.985	2.21	10513	3240.0	< 0.005		13	3.83
Gypsum Creek	OK311600-01-0020F	12/31/2009	45312	15.91	126.40	5.38	Organics	171.0	5.7	15340.0	8.06	4740.1	2365.9	0.121	2.56	< 0.02	0.11	2.701	2.69	4100.0	< 0.005	< 0.005	< 10	5.66	
Gypsum Creek	OK311600-01-0020F	2/8/2010	46057	14.35	111.90	11.40	Inorganics	160.0	4.8	8940.0	7.85	3685.4	1865.5	0.284	2.5	< 0.02	0.77	2.804	3.29	7615	2726.0	0.059	0.073	12	8.58
Gypsum Creek	OK311600-01-0020F	3/8/2010	46145	14.23	137.30	6.71	Inorganics	158.0	13.7	14800.0	8.17	7420.4	3597.8	0.035	< 0.02	0.02	0.61	0.075	0.65	10305	3140.0	0.035	0.074	16	2.83
Gypsum Creek	OK311600-01-0020F	4/12/2010	46198	11.29	128.10	12.10	Organics	136.0	21.5	15650.0	7.86	1308.2	677.9	0.214	0.29	< 0.02	0.11	0.524	0.42	11149	4310.0	0.008	< 0.005	18	3.31
Gypsum Creek	OK311600-01-0020F	5/24/2010	46286	13.53	174.10	36.80	Inorganics	127.0	28.7	14980.0	8.18	7386.3	3994.6	0.021	0.51	< 0.02	0.11	0.551	0.64	10309	3950.0	0.034	0.04	53	10.46
Gypsum Creek	OK311600-01-0020F	6/28/2010	46308	15.29	190.90	11.90	Inorganics	56.0	26.8	15030.0	8.79	6158.3	2779.8	0.039	< 0.02	< 0.02	1.45	0.079	1.49	9985	4310.0	< 0.005	0.068	36	3.81
Gypsum Creek	OK311600-01-0020F	8/2/2010	46547	11.82	164.70	26.30	Organics	120.0	33.0	16160.0	8.07	4490.2	2307.4	0.059	0.49	0.02	0.7	0.569	1.21	9585	4570.0	0.041	0.06	52	5.05
Gypsum Creek	OK311600-01-0020F	9/13/2010	46635	14.03	183.20	9.68	Inorganics	124.0	29.1	13690.0	8.09	3965.4	2073.7	0.081	1.87	0.02	0.68	1.971	2.57	8758	3420.0	0.009	0.036	18	5.00
Gypsum Creek	OK311600-01-0020F	10/18/2010	46739	15.40	168.70	5.68	Organics	106.0	19.8	14260.0	8.25	4048.7	2082.3	0.02	1.79	0.02	0.99	1.830	2.80	9740	4070.0	0.005	0.016	10	2.87
Gypsum Creek	OK311600-01-0020F	11/29/2010	46802	13.61	119.30	3.29	Organics	170.0	9.5	14350.0	8.08	4245.5	2157.1	0.098	0.16	0.02	0.82	0.278	1.00	9987	3910.0	0.005	0.005	35	5.01
Gypsum Creek	OK311600-01-0020F	1/10/2011	46865	14.62	109.60	3.70	Organics	175.0	3.4	14500.0	8.08	4201.5	2069	0.015	2.56	0.02	1.51	2.595	4.09	9921	4820.0	0.005	0.008	16	
Gypsum Creek	OK311600-01-0020F	2/14/2011	47033	15.00	131.50	5.33	Organics	165.0	9.5	14210.0	8.08	4257.6	2184.5	0.015	2.44	< 0.02	0.97	2.475	3.43	11022	4600.0	0.012	0.024	< 10	5.72
Gypsum Creek	OK311600-01-0020F	3/21/2011	46953	12.04	133.20	15.70	Organics	152.0	20.3	14560.0	7.87	4574.4	2307.1	0.132	0.67	0.02	1.02	0.822	1.71	10017	4100.0	0.019	0.05	10	6.30
Gypsum Creek	OK311600-01-0020F	4/25/2011	47117	15.90	182.20	19.10	Organics	115.0	22.1	15820.0	8.12	5429	2704.7	0.076	1.93	< 0.02	1.34	2.026	3.29	11095	4240.0	0.016	0.039	39	5.15
Haystack Creek	OK311800-00-0040D	5/19/2009	43549	10.89	124.40	94.30	Inorganics	217.0	22.0	6400.0	7.95	1096.7	2374.4	0.015	< 0.02	< 0.02	1.08	0.055	1.12	4822.4		0.017	0.087	84	2.80
Haystack Creek	OK311800-00-0040D	6/23/2009	43859	8.96	117.10	53.10	Inorganics	144.0	29.6		8.00	1208.9	1727.3	0.015	0.05	< 0.02	0.71	0.085	0.78	4162		0.025	0.076	36	0.57
Haystack Creek	OK311800-00-0040D	7/28/2009	44153	6.98	85.30		Inorganics	97.0	25.5	1343.0	7.77	179.4	528.7	0.039	0.41	< 0.02	3.89	0.469	4.32	1287		1.597	1.771	3077	
Haystack Creek	OK311800-00-0040D	8/10/2009	43671	4.84	63.20	68.40	Inorganics	139.0	29.9	2541.0	7.85										1055.0				0.05
Haystack Creek	OK311800-00-0040D	9/1/2009	44464	8.22	94.80	17.60	Inorganics	103.0	22.8	2876.0	7.97	465.7	1300	0.023	0.23	< 0.02	0.32	0.273	0.57	2146	1254.0	0.012	0.05	< 10	
Haystack Creek	OK311800-00-0040D	10/6/2009	44685	8.57	87.60	16.70	Inorganics	160.0	16.3	3280.0	8.05	580.5	1844.5	0.015	0.32	< 0.02	0.46	0.335	0.78	2521	1370.0	< 0.005	< 0.025	< 10	
Haystack Creek	OK311800-00-0040D	11/3/2009	45092	7.15	66.40	159.00	Inorganics	106.0	12.0	1834.0	7.55	203.7	615.8	0.015	0.17	< 0.02	0.66	0.185	0.83	1304	696.0	0.074	0.148	57	0.55
Haystack Creek	OK311800-00-0040D	12/15/2009	45231	10.06	73.50	14.80	Inorganics	219.0	2.2	954.0	8.06	2554.8	3921.9	0.015	0.7	< 0.02	0.11	0.735	0.83	7006		0.013		15	0.46
Haystack Creek	OK311800-00-0040D	1/26/2010	45406	10.74	81.40	46.10	Inorganics	297.0	3.7	8270.0	8.03	2146.2	2603.3	0.015	1.01	< 0.02	0.45	1.045	1.48	5703	2298.0	0.022	0.04	23	0.08
Haystack Creek	OK311800-00-0040D	3/2/2010	46109	11.21	88.20	23.70	Inorganics	155.0	5.1	5790.0	8.08	1459.2	2252.8	0.015	0.13	< 0.02	0.52	1.065	0.67	4069		< 0.005	0.036	13	
Haystack Creek	OK311800-00-0040D	4/6/2010	46172	7.44	85.60	74.80	Inorganics	184.0	22.7	9850.0	7.89	2579.3	3291.6	0.015	< 0.02	< 0.02	0.79	0.055	0.83	7365	3180.0	0.029	0.09	48	0.14
Haystack Creek	OK311800-00-0040D	5/18/2010	46260	8.34	94.70	29.40	Inorganics	142.0	21.6	3617.0	7.93	428.3	1731.5	0.096	0.12	< 0.02	0.45	0.236	0.59	2917	1595.0	0.09	0.072	101	2.41
Haystack Creek	OK311800-00-0040D	6/22/2010	46452	6.09	77.40	24.70	Inorganics	150.0	27.7	6530.0	7.85	1189.1	2206.9	0.03	< 0.02	< 0.02	1.61	0.070	1.65	5156	2520.0	< 0.005	0.062	15	0.04
Haystack Creek	OK311800-00-0040D	7/27/2010	46536		22.10	Inorganics	178.0	26.1	5400.0	7.90	1057.5	2652.3	0.023	0.08	0.02	0.94	0.123	1.04	4132	2150.0	0.005	0.049	11	0.18	
Haystack Creek	OK311800-00-0040D	9/8/2010	46609	4.63	54.40	13.50	Inorganics	193.0	23.5	6770.0	7.49	17.8	45.9	0.015	0.02	0.02	1.06	0.055	1.10	5139	3080.0	0.011	0.035	21	
Haystack Creek	OK311800-00-0040D	10/12/2010	46713	7.91	85.70	11.80	Inorganics	127.0	19.3		7.90	630.6	1456.2	0.015	0.02	0.02	0.76	0.055	0.80	3181	1725.0	0.018	0.026	10	
Haystack Creek	OK311800-00-0040D	11/16/2010	46776	9.46	79.20	22.00	Inorganics	69.0	7.7	1903.0	7.73	253.3	688.0	0.015	0.45	0.02	0.93	0.485	1.40	1395	880.0	0.095	0.143	47	0.60
Haystack Creek	OK311800-00-0040D	1/4/2011	46839	12.32	90.50	8.35	Inorganics	247.0	2.7	6610.0	8.06	1221.5	1989	0.015	0.53	0.02	1.71	0.565	2.26	5225	510.0	0.005	0.014	10	
Haystack Creek	OK311800-00-0040D	2/8/2011	47012		12.30	Inorganics	255.0		7.90	1577.1	2491.5	0.015	0.3												

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WQID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)				
Ionine Creek	OK310820-01-0160L	8/3/2009	44274	11.84	151.10	14.20	Inorganics	292.0	27.9	2866.0	8.05	70.4	1628.3	0.136	1.17	<	0.02	0.81	1.326	2.00	2582	1605.0	0.019	0.135	45	3.38			
Ionine Creek	OK310820-01-0160L	9/1/2009	44500	12.80	154.80	8.44	Organics	237.0	24.9	2864.0	8.11	74.3	<	2017.5	0.022	1.2	<	0.02	0.5	1.242	1.72	2603	1540.0	0.024	0.024	14	1.74		
Ionine Creek	OK310820-01-0160L	10/13/2009	44700	9.20	94.30	22.80	Inorganics	343.0	16.5	2883.0	8.00	65.9	1973.5	0.021	1.51	<	0.39	1.531	1.90	2478	1830.0	0.05	0.063	39	6.06				
Ionine Creek	OK310820-01-0160L	11/17/2009	45107	16.20	144.70	1.86	Inorganics	319.0	10.4	2938.0	8.19	70.8	1890.3	0.015	1.3	<	0.02	0.77	1.335	2.09	2572	1670.0	<	0.005	0.017	<	10	4.55	
Ionine Creek	OK310820-01-0160L	12/28/2009	45256	14.79	112.00	20.00	Inorganics	272.0	3.7	2865.0	8.10	67.9	1647.5	0.043	1.1	<	0.02	0.79	1.163	1.91	2542	1580.0	0.03	0.048	57				
Ionine Creek	OK310820-01-0160L	3/9/2010	46124	9.82	93.00	130.00		217.0	12.9	2080.0	7.99	48.8	1004.8	0.804	1.58	<	0.02	1.89	2.404	3.49	1720	1050.0	0.373	0.427	146	22.33			
Ionine Creek	OK310820-01-0160L	4/13/2010	46187	14.85	167.60	6.21	Inorganics	251.0	21.3	2957.0	8.16	84.3	1700.1	0.034	0.67	<	0.02	0.55	0.724	1.24	2518	1690.0	0.018	0.048	14	2.61			
Ionine Creek	OK310820-01-0160L	5/25/2010	46275	13.11	158.80	11.40	Organics	289.0	25.1	2963.0	8.03	84.9	1920	0.038	0.5	<	0.02	0.44	0.558	0.96	2622	1760.0	0.01	0.069	16	1.94			
Ionine Creek	OK310820-01-0160L	6/29/2010	46467	7.80	96.40	26.40	Inorganics	238.0	26.2	3085.0	8.00	85.6	2203.4	0.024	0.39	<	0.02	0.87	0.434	1.28	2858	2070.0	0.031	0.07	42	1.56			
Ionine Creek	OK310820-01-0160L	7/26/2010	46334	10.77	133.40	8.82	Organics	288.0	26.6	2915.0	7.98	87.4	2229.4	0.046	0.71	<	0.02	0.71	0.776	1.44	2858	1880.0	0.007	0.026	32	0.56			
Ionine Creek	OK310820-01-0160L	9/14/2010	46624	6.37	79.10	14.30	Organics	283.0	27.1	2572.0	7.84	68.4	1149.5	0.33	0.86	0.02	1.47	1.210	2.35	2001	1740.0	0.028	0.088	27					
Ionine Creek	OK310820-01-0160L	10/19/2010	46728	4.91	52.10	36.70	Inorganics	274.0	18.2	3191.0	7.61	82.7	1695.2	0.104	0.85	0.02	1.05	0.974	1.92	2822	1610.0	0.01	0.044	16					
Ionine Creek	OK310820-01-0160L	11/30/2010	46791	13.32	106.60	10.60	Inorganics	255.0	5.9	2746.0	7.97	60.7	1390.3	0.015	0.72	0.02	0.78	0.755	1.52	2445	1680.0	0.018	0.02	10					
Ionine Creek	OK310820-01-0160L	1/25/2011	46854	12.44	92.00	10.60	Inorganics	242.0	2.8	2603.0	7.85	54.2	1279.8	0.015	1.08	0.02	0.74	1.115	1.84	2248	1710.0	0.023	0.025	22					
Ionine Creek	OK310820-01-0160L	2/15/2011	46986	12.08	104.60	20.20	Organics	292.0	8.7	2384.0	7.91	46.2	1139.7	0.015	0.61	<	0.02	0.67	0.645	1.30	2057	1460.0	0.013	0.036	11				
Ionine Creek	OK310820-01-0160L	3/23/2011	46971	6.28	66.60	36.40	Inorganics	206.0	17.5	2679.0	7.53	58.4	1478.2	0.085	0.31	0.02	1.07	0.415	1.40	2334	1480.0	0.021	0.065	12					
Ionine Creek	OK310820-01-0160L	4/26/2011	47106	6.15	65.10	33.10	Inorganics	182.0	18.1	3149.0	7.88	79.4	1812.2	0.036	0.08	<	0.02	0.79	0.136	0.89	2821	1780.0	0.019	0.055	14				
Kickapoo Sandy Creek	OK310810-01-0050G	5/18/2009	43532	8.40	90.30	34.30	Inorganics	104.0	19.7	2300		55.2	36.5	0.03	0.04	0.14	1	0.210	1.18	176	86.5	0.039	0.214	34	59.13				
Kickapoo Sandy Creek	OK310810-01-0050G	6/9/2009	43793	6.81	81.40	37.30	Inorganics	105.0	24.3	2362	7.68														19.07				
Kickapoo Sandy Creek	OK310810-01-0050G	6/22/2009	43840	7.98	95.10	6.72	Organics	280.0	24.3	788.0	7.83	75.5	<	39.9	0.015	1.07	<	0.02	0.64	1.105	1.73	485	256.0	0.107	0.107	<	10	0.53	
Kickapoo Sandy Creek	OK310810-01-0050G	7/28/2009	44141	6.42	74.50	32.70	Inorganics	197.0	22.8	755.0	7.62	97.9	106.4	0.065	0.75	<	0.02	1.06	0.835	1.83	497	198.0	0.168	0.231	52	0.92			
Kickapoo Sandy Creek	OK310810-01-0050G	8/31/2009	44445	8.05	88.60	5.84	Organics	258.0	19.9	685.0	7.93	63.3	51.1	0.076	0.75	<	0.02	0.39	0.846	1.16	449	225.0	0.112	0.153	<	10	0.49		
Kickapoo Sandy Creek	OK310810-01-0050G	10/5/2009	44666	7.93	79.90	3.05	Organics	233.0	15.6	681.0	7.94	52.6	78.9	0.015	0.87	<	0.02	0.24	0.905	1.13	379	207.0	0.071	0.08	<	10	0.45		
Kickapoo Sandy Creek	OK310810-01-0050G	11/3/2009	45080	8.22	80.80	33.80	Inorganics	120.0	14.3	215.0	7.65	14.6	14	0.037	0.05	<	<	0.11	0.087	0.16	162	62.0	0.087	0.133	20	2.44			
Kickapoo Sandy Creek	OK310810-01-0050G	12/15/2009	45219	11.93	91.90	12.50	Organics	282.0	4.4	716.0	7.97	60.2	46.1	0.08	0.65	<	0.02	0.37	0.750	1.04	412	203.0	0.048	<	10	0.56			
Kickapoo Sandy Creek	OK310810-01-0050G	1/26/2010	45394	12.11	95.30	44.60	Inorganics	201.0	5.2	429.0	7.99	16.1	10.3	0.087	0.15	<	0.02	0.49	0.257	0.66	263	142.0	0.056	0.078	19	4.02			
Kickapoo Sandy Creek	OK310810-01-0050G	3/2/2010	46097	11.92	96.80	24.20	Inorganics	246.0	6.5	512.0	8.20	24	16.3	0.048	0.2	<	0.02	0.28	0.268	0.50	332	175.0	0.017	0.051	12	2.32			
Kickapoo Sandy Creek	OK310810-01-0050G	4/6/2010	46160	10.09	105.70	2.60	Organics	255.0	17.6	574.0	8.19	28.9	28.3	0.027	0.04	<	0.02	0.11	0.087	0.17	326	195.0	0.027	0.014	10	1.22			
Kickapoo Sandy Creek	OK310810-01-0050G	5/18/2010	46249	7.93	87.60	28.20	Inorganics	181.0	20.2	390.1	7.75	24.3	26.3	0.061	0.22	<	0.02	0.17	0.301	0.41	269	149.0	0.045	0.082	24	7.39			
Kickapoo Sandy Creek	OK310810-01-0050G	6/22/2010	46439	7.91	98.80	7.34	Organics	195.0	26.7	622.0	8.00	37.6	26.9	0.046	0.66	<	0.02	0.87	0.726	1.55	324	180.0	0.076	0.083	<	10	1.36		
Kickapoo Sandy Creek	OK310810-01-0050G	7/27/2010	46524	7.48	91.80	6.14	Organics	166.0	25.9	338.1	6.39	23.1	16	0.047	0.12	<	0.02	1.04	0.187	1.18	218	124.0	0.019	0.052	<	10	3.02		
Kickapoo Sandy Creek	OK310810-01-0050G	9/7/2010	46589	6.05	69.50	6.02	Organics	272.0	23.4	708.0	7.83	82.4	41.4	0.051	0.87	0.02	0.57	0.941	1.46	460	216.0	0.063	0.069	10					
Kickapoo Sandy Creek	OK310810-01-0050G	10/11/2010	46694	10.49	113.60	6.07	Organics	260.0	19.2	750.0	8.02	63.9	42.6	0.015	0.56	0.02	0.6	0.595	1.18	414	227.0	0.047	0.06	10	0.69				
Kickapoo Sandy Creek	OK310810-01-0050G	11/9/2010	46757	12.23	126.80	1.88	Organics	269.0	17.3	746.0	7.89	59	28.6	0.017	0.45	0.02	0.14	0.487	0.61	445	252.0	0.053	0.062	10	0.17				
Kickapoo Sandy Creek	OK310810-01-0050G	1/4/2011	46826	10.46	84.00	1.72	Organics	273.0	5.9	458.0	7.83	56.9	26.8	0.068	0.9	0.02	0.62	0.988	1.54	433	235.0	0.044	0.056	10	0.50				
Kickapoo Sandy Creek	OK310810-01-0050G	2/8/2011	47000	13.16	98.70	19.90	Inorganics	302.0	3.3	784.0	7.98	67	32.1	0.153	0.77	<	0.02	1.05	0.943	1.84	477	240.0	0.073	0.119	34	0.66			
Kickapoo Sandy Creek	OK310810-01-0050G	3/15/2011	47056	13.37	113.50	2.30	Organics	304.0	8.1	883.0	8.03	87.9	41.6	0.055	0.84	<	0.02	0.5	0.915	1.36	521	254.0	0.062	0.087	<	10			
Kickapoo Sandy Creek	OK310810-01-0050G	4/19/2011	47079	12.67	154.40	6.10	Organics	329.0	25.3	832.0	8.19	85.1	31.1	0.054	0.16	<	0.02	0.68	0.234	0.86	498	250.0	0.105	0.147	<	10	0.17		
Lake Creek	OK311510-01-0040D	5/19/2009	43550	13.47	165.70	7.06	Organics	214.0	26.0	2167.0	8.18	498.8	902.4	0.021	0.42	<	0.02	1.1	0.461	1.54	1810		0.006	0.073	<	10	0.95		
Lake Creek	OK311510-01-0040D	6/23/2009	43860	13.83	197.00	8.46	Organics	227.0	34.3	1760.0	8.34	242.2	<	441.1	0.015	0.11	<	0.02	1.13	1.315	1.25	1068	440.0	0.016	0.048	<	10	0.17	
Lake Creek	OK311510-01-0040D	7/28/2009	44154	15.84	>	200.00	5.91	Organics	236.0	29.3	636.0	7.58	30.5	<	45.6	0.068	0.05	<	0.02	0.37	0.138	0.44	349		0.019	0.112	<	10	
Lake Creek	OK311510-01-0040D	8/10/2009	43672	12.62	120.10	9.20	Organics	312.0	28.4	1832.0	8.01										832.0						0.11		
Lake Creek	OK311510-01-0040D	9/3/2009	44465	7.06	80.50	24.00	Organics	220.0	22.6	326.6	7.77	96.6	214.6	0.028	<	0.02	<	0.02	0.35	0.068	0.39	332	252.0	0.025	0.07	19			
Lake Creek	OK311510-01-0040D	10/12/2009	44686	8.25	82.80	14.70	Organics	236.0	15.6	863.0	8.00	103	272.4	0.015	0.12	<	0.02	0.46	0.135	0.58	548	410.0	0.027	0.06	<	10			
Lake Creek	OK311510-01-0040D	11/3/2009	45093	9.19	88.30	57.00	Inorganics	190.0	13.7	993.0	7.99	89.4	199.4	0.015	1.29		0.98	1.305	2.27	617	408.0	0.218	0.311	13	1.20				
Lake Creek																													

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthophos (mg/L)	TotPhosphorus (mg/L)	TotSulphides (mg/L)	Flow (cfs)			
Little Beaver Creek	OK311210-00-0050D	6/28/2010	46314	6.86	82.90	172.00	Inorganics	204.0	24.8	916.0	8.18	51.3	224	0.036	0.05	<	0.02	0.76	0.106	0.83	585	450.0	0.087	0.15	97	20.47		
Little Beaver Creek	OK311210-00-0050D	8/2/2010	46553	6.52	84.50	10.40	Organics	260.0	28.7	1070.0	8.21	69.6	309.9	0.015	0.02	0.87	0.52	0.055	0.56	678	430.0	0.02	0.037	10	3.50			
Little Beaver Creek	OK311210-00-0050D	9/13/2010	46641	6.08	73.00		Inorganics	24.5	387.8	7.58	13.6	63.5	0.084	0.41	0.08	3.32	0.574	3.81	329	485.0	0.402	0.837	777					
Little Beaver Creek	OK311210-00-0050D	10/18/2010	46745	9.04	93.80	3.61	Organics	267.0	17.1	1026.0	8.33	37.4	240.3	0.015	0.02	0.02	0.58	0.055	0.62	673	450.0	0.011	0.018	10				
Little Beaver Creek	OK311210-00-0050D	11/29/2010	46808	10.27	87.90	4.14	Organics	327.0	8.6	1111.0	8.28	43.2	244.4	0.015	0.13	0.02	0.4	0.165	0.55	725	510.0	0.008	0.017	10	23.06			
Little Beaver Creek	OK311210-00-0050D	1/10/2011	46871	12.79	93.60	4.89	Organics	306.0	2.5	1028.0	8.26	36.7	209.6	0.015	0.43	0.02	0.36	0.465	0.81	672	740.0	0.005	0.005	10	8.22			
Little Beaver Creek	OK311210-00-0050D	27-Jan-11	47063				Organics																					
Little Beaver Creek	OK311210-00-0050D	2/14/2011	47017	12.12	96.90	14.00	Organics	322.0	5.8	974.0	8.27	37.1	230.4	0.015	0.5	<	0.02	0.61	0.535	1.13	718	615.0	0.01	0.022	25	9.57		
Little Beaver Creek	OK311210-00-0050D	3/21/2011	46959	6.75	71.20	15.90	Organics	251.0	18.0	1012.0	8.17	44.5	254.9	0.022	0.02	0.02	0.52	0.062	0.56	666	575.0	0.011	0.036	10	10.17			
Little Beaver Creek	OK311210-00-0050D	4/25/2011	47123	7.87	78.60	61.10	Organics	280.0	15.3	974.0	8.17	35.7	230.7	0.261	0.18	<	0.02	1.11	0.461	1.31	639	490.0	0.04	0.103	53	19.55		
Little Deep Red Creek	OK311310-03-0040D	5/26/2009	43586	7.45	90.50	40.80	Inorganics	290.0	25.4	4179.0	8.17	1146.5	484.2	0.015	0.08	<	0.02	1.12	0.115	1.22	2821	890.0	0.064	0.12	34	10.68		
Little Deep Red Creek	OK311310-03-0040D	6/17/2009	43814	7.66	103.30	56.90	Inorganics	361.0	30.7	4395.0	8.18															0.65		
Little Deep Red Creek	OK311310-03-0040D	6/29/2009	43910	4.86	59.60	77.60	Inorganics	290.0	25.7	7000.0	7.18	2182.2	807.8	0.252	<	0.02	<	0.02	0.82	0.292	0.86	4601	1020.0	0.039	0.108	50		
Little Deep Red Creek	OK311310-03-0040D	8/3/2009	44310	5.09	66.50	450.00	Inorganics	108.0	27.5	927.0	7.82	229.6	99.1	0.103	0.34	<	0.02	2.17	0.663	2.53	605	184.0	0.39	0.552	287	13.35		
Little Deep Red Creek	OK311310-03-0040D	9/15/2009	44597	6.83	77.40	194.00	Inorganics	90.0	21.6	1623.0	7.80	350.9	221	0.076	1.54	0.51	0.81	2.126	2.86	980	302.0	0.275	0.24	116	2.84			
Little Deep Red Creek	OK311310-03-0040D	10/12/2009	44721	8.92	86.40	215.00	Inorganics	96.0	13.7	1115.0	7.78	232.5	108.1	0.035	1.22	0.24	1.19	1.495	2.65	741	224.0	0.466	0.492	36	3.18			
Little Deep Red Creek	OK311310-03-0040D	11/16/2009	45173	5.98	55.10	13.70	Inorganics	239.0	11.8	6670.0	7.81	1982.9	913	0.015	<	0.02	<	0.02	0.73	0.055	0.77	4242	1830.0	0.069	<	10	1.34	
Little Deep Red Creek	OK311310-03-0040D	12/21/2009	45309	10.08	76.60	9.93	Organics	334.0	3.8	6980.0	8.11	2125.4	839.8	0.016	0.14	<	0.02	0.44	0.176	0.60		1490.0	0.02	0.043	<	10	0.45	
Little Deep Red Creek	OK311310-03-0040D	08-Feb-10	46054																									
Little Deep Red Creek	OK311310-03-0040D	3/8/2010	46142	9.56	88.70	19.70	Inorganics	295.0	12.1	5820.0	8.31	1943.6	823.4	0.016	0.17	<	0.02	0.97	0.206	1.16	3624	1384.0	0.012	0.147	206	4.65		
Little Deep Red Creek	OK311310-03-0040D	4/12/2010	46195	6.05	66.60	40.00	Inorganics	377.0	20.0	7590.0	8.02	2052.4	851	0.021	<	0.02	<	0.02	0.87	0.061	0.91	4973	1440.0	0.023	0.122	35	1.38	
Little Deep Red Creek	OK311310-03-0040D	5/24/2010	46283	6.40	77.40	67.90	Inorganics	358.0	24.8	5640.0	8.13	1872.8	802.8	0.015	0.04	<	0.02	1.37	0.075	1.43	3617	1076.0	0.07	0.218	60	7.54		
Little Deep Red Creek	OK311310-03-0040D	6/28/2010	46305	3.60	43.80	37.60	Inorganics	273.0	25.2	4091.0	7.95	1737.5	467.4	0.034	<	0.02	<	0.02	1.39	0.074	1.43	2455	668.0	0.108	0.19	24	2.20	
Little Deep Red Creek	OK311310-03-0040D	8/2/2010	46544	6.20	81.90	18.20	Organics	270.0	30.0	6990.0	8.05	1992.1	745	0.015	0.02	0.02	0.67	0.055	0.71	4040	1180.0	0.06	0.098	22	2.63			
Little Deep Red Creek	OK311310-03-0040D	9/13/2010	46632	6.83	85.00	51.40	Inorganics	160.0	26.4	2385.0	7.95	666.8	340.4	0.033	0.82	0.02	1.64	0.873	2.48	1424	420.0	0.157	0.227	27	1.20			
Little Deep Red Creek	OK311310-03-0040D	10/18/2010	46736	5.83	59.70	13.90	Inorganics	293.0	16.5	8410.0	7.98	2199.9	910.6	0.015	0.02	0.02	1.28	0.055	1.32	5468	1450.0	0.071	0.185	27	0.18			
Little Deep Red Creek	OK311310-03-0040D	11/29/2010	46799	6.39	54.40	5.17	Organics	280.0	8.3	7350.0	7.73	2000.4	881.6	0.015	0.02	0.02	0.78	0.055	0.82	4526	1830.0	0.119	0.142	10	0.42			
Little Deep Red Creek	OK311310-03-0040D	1/10/2011	46862	11.34	85.20	6.80	Organics	344.0	3.4	7080.0	8.14	1888.6	719.9	0.015	0.02	0.02	0.5	0.055	0.54	4446	1800.0	0.024	0.053	10	0.78			
Little Deep Red Creek	OK311310-03-0040D	2/14/2011	47030	13.77	109.90	12.20	Organics	333.0	5.7	6440.0	8.38	1538	977.8	0.015	<	0.02	<	0.02	1.07	0.055	1.11	4148	1580.0	0.007	0.054	<	10	2.09
Little Deep Red Creek	OK311310-03-0040D	3/21/2011	46950	4.22	45.50	58.50	Inorganics	363.0	19.1	6210.0	7.93	1778.2	690.7	0.015	0.02	0.02	1.71	0.055	1.75	3942	1300.0	0.098	0.27	27	0.47			
Little Deep Red Creek	OK311310-03-0040D	4/25/2011	47114	3.51	35.80	51.00	Inorganics	445.0	16.2	8740.0	7.95	3120.1	1194.7	0.015	<	0.02	<	0.02	2.24	0.055	2.28	5767	1680.0	0.036	0.251	<	10	0.40
Little Elk Creek	OK311500-03-0040D	5/19/2009	43551	7.57	88.40	28.40	Organics	268.0	23.0	1193.0	7.76	101.1	270.4	0.248	0.48	0.18	1.37	0.908	2.03	721		0.084	0.189	16	3.13			
Little Elk Creek	OK311500-03-0040D	6/23/2009	43861	10.46	139.20	4.69	Organics	29.5	30.4	1746.0	7.98	154.8	<	0.038	0.43	<	0.02	0.61	0.488	1.06	1178	650.0	0.096	0.101	<	10	0.41	
Little Elk Creek	OK311500-03-0040D	7/20/2009	43666	4.78	57.00	6.58	Organics	360.0	24.2	1592.0	7.80										448.0							
Little Elk Creek	OK311500-03-0040D	7/28/2009	44156	8.34	107.30	8.58	Organics	363.0	28.5	1304.0	7.98	120.4	335.5	0.223	0.45	<	0.02	0.72	0.693	1.19	879		<	0.005	0.123	21		
Little Elk Creek	OK311500-03-0040D	9/1/2009	44466	6.99	81.30	7.34	Organics	424.0	21.6	1335.0	8.25	96.5	210.2	0.107	0.22	<	0.02	0.47	0.347	0.71	786	410.0	0.156	0.173	<	10		
Little Elk Creek	OK311500-03-0040D	10/6/2009	44687	6.75	68.70	10.30	Organics	274.0	16.0	1314.0	7.85	93.6	319.9	0.029	1.01		0.58	1.039	1.59	852	620.0	0.1	0.101	<	10	0.31		
Little Elk Creek	OK311500-03-0040D	11/3/2009	45094	10.49	98.50	45.20	Organics	193.0	12.5	665.0	8.43	35.5	142.2	0.015	0.22	<	0.02	0.55	0.235	0.77	401	324.0	0.026	0.276	34			
Little Elk Creek	OK311500-03-0040D	12/15/2009	45233	11.57	82.30	7.61	Inorganics	265.0	1.4		8.31	136.6	404.3	0.02	0.85	<	0.02	0.53	0.890	1.40	815		0.021	<	10	1.98		
Little Elk Creek	OK311500-03-0040D	1/26/2010	45408	12.76	99.70	13.60	Inorganics	289.0	5.1	1582.0	8.25	126.8	513.9	0.015	0.66	<	0.02	0.32	0.695	1.00	1069	726.0	0.022	0.069	<	10	1.00	
Little Elk Creek	OK311500-03-0040D	3/2/2010	46111	12.47	98.30	37.40	Organics	255.0	5.2	776.0	8.56	36.8	116.3	0.015	0.17	<	0.02	1.05	0.205	1.24	464		<	0.005	0.106	32		
Little Elk Creek	OK311500-03-0040D	4/6/2010	46174	8.02	92.90		Organics	303.0	22.9	1443.0	7.96	176.3	480.1	0.082	0.24	<	0.02	0.49	0.342	0.75	873	540.0	0.035	0.075	21	0.83		
Little Elk Creek	OK311500-03-0040D	5/18/2010	46262	9.29	108.30	73.50	Inorganics	269.0	23.2	1162.0	8.10	90.4	252.6	0.204	0.27	<	0.02	0.25	0.494	0.54	690	580.0	0.068	0.073	70	1.90		
Little Elk Creek	OK311500-03-0040D	6/22/2010	46454	5.67	69.90	30.60	Inorganics	375.0	26.1	1196.0	7.75	105.2	262.7	0.208	0.4	<	0.02	0.78	0.628	1.20	847	510.0	0.131	0.162	<	10	0.02	
Little Elk Creek	OK311500-03-0040D	7/27/2010	46538			5.37	Organics	323.0		5840.0	7.91	256.2	636.6	0.046	0.24	0.02	0.82	0.306	1.08	1350	670.0	0.03	0.072	10	1.77			
Little Elk Creek	OK311500-03-0040D	9/8/2010	46611	4.11	47.30	20.60	Organics	323.0	22.5	2029.0	7.76	191.4	389.3	0.072	0.57	0.02	0.95	0.662	1.54	1288	700.0	0.118	0.166	16				
Little Elk Creek	OK3115																											

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)			
Mill Creek: Lower	OK310800-01-0190G	5/19/2009	43539	3.91	42.80	20.20	Inorganics	183.0	19.2	385.0	7.91	25.6		0.052	0.48	<	0.02	0.6	0.552	1.10	235	190.0	0.044	0.116	19			
Mill Creek: Lower	OK310800-01-0190G	6/23/2009	43847	4.77	63.50	38.60	Inorganics	184.0	30.1	476.0	7.51	14	62.9	0.015	0.07	<	0.02	0.43	0.105	0.52	275	257.0	0.075	0.09	40			
Mill Creek: Lower	OK310800-01-0190G	7/27/2009	44135	4.62	56.30	72.10	Inorganics	166.0	28.0	481.0	7.53	16.3	67.6	0.059	<	0.02	<	0.02	0.6	0.099	0.64	277	216.0	0.053	0.1	50		
Mill Creek: Lower	OK310800-01-0190G	7/29/2009	44162	5.14	64.30	11.70	Inorganics	146.0	26.7	437.0	8.06																	
Mill Creek: Lower	OK310800-01-0190G	9/1/2009	44452	4.72	54.10	49.80	Inorganics	159.0	23.0	514.0	7.87	21.4	74.6	0.066	<	0.02	<	0.02	<	0.11	0.106	0.15	300	183.0	0.035	0.068	33	
Mill Creek: Lower	OK310800-01-0190G	10/6/2009	44673	6.47	68.70	10.30	Inorganics	172.0	18.3	423.0	7.90	40	10.3	0.015	<	0.02	<	0.02	0.17	0.055	0.21	236	205.0	0.018	0.011	<	10	
Mill Creek: Lower	OK310800-01-0190G	11/2/2009	45074	8.88	88.60	14.50	Inorganics	173.0	14.2	380.0	8.20	6.4	26.2	0.034	0.45	<			0.31	0.484	0.76	234	176.0	0.064	0.063	<	10	
Mill Creek: Lower	OK310800-01-0190G	12/4/2009	45213	12.74	109.60	2.63	Organics	197.0	8.7	509.0	8.40	10	30.7	0.022	0.28	<	0.02	0.18	0.322	0.48	305	270.0	<	0.005	<	10		
Mill Creek: Lower	OK310800-01-0190G	1/25/2010	45388	11.43	98.50	2.89	Organics	223.0	8.7	489.3	8.44	8.7	23.6	0.015	0.05	<	0.02	<	0.11	0.085	0.18	245	245.0	<	0.013	0.005	<	10
Mill Creek: Lower	OK310800-01-0190G	3/1/2010	46091	11.45	98.70	5.87	Inorganics	225.0	8.8	461.5	8.45	6.1	18	0.015	0.11	<	0.02	0.21	0.145	0.34	263	238.0	0.007	0.023	<	10		
Mill Creek: Lower	OK310800-01-0190G	4/5/2010	46154	8.92	96.60	13.90	Organics	217.0	19.2	433.7	8.20	10.7	21.7	0.042	0.18	<	0.02	<	0.11	0.242	0.31	213	224.0	0.022	0.034	16	3.80	
Mill Creek: Lower	OK310800-01-0190G	5/17/2010	46242	7.76	87.70	16.10	Inorganics	165.0	16.4	345.0	8.05	4.8	14.1	0.067	0.42	<	0.02	<	0.11	0.507	0.55	203	163.0	0.053	0.087	26		
Mill Creek: Lower	OK310800-01-0190G	6/21/2010	46433	5.85	79.10	18.30	Organics	168.0	31.4	230.0	7.83	6.4	12.8	0.092	0.11	<	0.02	0.71	0.222	0.84	221	170.0	0.123	0.134	23	11.31		
Mill Creek: Lower	OK310800-01-0190G	7/26/2010	46518	7.28	95.50	9.65	Organics	167.0	29.7	414.0	8.19	10.7	24.7	0.035	<	0.02	0.38	0.075	0.42	226	183.0	0.02	0.045	10	10.04			
Mill Creek: Lower	OK310800-01-0190G	9/8/2010	46597	7.02	83.90	114.00	Inorganics	114.0	24.3	365.0	7.96	12.1	28.5	0.049	0.02	0.02	0.46	0.089	0.50	228	166.0	0.078	0.1	101				
Mill Creek: Lower	OK310800-01-0190G	10/12/2010	46701	8.27	88.10	5.63	Organics	175.0	18.4	131.0	8.26	14.5	46.8	0.047	0.03	0.02	0.52	0.067	0.57	258	203.0	0.014	0.017	10	2.74			
Mill Creek: Lower	OK310800-01-0190G	11/15/2010	46764	8.95	82.90	5.62	Organics	226.0	11.8	518.0	8.16	15	54.8	0.015	0.02	0.02	0.11	0.055	0.15	305	256.0	0.014	0.017	10	6.67			
Mill Creek: Lower	OK310800-01-0190G	1/3/2011	46821	13.05	100.60	5.57	Organics	226.0	4.4	367.0	8.33	9.8	32.5	0.015	0.36	0.02	0.56	0.395	0.94	257	220.0	0.008	0.019	10	15.01			
Mill Creek: Lower	OK310800-01-0190G	2/7/2011	46994	13.59	101.90	3.80	Inorganics	234.0	3.3	512.0	8.40	13.3	41.3	0.015	0.05	<	0.02	0.3	0.085	0.37	308	309.0	<	0.005	0.023	<	10	
Mill Creek: Lower	OK310800-01-0190G	3/14/2011	47050	8.75	82.60	6.09	Organics	218.0	12.7	452.0	8.42	11.9	34.6	0.015	<	0.02	0.02	0.25	0.055	0.29	276	235.0	<	0.005	0.011	<	10	
Mill Creek: Lower	OK310800-01-0190G	4/18/2011	47073	7.60	85.40	49.50	Inorganics	107.0	21.0	481.0	7.91	12.5	42.1	0.015	<	0.02	0.45	0.055	0.49	299	242.0	0.031	0.054	32	4.41			
Mud Creek	OK311100-04-0010G	5/27/2009	43601	6.35	74.20	68.20	Inorganics	323.0	22.9	1259.0	8.01	205.4	87.7	0.015	0.06	<	0.02	1.26	0.095	1.34	709	412.0	0.101	0.169	54	0.00		
Mud Creek	OK311100-04-0010G	7/1/2009	43927	4.96	64.00	54.50	Inorganics	358.0	28.6	1479.0	7.87	252.8	101	<	0.015	<	0.02	0.76	0.055	0.80	836	466.0	0.078	0.095	21	3.40		
Mud Creek	OK311100-04-0010G	7/13/2009	44054				Inorganics																					
Mud Creek	OK311100-04-0010G	8/4/2009	44303	3.76	46.50	111.00	Inorganics	192.0	26.6	764.0	7.83	92.5	38.8	0.086	0.21	<	0.02	1.01	0.316	1.24	454	216.0	0.108	0.185	24	0.52		
Mud Creek	OK311100-04-0010G	9/9/2009	44523	2.28	27.50	18.10	Inorganics	272.0	24.9	1100.0	7.65	158	<	0.12	0.13	<	0.02	0.59	0.270	0.74	579	240.0	0.054	0.102	14			
Mud Creek	OK311100-04-0010G	9/14/2009	44568				Inorganics																					
Mud Creek	OK311100-04-0010G	10/13/2009	44736	8.59	84.00	442.00	Inorganics	55.0	14.4	170.4	7.42	9.7	7.9	0.041	0.23	<	0.02	0.98	0.291	1.23	344	12.0	0.192	0.316	113			
Mud Creek	OK311100-04-0010G	11/17/2009	45136	5.13	47.10	58.10	Inorganics	143.0	11.3	432.4	7.58	36.5	17.5	0.015	<	0.02	0.65	0.055	0.69	271	204.0	0.102	0.2	<	10	0.83		
Mud Creek	OK311100-04-0010G	1/5/2010	45345	13.83	98.30		Inorganics	87.0	1.4	823	36.9	98.30	19.3	0.03	0.21	<	0.02	1.09	0.260	1.32	272	220.0	0.026	0.11	15			
Mud Creek	OK311100-04-0010G	2/9/2010	46069	11.54	89.40	411.00	Inorganics	104.0	4.5	391.7	8.05	40.4	19.6	0.054	0.21	<	0.02	1.29	0.284	1.52	393	330.0	0.121	0.291	192			
Mud Creek	OK311100-04-0010G	3/4/2010	46135	10.78	90.80	70.80	Inorganics	251.0	7.9	1169.0	8.40	183.3	64.7	0.053	0.07	<	0.02	0.74	0.143	0.83	663	330.0	0.054	0.095	29			
Mud Creek	OK311100-04-0010G	4/13/2010	46210	7.01	75.40	32.90	Organics	385.0	19.1	2050.0	8.23	436.2	136.8	0.024	<	0.02	0.42	0.064	0.46	1117	710.0	0.046	0.076	22				
Mud Creek	OK311100-04-0010G	5/25/2010	46298	6.15	73.40	57.50	Organics	286.0	24.3	1326.0	7.96	196.5	82.3	0.016	0.08	<	0.02	0.52	0.116	0.62	729	385.0	0.06	0.121	29	35.14		
Mud Creek	OK311100-04-0010G	6/3/2010	46396	17.45			Inorganics	363.0	25.9	1896.0	7.97															16.96		
Mud Creek	OK311100-04-0010G	6/29/2010	46320	3.96	49.10	59.50	Inorganics	219.0	26.4	955.0	7.39	145.6	48.3	0.022	0.25	<	0.02	1	0.292	1.27	506	224.0	0.084	0.136	12	2.56		
Mud Creek	OK311100-04-0010G	8/3/2010	46559	2.98	37.70	41.70	Inorganics	220.0	26.9	974.0	7.72	148.5	52.7	0.056	0.02	0.02	1.01	0.096	1.05	501	225.0	0.113	0.139	16	0.20			
Mud Creek	OK311100-04-0010G	9/14/2010	46647	8.38	104.20		Inorganics	80.0	25.9	243.3	7.45	77.3	20.5	0.174	0.23	0.02	2.04	0.424	2.29	525	140.0	0.342	0.626	576				
Mud Creek	OK311100-04-0010G	10/18/2010	46751	3.66	39.10	62.80	Inorganics	148.0	17.9	556.0	7.51	55.5	32.3	0.015	0.02	0.02	1.04	0.055	1.08	342	172.0	0.14	0.182	10				
Mud Creek	OK311100-04-0010G	11/30/2010	46814	3.44	29.90	60.90	Inorganics	190.0	6.5	573.0	7.59	54.3	21.1	0.02	0.02	0.02	1.3	0.060	1.34	372	300.0	0.457	0.514	10				
Mud Creek	OK311100-04-0010G	1/11/2011	46877	9.38	68.00	43.70	Inorganics	291.0	2.1	1235.0	8.02	156.7	78.1	0.015	0.02	0.02	0.99	0.055	1.03	738	280.0	0.214	0.243	10				
Mud Creek	OK311100-04-0010G	2/15/2011	47023	8.83	75.20	89.20	Inorganics	80.0	8.4	479.5	7.80	57.1	23.8	0.015	<	0.02	0.88	0.055	0.92	364	200.0	0.162	0.246	<	10			
Mud Creek	OK311100-04-0010G	3/22/2011	46965	6.29	66.80	36.70	Inorganics	307.0	18.3	934.0	8.07	112.1	45.6	0.015	0.02	0.02	1.29	0.055	1.33	636	220.0	0.139	0.204	10				
Mud Creek	OK311100-04-0010G	4/26/2011	47129	1.63	16.90	13.80	Inorganics	445.0	17.4	1404.0	7.81	203.1	43.4	0.017	<	0.02	1.53	0.177	1.57	780	375.0	0.546	0.611	<	10			
North Elm Creek	OK311800-00-0170G	6/10/2009	43773	6.34	71.50	11.70	Inorganics	79.0	21.4	9.0	7.66	2562.1	1835.6	0.053	<	0.02	<	0.02	0.43	0.093	0.47	6490	2412.0	<	0.005	0.01	22	
North Elm Creek	OK311800-00-0170G	6/23/2009	43856	5.78	71.60	2.39	Inorganics	90.0	26.5	15340.0	7.60	4707.7	2274	0.015	0.76	<	0.02	0.49	0.795	1.27	9624	2770.0	<	0.01	0.012	<	10	0.43
North Elm Creek	OK311800-00-0170G	7/28/2009	44150	4.94	60.30	17.70	Organics	92.0	25.1	8970.0	7.75	2368.3	<	0.017	<	0.02	0.88	0.057	0.92	7072		<	0.005	0.157	<	10</		

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPencat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulphides (mg/L)	Flow (cfs)			
Oil Creek	OK310800-01-0240P	3/1/2010	46090	10.55	96.00	1.57	Inorganics	262.0	11.1	573.0	8.21	10	24.6	0.015	1.96	<	0.02	0.25	1.995	2.23	348	355.0	0.023	0.02	<	10		
Oil Creek	OK310800-01-0240P	4/5/2010	46153	6.99	75.80	0.57	Organics	243.0	19.4	558.0	7.72	20.7	31.4	0.04	1.29	<	0.02	0.25	1.350	1.56	312	270.0	0.006	0.021	<	10	4.45	
Oil Creek	OK310800-01-0240P	5/17/2010	46241	8.93	97.20	4.48	Inorganics	278.0	15.5	527.0	7.94	5.5	10.8	0.05	0.59	<	0.02	0.11	0.660	0.72	314	343.0	0.07	0.085	<	10	28.20	
Oil Creek	OK310800-01-0240P	6/21/2010	46432	5.66	74.00	3.45	Organics	224.0	29.3	467.0	7.84	10.8	15.9	0.067	0.33	<	0.02	0.27	0.417	0.62	280	242.0	0.141	0.139	<	10	3.65	
Oil Creek	OK310800-01-0240P	7/26/2010	46517	4.70	60.70	2.89	Organics	184.0	28.6	423.2	7.60	7.25	11.2	0.037	0.06	<	0.02	0.46	0.117	0.54	235	196.0	0.018	0.036	<	10	2.23	
Oil Creek	OK310800-01-0240P	9/8/2010	46596	3.67	44.10	4.92	Inorganics	171.0	24.6	355.0	7.71	8.3	15	0.025	0.02	0.02	0.51	0.065	0.55	204	184.0	0.021	0.025	<	10			
Oil Creek	OK310800-01-0240P	10/12/2010	46700	6.62	70.80	1.52	Organics	0.0	18.5	421.0	7.83	13.5	20.8	0.021	0.22	0.02	0.41	0.261	0.65	233	210.0	0.01	0.021	<	10	1.30		
Oil Creek	OK310800-01-0240P	11/15/2010	46763	7.90	73.90	0.95	Organics	265.0	12.4	543.0	8.01	59.6	86.4	0.015	0.02	0.02	1.02	0.055	1.06	413	293.0	0.1	0.145	<	14	0.60		
Oil Creek	OK310800-01-0240P	1/3/2011	46820	11.09	91.00	2.33	Organics	364.0	6.9	542.0	8.19	4.5	11.2	0.015	0.43	0.02	0.53	0.465	0.98	328	315.0	0.059	0.06	<	10	3.51		
Oil Creek	OK310800-01-0240P	2/7/2011	46993	12.45	95.90	5.93	Inorganics	279.0	4.4	603.0	8.22	12	32.4	0.015	2.14	0.04	0.54	2.195	2.72	388	320.0	0.008	0.034	<	10	10.49		
Oil Creek	OK310800-01-0240P	3/14/2011	47049	8.64	82.40	1.53	Organics	247.0	13.1	522.0	8.02	12.1	26.5	0.016	0.27	<	0.02	0.4	0.306	0.69	329	275.0	<	0.005	<	10	2.91	
Oil Creek	OK310800-01-0240P	4/18/2011	47072	7.15	77.30	1.91	Organics	246.0	19.1	482.0	7.80	12.6	31.1	0.046	0.03	<	0.02	0.5	0.096	0.55	326	297.0	0.009	0.027	<	10	2.86	
Otter Creek	OK311500-01-0080F	5/26/2009	43588	5.49	64.90	73.60	Inorganics	134.0	24.0	528.0	7.60	71.2	56.5	0.069	0.33	<	0.02	0.89	0.419	1.24	392	152.0	0.295	0.308	<	36		
Otter Creek	OK311500-01-0080F	6/29/2009	43912	6.05	74.90	33.00	Inorganics	255.0	26.2	1850.0	7.85	431.1	234.6	0.131	0.82	<	0.02	1.02	0.971	1.86	1117	430.0	0.202	0.215	<	25		
Otter Creek	OK311500-01-0080F	8/3/2009	44312	4.32	56.30	32.00	Inorganics	141.0	29.0	1210.0	7.55	252.6	158.5	0.271	0.9	<	0.02	1.46	1.191	2.38	735	253.0	0.35	0.358	<	27	5.99	
Otter Creek	OK311500-01-0080F	8/10/2009	44335	4.42	55.50	27.40	Organics	294.0	27.1	2091.0	7.74															3.62		
Otter Creek	OK311500-01-0080F	9/15/2009	44599	6.29	70.70	144.00	Inorganics	55.0	21.1	243.0	7.40	17.6	13.9	0.057	2.75	0.1	1.3	2.907	4.15	207	70.0	0.448	0.489	<	94			
Otter Creek	OK311500-01-0080F	10/12/2009	44723	7.13	67.40	214.00	Inorganics	89.0	12.9	493.9	7.51	75.7	41.2	0.04	0.72	<	0.02	0.85	0.780	1.59	423	122.0	0.292	0.344	<	36		
Otter Creek	OK311500-01-0080F	11/16/2009	45175	5.24	49.30	31.90	Inorganics	214.0	12.7	1660.0	7.77	426.8	202.9	0.015	0.37	<	0.02	0.64	0.405	1.03	1041	377.0	0.027		<	16		
Otter Creek	OK311500-01-0080F	12/21/2009	45311	16.03	125.10	2.83	Organics	263.0	4.9	1997.0	8.23	436.4	2365.9	0.015	0.87	<	0.02	0.58	0.905	1.47		417.0	<	0.005	<	10		
Otter Creek	OK311500-01-0080F	2/8/2010	46056	12.16	93.20	100.30	Inorganics	102.0	4.1	478.0	8.03	134.9	96.8	0.084	0.56	<	0.02	0.87	0.664	1.45	353	143.0	0.161	0.226	<	23		
Otter Creek	OK311500-01-0080F	3/8/2010	46144	9.18	85.00	18.00	Inorganics	259.0	11.9	1275.0	8.20	444.7	277.9	0.033	0.56	<	0.02	0.57	0.613	1.15	744	324.0	0.044	0.064	<	18		
Otter Creek	OK311500-01-0080F	4/12/2010	46197	7.97	86.70	12.40	Organics	269.0	19.5	1486.0	7.98	306.1	183.8	0.061	0.64	<	0.02	0.6	0.721	1.26	914	361.0	0.075	0.1	<	10	5.01	
Otter Creek	OK311500-01-0080F	5/24/2010	46285	5.64	67.70	20.80	Inorganics	237.0	24.6	1419.0	7.82	270.4	171.1	0.145	0.77	<	0.02	0.15	0.935	0.94	864	367.0	0.164	0.175	<	18	14.12	
Otter Creek	OK311500-01-0080F	6/28/2010	46307	5.71	71.50	20.00	Inorganics	229.0	26.9	2290.0	7.90	480.8	203.8	0.058	0.27	<	0.02	1.17	0.348	1.46	1329	464.0	0.191	0.247	<	18	4.35	
Otter Creek	OK311500-01-0080F	8/2/2010	46546	5.56	72.90	12.00	Organics	202.0	29.6	1086.0	8.22	194.4	149.5	0.015	0.02	0.02	1.18	0.055	1.22	585	256.0	0.136	0.187	<	11	4.46		
Otter Creek	OK311500-01-0080F	9/13/2010	46634	5.63	70.30	74.10	Inorganics	135.0	26.6	584.0	7.60	77.1	50	0.076	0.46	0.02	1.35	0.556	1.83	396	140.0	0.355	0.438	<	16	14.34		
Otter Creek	OK311500-01-0080F	10/18/2010	46738	4.78	50.10	25.40	Organics	184.0	17.6	1065.0	7.73	184.7	143.9	0.015	0.18	0.02	0.92	0.215	1.12	624	286.0	0.112	0.16	<	10	0.75		
Otter Creek	OK311500-01-0080F	11/29/2010	46801	8.68	73.70	7.76	Organics	314.0	8.2	1116.0	7.87	212.5	136.3	0.015	0.22	0.02	0.69	0.255	0.93	732	322.0	0.122	0.144	<	11	2.78		
Otter Creek	OK311500-01-0080F	1/10/2011	46864	13.31	107.00	5.74	Organics	295.0	4.2	1800.0	8.17	399.2	190.7	0.049	0.77	0.02	0.95	0.839	1.74	1093	457.0	0.012	0.154	<	10			
Otter Creek	OK311500-01-0080F	2/14/2011	47032	16.71	136.20	9.61	Organics	265.0	6.6	1772.0	8.17	322.8	181.2	0.015	1.33	<	0.02	1.03	1.365	2.38	1062	420.0	<	0.005	0.082	<	10	6.35
Otter Creek	OK311500-01-0080F	3/21/2011	46952	18.08	195.80	21.90	Organics	248.0	19.1	1873.0	8.45	372.6	189.2	0.015	0.02	0.02	1.83	0.055	1.87	1099	402.0	0.011	0.127	<	21	2.53		
Otter Creek	OK311500-01-0080F	4/25/2011	47116	3.53	38.60	17.30	Organics	237.0	18.8	2369.0	7.79	545.2	239.9	0.232	0.22	<	0.02	1.28	0.472	1.52	1425	570.0	0.147	0.22	<	18	2.83	
Pennington Creek	OK310800-01-0120G	5/19/2009	43540	6.45	72.30	4.98	Inorganics	222.0	21.2	413.0	8.19	7.9	11.8	0.015	0.23	<	0.02	0.22	0.265	0.47	278	260.0	0.012	0.052	<	10		
Pennington Creek	OK310800-01-0120G	6/23/2009	43848	7.53	100.30	1.65	Organics	260.0	30.4	438.0	8.24	5.3	9.8	0.015	0.15	<	0.02	0.14	0.185	0.31	223	264.0	0.007	0.072	<	10	36.24	
Pennington Creek	OK310800-01-0120G	7/27/2009	44136	7.09	90.80	1.65	Inorganics	223.0	28.2	255.0	8.32	4.6	<	0.02	0.06	0.02	0.21	0.095	0.29	201	222.0	0.006	0.01	<	10			
Pennington Creek	OK310800-01-0120G	7/29/2009	44161	4.90	61.60	3.58	Inorganics	247.0	26.7	340.0	8.28															31.09		
Pennington Creek	OK310800-01-0120G	9/1/2009	44453	7.49	90.40	1.48	Organics	225.0	25.0	400.0	8.47	4.9	9.8	0.021	<	0.02	<	0.11	0.061	0.15	219	225.0	0.008	0.034	<	10	11.26	
Pennington Creek	OK310800-01-0120G	10/6/2009	44674	8.20	87.30	27.70	Inorganics	228.0	18.4	425.0	8.00	3.1	7.3	0.015	0.07	<	0.02	0.15	0.105	0.24	229	227.0	0.039	0.043	<	15		
Pennington Creek	OK310800-01-0120G	11/2/2009	45075	9.32	93.00	3.88	Inorganics	220.0	15.7	480.0	8.41	3.5	7.7	0.034	0.28	<	<	0.11	0.314	0.39	279	260.0	0.011	0.032	<	10	43.65	
Pennington Creek	OK310800-01-0120G	12/14/2009	45214	11.37	102.50	0.76	Organics	263.0	10.7	512.0	8.33	4.3	10.1	0.02	0.25	<	0.02	0.11	0.290	0.38	280	262.0	<	0.005	<	10	15.73	
Pennington Creek	OK310800-01-0120G	1/25/2010	45389	10.49	92.70	0.71	Organics	253.0	9.8	491.0	8.19	4.1	10.4	0.015	0.17	<	0.02	0.11	0.205	0.30	236	263.0	<	0.012	<	10	20.13	
Pennington Creek	OK310800-01-0120G	3/1/2010	46092	11.10	98.40	2.16	Inorganics	250.0	9.9	483.2	8.54	4.7	9.1	0.015	0.1	<	0.02	0.15	0.135	0.27	258	250.0	0.013	0.014	<	10	42.16	
Pennington Creek	OK310800-01-0120G	4/5/2010	46155	9.42	101.00	10.20	Organics	270.0	18.7	464.8	8.31	4.7	10.1	0.031	0.04	<	0.02	0.11	0.091	0.17	233	252.0	0.012	0.006	<	10	31.47	
Pennington Creek	OK310800-01-0120G	5/17/2010	46243	9.30	109.90	6.75	Inorganics	270.0	21.3	422.8	8.33	3	7.2	0.049	0.29	<	0.02	0.11	0.359	0.42	249	254.0	0.025	0.042	<	10		
Pennington Creek	OK310800																											

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)	
Quartermaster Creek	OK310840-01-0060L	3/14/2011	46938	18.12	176.70	11.50	Organics	245.0	16.2	3575.0	8.49	61.5	2501.1	0.015	0.02	0.02	1.79	0.055	1.83	3640	2525.0	0.028	0.128	21	0.75	
Quartermaster Creek	OK310840-01-0060L	4/18/2011	47087			3.23	Organics		26.2	2220.0	8.38	47.3	2348.7	0.015	< 0.02	< 0.02	0.86	0.055	0.90	3614		0.026	0.05	< 10		
Rainy Mountain Creek	OK310830-02-0060G	5/19/2009	43558	8.35	97.80	155.00	Inorganics	120.0	22.9	1105.0	7.91	179.6	368.1	0.028	0.13	< 0.02	1.24	0.178	1.39	655	315.0	0.095	0.201	138	51.96	
Rainy Mountain Creek	OK310830-02-0060G	6/22/2009	44048	7.36	98.80	23.90		290.0	30.9	2095.0	8.23										650.0				1.13	
Rainy Mountain Creek	OK310830-02-0060G	7/13/2009	43832				Inorganics					191	609.4	0.015	< 0.02	< 0.02	0.94	0.055	0.98	1425		0.102	0.11	13		
Rainy Mountain Creek	OK310830-02-0060G	8/3/2009	44277	7.07	90.50	415.00	Inorganics	98.0	28.3	566.0	7.95	38	128	0.02	0.28	< 0.02	1.3	0.320	1.60	423	165.0	0.268	0.386	246		
Rainy Mountain Creek	OK310830-02-0060G	9/1/2009	44503	9.02	109.50	57.30	Inorganics	214.0	25.2	486.0	8.34	109.1	< 533.2	0.017	< 0.02	< 0.02	0.26	0.057	0.30	1097	515.0	0.102	0.087	27	0.23	
Rainy Mountain Creek	OK310830-02-0060G	9/3/2009	44496	4.88	57.20	113.00	Inorganics	270.0	27.7	1550.0	8.24														2.08	
Rainy Mountain Creek	OK310830-02-0060G	10/13/2009	44703	8.95	89.20	39.40	Inorganics	202.0	15.2	1292.0	8.19	132.9	428	0.02	0.27	< 0.02	0.57	0.290	0.84	851	400.0	0.091	0.134	16	15.62	
Rainy Mountain Creek	OK310830-02-0060G	11/17/2009	45110	11.22	97.80	10.70	Inorganics	236.0	9.3	1554.0	8.29	133.4	469.8	0.015	< 0.02	< 0.02	< 0.11	0.055	0.15	1043	550.0	0.036	0.066	< 10	11.20	
Rainy Mountain Creek	OK310830-02-0060G	12/28/2009	45259	14.54	104.00	10.80	Inorganics	273.0	1.6		8.28	246.1	833.8	0.015	0.28	< 0.02	0.3	0.315	0.60	1690	850.0	0.019	0.037	< 10		
Rainy Mountain Creek	OK310830-02-0060G	3/9/2010	46127	10.12	96.90	470.00	Inorganics	234.0	13.3	1932.0	8.12	182.8	504.6	0.04	0.37	< 0.02	1.7	0.430	2.09	1290	580.0	0.188	0.323	407		
Rainy Mountain Creek	OK310830-02-0060G	4/13/2010	46190	10.20	116.30	23.40	Inorganics	296.0	21.8	2824.0	8.28	299.5	1009.2	0.024	< 0.02	< 0.02	0.43	0.064	0.47	1922	845.0	0.049	0.081	18	12.81	
Rainy Mountain Creek	OK310830-02-0060G	5/25/2010	46278	8.35	101.60	10.60	Inorganics	323.0	25.2	2700.0	8.24	282.1	987.6	0.018	< 0.02	< 0.02	0.92	0.058	0.96	1868	815.0	0.079	0.14	81	3.08	
Rainy Mountain Creek	OK310830-02-0060G	6/29/2010	46470	7.58	99.30	55.90	Inorganics	214.0	29.3	4183.0	8.34	461.1	1684	0.015	< 0.02	< 0.02	1.93	0.055	1.97	3034	1110.0	0.039	0.22	48	5.93	
Rainy Mountain Creek	OK310830-02-0060G	7/26/2010	46337	6.73	87.10	16.60	Inorganics	144.0	28.7	732.0	7.86	84.2	148.9	0.106	0.05	< 0.02	1.14	0.176	1.21	450	170.0	0.296	0.371	141		
Rainy Mountain Creek	OK310830-02-0060G	9/14/2010	46627	5.67	74.20	23.20	Inorganics	231.0	29.1	1593.0	8.40	156.6	464	0.146	0.38	0.02	0.77	0.546	1.17	990	640.0	0.195	0.275	40	3.27	
Rainy Mountain Creek	OK310830-02-0060G	10/19/2010	46731	6.73	73.70	24.10	Inorganics	248.0	19.8	2555.0	8.00	257.7	818.5	< 0.015	< 0.02	< 0.02	0.95	0.055	0.99	1752	820.0	0.042	0.092	< 10	0.35	
Rainy Mountain Creek	OK310830-02-0060G	11/30/2010	46794	11.25	91.80	31.50	Inorganics	284.0	6.6	2134.0	8.16	231.6	551.1	0.015	0.02	0.02	0.75	0.055	0.79	1480	715.0	0.048	0.081	13	4.57	
Rainy Mountain Creek	OK310830-02-0060G	1/25/2011	46857	13.66	102.10	6.44	Inorganics	286.0		3201.0	8.10	371.3	945.3	0.015	0.16	0.02	0.54	0.195	0.72	2255	760.0	0.011	0.035	< 10		
Rainy Mountain Creek	OK310830-02-0060G	2/15/2011	46989	16.27	143.70	10.30	Inorganics	264.0	9.9	2386.0	8.32	317.6	837.5	0.015	0.46	< 0.02	0.58	0.495	1.06	1968	900.0	< 0.005	0.025	< 10		
Rainy Mountain Creek	OK310830-02-0060G	3/22/2011	46974	9.50	106.60	39.00	Inorganics	314.0	21.0	2023.0	7.96	359.2	888	< 0.015	< 0.02	< 0.02	0.79	0.055	0.83	2188	870.0	0.042	0.091	33	3.39	
Rainy Mountain Creek	OK310830-02-0060G	4/26/2011	47109	8.34	89.50	34.60	Inorganics	363.0	18.7	3538.0	7.85	375.5	1112.1	0.02	0.02	< 0.02	0.78	0.060	0.82	2527	985.0	0.07	0.119	20	1.20	
Red Creek	OK311100-01-0290D	5/27/2009	43600	3.09	35.70	64.30	Inorganics	135.0	22.7	6.4	7.45	116.3	15.5	0.069	< 0.02	< 0.02	1.62	0.109	1.66	396	169.0	0.098	0.156	13		
Red Creek	OK311100-01-0290D	7/1/2009	43926	2.07	26.70	28.20	Inorganics	54.0	27.5	175.3	7.18	11.7	6.3	0.161	0.33	0.1	1.8	0.591	2.23	229	80.0	0.192	0.371	65		
Red Creek	OK311100-01-0290D	8/4/2009	44302	4.09	51.30	258.00	Inorganics	49.0	26.9	216.4	7.14	27.7	3.1	0.059	0.16	< 0.02	1.08	0.239	1.26	291	55.0	0.111	0.131	28		
Red Creek	OK311100-01-0290D	8/25/2009	43675	2.22	27.70	58.70	Organics	125.0	26.5	245.0	7.34															
Red Creek	OK311100-01-0290D	9/9/2009	44522	3.33	40.00	40.60	Inorganics	140.0	24.7	421.2	7.35	49.5	< 17	0.015	0.96	< 0.02	0.53	0.995	1.51		226	160.0	0.047	0.108	24	
Red Creek	OK311100-01-0290D	9/14/2009	44567				Inorganics																			
Red Creek	OK311100-01-0290D	10/13/2009	44735	6.61	65.70	520.00	Inorganics	58.0	15.3	271.2	7.51	22.7	10.9	0.048	0.29	0.03	1.77	0.368	2.09		526	84.0	0.216	0.422	32	
Red Creek	OK311100-01-0290D	11/17/2009	45135	4.25	38.30	77.70	Inorganics	109.0	10.7	343.0	7.83	33.5	9.5	0.015	< 0.02	< 0.02	0.85	0.055	0.89	229	180.0	0.051	0.16	< 10		
Red Creek	OK311100-01-0290D	1/5/2010	45344	13.77	97.20		Inorganics	76.0	1.1		8.12	45.1	9.6	0.036	0.19	< 0.02	0.9	0.246	1.11	242	160.0	0.05	0.144	< 10	1.58	
Red Creek	OK311100-01-0290D	2/9/2010	46068	12.35	92.80	142.00	Inorganics	65.0	3.4	311.2	8.02	37.6	9.6	0.082	0.19	< 0.02	1.15	0.292	1.36	287	420.0	0.076	0.17	41		
Red Creek	OK311100-01-0290D	3/4/2010	46134	10.54	87.50	90.70	Inorganics	125.0	7.3	532.0	8.17	81.5	14.6	0.041	0.15	< 0.02	0.98	0.211	1.15	361	252.0	0.041	0.105	15	7.16	
Red Creek	OK311100-01-0290D	4/13/2010	46209	4.79	51.40	53.40	Inorganics	343.0	19.5	2012.0	7.88	481.8	39.1	0.023	0.05	< 0.02	0.43	0.093	0.50	1066	470.0	0.033	0.073	25	0.25	
Red Creek	OK311100-01-0290D	5/25/2010	46297	4.96	58.90	95.60	Organics	176.0	24.0	830.0	7.75	172.4	18.3	0.042	0.22	< 0.02	0.15	0.282	0.39	468	350.0	0.058	0.066	51	5.18	
Red Creek	OK311100-01-0290D	6/28/2010	46318	4.80	61.00	16.10	Inorganics	251.0	28.3	1016.0	7.74	187.1	16.7	0.02	0.03	< 0.02	0.64	0.070	0.69	520	224.0	0.019	0.053	< 10		
Red Creek	OK311100-01-0290D	8/3/2010	46558	3.30	43.40	60.10	Inorganics	260.0	29.2	866.0	7.88	180.6	13.1	0.067	0.02	0.02	0.73	0.107	0.77	539	300.0	0.029	0.075	30		
Red Creek	OK311100-01-0290D	9/14/2010	46646	8.14	101.70		Inorganics	46.0	25.2	140.4	7.48	6.8	3.7	0.494	2.6	0.09	3.81	3.184	6.50	444	60.0	0.289	0.645	225		
Red Creek	OK311100-01-0290D	10/19/2010	46750	3.55	36.10	229.00	Inorganics	119.0	16.5	288.8	7.93	51.3	30.2	0.048	0.02	0.02	1.55	0.088	1.59	363	275.0	0.138	0.267	10		
Red Creek	OK311100-01-0290D	11/30/2010	46813	5.01	41.90	262.00	Inorganics	151.0	6.9	320.4	7.66	14.9	7.3	0.075	0.17	0.02	1.22	0.265	1.41	355	255.0	0.103	0.202	10		
Red Creek	OK311100-01-0290D	1/10/2011	46875	10.25	77.30	20.70	Inorganics	225.0	3.7	487.2	7.98	25.8	9.59	0.015	0.07	0.02	0.8	0.105	0.89	297	150.0	0.021	0.049	10		
Red Creek	OK311100-01-0290D	2/14/2011	47021	9.51	84.80	167.00	Inorganics	93.0	8.7	301.4	7.88	25.7	11.9	0.017	0.25	< 0.02	2.07	0.287	2.34	284	150.0	0.122	0.306	10		
Red Creek	OK311100-01-0290D	3/22/2011	46964	6.13	66.90	64.60	Inorganics	182.0	17.2	1055.0	7.73	214.7	20.4	0.061	0.03	0.02	1.26	0.111	1.31	594	240.0	0.042	0.082	10		
Red Creek	OK311100-01-0290D	4/26/2011	47128	6.89	71.00	50.00	Organics	274.0	18.9	1114.0	8.04	209.7	18.8	0.023	< 0.02	< 0.02	1.45	0.063	1.49	597	295.0	0.017	0.109	18		
Rush Creek	OK310810-05-0010D	5/18/2009	43531	7.93	86.30	366.00	Inorganics	59.0	19.3	480.0		20.7	60	0.018	0.25	0.12	1.07	0.388	1.44	344	220.0	0.092	0.329	326		
Rush Creek	OK310810-05-0010D	6/22/2009	43839	6.67	87.10	22.40	Organics	274.0	29.2	1072.0	8.02	103.5	154.7	0.062	0.11	< 0.02	0.79	0.892	0.92	578	400.0	0.037</				

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)				
Salt Creek	OK310810-03-0080G	1/25/2010	45384	12.60	94.30	31.60	Inorganics	384.0	3.3	1145.0	8.31	140.4	82.4	0.015	0.08	<	0.02	0.42	0.115	0.52	652	450.0	0.044	0.077	<	10	9.71		
Salt Creek	OK310810-03-0080G	3/1/2010	46087	11.64	96.50	20.30	Inorganics	365.0	7.2	1231.0	8.35	148.6	82.3	0.022	0.15	<	0.02	0.34	0.192	0.51	705	522.0	0.027	0.047	15	12.79			
Salt Creek	OK310810-03-0080G	4/5/2010	46150	8.06	86.70	7.56	Organics	407.0	18.9	1302.0	8.11	188.9	103.8	0.026	<	0.02	<	0.02	0.21	0.066	0.25	724	601.0	0.013	0.021	<	10	8.95	
Salt Creek	OK310810-03-0080G	5/17/2010	46238	8.40	89.90	100.00	Organics	373.0	18.6	698.0	8.07	51.1	35.5	0.034	0.1	<	0.02	<	0.11	0.154	0.23	404	331.0	0.054	0.096	101	45.01		
Salt Creek	OK310810-03-0080G	6/21/2010	46429	7.25	88.80	38.00	Inorganics	204.0	25.6	852.0	8.18	93.4	45.2	0.015	0.19	<	0.02	0.98	0.225	1.19	506	357.0	0.044	0.071	28	159.07			
Salt Creek	OK310810-03-0080G	7/26/2010	46514	6.88	82.60	5.27	Organics	387.0	24.6	1476.0	7.99	296.9	122.7	0.023	<	0.02	<	0.02	0.53	0.063	0.57	824	579.0	<	0.005	0.029	<	10	6.74
Salt Creek	OK310810-03-0080G	9/8/2010	46593	7.52	88.80	30.70	Inorganics	392.0	23.6	1289.0	8.16	150.1	105.9	0.02	0.02	0.02	0.72	0.060	0.76	742	484.0	0.012	0.027	35					
Salt Creek	OK310810-03-0080G	10/12/2010	46697	7.86	78.40	8.65	Organics	408.0	15.1	1192.0	8.16	115.4	112.5	0.015	0.02	0.02	0.52	0.055	0.56	666	482.0	0.005	0.008	10	4.41				
Salt Creek	OK310810-03-0080G	11/15/2010	46760	9.54	81.70	4.63	Organics	458.0	8.6	1250.0	8.28	102	102.5	0.015	0.95	0.02	0.29	0.985	1.26	736	574.0	0.009	0.01	10	4.85				
Salt Creek	OK310810-03-0080G	1/3/2011	46817	14.69	101.20	9.43	Organics	491.0	0.4		8.33	107.2	93	0.015	0.02	0.02	0.43	0.055	0.47	734	610.0	0.009	0.014	10	5.56				
Salt Creek	OK310810-03-0080G	2/7/2011	46990	12.90	88.60	28.00	Inorganics	451.0	0.1		8.29	116.7	93.7	0.015	0.23	<	0.02	0.5	0.265	0.75	714	525.0	0.011	0.026	<	10	10.24		
Salt Creek	OK310810-03-0080G	3/14/2011	47046	9.33	83.80	5.73	Organics	395.0	10.5	1029.0	8.34	143.6	108.6	0.015	<	0.02	0.33	0.055	0.37	761	510.0	<	0.005	0.017	<	10	8.82		
Salt Creek	OK310810-03-0080G	4/18/2011	47069	6.56	68.30	12.30	Organics	376.0	17.2	1210.0	8.16	179.2	114.2	0.015	0.15	<	0.02	0.49	0.185	0.66	830	573.0	0.011	0.021	<	10	4.94		
Sandstone Creek	OK310840-02-0020C	5/18/2009	43544	10.05	112.20	35.90	Inorganics	260.0	20.7	1684.0	7.97	51.2	681.9	0.057	0.23	<	0.02	0.56	0.307	0.81	1275	830.0	0.028	0.098	39	6.36			
Sandstone Creek	OK310840-02-0020C	6/22/2009	43854	9.49	123.90	12.50	Inorganics	254.0	29.5	2409.0	7.93	98	1482.1	0.028	0.19	<	0.02	0.39	0.238	0.60	2098	1360.0	0.029	0.095	20	1.38			
Sandstone Creek	OK310840-02-0020C	7/27/2009	44148	7.84	98.00	19.90	Organics	207.0	26.8	2782.0	7.85	41.8	2069.6	0.095	0.17	<	0.02	0.47	0.285	0.66	2543		<	0.005	0.092	17	0.78		
Sandstone Creek	OK310840-02-0020C	8/31/2009	44459	8.15	936.30	11.30	Organics	216.0	22.0	2736.0	7.86	45	1790.2	0.055	0.14	<	0.02	0.23	0.215	0.39	2495	1620.0	0.02	0.087	<	10	0.44		
Sandstone Creek	OK310840-02-0020C	10/5/2009	44680	6.53	64.40	4.50	Organics	251.0	15.0	2860.0	7.77	44.4	2190.4	0.015	0.26	<	0.02	0.17	0.295	0.45	2784	1810.0	<	0.005	0.008	<	10	0.64	
Sandstone Creek	OK310840-02-0020C	11/2/2009	45086	8.29	78.00	41.90	Inorganics	280.0	12.5	2000.0	7.95	49.3	1315.8	0.019	0.14	<		0.56	0.159	0.70	1581	1006.0	0.058	0.078	18	2.00			
Sandstone Creek	OK310840-02-0020C	12/14/2009	45225	13.64	105.20	17.20	Organics	303.0	4.4	2161.0	8.28	43.9	1145	0.015	0.23	<	0.02	0.12	0.265	0.37	1770	1260.0	0.014		27	1.74			
Sandstone Creek	OK310840-02-0020C	1/25/2010	45401	14.68	121.00	11.40	Inorganics	290.0	7.2	2047.0	8.31	46.4	1092.6	0.015	0.15	<	0.02	0.15	0.185	0.32	1623	1186.0	<	0.005	0.014	12	0.83		
Sandstone Creek	OK310840-02-0020C	3/1/2010	46104	11.68	97.00	20.40	Inorganics	282.0	7.3	2060.0	8.27	50	1096.3	0.015	0.09	<	0.02	0.27	0.125	0.38	1664	1108.0	0.032	0.025	22				
Sandstone Creek	OK310840-02-0020C	4/5/2010	46167	11.21	128.10	27.90	Inorganics	262.0	21.9	7740.0	8.02	51.9	1346.7	0.047	0.1	<	0.02	0.47	0.167	0.59	1840	1214.0	0.032	0.058	24	1.80			
Sandstone Creek	OK310840-02-0020C	5/17/2010	46255	7.80	86.40	32.80	Inorganics	294.0	20.4	2080.0	8.02	48.7	1076	0.183	0.23	<	0.02	<	0.11	0.433	0.36	1673	1185.0	0.038	0.056	32	4.23		
Sandstone Creek	OK310840-02-0020C	6/21/2010	46447	8.32	102.70	9.58	Inorganics	261.0	26.3	249.1	7.84	50	1110.5	0.032	0.18	<	0.02	0.68	0.232	0.88	2159	1475.0	0.016	0.046	12	2.12			
Sandstone Creek	OK310840-02-0020C	7/26/2010	46531			76.10	Inorganics	238.0		2791.0	7.71	54	2060.9	0.084	0.16	0.02	0.9	0.264	1.08	2460	1565.0	0.02	0.03	11	0.85				
Sandstone Creek	OK310840-02-0020C	9/7/2010	46604	5.33	60.30	5.40	Organics	260.0	21.4	3257.0	7.60	51.4	1636.5	0.188	0.21	0.02	0.83	0.418	1.06	3035	2070.0	0.04	0.034	10					
Sandstone Creek	OK310840-02-0020C	10/11/2010	46708	8.34	86.50	2.35	Organics	263.0	17.0		7.88	45.9	1745.1	0.063	0.28	0.02	0.79	0.363	1.09	2955	2240.0	0.025	0.032	10					
Sandstone Creek	OK310840-02-0020C	11/15/2010	46771	8.83	74.70	66.50	Inorganics	201.0	8.1	1622.0	7.71	35.4	671.5	0.015	0.11	0.02	0.79	0.145	0.92	1272	1085.0	0.054	0.101	10	1.10				
Sandstone Creek	OK310840-02-0020C	1/3/2011	46834	13.48	99.80	15.50	Inorganics	340.0	2.9	2257.0	8.23	48.3	865.1	0.015	0.31	0.02	0.48	0.345	0.81	1927	1300.0	0.011	0.016	10	2.24				
Sandstone Creek	OK310840-02-0020C	1/25/2011	46924				Organics																						
Sandstone Creek	OK310840-02-0020C	2/7/2011	47007	8.92	66.10	7.76	Inorganics	298.0	2.9		8.33	46	804.5	0.015	0.21	<	0.02	0.53	0.245	0.76	1522	1075.0	0.007	0.015	12				
Sandstone Creek	OK310840-02-0020C	3/14/2011	46937	12.24	113.30	12.70	Inorganics	244.0	11.6	2121.0	8.15	51.9	1028.4	0.015	0.11	0.02	0.53	0.145	0.66	1830	1265.0	0.005	0.022	10	1.67				
Sandstone Creek	OK310840-02-0020C	4/18/2011	47086	9.07	94.10	5.69	Organics	149.0	17.8	2555.0	7.84	59.3	1339.6	0.038	0.1	<	0.02	0.48	0.158	0.60	2287		0.011	0.023	10				
Sandy Creek	OK311600-01-0040G	5/27/2009	43590	7.73	84.20	68.30	Inorganics	174.0	19.6	13600.0	7.81	4552.8	2042.2	0.146	1.07	<	0.02	1.43	1.236	2.52	9471	2650.0	0.063	0.154	73	12.24			
Sandy Creek	OK311600-01-0040G	5/28/2009	43679	17.37		41.30	Inorganics	172.0	25.5	13850.0	8.19										3100.0					12.13			
Sandy Creek	OK311600-01-0040G	6/30/2009	43915	6.64	79.00	9.93	Inorganics	148.0	24.1	16370.0	7.56	5453.6	2342.2	0.023	0.74	<	0.02	0.86	0.783	1.62	11505	3110.0	<	0.005	0.068	19	5.87		
Sandy Creek	OK311600-01-0040G	8/4/2009	44315	5.82	70.80	13.90	Inorganics	123.0	25.3	9200.0	7.75	2775.2	817.2	0.407	0.56	<	0.02	1.05	0.987	1.63	5873	1530.0	0.036	0.081	18	11.79			
Sandy Creek	OK311600-01-0040G	9/16/2009	44602	6.52	74.40	103.00	Inorganics	129.0	21.7	6120.0	7.69	1869.5	647.6	0.185	0.8	<	0.02	1.03	1.005	1.85	3775	1300.0	0.13	0.171	121	24.17			
Sandy Creek	OK311600-01-0040G	10/13/2009	44726	8.05	81.20	16.70	Inorganics	176.0	15.7	18220.0	7.50	8993.8	3519.8	0.015	2.31	<	0.02	<	0.11	2.345	2.44	12228	2830.0	<	0.005	<	0.005	21	11.99
Sandy Creek	OK311600-01-0040G	11/17/2009	45178	8.67	73.90	53.80	Inorganics	184.0	8.4	18360.0	7.92	6906	2603.8	0.015	2.1	<	0.02	0.28	2.135	2.40	12188	3910.0	<	0.005	0.05	64	7.13		
Sandy Creek	OK311600-01-0040G	12/22/2009	45314	10.77	88.40	36.10	Inorganics	158.0	4.3	17850.0	7.78	8788.6	3772.6	0.086	3.45	<	0.02	<	0.11	3.556	3.58	4080.0	0.023	0.021	59	9.93			
Sandy Creek	OK311600-01-0040G	2/9/2010	46059	12.82	97.10	4.47	Inorganics	168.0	3.7	13980.0	7.81	4438.5	2080	0.015	2	<	0.02	<	0.11	2.035	2.13	9319	2800.0	0.012	0.011	<	10	7.83	
Sandy Creek	OK311600-01-0040G	3/9/2010	46147	10.00	89.50	9.15	Inorganics	185.0	10.5	16260.0	7.82	6426.2	2760.2	0.109	2.47	<	0.02	<	0.12	2.599	2.61	11015	3620.0	0.013	0.018	18	7.91		
Sandy Creek	OK311600-01-0040G	4/13/2010	46200	7.19	73.70	35.90	Organics	180.0	16.6	16880.0	7.69	6104.3	2581.4	0.261	1.52	<	0.02	<	0.11	1.801	1.65	11234	3620.0	0.032					

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercSat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)
Spring Creek	OK310830-04-0010G	4/26/2011	47104	10.65	105.50	3.98	Inorganics	147.0	15.4	2004.0	7.72	52.2	1051.8	0.017	0.03	< 0.02	0.49	0.067	0.54	1713	1070.0	0.008	0.022	< 10	5.52
Spring Creek	OK310840-02-0240D	5/19/2009	43546	6.90	73.50	9.40	Organics	297.0	18.3	600.0	7.97	23.4	214.3	0.119	0.08	0.11	0.89	0.309	1.08	385	234.0	0.041	0.143	15	0.71
Spring Creek	OK310840-02-0240D	6/2/2009	43658	5.54	57.90	12.50	Organics	300.0	19.0	665.0	7.45														0.27
Spring Creek	OK310840-02-0240D	6/22/2009	43853	5.75	78.60	4.39	Organics	325.0	32.6	673.0	7.79	33.2	185.6	0.071	0.03	< 0.02	0.64	0.121	0.69	399	210.0	0.094	0.117	< 10	0.09
Spring Creek	OK310840-02-0240D	7/14/2009	44065				Inorganics																		
Spring Creek	OK310840-02-0240D	7/27/2009	44147	7.25	93.80	19.90	Organics	321.0	28.5	689.0	8.04	24.1	19	0.043	< 0.02	< 0.02	0.61	0.083	0.65	409	232.0	< 0.005	0.101	< 10	0.01
Spring Creek	OK310840-02-0240D	8/31/2009	44458	5.43	63.60	6.74	Organics	321.0	19.6	706.0	7.73	31.7	39.1	0.031	0.05	< 0.02	< 0.11	0.101	0.18	419	208.0	0.064	0.089	< 10	0.18
Spring Creek	OK310840-02-0240D	10/5/2009	44679	4.80	47.70	5.92	Organics	318.0	14.9	684.0	7.70	49.2	96.8	0.015	< 0.02	< 0.02	0.31	0.055	0.35	421	435.0	0.029	0.046	< 10	
Spring Creek	OK310840-02-0240D	11/2/2009	45085	3.68	35.00	12.00	Organics	280.0	12.8	655.0	7.65	26.1	102	0.045	< 0.02	< 0.02	0.66	0.065	0.68	391	225.0	0.049	0.084	19	
Spring Creek	OK310840-02-0240D	12/14/2009	45224	10.32	81.30	10.80	Organics	280.0	5.2	652.0	8.38	23.5	34.6	0.339	0.24	< 0.02	0.7	0.599	0.96	394	266.0	0.041	< 10	1.65	
Spring Creek	OK310840-02-0240D	1/25/2010	45400	12.07	105.80	10.10	Organics	275.0	9.8	629.0	8.56	27	59.9	0.302	0.33	< 0.02	0.41	0.652	0.76	358	288.0	0.025	0.054	< 10	0.26
Spring Creek	OK310840-02-0240D	3/1/2010	46103	10.70	87.90	11.50	Organics	258.0	7.1	618.0	8.53	26.9	55.7	0.119	0.37	< 0.02	0.47	0.509	0.86	391	300.0	0.016	0.055	< 10	
Spring Creek	OK310840-02-0240D	4/5/2010	46166	10.15	119.80	12.70	Organics	260.0	23.5	614.0	8.33	35.4	82.3	0.173	0.2	< 0.02	0.75	0.393	0.97	355	224.0	0.06	0.094	15	0.54
Spring Creek	OK310840-02-0240D	5/17/2010	46254	7.81	94.50	15.30	Organics	265.0		631.0	8.38	23.1	29.9	0.273	0.23	0.11	0.2	0.613	0.54	357	200.0	0.052	0.075	11	0.74
Spring Creek	OK310840-02-0240D	6/21/2010	46446	4.04	53.70	3.14	Organics	290.0	30.3	614.0	7.91	25.8	17.3	0.556	0.06	0.16	1.23	0.776	1.45	379	190.0	0.11	0.133	14	0.12
Spring Creek	OK310840-02-0240D	7/26/2010	46530			13.10	Organics	292.0		668.0	7.73	49.9	92.4	0.25	0.11	0.09	1.08	0.450	1.28	368	180.0	0.081	0.072	14	0.25
Spring Creek	OK310840-02-0240D	9/7/2010	46603	7.68	84.10	3.66	Organics	321.0	19.8	700.0	7.84	26.4	18.5	0.169	0.07	0.24	0.83	0.479	1.14	387	205.0	0.069	0.06	10	
Spring Creek	OK310840-02-0240D	10/11/2010	46707	6.67	71.10	2.52	Organics	305.0	18.0		7.86	30.9	30.1	0.107	0.11	0.2	0.57	0.417	0.88	387	175.0	0.056	0.066	10	
Spring Creek	OK310840-02-0240D	11/15/2010	46770	8.08	71.10	37.10	Organics	300.0	9.5	676.0	7.67	26.5	19.7	0.112	0.09	0.02	0.59	0.222	0.70	412	390.0	0.035	0.04	10	0.15
Spring Creek	OK310840-02-0240D	1/3/2011	46833	9.77	78.90	17.80	Organics	280.0	6.4	648.0	8.26	22.5	30	0.169	0.25	0.02	1.04	0.439	1.31	420	200.0	0.048	0.065	16	0.09
Spring Creek	OK310840-02-0240D	1/25/2011	46923				Organics																		
Spring Creek	OK310840-02-0240D	2/7/2011	47006	13.21	108.00	8.12	Inorganics	292.0	6.7		8.57	25.8	35.1	0.073	0.38	< 0.02	< 0.11	0.473	0.51	383	250.0	0.027	0.055	< 10	
Spring Creek	OK310840-02-0240D	3/14/2011	46936	13.06	128.40	12.50	Organics	253.0	14.5	591.0	8.59	25.8	29.6	0.087	0.21	< 0.02	0.84	0.317	1.07	393	270.0	0.034	0.068	10	0.43
Spring Creek	OK310840-02-0240D	4/18/2011	47085	10.73	124.30	7.84	Organics		24.9	642.0	8.25	24.3	17.5	0.16	0.03	< 0.02	0.75	0.210	0.80	394		0.072	0.087	< 10	0.09
Station Creek	OK311800-00-0060G	5/19/2009	43548	11.63	130.60	17.50	Organics	198.0	20.8	4242.0	7.93	465.7	2718.1	0.015	0.65	< 0.02	1.36	0.685	2.03	3664		0.011	0.069	11	0.40
Station Creek	OK311800-00-0060G	6/23/2009	43858	11.23	142.50	11.90	Organics	131.0	27.9	3792.0	7.92	759	2185.4	0.056	1.46	< 0.02	0.55	1.536	2.03	3943	2244.0	0.011	0.044	< 10	0.02
Station Creek	OK311800-00-0060G	6/25/2009	43872																						
Station Creek	OK311800-00-0060G	7/28/2009	44152	7.30	90.20	44.80	Organics	63.0	26.6	2361.0	7.78	360.2	1388.4	0.1	1.24	< 0.02	0.87	1.360	2.13	1693		0.035	0.13	37	0.10
Station Creek	OK311800-00-0060G	8/6/2009	43669	8.37	107.30	127.00	Organics	135.0	29.5	5200.0	7.90										2315.0				0.03
Station Creek	OK311800-00-0060G	9/1/2009	44463	5.35	57.90	20.50	Inorganics	119.0	20.1	5800.0	7.38	1945.2	2336.8	0.137	1.92	< 0.02	0.13	2.077	2.07	4646	2232.0	0.03	0.081	81	
Station Creek	OK311800-00-0060G	10/6/2009	44684	5.91	59.80	35.60	Inorganics	116.0	15.9	5830.0	7.55	1116.2	2453	0.015	3.47	< 0.02	1.06	3.485	4.53	4639	2420.0	0.019	0.038	22	
Station Creek	OK311800-00-0060G	11/3/2009	45091	6.40	59.30	16.10	Organics	121.0	11.9	4339.0	7.39	1387	2321.9	0.015	2.43	< 0.02	0.71	2.445	3.14	4561	2500.0	0.048	0.044	< 10	
Station Creek	OK311800-00-0060G	12/15/2009	45230	9.66	73.40	5.46	Organics	132.0	3.8	4099.0	7.94	1502.8	2435	0.015	2.39	< 0.02	0.35	2.425	2.76	4376		0.006	< 10	0.11	
Station Creek	OK311800-00-0060G	1/26/2010	45405	10.39	80.70	13.20	Inorganics	160.0	4.7	4315.0	7.92	1305.3	2774.6	0.015	0.98	< 0.02	0.6	1.015	1.60	3522	2254.0	0.007	0.044	< 10	
Station Creek	OK311800-00-0060G	3/2/2010	46108	11.18	89.90	8.74	Organics	122.0	6.0	3955.0	8.08	1421.1	2849.5	0.015	0.46	< 0.02	0.44	0.495	0.92	3617		< 0.005	0.017	< 10	
Station Creek	OK311800-00-0060G	4/6/2010	46171	6.29	70.10	22.50	Inorganics	140.0	20.5	4543.0	7.69	1555.7	2609.2	0.071	0.45	< 0.02	0.61	0.541	1.08	3960	2675.0	0.01	0.035	12	
Station Creek	OK311800-00-0060G	5/18/2010	46259	12.06	134.10	24.60	Inorganics	172.0	20.5	3451.0	7.97	201.2	2160	0.054	0.5	< 0.02	0.59	0.574	1.11	3118	2515.0	0.011	0.041	20	0.81
Station Creek	OK311800-00-0060G	6/22/2010	46451	5.78	67.80	22.30	Organics	117.0	23.2	5870.0	7.59	1971.4	2197.8	0.118	1.4	< 0.02	1.37	1.538	2.79	4565	2400.0	0.007	0.04	18	0.00
Station Creek	OK311800-00-0060G	7/27/2010	46535			18.40	Inorganics	130.0		5150.0	7.74	992.2	2477.4	0.063	1.76	0.02	0.57	1.843	2.35	4361	2355.0	0.005	0.03	14	0.12
Station Creek	OK311800-00-0060G	9/8/2010	46608	4.35	49.90	36.60	Inorganics	121.0	22.1	5610.0	7.48	982	1854.3	0.097	2	0.02	0.98	2.117	3.00	4178	455.0	0.011	0.033	20	
Station Creek	OK311800-00-0060G	10/12/2010	46712	7.48	74.50	22.00	Inorganics	119.0	15.9		7.60	1046.9	2061.6	0.019	2.5	0.02	1.35	2.539	3.87	4718	2470.0	0.021	0.017	17	
Station Creek	OK311800-00-0060G	11/16/2010	46775	6.91	59.50	34.70	Inorganics	141.0	8.9	5060.0	7.68	747.4	1809.8	0.015	1.97	0.02	1.41	2.005	3.40	3809	2200.0	0.009	0.037	21	
Station Creek	OK311800-00-0060G	1/4/2011	46838	9.65	75.00	36.70	Inorganics	147.0	4.8	5440.0	7.67	825.7	1952.9	0.03	2.26	< 0.02	1.79	2.310	4.07	4310	585.0	0.015	0.028	17	
Station Creek	OK311800-00-0060G	2/8/2011	47011			20.40	Inorganics	147.0		7.75	739.3	1976.3	0.015	1.97	< 0.02	1.26	2.005	3.25	3985	2000.0	0.008	0.017	< 10		
Station Creek	OK311800-00-0060G	3/15/2011	46941	6.84	57.20	13.80	Inorganics	106.0	8.1	5560.0	7.80	965.4	2150.9	0.015	1.96	0.02	0.58	1.995	2.56	4585	2155.0	0.005	0.013	10	
Station Creek	OK311800-00-0060G	4/19/2011	47090	6.08	60.20	12.00	Inorganics		15.4	5910.0	7.52	1088	2276.9	0.033	1.68	< 0.02	0.53	1.733	2.23	4690		< 0.005	0.022	< 10	
Stinking Creek	OK310830-02-0020D	5/19/2009	43557	7.44	81.60	199.00	Inorganics	104.0	19.9	505.0	7.48	30.5	70.4	0.089	0.34	0.11	1.11	0.539	1.56	649	170.0	0.182	0.317	162	
Stinking Creek	OK310830-02-0020D	6/22/2009	43831	7.69	98.90	22.70	Inorganics	290.0	28.4	1524.0	8.08	168.8	367.3	0.015	0.17										

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)			
Stinking Creek	OK310830-04-0030K	3/9/2010	46123	9.79	94.10	160.00		208.0	13.5	1932.0	8.10	22.1	1016.3	0.157	0.22	<	0.02	0.96	0.397	1.20	1663	1170.0	0.25	0.333	433	15.07		
Stinking Creek	OK310830-04-0030K	4/13/2010	46186	9.85	111.60	4.39	Inorganics	229.0	21.4	2467.0	7.91	41.2	1481.4	0.027	<	0.02	0.76	0.067	0.80	2106	1560.0	0.015	0.027	14	3.29			
Stinking Creek	OK310830-04-0030K	5/25/2010	46274	8.80	107.00	3.70	Inorganics	288.0	25.3	2553.0	7.97	44.2	1563.4	0.029	0.15	<	0.02	0.69	0.199	0.86	2309	1670.0	0.017	0.036	<	10	2.60	
Stinking Creek	OK310830-04-0030K	6/29/2010	46466	7.18	86.80	3.97	Inorganics	233.0	25.0	2154.0	7.90	53.3	1845.7	0.015	0.09	<	0.02	0.95	0.125	1.06	2580	2180.0	0.024	0.053	<	10	1.82	
Stinking Creek	OK310830-04-0030K	7/26/2010	46333	7.97	98.60	3.61	Inorganics	262.0	28.6	2861.0	7.91	54.3	1972.6	0.015	0.11	<	0.02	0.77	0.145	0.90	2588	2060.0	0.018	0.048	<	10	0.83	
Stinking Creek	OK310830-04-0030K	9/14/2010	46623	8.08	104.60	3.31	Inorganics	180.0	28.8	2688.0	7.92	44.1	1383.5	0.015	0.14	0.02	0.7	0.175	0.86	2359	1730.0	0.005	0.026	10	0.99			
Stinking Creek	OK310830-04-0030K	10/19/2010	46727	10.78	111.90	1.49	Inorganics	271.0	17.2	2905.0	7.76	55.4	1619.8	0.015	0.16	0.02	0.51	0.195	0.69	2754	1970.0	0.005	0.01	10	0.38			
Stinking Creek	OK310830-04-0030K	11/30/2010	46790	12.63	102.30	1.67	Inorganics	259.0	6.3	2450.0	7.91	42.2	1259.4	0.015	0.11	0.02	0.34	0.145	0.47	2189	1560.0	0.013	0.013	10	1.61			
Stinking Creek	OK310830-04-0030K	2/15/2011	46985	14.60	135.60	4.07	Organics	247.0	11.9	2063.0	8.01	32.3	940.6	0.015	0.06	<	0.02	0.59	0.095	0.67	1660	1280.0	<	0.005	0.02	<	10	
Stinking Creek	OK310830-04-0030K	3/23/2011	46970	9.02	94.80	2.98	Inorganics	242.0	17.8	2278.0	7.60	37.3	1155.4	0.015	0.04	0.02	0.73	0.075	0.79	2053	1390.0	0.01	0.023	10	2.55			
Stinking Creek	OK310830-04-0030K	4/26/2011	47105	9.38	94.00	1.43	Inorganics	193.0	15.4	2536.0	7.92	46.4	1396.3	0.015	<	0.02	0.56	0.055	0.60	2239	1550.0	<	0.005	0.009	<	10	2.69	
Sugar Creek	OK310830-05-0010D	5/19/2009	43552	8.33	87.70	138.00	Inorganics	207.0	17.5	1782.0	8.01	52.9	877.4	0.072	0.43	0.1	1.25	0.677	1.78	1339	1070.0	0.223	0.332	197	66.83			
Sugar Creek	OK310830-05-0010D	6/22/2009	43826	6.78	82.80	8.75	Inorganics	290.0	15.3	2850.0	8.07	115.9	1810.9	0.064	0.54	<	0.02	0.74	0.624	1.30	2367	1700.0	0.153	0.175	50	17.93		
Sugar Creek	OK310830-05-0010D	7/24/2009	44118	6.40	74.80	6.22	Inorganics	234.0	23.1	3793.0	7.92															84.06		
Sugar Creek	OK310830-05-0010D	8/3/2009	44271	7.77	94.30	11.80	Inorganics	263.0	25.1	3230.0	8.00	141.1	1746.9	0.376	0.29	<	0.02	0.14	0.686	0.45	2726	1570.0	0.11	0.192	23	21.52		
Sugar Creek	OK310830-05-0010D	9/1/2009	44497	8.53	94.30	9.17	Inorganics	220.0	20.2	3010.0	8.15	122.7	<	1601.2	0.205	0.49	<	0.02	0.64	0.715	1.15	2519	1270.0	0.134	0.23	23	13.40	
Sugar Creek	OK310830-05-0010D	10/13/2009	44697	9.04	88.90	48.30	Inorganics	203.0	14.6	2040.0	8.07	76.6	902.5	0.099	0.54	<	0.02	1.03	0.639	1.57	1606	870.0	0.181	0.178	83	28.50		
Sugar Creek	OK310830-05-0010D	11/17/2009	45104	11.64	96.10	31.90	Inorganics	253.0	7.1	1994.0	8.13	78	840	0.015	0.4	<	0.02	0.92	0.435	1.34	1540	980.0	0.14	0.208	48	28.24		
Sugar Creek	OK310830-05-0010D	12/28/2009	45253	14.44	101.40	34.00	Inorganics	246.0	0.9		8.18	58.8	980.7	0.349	0.46	<	0.02	0.88	0.289	1.36	1369	790.0	0.116	0.205	67			
Sugar Creek	OK310830-05-0010D	3/9/2010	46121	10.20	90.60	258.00	Inorganics	206.0	10.1	1433.0	8.15	83.8	662	0.277	0.23	<	0.02	1.64	0.527	1.89	1083	715.0	0.484	0.675	646			
Sugar Creek	OK310830-05-0010D	4/13/2010	46184	9.59	100.90	19.50	Inorganics	250.0	13.8	2270.0	8.07	96.3	1071	0.146	0.45	0.11	0.18	0.706	0.74	1794	1090.0	0.143	0.164	77	26.20			
Sugar Creek	OK310830-05-0010D	5/25/2010	46272	8.99	102.30	9.76	Inorganics	258.0	21.7	2602.0	8.08	99.6	1371.8	0.077	0.36	<	0.02	0.64	0.457	1.02	2072	1035.0	0.118	0.175	52	17.81		
Sugar Creek	OK310830-05-0010D	6/29/2010	46464	6.66	80.20	7.18	Inorganics	230.0	24.5	962.0	8.01	131.6	1728	0.242	0.15	<	0.02	0.68	0.412	0.85	2705	1750.0	0.162	0.178	27	17.99		
Sugar Creek	OK310830-05-0010D	7/26/2010	46331	6.23	76.50	3.62	Inorganics	241.0	25.8	3751.0	7.99	172.1	2296.5	0.015	0.05	<	0.02	0.88	0.085	0.95	3102	1640.0	0.084	0.148	19	7.57		
Sugar Creek	OK310830-05-0010D	9/14/2010	46621	6.82	81.60	93.30	Inorganics	125.0	24.5	1797.0	7.84	66.1	661.5	0.319	0.33	0.19	1.93	0.839	2.45	1330	770.0	0.242	0.38	151	205.77			
Sugar Creek	OK310830-05-0010D	10/19/2010	46725	8.99	93.00	8.86	Inorganics	282.0	16.9	3396.0	7.88	205.3	1654.9	0.181	0.71	0.02	1.21	0.911	1.94	2900	1670.0	0.094	0.149	12	12.34			
Sugar Creek	OK310830-05-0010D	11/30/2010	46788	12.67	99.20	18.80	Inorganics	260.0	5.0	2380.0	8.01	142	966.6	0.288	0.5	0.02	1.03	0.808	1.55	1929	1180.0	0.102	0.165	28	18.34			
Sugar Creek	OK310830-05-0010D	1/25/2011	46851	12.30	91.40	18.40	Inorganics	199.0	3.0	2047.0	7.93	82.5	905.2	0.183	0.46	0.02	0.9	0.663	1.38	1583	1100.0	0.057	0.135	46				
Sugar Creek	OK310830-05-0010D	2/15/2011	46983	11.63	97.60	28.90	Inorganics	236.0	7.7	1772.0	8.05	67.7	697.2	0.146	0.41	<	0.02	0.98	0.576	1.41	1377	810.0	0.063	0.154	38			
Sugar Creek	OK310830-05-0010D	3/22/2011	46968	8.84	90.50	20.70	Inorganics	243.0	16.6	2162.0	7.76	90.2	987.1	0.138	0.43	0.02	1.25	0.458	1.57	1720	990.0	0.115	0.162	36	22.02			
Sugar Creek	OK310830-05-0010D	4/26/2011	47103	10.53	102.00	12.40	Inorganics	204.0	14.0	2748.0	7.85	125.7	1290.4	0.178	0.48	<	0.02	1.11	0.678	1.61	2211	1390.0	0.097	0.134	17	17.35		
Suttle Creek	OK311310-01-0070H	5/26/2009	43587	9.03	108.90	30.50	Inorganics	379.0	24.7	4760.0	7.97	994.3	655.3	0.081	0.1	<	0.02	1.57	0.201	1.69	3177	1075.0	0.104	0.18	34	3.19		
Suttle Creek	OK311310-01-0070H	6/18/2009	43815	5.80	89.60	47.80	Inorganics	399.0	24.5	4800.0	7.88															0.12		
Suttle Creek	OK311310-01-0070H	6/29/2009	43911	7.75	66.20	>	1000.00	Inorganics	105.0	23.6	103.0	7.33	412.7	193.8	0.252	0.62	<	0.02	3.66	0.892	4.30	537	175.0	0.521	0.993	851		
Suttle Creek	OK311310-01-0070H	8/3/2009	44311	7.32	95.60	75.40	Inorganics	172.0	29.2	1289.0	8.03	270.9	162.9	0.047	0.1	<	0.02	1.51	0.167	1.63	788	245.0	0.272	0.384	52	0.97		
Suttle Creek	OK311310-01-0070H	9/15/2009	44598	7.20	81.50	183.00	Inorganics	101.0	21.4	420.0	7.82	62.9	54.5	0.045	0.4	0.07	1.06	0.515	1.53	347	108.0	0.464	0.465	44	2.90			
Suttle Creek	OK311310-01-0070H	10/12/2009	44722	9.21	88.80	273.00	Inorganics	109.0	13.7	554.0	7.84	80.3	88.1	0.059	0.58	0.07	1.31	0.709	1.96	514	131.0	0.573	0.654	26	3.73			
Suttle Creek	OK311310-01-0070H	11/16/2009	45174	6.24	55.50	8.45	Inorganics	485.0	10.1	4121.0	8.01	933	610.4	0.015	<	0.02	0.5	0.055	0.54	2621	900.0	0.165	<	10	1.03			
Suttle Creek	OK311310-01-0070H	12/21/2009	45310	8.77	71.00	5.61	Organics	539.0	5.0	4007.0	8.33	1007.3	666.6	0.015	<	0.02	0.64	0.035	0.66		725.0	0.023	0.048	<	10			
Suttle Creek	OK311310-01-0070H	2/8/2010	46055	11.26	89.90	48.10	Inorganics	291.0	5.7	5103.0	7.92	950.9	629.8	0.428	1.72	<	0.02	1.4	2.168	3.14	2584	855.0	0.322	0.411	15			
Suttle Creek	OK311310-01-0070H	3/8/2010	46143	10.16	95.40	10.60	Inorganics	371.0	12.5	5790.0	8.18	1927.3	1115.8	0.02	0.23	<	0.02	0.11	0.270	0.36	3803	1540.0	<	0.005	0.009	16	3.81	
Suttle Creek	OK311310-01-0070H	4/12/2010	46196	8.96	99.10	23.20	Inorganics	394.0	20.3	5440.0	8.01	1369.7	801.9	0.025	<	0.02	0.82	0.065	0.86	3622	11.1	0.04	0.121	20	1.92			
Suttle Creek	OK311310-01-0070H	5/24/2010	46284	8.00	97.10	34.80	Inorganics	362.0	25.1	4435.0	8.06	1214.4	683.2	0.198	0.12	<	0.02	0.24	0.338	0.38	2833	862.0	0.184	0.279	27	0.70		
Suttle Creek	OK311310-01-0070H	6/28/2010	46306	4.96	60.00	41.40	Organics	364.0	25.0	5600.0	7.98	1679.6	830.5	0.111	0.08	<	0.02	6.35	0.211	6.49	3702	1142.0	0.548	0.936	59			
Suttle Creek	OK311310-01-0070H	8/2/2010	46545	8.17	105.40	15.10	Organics	338.0	28.7	5130.0	8.00	1158.6	762.2	0.165	0.09	0.02	1.38	0.275	1.49	3097	960.0	0.114	0.164	20				
Suttle Creek	OK311310-01-0070H	9/13/2010																										

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)			
Sweetwater Creek	OK311510-02-0120D	4/18/2011	47084	10.01	99.60	52.50	Organics	230.0	15.2	1465.0	8.29	131.6	391.2	0.015	<	0.02	<	0.02	0.38	0.055	0.42	1115	570.0	0.007	0.027	<	10	10.60
Tepee Creek	OK311500-01-0110D	5/21/2009	43677	7.81	81.80	10.80	Inorganics	168.0	17.5	1899.0	7.81																	3.48
Tepee Creek	OK311500-01-0110D	5/27/2009	43593	7.86	87.20	6.27	Organics	159.0	20.5	3363.0	7.93	633.2	845.3	0.015	0.16	<	0.02	0.84	0.195	0.57	2366	1083.0	0.07	0.11	<	10	3.09	
Tepee Creek	OK311500-01-0110D	6/30/2009	43917	7.65	90.70	6.39	Organics	161.0	23.9	242.1	7.90	398.4	<	0.015	0.06	<	0.02	0.49	0.095	0.57	1704	800.0	0.054	0.068	<	10	0.95	
Tepee Creek	OK311500-01-0110D	8/4/2009	44317	5.20	62.50	21.40	Inorganics	130.0	25.0	1202.0	7.55	190	301.3	0.368	0.46	<	0.02	0.86	0.848	1.34	742	367.0	0.221	0.251	<	17	0.77	
Tepee Creek	OK311500-01-0110D	9/16/2009	44604	6.99	78.10	118.00	Inorganics	86.0	20.8	531.0	7.71	100.5	98.1	0.015	0.71	0.1	1.12	0.825	1.93	421	167.0	0.082	0.368	<	20	0.76		
Tepee Creek	OK311500-01-0110D	11/17/2009	45180	8.32	69.50	2.73	Organics	169.0	7.6	3748.0	7.87	861	825.1	0.015	0.09	<	0.02	0.49	0.125	0.60	2489	1350.0	0.266	<	10	0.25		
Tepee Creek	OK311500-01-0110D	12/22/2009	45316	11.28	88.40	1.65	Organics	168.0	5.1	4097.0	7.99	1605	1210.3	0.015	0.6	<	0.02	0.45	0.635	1.07	1650.0	0.023	0.032	<	10	0.70		
Tepee Creek	OK311500-01-0110D	2/9/2010	46061	13.32	95.60	47.90	Inorganics	110.0	17.7	8.01	607.4	591.6	0.182	1.69	<	0.02	0.91	1.892	2.62	1464	6.8	0.263	0.267	<	20	9.03		
Tepee Creek	OK311500-01-0110D	3/9/2010	46149	13.20	124.10	12.10	Inorganics	160.0	12.6	4774.0	8.29	1175.1	1285.5	0.015	0.39	<	0.02	0.38	0.425	0.79	3259	1490.0	0.018	0.064	<	11	1.34	
Tepee Creek	OK311500-01-0110D	4/13/2010	46202	9.05	95.20	2.51	Organics	173.0	17.8	5230.0	8.01	1145.9	1244.5	0.034	<	0.02	0.4	0.074	0.44	3621	1600.0	0.018	0.022	<	10	1.30		
Tepee Creek	OK311500-01-0110D	5/25/2010	46290	9.50	111.30	2.10	Organics	67.0	23.5	3278.0	8.10	729.2	1046.9	0.015	<	0.02	0.16	0.055	0.20	2391	1102.0	0.05	0.056	<	10	1.88		
Tepee Creek	OK311500-01-0110D	6/29/2010	46312	6.13	76.30	19.00	Organics	96.0	26.5	1641.0	7.70	347	365.2	0.083	0.1	<	0.02	1.63	0.203	1.75	1038	444.0	0.3	0.341	<	10	1.48	
Tepee Creek	OK311500-01-0110D	8/3/2010	46551	8.68	107.90	3.62	Organics	210.0	26.3	3731.0	7.90	985.4	1183.2	0.028	0.06	0.02	0.96	0.108	1.04	2533	1300.0	0.033	0.084	<	10	2.81		
Tepee Creek	OK311500-01-0110D	9/14/2010	46639			6.61	Organics	202.0	25.3	3800.0	7.81	701.1	805.5	0.037	0.04	0.02	0.5	0.097	0.56	2576	1160.0	0.1	0.123	<	15	0.72		
Tepee Creek	OK311500-01-0110D	10/19/2010	46743	5.46	56.80	45.80	Organics	176.0	17.2	6250.0	8.04	1415.5	1568.4	0.015	0.02	0.02	2.15	0.055	2.19	4367	1970.0	0.074	0.291	<	48			
Tepee Creek	OK311500-01-0110D	11/30/2010	46806	10.98	86.90	4.22	Organics	192.0	5.4	3938.0	8.01	884.5	853.4	0.015	0.27	0.02	1.15	0.305	1.44	2761	1720.0	0.07	0.102	<	10	0.89		
Tepee Creek	OK311500-01-0110D	1/11/2011	46869	14.11	98.50	2.98	Organics	204.0	0.7	7.94	1115.2	990.3	0.033	1.15	0.02	0.7	1.203	1.87	3490	1790.0	0.022	0.026	<	10	1.09			
Tepee Creek	OK311500-01-0110D	2/15/2011	47037	13.50	108.70	2.17	Organics	138.0	6.1	4293.0	8.08	869.8	868.2	0.015	1.25	<	0.02	0.55	1.285	1.82	2830	1650.0	0.006	0.013	<	10	1.13	
Tepee Creek	OK311500-01-0110D	3/22/2011	46957	9.76	105.40	3.86	Organics	178.0	19.0	3394.0	7.96	949.4	978.3	0.015	0.03	0.02	0.5	0.065	0.55	2740	1200.0	0.006	0.024	<	10	2.03		
Tepee Creek	OK311500-01-0110D	4/26/2011	47121	7.31	73.60	3.51	Organics	82.0	15.6	3326.0	7.82	656.1	842.6	0.015	<	0.02	0.48	0.055	1.48	2365	1120.0	0.035	0.057	<	10	1.25		
Timber Creek	OK311510-01-0090G	5/18/2009	43541	7.52	74.30	3.21	Organics	353.0	14.8	1014.0	7.98	50.3	165.7	0.015	0.14	<	0.02	0.33	0.175	0.49	621	454.0	0.011	0.09	<	10	2.34	
Timber Creek	OK311510-01-0090G	6/4/2009	43661	12.26	137.40	40.40		382.0	20.9	1679.0	8.29										521.0						0.67	
Timber Creek	OK311510-01-0090G	6/23/2009	43850	5.74	70.10	9.62	Organics	388.0	25.5	1284.0	8.08	1207.7	<	456.5	0.235	0.32	<	0.02	0.62	0.575	0.96	1008	612.0	0.147	0.177	<	10	0.64
Timber Creek	OK311510-01-0090G	7/27/2009	44144	3.77	42.80	32.50	Inorganics	202.0	21.7	1711.0	7.52	92.8	687.4	0.384	0.32	0.24	1.24	0.944	1.80	1220	754.0	<	0.005	0.194	<	18	0.06	
Timber Creek	OK311510-01-0090G	8/31/2009	44455	8.80	95.40	5.78	Organics	297.0	19.3	1112.0	7.92	62.3	349	0.051	0.32	<	0.02	0.2	0.391	0.54	826	540.0	0.032	0.085	<	10	0.10	
Timber Creek	OK311510-01-0090G	10/3/2009	44676	4.52	44.80	3.38	Inorganics	396.0	14.9	2035.0	7.50	109.9	1105.6	0.015	0.12	<	0.02	0.31	0.155	0.45	1700	1175.0	0.028	0.06	<	10		
Timber Creek	OK311510-01-0090G	11/3/2009	45088	6.30	55.90	8.05	Organics	237.0	10.7	1911.0	7.54	91	753.6	0.052	1.12		0.39	1.172	1.51	1430	940.0	0.043	0.047	<	10	0.13		
Timber Creek	OK311510-01-0090G	12/15/2009	45227	11.01	76.10	1.96	Organics	340.0	0.9	8.23	57.5	847.1	0.015	0.61	<	0.02	0.3	0.645	0.93	885	660.0	0.011	<	10	0.54			
Timber Creek	OK311510-01-0090G	1/25/2010	45397	13.25	103.00	8.69	Inorganics	375.0	4.7	1092.0	8.33	52.7	198.7	0.031	0.26	<	0.02	0.22	0.311	0.50	676	478.0	0.023	0.018	<	10	0.31	
Timber Creek	OK311510-01-0090G	3/1/2010	46100	9.96	78.70	8.02	Organics	357.0	6.1	944.0	8.36	47.8	103.9	0.169	0.11	<	0.02	0.44	0.299	0.57	559	672.0	0.051	0.043	<	10	11.62	
Timber Creek	OK311510-01-0090G	4/5/2010	46163	6.34	67.20	10.70	Organics	371.0	18.2	1046.0	7.87	47	172	0.039	0.11	<	0.02	0.59	0.169	0.72	585	442.0	0.014	0.026	<	10	1.13	
Timber Creek	OK311510-01-0090G	5/17/2010	46251	7.12	73.70	19.10	Inorganics	358.0	17.2	901.0	8.16	43.5	74.3	0.216	0.16	0.09	0.32	0.466	0.57	504	470.0	0.074	0.096	<	15	5.23		
Timber Creek	OK311510-01-0090G	6/21/2010	46443	6.54	77.00	17.60	Inorganics	389.0	23.5	1061.0	8.02	54.1	183.1	0.051	0.28	<	0.02	0.76	0.351	1.06	690	440.0	0.042	0.06	<	17	1.47	
Timber Creek	OK311510-01-0090G	7/26/2010	46527		27.20	10.70	Inorganics	380.0		976.0	8.23	43.3	125	0.046	0.24	<	0.02	0.92	0.306	1.18	573	515.0	0.036	0.072	<	19	2.33	
Timber Creek	OK311510-01-0090G	9/7/2010	46600	3.46	37.90	15.80	Organics	319.0	19.6	2001.0	7.48	111.1	587	0.07	0.04	0.02	0.38	0.130	0.44	1426	7.5	0.053	0.083	<	12			
Timber Creek	OK311510-01-0090G	10/11/2010	46704	5.18	50.20	7.85	Organics	310.0	14.0	7.66	119	679.1	0.049	0.03	0.02	0.44	0.099	0.49	1495	930.0	0.045	0.045	<	10				
Timber Creek	OK311510-01-0090G	11/15/2010	46767	9.20	77.10	5.09	Organics	396.0	7.8	1113.0	8.04	42.3	179.2	0.015	0.33	0.02	0.47	0.365	0.82	688	675.0	0.015	0.022	<	10	0.67		
Timber Creek	OK311510-01-0090G	1/3/2011	46830	12.36	85.10	3.96	Organics	406.0	0.4	8.30	43.3	134.8	0.015	0.35	0.02	0.45	0.385	0.82	644	480.0	0.011	0.012	<	10	1.50			
Timber Creek	OK311510-01-0090G	1/25/2011	46920				Organics																					
Timber Creek	OK311510-01-0090G	2/7/2011	47003	13.77	94.70	10.70	Inorganics	340.0	0.2	8.37	39.3	102.5	0.015	0.41	<	0.02	0.61	0.445	1.04	541	250.0	0.012	0.026	<	10	2.83		
Timber Creek	OK311510-01-0090G	3/14/2011	46933	9.85	80.90	2.16	Organics	350.0	6.9	506.0	8.19	47.5	146.6	0.015	0.37	0.02	0.47	0.405	0.86	644	350.0	0.016	0.033	<	10	0.90		
Timber Creek	OK311510-01-0090G	4/18/2011	47082	6.60	63.40	1.79	Organics	378.0	13.8	1076.0	7.81	63.9	264.2	0.016	0.18	<	0.02	0.47	0.216	0.67	828	650.0	<	0.005	0.012	<	10	0.39
Trail Creek	OK311500-03-0070D	6/10/2009	43774	6.79	75.50	43.80	Inorganics	330.0	20.5	17.0	7.96	69.7	642	0.015	1.41	0.16	0.75	1.856	2.32	1187	856.0	0.011	0.069	<	48	3.24		
Trail Creek	OK311500-03-0070D	6/23/2009	43862	10.06	139.60	6.15	Organics	287.0	32.7	1826.0	8.08	67.4	<	824.1	0.063	0.97	<	0.02	0.51	1.053	1.50	1353	650.0	0.04	0.054	<	10	1.31
Trail Creek	OK311500-03-0070D	7/14/2009	44062	</																								

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)
Turkey Creek	OK311600-02-0060J	2/9/2010	46058	14.04	99.70	78.50	Inorganics	148.0	1.3	798	1289.4	1168	0.164	3.92	< 0.02	0.97	4.104	4.91	3339	1610.0	0.12	0.163	30	5.52	
Turkey Creek	OK311600-02-0060J	3/9/2010	46146	9.07	81.40	47.10	Inorganics	162.0	10.5	7590.0	7.95	2455.5	2448.4	0.049	2.61	< 0.02	0.11	2.679	2.74	5805	2620.0	0.028	0.039	49	3.73
Turkey Creek	OK311600-02-0060J	4/13/2010	46199	4.64	49.20	38.40	Inorganics	233.0	18.2	8320.0	7.63	2042.4	2791.2	0.074	0.36	< 0.02	0.84	0.454	1.22	6425	3280.0	0.012	0.083	52	0.88
Turkey Creek	OK311600-02-0060J	5/25/2010	46287	5.00	57.90	106.00	Inorganics	162.0	22.7	6030.0	7.57	1537.5	3083.4	0.261	0.38	< 0.02	0.39	0.661	0.79	4795	2584.0	0.037	0.084	104	4.91
Turkey Creek	OK311600-02-0060J	6/29/2010	46309	2.71	33.40	16.90	Organics	135.0	25.9	5700.0	7.48	1552.8	1691.4	0.195	0.18	< 0.02	1.35	0.395	1.55	4045	2730.0	< 0.005	0.075	24	5.10
Turkey Creek	OK311600-02-0060J	8/3/2010	46548	3.86	48.20	40.60	Organics	145.0	26.8	6860.0	7.63	1362.1	2277.1	0.087	0.6	0.02	0.93	0.707	1.55	5315	2850.0	0.028	0.087	52	2.56
Turkey Creek	OK311600-02-0060J	9/14/2010	46636	6.10	74.20	45.50	Inorganics	158.0	25.3	6410.0	7.45	1081.1	1765	0.029	1.2	0.02	0.88	1.249	2.10	4680	2728.0	0.022	0.083	45	2.67
Turkey Creek	OK311600-02-0060J	10/19/2010	46740	8.48	88.90	7.15	Organics	165.0	17.7	5790.0	7.49	1270.8	2070.7	0.015	2.29	0.02	1.22	3.325	3.53	4709	2560.0	0.005	0.015	10	1.33
Turkey Creek	OK311600-02-0060J	11/30/2010	46803	11.26	88.20	14.90	Organics	181.0	5.0	6890.0	7.90	1626.7	2093.5	0.015	4.23	0.02	0.7	4.265	4.95	5110	3360.0	0.009	0.029	27	6.72
Turkey Creek	OK311600-02-0060J	11/13/2011	46866	15.80	107.90	5.96	Organics	225.0	-0.1	790	1291.1	2020.5	0.015	3.94	0.02	1.24	3.975	5.20	5193	3190.0	0.005	0.01	10	4.25	
Turkey Creek	OK311600-02-0060J	2/15/2011	47034	10.11	80.60	31.30	Inorganics	176.0	5.7	6390.0	7.86	1131.8	1754.6	0.015	3.84	< 0.02	0.73	3.875	4.59	4833	3360.0	0.005	0.046	36	4.80
Turkey Creek	OK311600-02-0060J	3/22/2011	46954	5.55	58.40	50.50	Inorganics	148.0	17.9	5610.0	7.34	1461	2267.4	0.042	0.74	0.02	0.97	0.802	1.73	5155	4520.0	0.022	0.084	10	3.93
Turkey Creek	OK311600-02-0060J	4/26/2011	47118	6.28	63.30	82.10	Inorganics	162.0	16.0	5930.0	7.59	1144.7	2163.7	0.015	0.61	< 0.02	1.18	0.645	2.18	5077	2820.0	0.034	0.107	86	4.19
Walnut Bayou	OK311100-03-0010G	5/27/2009	43602	7.50	92.30	64.20	Inorganics	164.0	25.7	794.0	8.07	116.8	50.7	0.015	< 0.02	< 0.02	1.3	0.058	1.34	467	241.0	0.059	0.084	49	36.08
Walnut Bayou	OK311100-03-0010G	7/12/2009	43928	8.85	123.90	8.85	Organics	197.0	33.4	1196.0	8.09	240.5	< 93.1	< 0.015	< 0.02	< 0.02	0.46	0.055	0.50	674	296.0	0.018	0.022	< 10	2.86
Walnut Bayou	OK311100-03-0010G	8/4/2009	44304	5.62	71.60	19.80	Organics	143.0	28.2	902.0	8.08	151.8	< 77.6	0.431	0.06	< 0.02	0.64	0.511	0.72	510	204.0	0.012	0.033	< 10	0.77
Walnut Bayou	OK311100-03-0010G	8/12/2009	43663	8.61	119.30	22.30	Organics	203.0	32.8	882.0	8.07	94.6	< 71.3	0.018	< 0.02	< 0.02	0.39	0.558	0.43	363	142.0	0.014	0.034	15	0.17
Walnut Bayou	OK311100-03-0010G	9/9/2009	44524	10.82	143.60	13.30	Organics	134.0	30.6	658.0	8.47	68	56.8	0.048	0.26	< 0.02	0.79	0.328	1.07	375	262.0	0.084	0.146	49	
Walnut Bayou	OK311100-03-0010G	10/13/2009	44737	8.79	8.88	208.00	Inorganics	80.0	15.9	504.0	7.80										148.0				
Walnut Bayou	OK311100-03-0010G	11/17/2009	45137	9.69	89.10	8.47	Organics	256.0	11.8	825.0	8.19	118.8	43.3	0.046	< 0.02	< 0.02	0.34	0.086	0.38	458	362.0	0.033	0.059	< 10	200.96
Walnut Bayou	OK311100-03-0010G	1/5/2010	45346	13.69	98.80		Inorganics	256.0	1.9	582.0	8.15	72.8	36.2	0.026	0.14	< 0.02	0.65	0.186	0.81	363	340.0	0.037	0.114	24	
Walnut Bayou	OK311100-03-0010G	2/9/2010	46070	12.02	91.60	782.00	Inorganics	105.0	4.0	482.3	8.01	55.2	30.2	0.035	0.16	< 0.02	1.12	0.215	1.30	459	238.0	0.088	0.277	45	
Walnut Bayou	OK311100-03-0010G	3/4/2010	46136	11.23	97.80	18.00	Organics	220.0	9.3	1105.0	8.38	184.5	76.1	0.025	< 0.02	< 0.02	0.44	0.065	0.48	617	324.0	0.007	0.053	< 10	15.05
Walnut Bayou	OK311100-03-0010G	4/13/2010	46211	8.26	90.90	8.23	Organics	252.0	20.3	1527.0	8.22	328.4	105.9	0.017	< 0.02	< 0.02	0.11	0.057	0.15	816	490.0	0.029	0.029	< 10	12.78
Walnut Bayou	OK311100-03-0010G	5/25/2010	46299	7.19	87.30	30.00	Inorganics	225.0	25.2	1013.0	8.13	186.7	78.2	0.015	< 0.02	< 0.02	0.14	0.055	0.18	590	320.0	0.022	0.051	20	40.50
Walnut Bayou	OK311100-03-0010G	6/29/2010	46321	6.21	77.70	5.58	Organics	219.0	27.4	1540.0	7.91	358.1	113.5	0.015	< 0.02	< 0.02	0.44	0.055	0.48	852	376.0	0.007	0.029	< 10	4.50
Walnut Bayou	OK311100-03-0010G	8/3/2010	46560	3.41	44.10	19.70	Inorganics	184.0	30.5	1167.0	7.77	228.5	106.8	0.026	0.02	0.02	0.53	0.066	0.57	630	220.0	0.012	0.033	15	0.93
Walnut Bayou	OK311100-03-0010G	9/14/2010	46648	8.56	110.10	74.30	Inorganics	101.0	28.1	631.0	7.68	91.5	57.5	0.127	0.2	0.02	0.78	0.347	1.00	366	180.0	0.063	0.095	26	5.69
Walnut Bayou	OK311100-03-0010G	10/19/2010	46752	9.71	108.10	8.40	Organics	184.0	20.6	598.0	8.11	80.7	66.3	0.015	0.02	0.02	0.53	0.055	0.57	436	228.0	0.035	0.045	10	
Walnut Bayou	OK311100-03-0010G	11/30/2010	46815	10.65	90.00	7.85	Organics	212.0	8.0	713.0	8.20	70.8	47.1	0.015	0.02	0.02	0.5	0.055	0.54	431	265.0	0.062	0.07	10	3.54
Walnut Bayou	OK311100-03-0010G	1/11/2011	46878	14.11	98.20	15.70	Organics	178.0	1.7	653.0	8.32	67.5	41.6	0.039	0.02	0.02	0.38	0.079	0.42	414	265.0	0.035	0.048	10	30.81
Walnut Bayou	OK311100-03-0010G	2/15/2011	47024	11.37	99.80	12.90	Inorganics	217.0	9.6	540.0	8.25	70.8	52.7	< 0.015	< 0.02	< 0.02	0.38	0.055	0.42	424	255.0	0.015	0.029	< 10	5.81
Walnut Bayou	OK311100-03-0010G	3/22/2011	46966	8.99	95.40	4.10	Organics	238.0	19.1	739.0	8.10	82.3	45.3	0.015	0.02	0.02	0.58	0.055	0.62	10	200.0	0.05	0.053	492	4.16
Walnut Bayou	OK311100-03-0010G	4/26/2011	47130	8.86	97.80	5.83	Organics	226.0	19.8	722.0	7.96	91	57.3	0.046	< 0.02	< 0.02	0.49	0.086	0.53	408	250.0	0.057	0.065	< 10	3.65
Washington Creek	OK310810-01-0190G	5/18/2009	43530	8.21	86.80	97.00	Inorganics	54.0	18.0	230.0		7	14.2	0.074	0.12	0.1	1.02	0.294	1.24	207	127.0	0.02	0.108	11	3.03
Washington Creek	OK310810-01-0190G	6/8/2009	43791	6.32	72.00	76.10	Inorganics	225.0	22.0	550.0	7.55														0.16
Washington Creek	OK310810-01-0190G	6/22/2009	43838	3.99	48.50	158.00	Inorganics	336.0	25.1	824.0	7.85	51.8	46.6	0.073	0.04	< 0.02	4.37	0.133	4.43	536	278.0	0.054	0.152	60	0.03
Washington Creek	OK310810-01-0190G	7/28/2009	44443	5.81	67.40	171.00		197.0	22.7	443.0	7.85														
Washington Creek	OK310810-01-0190G	8/31/2009	44139				Inorganics					24.3	15.7	0.094	0.1	< 0.02	0.57	0.214	0.69	296		0.045	0.13	185	
Washington Creek	OK310810-01-0190G	11/3/2009	45078	8.62	78.40	62.90	Inorganics	137.0	11.1	295.0	8.00	11.8	12.3	0.015	0.03	< 0.02	0.17	0.045	0.20	214	117.0	0.027	0.163	< 10	
Washington Creek	OK310810-01-0190G	12/15/2009	45217	14.47	100.40	2.19	Organics	345.0	0.5	8.19	37.7	25.4	0.062	< 0.02	< 0.02	0.36	0.102	0.40	460	270.0	0.043				10
Washington Creek	OK310810-01-0190G	1/26/2010	45392	12.61	90.50	28.10	Inorganics	145.0	1.7	7.85	11.6	24.1	0.023	0.03	< 0.02	0.24	0.073	0.29	208	148.0	0.017	0.017	< 10	0.38	
Washington Creek	OK310810-01-0190G	3/2/2010	46095	12.31	93.80	41.30	Inorganics	158.0	3.9	390.2	8.13	11.6	26.4	0.015	0.03	< 0.02	0.25	0.065	0.30	242	155.0	0.01	0.042	< 10	1.38
Washington Creek	OK310810-01-0190G	4/6/2010	46158	7.28	76.60	15.10	Organics	218.0	17.5	530.0	7.82	18.2	40.1	0.036	0.04	< 0.02	0.22	0.096	0.28	307	195.0	0.013	0.017	< 10	0.58
Washington Creek	OK310810-01-0190G	5/18/2010	46247	8.06	87.20	90.90	Inorganics	210.0	19.2	425.9	7.93	11.9	31.9	0.053	0.05	< 0.02	0.11	0.123	0.18	286	165.0	0.019	0.072	32	2.26
Washington Creek	OK310810-01-0190G	6/22/2010	46437	5.78	70.00	24.80	Organics	297.0	25.1	674.0	7.86	28.5	41.3	0.048	0.12	< 0.02	0.32	0.188	0.46	421	232.0	0.029	0.044	16	0.19
Washington Creek																									

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPencat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)
West Barnitz Creek	OK310830-03-0230C	3/7/2011	47043	15.59	139.70	4.45	Inorganics	162.0	10.5	3001.0	8.37	29.5	1785.9	0.015	< 0.02	< 0.02	0.59	0.055	0.63	3017	2090.0	< 0.005	0.024	< 10	
West Barnitz Creek	OK310830-03-0230C	4/20/2011	47097	9.46	92.90	0.96	Organics	98.0	14.5	3124.0	7.81	28.6	2124	0.071	< 0.02	< 0.02	0.48	0.111	0.52	3143	2060.0	< 0.005	0.008	< 10	1.24
West Cache Creek	OK311310-02-0010M	5/26/2009	43584	6.83	80.30	33.00	Inorganics	115.0	23.5	286.0	7.93	67.7	28.8	0.015	0.14	< 0.02	0.4	0.175	0.56	191	116.0	0.138	0.143	21	64.13
West Cache Creek	OK311310-02-0010M	6/17/2009	43813	5.53	68.10	8.57	Organics	175.0	25.9	636.0	7.75														1.57
West Cache Creek	OK311310-02-0010M	6/29/2009	43908	3.66	45.60	21.00	Inorganics	183.0	27.6	903.0	7.74	186.5	22.2	< 0.015	< 0.02	< 0.02	0.39	0.055	0.43	513	241.0	0.032	0.054	17	
West Cache Creek	OK311310-02-0010M	8/3/2009	44308	4.50	58.90	35.40	Organics	145.0	29.3	772.0	8.09	184.5	18.6	0.015	< 0.02	< 0.02	1.35	0.055	1.39	455	165.0	0.021	0.184	23	
West Cache Creek	OK311310-02-0010M	9/15/2009	44595	7.00	79.80	150.00	Inorganics	86.0	21.8	317.0	7.77	35.7	12.1	0.055	2.1	0.16	1.08	2.315	3.34	253	92.0	0.263	0.281	65	18.21
West Cache Creek	OK311310-02-0010M	10/12/2009	44719	8.55	83.70	77.40	Inorganics	109.0	14.4	297.0	7.84	24.4	< 13.1	0.022	0.94	< 0.02	0.54	0.982	1.50	245	98.0	0.188	0.242	< 10	3.52
West Cache Creek	OK311310-02-0010M	11/16/2009	45171	10.11	92.30	2.43	Organics	100.0	11.3	332.0	8.22	20.6	16.3	0.015	< 0.02	< 0.02	0.11	0.055	0.15	193	95.0	0.07	< 10	9.16	
West Cache Creek	OK311310-02-0010M	12/21/2009	45307	9.60	76.00	0.95	Organics	154.0	5.4	595.0	8.35	83.4	24.9	0.015	< 0.02	< 0.02	0.11	0.035	0.13	140	140.0	0.013	0.017	< 10	0.78
West Cache Creek	OK311310-02-0010M	2/8/2010	46052	12.07	93.90	77.10	Inorganics	57.0	4.8	167.0	8.07	10	10.5	0.109	0.19	< 0.02	0.4	0.319	0.61	140	59.0	0.081	0.106	27	
West Cache Creek	OK311310-02-0010M	3/8/2010	46140	9.34	85.70	8.70	Inorganics	98.0	11.5	260.6	8.22	17.2	22.1	0.015	0.08	< 0.02	0.29	0.115	0.39	157	80.0	0.041	0.085	< 10	38.24
West Cache Creek	OK311310-02-0010M	4/12/2010	46193	7.76	83.20	2.43	Organics	139.0	18.7	386.6	8.07	32.1	21.3	0.021	< 0.02	< 0.02	0.11	0.061	0.15	214	120.0	0.02	0.02	< 10	2.80
West Cache Creek	OK311310-02-0010M	5/24/2010	46281	8.27	97.80	3.74	Organics	135.0	23.8	410.7	8.19	41.7	18.3	0.02	< 0.02	< 0.02	0.11	0.060	0.15	248	120.0	0.044	0.073	< 10	12.00
West Cache Creek	OK311310-02-0010M	6/28/2010	46303	4.86	58.70	6.01	Organics	127.0	26.2	569.0	8.15	78.1	14.9	0.016	< 0.02	< 0.02	0.46	0.056	0.50	298	136.0	0.061	0.065	< 10	0.02
West Cache Creek	OK311310-02-0010M	8/2/2010	46542	5.05	65.10	4.39	Organics	139.0	28.5	398.0	7.98	38.4	11.3	0.02	0.02	0.02	0.34	0.060	0.38	217	104.0	0.06	0.065	10	
West Cache Creek	OK311310-02-0010M	9/13/2010	46630	5.46	67.20	13.00	Inorganics	128.0	25.9	410.0	7.84	44.3	12.1	0.036	0.4	0.02	0.7	0.456	1.12	246	110.0	0.101	0.112	10	
West Cache Creek	OK311310-02-0010M	10/18/2010	46734	5.67	59.36	35.00	Inorganics	142.0	17.9	423.0	8.21	47.8	16.5	0.015	0.09	0.02	1.01	0.125	1.12	237	125.0	0.005	0.099	22	
West Cache Creek	OK311310-02-0010M	11/29/2010	46797	6.92	60.80	5.19	Organics	157.0	9.7	417.3	7.83	40.7	14.5	0.015	0.02	0.02	0.64	0.055	0.68	220	117.0	0.193	0.218	10	
West Cache Creek	OK311310-02-0010M	1/10/2011	46860	10.06	77.50	4.95	Organics	125.0	4.4	389.0	8.14	35.6	10.1	0.015	0.02	0.02	0.69	0.055	0.73	231	110.0	0.059	0.088	10	
West Cache Creek	OK311310-02-0010M	2/14/2011	47028	8.32	69.90	5.92	Organics	120.0	8.0	354.0	7.31	30.3	10.7	0.015	< 0.02	< 0.02	0.51	0.055	0.55	199	98.0	0.047	0.072	< 10	
West Cache Creek	OK311310-02-0010M	3/21/2011	46948	5.62	60.60	8.75	Organics	119.0	19.1	395.0	7.83	34	10.2	0.015	0.02	0.02	0.85	0.055	0.89	234	132.0	0.024	0.073	10	
West Cache Creek	OK311310-02-0010M	4/25/2011	47112	4.90	48.80	221.00	Inorganics	78.0	15.5	250.0	7.45	26.6	9.4	0.035	0.24	0.07	1.82	0.345	2.13	248	110.0	0.249	0.415	58	
Wildhorse Creek: near Davis	OK310810-01-0020G	5/18/2009	43534	7.93	89.60	416.00	Inorganics	155.0	21.3	410.0		19.9	35.6	0.024	0.12	0.07	1.09	0.214	1.28	305	187.0	0.069	0.293	442	
Wildhorse Creek: near Davis	OK310810-01-0020G	6/22/2009	43842	8.11	109.20	11.30	Organics	268.0	31.2	1045.0	8.15	161.5	< 103.7	0.015	< 0.02	< 0.02	0.56	0.055	0.60	624	375.0	0.039	0.061	< 10	55.97
Wildhorse Creek: near Davis	OK310810-01-0020G	7/28/2009	44143	7.96	99.60	19.20	Inorganics	279.0	26.8	1316.0	8.13	226.6	126.7	0.016	< 0.02	< 0.02	0.53	0.056	0.57	767	400.0	< 0.005	0.069	25	22.01
Wildhorse Creek: near Davis	OK310810-01-0020G	8/31/2009	44447	8.91	107.90	76.50	Inorganics	167.0	25.0	502.0	8.41	57.5	34.3	0.025	< 0.02	< 0.02	0.32	0.065	0.36	318	192.0	0.02	0.074	47	17.17
Wildhorse Creek: near Davis	OK310810-01-0020G	10/5/2009	44668	8.98	93.60	63.90	Inorganics	303.0	17.3	1064.0	8.25	126	98	0.015	< 0.02	< 0.02	0.25	0.055	0.29	611	363.0	0.018	0.046	52	9.56
Wildhorse Creek: near Davis	OK310810-01-0020G	11/3/2009	45082	9.52	93.30	36.10	Inorganics	202.0	14.3	521.0	8.24	29	28.3	0.04	0.07	< 0.02	0.65	0.110	0.72	321	224.0	0.048	0.067	19	
Wildhorse Creek: near Davis	OK310810-01-0020G	12/15/2009	45221	12.86	101.90	3.45	Organics	320.0	5.4	1028.0	8.38	117.8	75.2	0.017	0.04	< 0.02	0.29	0.077	0.35	587	385.0	< 0.005	< 10	24.31	
Wildhorse Creek: near Davis	OK310810-01-0020G	1/26/2010	45396	11.93	96.80	50.50	Inorganics	275.0	6.4	939.0	8.14	109.3	59.2	0.037	0.08	< 0.02	0.26	0.137	0.36	541	340.0	0.06	0.067	19	32.69
Wildhorse Creek: near Davis	OK310810-01-0020G	3/2/2010	46099	11.44	95.70	28.20	Inorganics	314.0	7.6	906.0	8.12	85.2	66.5	0.015	0.09	< 0.02	0.33	0.125	0.44	547	383.0	0.043	0.034	22	
Wildhorse Creek: near Davis	OK310810-01-0020G	4/6/2010	46162	8.85	97.30	6.17	Organics	295.0	20.0	102.3	8.13	132.5	111.7	0.024	< 0.02	< 0.02	0.11	0.064	0.15	571	400.0	0.029	0.023	< 10	65.01
Wildhorse Creek: near Davis	OK310810-01-0020G	5/17/2010	46245	8.84	103.10	123.00	Inorganics	200.0	23.1	625.0	8.12	43.6	54.6	0.039	0.11	< 0.02	0.23	0.159	0.35	382	315.0	0.064	0.146	148	
Wildhorse Creek: near Davis	OK310810-01-0020G	6/22/2010	46441	8.65	117.40	53.50	Inorganics	195.0	31.3	663.0	8.30	57	73.2	0.015	0.06	< 0.02	0.86	0.095	0.94	418	286.0	0.034	0.084	45	101.29
Wildhorse Creek: near Davis	OK310810-01-0020G	7/27/2010	46526	7.72	101.90	24.70	Organics	226.0	29.0	1050.0	8.27	162.5	161.2	0.02	0.03	0.02	0.63	0.070	0.68	619	389.0	0.008	0.048	27	53.45
Wildhorse Creek: near Davis	OK310810-01-0020G	9/7/2010	46587	6.60	82.20	29.60	Organics	277.0	26.6	1293.0	8.30	188.5	133.8	0.015	0.02	0.02	0.65	0.055	0.69	763	415.0	0.012	0.039	32	2.97
Wildhorse Creek: near Davis	OK310810-01-0020G	10/11/2010	46696	8.45	95.80	24.50	Organics	320.0	21.5	1276.0	8.29	169	127.7	0.015	0.02	0.02	0.45	0.055	0.49	744	426.0	0.01	0.023	10	10.11
Wildhorse Creek: near Davis	OK310810-01-0020G	11/9/2010	46759	9.90	98.80	9.31	Organics	361.0	15.4	1352.0	8.31	173.4	130.8	0.015	0.02	0.02	0.29	0.055	0.33	803	477.0	0.005	0.013	10	8.32
Wildhorse Creek: near Davis	OK310810-01-0020G	1/4/2011	46824	13.95	107.70	11.20	Organics	365.0	4.5	1422.0	8.26	189.2	119.4	0.015	0.02	0.02	0.35	0.055	0.39	815	534.0	0.005	0.019	10	17.09
Wildhorse Creek: near Davis	OK310810-01-0020G	2/8/2011	47002	13.16	96.70	16.50	Inorganics	383.0	2.6	1341.0	8.16	180.1	110.6	0.015	< 0.02	< 0.02	0.32	0.055	0.36	744	506.0	0.01	0.024	12	19.39
Wildhorse Creek: near Davis	OK310810-01-0020G	3/15/2011	47058	10.80	99.00	17.30	Organics	349.0	11.5	1298.0	8.27	169.7	106	0.015	< 0.02	< 0.02	0.38	0.055	0.42	774	468.0	< 0.005	0.028	< 10	
Wildhorse Creek: near Davis	OK310810-01-0020G	4/19/2011	47081	8.65	104.40	37.10	Organics	255.0	24.9	1442.0	8.22	222.2	128.4	0.015	< 0.02	< 0.02	0.58	0.055	0.62	828	458.0	0.011	0.047	38	5.14
Wildhorse Creek: near Duncan	OK310810-04-0140D	5/26/2009	43594	6.69	80.30	34.50	Inorganics	134.0	24.4	513.0	6.64	10.6	111.3	0.028	< 0.02	< 0.02	0.38	0.098	0.42	321	226.0	0.036	0.085	81	56.47
Wildhorse Creek: near Duncan	OK310810-04-0140D	6/30/2009	43920	7.76	93.50	27.30	Inorganics	388.0	25.0	795.0	7.93	12.7	34.7	0.055	0.5	< 0.02	0.52	0.575	1.04	438	418.0	< 0.005	0.042	34	1.09
Wildhorse Creek: near Duncan	OK310810-04-0140D	7/13/2009	44050																						

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)					
Wildhorse Creek: near Tatums	OK310810-03-0010R	3/1/2010	46088	11.00	93.20	22.40	Inorganics	276.0	8.1	1098.0	8.35	144.5	101.1	0.02	0.12	<	0.02	0.46	0.160	0.60	639	468.0	0.025	0.048	19					
Wildhorse Creek: near Tatums	OK310810-03-0010R	4/5/2010	46151	8.42	90.80	9.16	Organics	307.0	19.0	1176.0	8.16	150.8	121.6	0.028	<	0.02	0.36	0.068	0.40	691	427.0	0.023	0.02	12	13.06					
Wildhorse Creek: near Tatums	OK310810-03-0010R	5/17/2010	46239	8.06	89.30	125.00	Inorganics	265.0	20.5	667.0	8.09	65.4	86.9	0.036	0.1	<	0.02	0.33	0.156	0.45	436	327.0	0.064	0.167	153					
Wildhorse Creek: near Tatums	OK310810-03-0010R	6/21/2010	46430	7.28	92.70	75.90	Inorganics	233.0	27.8	685.0	8.15	60.7	92.6	0.015	0.04	<	0.02	1.12	0.075	1.18	414	283.0	0.055	0.127	85	276.17				
Wildhorse Creek: near Tatums	OK310810-03-0010R	7/26/2010	46515	6.50	81.60	10.50	Inorganics	252.0	27.4	1084.0	8.16	130.9	172.1	0.026	0.02	0.02	0.89	0.066	0.93	647	423.0	0.015	0.048	32	20.65					
Wildhorse Creek: near Tatums	OK310810-03-0010R	9/8/2010	46594	7.56	89.90	73.20	Inorganics	288.0	24.0	1312.0	8.03	190.7	116.9	0.036	0.02	0.02	0.94	0.076	0.98	795	460.0	0.031	0.068	88						
Wildhorse Creek: near Tatums	OK310810-03-0010R	10/12/2010	46698	8.13	82.50	7.08	Organics	354.0	16.0	1687.0	8.10	280.9	157.8	0.015	0.02	0.02	0.42	0.055	0.46	962	617.0	0.006	0.01	10	10.18					
Wildhorse Creek: near Tatums	OK310810-03-0010R	11/15/2010	46761	10.10	90.10	7.43	Organics	460.0	10.3	1655.0	8.29	221.4	151.7	0.015	0.04	0.02	0.39	0.075	0.45	989	700.0	0.014	0.019	10	49.35					
Wildhorse Creek: near Tatums	OK310810-03-0010R	1/3/2011	46818	14.23	100.70	4.77	Organics	422.0	1.2		8.29	208.2	127.2	0.015	0.02	0.02	0.45	0.055	0.49	878	624.0	0.006	0.013	10	8.24					
Wildhorse Creek: near Tatums	OK310810-03-0010R	1/18/2011	46896																											
Wildhorse Creek: near Tatums	OK310810-03-0010R	2/7/2011	46991	14.33	98.90	31.50	Inorganics	382.0	0.3		8.25	232.4	117.9	0.015	0.13	<	0.02	0.52	0.165	0.67	893	624.0	0.015	0.043	22	14.16				
Wildhorse Creek: near Tatums	OK310810-03-0010R	3/14/2011	47047	9.25	85.50	19.40	Organics	380.0	11.8	1560.0	8.29	256.9	131.9	0.015	<	0.02	0.58	0.055	0.62	954	605.0	<	0.005	0.018	<	10	12.75			
Wildhorse Creek: near Tatums	OK310810-03-0010R	4/18/2011	47070	7.60	80.00	17.60	Organics	405.0	17.8	1538.0	8.15	313.9	134.3	0.015	<	0.02	0.63	0.055	0.67	1061	630.0	0.012	0.038	23	5.59					
Armstrong Creek	OKR09730-095	6/30/2009	43637	7.53	88.6	4.05		370	23.5	812	8.2	33.5	66.3	<	0.015	0.18	<	0.02	0.47	0.215	0.67	454	419	0.026	0.031	<	10			
Barnitz Creek	OKR09730-106	5/21/2009	43644			85.6	Inorganics	208	17.3	2873	7.9														6.47					
Barnitz Creek	OKR09730-106	6/9/2009	43800	7.85	98.1	10.1	Inorganics	155	26.8	2935	8.1	28.4	2402.9	<	0.015	0.23	<	0.02	0.76	0.265	1.01	2899	1725	0.043	0.095	116	1.71			
Beaver Creek	OKR09730-091	7/21/2009	44094	4.02	50.6	21	Inorganics	157	27.1	552	7.5	31.2	82.5	0.034	0.03	<	0.02	<	0.11	0.084	0.16	324	217	0.045	0.07	<	10			
Beaver Creek	OKR09730-091	7/28/2010	46416	9.96	129.8	22.1	Inorganics	152	29.2	550	8.6														16.31					
Bitter Creek	OKR09730-005	7/15/2009	44085	4.89	61.1	135	Inorganics	136	25.6	3236	7.7														10.15					
Bitter Creek	OKR09730-005	7/22/2009	44106	4.58	51.4	182	Inorganics	133	24.2	3416	7.4	523.2	1057.6	0.177	2.42	<	0.02	1.04	2.617	3.48	2358	1770	0.057	0.182	135	5.74				
Buffalo Creek	OKR09730-012	6/10/2009	43803	8.64	92.7	4.8	Inorganics	369	18.5	1644	8.1	96.7	755.9	<	0.015	0.34	<	0.02	0.58	0.375	0.94	1272	750	0.024	0.031	<	10	0.99		
Buffalo Creek	OKR09730-012	6/16/2009	43649	8.03	93.8	23.4	Inorganics	298	23.1	1530	8.0														1.09					
Cavalry Creek	OKR09730-058	6/30/2009	43889	17.68	200	20.4	Inorganics	123	27.5	2878	8.2	126.5	2033.2	0.017	<	0.02	<	0.02	1.36	0.057	1.4	2828	1850	0.015	0.1	59	8.37			
Cavalry Creek	OKR09730-058	7/29/2009	44159	5.55	67.1	7.85	Inorganics	189	24.9	2908	7.7														2.26					
Chandler Creek	OKR09730-085	6/25/2009	43634	5.18	62.6	0.99	Inorganics	185	24.5	558	7.6	32.5	19.7	<	0.015	0.12	<	0.02	<	0.11	0.155	0.25	321	246	0.015	0.035	<	10		
Cow Creek	OKR09730-098	6/30/2009	43638	8.7	112.1	18.9	Inorganics	2.29	28.5	1011	8.3	83.2	172.1	0.091	9.21	<	0.02	0.62	9.321	9.85	606	335	2.004	1.761	13	3.40				
East Winter Creek	OKR09730-046	6/2/2009	43786	7.97	88.7	9.5	Inorganics	316	20.3	662	4.9	18.2	105.4	<	0.015	0.41	0.14	0.77	0.565	1.32	371	400	0.063	0.124	79	6.09				
East Winter Creek	OKR09730-046	6/24/2009	43633	7.53	95.6	24.1	Inorganics	333	27.8	541	8.0														1.20					
East Winter Creek	OKR09730-119	6/24/2009	43632	7.66	88.9	4.68	Inorganics	336	22.7	717	7.9	14.5	42.1	<	0.015	0.38	<	0.02	0.22	0.415	0.62	401	426	0.019	0.019	<	10	0.80		
Elk Creek	OKR09730-041	7/14/2009	44083	3.07	37.4	9.63	Inorganics	169	25.4	2486	7.5														0.06					
Elk Creek	OKR09730-041	7/23/2009	44108	4.66	53.5	11.9	Inorganics	155	24.1	1289	7.9	39.2	486	0.155	0.2	0.13	0.8	0.485	1.13	898	552	0.089	0.185	18	0.18					
Elk Creek	OKR09730-057	7/22/2009	44107	4.71	56.8	26.1	Inorganics	111	25.6	2883	8.0	226.5	1443.8	0.016	<	0.02	<	0.02	0.92	0.056	0.96	2368	1246	0.007	0.087	26	3.45			
Elk Creek	OKR09730-057	8/12/2009	44370	3.73	45.2	56.4	Inorganics	94	25.1	1464	6.5														0.84					
Laffin Creek	OKR09730-003	6/2/2009	43787	7.91	92	46.9	Inorganics	323	23.0	4000	8.2	11.8	32.9	<	0.015	0.21	<	0.02	0.68	0.245	0.91	325	300	0.041	0.098	54	9.03			
Laffin Creek	OKR09730-003	6/22/2009	43629	6.97	102.2	7.92	Inorganics	260	36.2	665	8.0														1.04					
Lake Creek	OKR09730-080	6/30/2009	43884	7.73	84.5	16.9	Inorganics	268	19.6	427.1	8.1	14.8	264.7	0.088	0.69	0.12	0.43	0.898	1.24	393		0.095	0.139	18	2.51					
Lake Creek	OKR09730-080	5/27/2010	46408	8.39	92.1	19.9	Inorganics	265	19.9	623	8.2														5.86					
Little Turkey Creek	OKR09730-069	6/10/2009	43804	1.06	11.8	11.3	Organics	288	20.4	1950	7.6	87.2	950.6	<	0.015	0.72	0.21	0.87	0.945	1.8	1588	910	0.022	0.184	<	10				
Little Turkey Creek	OKR09730-069	6/16/2009	43650	1.67	19.3	15.3	Organics	220	2.6	1960	7.5																			
Medicine Creek	OKR09730-026	8/4/2009	43641	5.01	63.4	5.71	Inorganics	108	27.2	302.7	7.1	5.4	14.3	0.026	<	0.02	<	0.02	0.16	0.066	0.2	177	141	0.007	0.018	<	10			
Mud Creek	OKR09730-031	6/29/2009	43635	4.37	55.7	67.2	Inorganics	392	28.3	1320	8.0	237.9	143.8	<	0.015	<	0.02	0.74	0.055	0.78	698	397	0.061	0.061	44	3.45				
Mud Creek	OKR09730-110	6/29/2009	43636	3.76	48	77.9	Inorganics	337	28.2	1609	8.0	283.8	105.4	<	0.015	<	0.02	0.75	0.055	0.79	869	508	0.059	0.07	47	3.20				
Negro Sandy Creek	OKR09730-130	6/18/2009	43625									9.1	7.6	<	0.015	0.18	0.65	0.24	0.845	1.07	265		0.033	0.041	<	10				
North Fork Red River	OKR09730-025	7/16/2009	44087	7.17	87.8	8.23	Inorganics	102	25.7	4218	8.1														2.74					
North Fork Red River	OKR09730-025	7/21/2009	44103	8.02	104.8	4.18	Inorganics	77	29.3	3813	8.2	803.1	1305.3	<	0.015	<	0.02	<	0.02	0.71	0.055	0.75	2940	1286	<	0.005	0.074	<	10	3.98
North Fork Red River	OKR09730-075	7/21/2009	44102	9.42	115.3	2.74	Inorganics	100	25.7	3330	8.0	831.8	1576.5	0.047	<	0.02	<	0.02	0.66	0.087	0.7	3042	1182	<	0.005	0.098	<	10	5.35	
North Fork Red River	OKR09730-096	6/10/2009	43802	5.95	69.4	115	Inorganics	193	21.4	2546	8.3	457.6	876	<	0.015	0.43	<	0.02	0.98	0.465	1.43	1848	800	0.054	0.092	103	59.35			
North Fork Red River	OKR09730-096	6/16/2009	43648	7.41	87.30	19.70		162	23.7	2969	8.1														56.67					
Owens Creek	OKR09730-059	6/23/2009	43630	3.36	40.7	64.5		387	25.1	1093	7.8	13.4	91.1	0.138	0.27	0.12	0.79	0.528	1.18	621	605	0.062	0.142	166	1.10					
Pennington Creek	OKR09730-124	6/17/2009	43627	8.53	104.20	3.11		213	25.6	527	8.2														46.40					
Pennington Creek	OKR09730-124	7/14/2009	43639	7.54	98.10	3.80		249	27.9	516	7.9	3.5	6.3																	

Appendix A.1. Raw chemical and physical water quality data.

SiteName	WBID	DateActivityStart	SampleID	DO (mg/L)	DOPercSat	Turbidity (NTU)	TurbidityCause	Alkalinity CaCO3	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Available Nitrogen (mg/L)	Total Nitrogen (mg/L)	TotDisSolids (mg/L)	Hardness (mg/L as CaCO3)	TotOrthoPhos (mg/L)	TotPhosphorus (mg/L)	TotSulSolids (mg/L)	Flow (cfs)	
Walnut Bayou	OKR09730-027	7/22/2009	44112	4.57	57.8	48.6	Inorganics	156	27.3	1061	7.6															
Washita River	OKR09730-020	6/9/2009	43801	8.18	101.5	18.4	Inorganics	212	26.2	1440	8.1	41.7	1631.4	< 0.015	0.49	< 0.02	0.6	0.525	1.11		1949	1300	0.054	0.076	27	53.08
Washita River	OKR09730-020	8/13/2009	44371	6	72.2	11.3	Inorganics	148	24.8	2128	7.4															23.65
Washita River	OKR09730-047	7/14/2009	43640	8.94	128.1	58	Inorganics	107	34.6	288.5	8.0	6.7	9.2	0.063	< 0.02	< 0.02	1.061	0.103	1.101		167	127	0.013	0.079	12	
Washita River	OKR09730-047	8/12/2010	46562	4.81	63.9	22.6	Inorganics	194	30.4	1215	7.8															
Washita River	OKR09730-074	6/30/2009	43885	6.98	83.8	7.35	Inorganics	148	23.6	2457	8.0	49.3	1337.8	0.081	0.41	< 0.02	1.06	0.511	1.49		2120	1110	0.019	0.055	21	61.37
Washita River	OKR09730-074	8/14/2009	44372	7.05	83.8	10.1	Inorganics	187	24.0	2308																33.21
Washita River	OKR09730-078	6/9/2009	43797	8.48	98.6	107	Inorganics	225	22.5	1902	8.1	75.1	1066.3	< 0.015	1.27	< 0.02	1.09	1.305	2.38		1556	915	0.077	0.13	135	29.36
Washita River	OKR09730-078	7/29/2010	46417	6.83	81.7	46.3	Inorganics	197	24.3	2576	7.9															17.62
Washita River	OKR09730-081	6/10/2010	46428	7.37	93.3	65.2	Inorganics	192	27.4	1793	8.2	88.4	1011	< 0.015	< 0.02	< 0.02	0.99	0.055	1.03		1368	806	0.039	0.175	107	572.52
Washita River	OKR09730-081	8/12/2010	46563	9.47	142	38.1	Inorganics	18	37.5	1235	8.6															
Washita River	OKR09730-127	6/10/2010	46427	5.82	73.5	83.2	Inorganics	173	27.6	2111	8.0	82.1	1021.9	< 0.015	0.08	< 0.02	0.89	0.115	0.99		1604	452	0.055	0.171	115	345.57
Washita River	OKR09730-127	6/24/2010	46414	5.78	78.9	27.5	Inorganics	169	29.4	2224	8.1															158.54
White Shield Creek	OKR09730-052	6/3/2009	43654	7.44	78.3	15.8	Inorganics	442	17.8	963	8.2															0.59
White Shield Creek	OKR09730-052	6/9/2009	43798	7.18	8.01	29.2	Inorganics	410	20.8	965	8.1	46.6	260.6	< 0.015	0.29	< 0.02	0.63	0.325	0.94		696	505	0.176	0.196	16	0.24
White Shield Creek	OKR09730-094	6/3/2009	43653	7.32	78.9	68.3	Inorganics	368	18.9	2235	7.9															1.75
White Shield Creek	OKR09730-094	6/9/2009	43799	7.87	94.8	9.3	Inorganics	303	24.2	2180	8.2	47.1	< 1495.5	< 0.015	1.59	0.14	0.62	1.745	2.35		2028	1250	0.111	0.114	< 10	0.70
Wild Horse Creek	OKR09730-008	5/28/2009	43646	7.44	76	1.32	Inorganics	254	16.4	1646	7.9															2.18
Wild Horse Creek	OKR09730-008	6/1/2009	43784	7.37	88.6	17.8	Inorganics	178	24.2	3348	8.1	46.4	2404.4	0.073	0.33	0.11	1.27	0.513	1.71		3480	2510	0.104	0.174	74	0.62

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Barnitz Creek	OK310830-03-0200C	5/26/2009	43576	425.00	200.00
Barnitz Creek	OK310830-03-0200C	6/29/2009	43897	160.00	120.00
Barnitz Creek	OK310830-03-0200C	7/27/2009	44284	< 170.00	190.00
Barnitz Creek	OK310830-03-0200C	9/9/2009	44531	45.00	155.00
Barnitz Creek	OK310830-03-0200C	9/22/2009	44629	70.00	290.00
Barnitz Creek	OK310830-03-0200C	5/18/2010	46267	550.00	650.00
Barnitz Creek	OK310830-03-0200C	6/22/2010	46459	310.00	880.00
Barnitz Creek	OK310830-03-0200C	7/20/2010	46326	130.00	1980.00
Barnitz Creek	OK310830-03-0200C	9/8/2010	46617	210.00	3350.00
Barnitz Creek	OK310830-03-0200C	9/21/2010	46679	180.00	1160.00
Beaver Creek	OK310830-03-0190C	5/26/2009	43575	530.00	250.00
Beaver Creek	OK310830-03-0190C	6/29/2009	43900	70.00	105.00
Beaver Creek	OK310830-03-0190C	7/27/2009	44285	< 5.00	50.00
Beaver Creek	OK310830-03-0190C	9/9/2009	44534	150.00	230.00
Beaver Creek	OK310830-03-0190C	9/22/2009	44632	30.00	230.00
Beaver Creek	OK310830-03-0190C	5/18/2010	46264	130.00	480.00
Beaver Creek	OK310830-03-0190C	6/22/2010	46456	120.00	650.00
Beaver Creek	OK310830-03-0190C	7/20/2010	46323	90.00	1220.00
Beaver Creek	OK310830-03-0190C	9/8/2010	46620	170.00	600.00
Beaver Creek	OK310830-03-0190C	9/21/2010	46682	1220.00	340.00
Beaver Creek	OK311200-00-0030L	5/26/2009	43597	800.00	700.00
Beaver Creek	OK311200-00-0030L	8/3/2009	44299	< 10.00	20.00
Beaver Creek	OK311200-00-0030L	9/8/2009	44520	10.00	10.00
Beaver Creek	OK311200-00-0030L	9/14/2009	44565	660.00	1340.00
Beaver Creek	OK311200-00-0030L	5/24/2010	46294	160.00	20.00
Beaver Creek	OK311200-00-0030L	6/28/2010	46316	720.00	2240.00
Beaver Creek	OK311200-00-0030L	8/2/2010	46555	10.00	10.00
Beaver Creek	OK311200-00-0030L	8/24/2010	46568	70.00	50.00
Beaver Creek	OK311200-00-0030L	9/13/2010	46643	260.00	500.00
Big Sandy Creek	OK310800-01-0090G	6/4/2009	43745	< 40.00	1200.00
Big Sandy Creek	OK310800-01-0090G	6/23/2009	43849	< 5.00	35.00
Big Sandy Creek	OK310800-01-0090G	7/27/2009	44137	< 5.00	40.00
Big Sandy Creek	OK310800-01-0090G	9/1/2009	44454	5.00	15.00
Big Sandy Creek	OK310800-01-0090G	5/4/2010	46224	< 10.00	10.00
Big Sandy Creek	OK310800-01-0090G	5/17/2010	46244	20.00	< 20.00
Big Sandy Creek	OK310800-01-0090G	6/21/2010	46435	20.00	310.00
Big Sandy Creek	OK310800-01-0090G	7/26/2010	46520	5.00	45.00
Big Sandy Creek	OK310800-01-0090G	9/8/2010	46599	2450.00	4900.00
Big Sandy Creek	OK310800-01-0090G	9/21/2010	46669	20.00	270.00
Boggy Creek	OK310830-03-0100C	5/26/2009	43574	5100.00	2000.00
Boggy Creek	OK310830-03-0100C	6/29/2009	43896	90.00	250.00
Boggy Creek	OK310830-03-0100C	7/27/2009	44281	< 390.00	500.00
Boggy Creek	OK310830-03-0100C	9/9/2009	44530	130.00	105.00
Boggy Creek	OK310830-03-0100C	9/22/2009	44628	140.00	350.00
Boggy Creek	OK310830-03-0100C	5/18/2010	46268	200.00	350.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Boggy Creek	OK310830-03-0100C	6/22/2010	46460	230.00	240.00
Boggy Creek	OK310830-03-0100C	7/20/2010	46327	10.00	190.00
Boggy Creek	OK310830-03-0100C	9/8/2010	46616	1900.00	2000.00
Boggy Creek	OK310830-03-0100C	9/21/2010	46678	20.00	280.00
Buffalo Creek	OK311510-02-0090D	5/18/2009	43542	410.00	180.00
Buffalo Creek	OK311510-02-0090D	6/22/2009	43851	60.00	135.00
Buffalo Creek	OK311510-02-0090D	7/27/2009	44145	< 7300.00	5700.00
Buffalo Creek	OK311510-02-0090D	8/31/2009	44456	70.00	320.00
Buffalo Creek	OK311510-02-0090D	5/17/2010	46252	300.00	550.00
Buffalo Creek	OK311510-02-0090D	6/21/2010	46444	820.00	670.00
Buffalo Creek	OK311510-02-0090D	7/26/2010	46528	1400.00	820.00
Buffalo Creek	OK311510-02-0090D	8/31/2010	46578	415.00	940.00
Buffalo Creek	OK311510-02-0090D	9/7/2010	46601	290.00	1920.00
Caddo Creek	OK310800-03-0010F	5/19/2009	43537	60.00	70.00
Caddo Creek	OK310800-03-0010F	6/23/2009	43845	30.00	100.00
Caddo Creek	OK310800-03-0010F	7/27/2009	44133	< 100.00	110.00
Caddo Creek	OK310800-03-0010F	9/1/2009	44450	115.00	110.00
Caddo Creek	OK310800-03-0010F	5/4/2010	46220	90.00	< 10.00
Caddo Creek	OK310800-03-0010F	5/17/2010	46240	750.00	1100.00
Caddo Creek	OK310800-03-0010F	6/21/2010	46431	150.00	40.00
Caddo Creek	OK310800-03-0010F	7/26/2010	46516	430.00	160.00
Caddo Creek	OK310800-03-0010F	9/8/2010	46595	480.00	2550.00
Caddo Creek	OK310800-03-0010F	9/21/2010	46665	270.00	290.00
Cavalry Creek	OK310830-03-0070D	5/26/2009	43573	> 10000.00	4600.00
Cavalry Creek	OK310830-03-0070D	6/29/2009	43895	230.00	110.00
Cavalry Creek	OK310830-03-0070D	7/27/2009	44280	> 1000.00	490.00
Cavalry Creek	OK310830-03-0070D	9/9/2009	44529	80.00	100.00
Cavalry Creek	OK310830-03-0070D	9/22/2009	44627	290.00	420.00
Cavalry Creek	OK310830-03-0070D	5/18/2010	46269	100.00	160.00
Cavalry Creek	OK310830-03-0070D	6/22/2010	46461	640.00	560.00
Cavalry Creek	OK310830-03-0070D	7/20/2010	46328	250.00	350.00
Cavalry Creek	OK310830-03-0070D	9/8/2010	46615	200.00	2600.00
Cavalry Creek	OK310830-03-0070D	9/21/2010	46677	90.00	390.00
Chigley Sandy Creek	OK310800-02-0190D	5/18/2009	43533	60.00	190.00
Chigley Sandy Creek	OK310800-02-0190D	6/22/2009	43841	30.00	315.00
Chigley Sandy Creek	OK310800-02-0190D	7/28/2009	44142	< 70.00	120.00
Chigley Sandy Creek	OK310800-02-0190D	8/31/2009	44446	5.00	95.00
Chigley Sandy Creek	OK310800-02-0190D	5/4/2010	46217	420.00	100.00
Chigley Sandy Creek	OK310800-02-0190D	5/18/2010	46250	20.00	180.00
Chigley Sandy Creek	OK310800-02-0190D	6/22/2010	46440	85.00	245.00
Chigley Sandy Creek	OK310800-02-0190D	7/27/2010	46525	70.00	335.00
Chigley Sandy Creek	OK310800-02-0190D	9/7/2010	46588	60.00	2750.00
Chigley Sandy Creek	OK310800-02-0190D	9/21/2010	46670	100.00	480.00
Cobb Creek	OK310830-06-0050M	5/26/2009	43571	> 10000.00	37.00
Cobb Creek	OK310830-06-0050M	6/29/2009	43893	220.00	670.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Cobb Creek	OK310830-06-0050M	7/27/2009	44278	< 280.00	120.00
Cobb Creek	OK310830-06-0050M	9/9/2009	44528	140.00	475.00
Cobb Creek	OK310830-06-0050M	9/22/2009	44626	250.00	590.00
Cobb Creek	OK310830-06-0050M	5/18/2010	46270	100.00	300.00
Cobb Creek	OK310830-06-0050M	6/22/2010	46462	260.00	530.00
Cobb Creek	OK310830-06-0050M	7/20/2010	46329	130.00	580.00
Cobb Creek	OK310830-06-0050M	9/8/2010	46614	770.00	3050.00
Cobb Creek	OK310830-06-0050M	9/23/2010	46684	1020.00	1060.00
Cow Creek	OK311200-00-0060L	5/26/2009	43599	580.00	450.00
Cow Creek	OK311200-00-0060L	8/3/2009	44301	< 10.00	30.00
Cow Creek	OK311200-00-0060L	9/8/2009	44521	85.00	110.00
Cow Creek	OK311200-00-0060L	9/14/2009	44564	1800.00	1140.00
Cow Creek	OK311200-00-0060L	5/24/2010	46295	210.00	300.00
Cow Creek	OK311200-00-0060L	6/28/2010	46319	5200.00	> 10000.00
Cow Creek	OK311200-00-0060L	8/2/2010	46556	100.00	50.00
Cow Creek	OK311200-00-0060L	8/24/2010	46567	1360.00	1660.00
Cow Creek	OK311200-00-0060L	9/13/2010	46644	5300.00	5500.00
Deep Red Creek	OK311310-03-0010D	5/26/2009	43585	200.00	< 100.00
Deep Red Creek	OK311310-03-0010D	6/29/2009	43909	60.00	390.00
Deep Red Creek	OK311310-03-0010D	8/3/2009	44309	< 110.00	250.00
Deep Red Creek	OK311310-03-0010D	9/15/2009	44596	1800.00	500.00
Deep Red Creek	OK311310-03-0010D	5/5/2010	46229	280.00	430.00
Deep Red Creek	OK311310-03-0010D	5/24/2010	46282	150.00	70.00
Deep Red Creek	OK311310-03-0010D	6/28/2010	46304	80.00	920.00
Deep Red Creek	OK311310-03-0010D	8/2/2010	46543	90.00	70.00
Deep Red Creek	OK311310-03-0010D	9/13/2010	46631	1320.00	1860.00
Deep Red Creek	OK311310-03-0010D	9/20/2010	46653	100.00	460.00
Delaware Creek	OK310830-01-0030G	5/19/2009	43556	< 10.00	110.00
Delaware Creek	OK310830-01-0030G	6/22/2009	43830	35.00	70.00
Delaware Creek	OK310830-01-0030G	8/3/2009	44275	< 10.00	10.00
Delaware Creek	OK310830-01-0030G	9/1/2009	44501	80.00	35.00
Delaware Creek	OK310830-01-0030G	9/16/2009	44607	140.00	800.00
Delaware Creek	OK310830-01-0030G	5/25/2010	46276	180.00	120.00
Delaware Creek	OK310830-01-0030G	6/29/2010	46468	100.00	80.00
Delaware Creek	OK310830-01-0030G	7/26/2010	46335	170.00	140.00
Delaware Creek	OK310830-01-0030G	9/14/2010	46625	240.00	280.00
Delaware Creek	OK310830-01-0030G	9/23/2010	46685	420.00	270.00
East Barnitz Creek	OK310830-03-0210C	5/26/2009	43577	50.00	90.00
East Barnitz Creek	OK310830-03-0210C	6/29/2009	43899	200.00	190.00
East Barnitz Creek	OK310830-03-0210C	7/27/2009	44283	< 325.00	330.00
East Barnitz Creek	OK310830-03-0210C	9/9/2009	44533	35.00	125.00
East Barnitz Creek	OK310830-03-0210C	9/22/2009	44631	120.00	460.00
East Barnitz Creek	OK310830-03-0210C	5/18/2010	46266	1200.00	900.00
East Barnitz Creek	OK310830-03-0210C	6/22/2010	46458	330.00	370.00
East Barnitz Creek	OK310830-03-0210C	7/20/2010	46325	100.00	1300.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
East Barnitz Creek	OK310830-03-0210C	9/8/2010	46619	250.00	2900.00
East Barnitz Creek	OK310830-03-0210C	9/21/2010	46681	30.00	260.00
East Cache Creek: Lower	OK311300-01-0020G	5/26/2009	43596	4400.00	100.00
East Cache Creek: Lower	OK311300-01-0020G	8/3/2009	44298	< 150.00	320.00
East Cache Creek: Lower	OK311300-01-0020G	9/8/2009	44519	40.00	140.00
East Cache Creek: Lower	OK311300-01-0020G	9/14/2009	44563	> 2000.00	> 2000.00
East Cache Creek: Lower	OK311300-01-0020G	5/24/2010	46293	440.00	210.00
East Cache Creek: Lower	OK311300-01-0020G	6/28/2010	46315	820.00	1740.00
East Cache Creek: Lower	OK311300-01-0020G	8/2/2010	46554	80.00	40.00
East Cache Creek: Lower	OK311300-01-0020G	8/24/2010	46566	60.00	290.00
East Cache Creek: Lower	OK311300-01-0020G	9/13/2010	46642	100.00	1460.00
East Cache Creek: Upper	OK311300-02-0010M	5/26/2009	43582	960.00	340.00
East Cache Creek: Upper	OK311300-02-0010M	6/29/2009	43906	20.00	10.00
East Cache Creek: Upper	OK311300-02-0010M	8/3/2009	44306	< 10.00	60.00
East Cache Creek: Upper	OK311300-02-0010M	9/15/2009	44593	20.00	100.00
East Cache Creek: Upper	OK311300-02-0010M	5/5/2010	46227	50.00	240.00
East Cache Creek: Upper	OK311300-02-0010M	5/24/2010	46279	45.00	190.00
East Cache Creek: Upper	OK311300-02-0010M	6/28/2010	46301	70.00	1100.00
East Cache Creek: Upper	OK311300-02-0010M	8/2/2010	46541	10.00	30.00
East Cache Creek: Upper	OK311300-02-0010M	9/13/2010	46628	60.00	50.00
East Cache Creek: Upper	OK311300-02-0010M	9/20/2010	46651	30.00	80.00
Elk Creek	OK311500-03-0010G	5/27/2009	43592	235.00	330.00
Elk Creek	OK311500-03-0010G	6/30/2009	43916	100.00	60.00
Elk Creek	OK311500-03-0010G	8/4/2009	44316	< 180.00	350.00
Elk Creek	OK311500-03-0010G	9/16/2009	44603	240.00	1060.00
Elk Creek	OK311500-03-0010G	5/5/2010	46236	90.00	490.00
Elk Creek	OK311500-03-0010G	5/25/2010	46289	250.00	480.00
Elk Creek	OK311500-03-0010G	6/29/2010	46311	1820.00	1740.00
Elk Creek	OK311500-03-0010G	8/3/2010	46550	60.00	50.00
Elk Creek	OK311500-03-0010G	9/14/2010	46638	60.00	700.00
Elk Creek	OK311500-03-0010G	9/20/2010	46660	60.00	120.00
Finn Creek	OK310810-02-0020D	5/18/2009	43529	290.00	100.00
Finn Creek	OK310810-02-0020D	6/22/2009	43837	50.00	125.00
Finn Creek	OK310810-02-0020D	7/29/2009	44138	< 40.00	670.00
Finn Creek	OK310810-02-0020D	8/31/2009	44442	15.00	175.00
Finn Creek	OK310810-02-0020D	5/4/2010	46213	40.00	280.00
Finn Creek	OK310810-02-0020D	5/18/2010	46246	350.00	2200.00
Finn Creek	OK310810-02-0020D	6/22/2010	46436	270.00	1220.00
Finn Creek	OK310810-02-0020D	7/27/2010	46521	630.00	850.00
Finn Creek	OK310810-02-0020D	9/7/2010	46592	100.00	310.00
Finn Creek	OK310810-02-0020D	9/21/2010	46674	< 10.00	520.00
Fish Creek	OK311800-00-0130G	5/19/2009	43547	260.00	50.00
Fish Creek	OK311800-00-0130G	6/23/2009	43857	< 5.00	5.00
Fish Creek	OK311800-00-0130G	7/28/2009	44151	< 150.00	270.00
Fish Creek	OK311800-00-0130G	9/1/2009	44462	< 5.00	160.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Fish Creek	OK311800-00-0130G	5/18/2010	46258	300.00	420.00
Fish Creek	OK311800-00-0130G	6/22/2010	46450	< 10.00	< 10.00
Fish Creek	OK311800-00-0130G	7/27/2010	46534	30.00	180.00
Fish Creek	OK311800-00-0130G	8/31/2010	46581	30.00	40.00
Fish Creek	OK311800-00-0130G	9/8/2010	46607	150.00	120.00
Fivemile Creek	OK310830-06-0080D	5/26/2009	43572	> 10000.00	> 10000.00
Fivemile Creek	OK310830-06-0080D	6/29/2009	43894	250.00	510.00
Fivemile Creek	OK310830-06-0080D	7/27/2009	44279	< 340.00	410.00
Fivemile Creek	OK310830-06-0080D	9/9/2009	44527	135.00	360.00
Fivemile Creek	OK310830-06-0080D	9/22/2009	44625	< 1000.00	640.00
Fivemile Creek	OK310830-06-0080D	5/18/2010	46271	400.00	540.00
Fivemile Creek	OK310830-06-0080D	6/22/2010	46463	215.00	300.00
Fivemile Creek	OK310830-06-0080D	7/20/2010	46330	640.00	890.00
Fivemile Creek	OK310830-06-0080D	9/8/2010	46613	1780.00	4600.00
Fivemile Creek	OK310830-06-0080D	9/22/2010	46683	310.00	1240.00
Fleetwood Creek	OK311100-01-0300D	5/26/2009	43598	665.00	380.00
Fleetwood Creek	OK311100-01-0300D	8/3/2009	44300	< 70.00	850.00
Fleetwood Creek	OK311100-01-0300D	9/14/2009	44566	1860.00	> 2000.00
Fleetwood Creek	OK311100-01-0300D	5/25/2010	46296	740.00	940.00
Fleetwood Creek	OK311100-01-0300D	6/28/2010	46317	2400.00	> 10000.00
Fleetwood Creek	OK311100-01-0300D	8/3/2010	46557	80.00	1780.00
Fleetwood Creek	OK311100-01-0300D	8/24/2010	46569	260.00	1880.00
Fleetwood Creek	OK311100-01-0300D	9/14/2010	46645	1150.00	5200.00
Gypsum Creek	OK311600-01-0020F	5/27/2009	43591	100.00	200.00
Gypsum Creek	OK311600-01-0020F	6/29/2009	43913	130.00	740.00
Gypsum Creek	OK311600-01-0020F	8/3/2009	44313	< 10.00	20.00
Gypsum Creek	OK311600-01-0020F	9/15/2009	44600	140.00	280.00
Gypsum Creek	OK311600-01-0020F	5/5/2010	46233	210.00	350.00
Gypsum Creek	OK311600-01-0020F	5/24/2010	46286	< 10.00	40.00
Gypsum Creek	OK311600-01-0020F	6/28/2010	46308	40.00	1000.00
Gypsum Creek	OK311600-01-0020F	8/2/2010	46547	10.00	20.00
Gypsum Creek	OK311600-01-0020F	9/13/2010	46635	30.00	120.00
Gypsum Creek	OK311600-01-0020F	9/20/2010	46657	< 10.00	180.00
Haystack Creek	OK311800-00-0040D	5/19/2009	43549	70.00	60.00
Haystack Creek	OK311800-00-0040D	6/23/2009	43859	105.00	> 500.00
Haystack Creek	OK311800-00-0040D	7/28/2009	44153	< 7500.00	4900.00
Haystack Creek	OK311800-00-0040D	9/1/2009	44464	< 5.00	15.00
Haystack Creek	OK311800-00-0040D	5/18/2010	46260	320.00	600.00
Haystack Creek	OK311800-00-0040D	6/22/2010	46452	1500.00	10.00
Haystack Creek	OK311800-00-0040D	7/27/2010	46536	< 10.00	220.00
Haystack Creek	OK311800-00-0040D	8/31/2010	46583	5.00	60.00
Haystack Creek	OK311800-00-0040D	9/8/2010	46609	< 10.00	350.00
Hickory Creek: HWY 775	OK311100-02-0010M	5/27/2009	43603	30.00	30.00
Hickory Creek: HWY 775	OK311100-02-0010M	8/4/2009	44305	< 30.00	140.00
Hickory Creek: HWY 775	OK311100-02-0010M	9/9/2009	44525	< 5.00	10.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Hickory Creek: HWY 775	OK311100-02-0010M	9/14/2009	44570	560.00	920.00
Hickory Creek: HWY 775	OK311100-02-0010M	5/25/2010	46300	40.00	50.00
Hickory Creek: HWY 775	OK311100-02-0010M	6/29/2010	46322	50.00	100.00
Hickory Creek: HWY 775	OK311100-02-0010M	8/3/2010	46561	< 10.00	20.00
Hickory Creek: HWY 775	OK311100-02-0010M	8/24/2010	46573	65.00	380.00
Hickory Creek: HWY 775	OK311100-02-0010M	9/14/2010	46649	40.00	60.00
Ionine Creek	OK310820-01-0160L	5/19/2009	43555	< 10.00	10.00
Ionine Creek	OK310820-01-0160L	6/22/2009	43829	5.00	5.00
Ionine Creek	OK310820-01-0160L	8/3/2009	44274	< 10.00	210.00
Ionine Creek	OK310820-01-0160L	9/1/2009	44500	25.00	30.00
Ionine Creek	OK310820-01-0160L	9/16/2009	44611	180.00	300.00
Ionine Creek	OK310820-01-0160L	5/25/2010	46275	280.00	90.00
Ionine Creek	OK310820-01-0160L	6/29/2010	46467	80.00	60.00
Ionine Creek	OK310820-01-0160L	7/26/2010	46334	175.00	35.00
Ionine Creek	OK310820-01-0160L	9/14/2010	46624	20.00	100.00
Ionine Creek	OK310820-01-0160L	9/23/2010	46689	70.00	110.00
Kickapoo Sandy Creek	OK310810-01-0050G	5/18/2009	43532	70.00	170.00
Kickapoo Sandy Creek	OK310810-01-0050G	6/22/2009	43840	295.00	450.00
Kickapoo Sandy Creek	OK310810-01-0050G	7/28/2009	44141	> 1000.00	> 1000.00
Kickapoo Sandy Creek	OK310810-01-0050G	8/31/2009	44445	465.00	225.00
Kickapoo Sandy Creek	OK310810-01-0050G	5/4/2010	46216	1900.00	770.00
Kickapoo Sandy Creek	OK310810-01-0050G	5/18/2010	46249	1200.00	1100.00
Kickapoo Sandy Creek	OK310810-01-0050G	6/22/2010	46439	85.00	245.00
Kickapoo Sandy Creek	OK310810-01-0050G	7/27/2010	46524	320.00	930.00
Kickapoo Sandy Creek	OK310810-01-0050G	9/7/2010	46589	1000.00	2600.00
Kickapoo Sandy Creek	OK310810-01-0050G	9/21/2010	46671	410.00	730.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	5/19/2009	43550	480.00	< 10.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	6/23/2009	43860	5.00	20.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	7/28/2009	44154	< 70.00	840.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	9/1/2009	44465	45.00	30.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	5/18/2010	46261	20.00	40.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	6/22/2010	46453	210.00	< 10.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	7/27/2010	46537	1400.00	380.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	8/31/2010	46584	940.00	130.00
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	9/8/2010	46610	370.00	1980.00
Little Beaver Creek	OK311210-00-0050D	5/26/2009	43595	370.00	230.00
Little Beaver Creek	OK311210-00-0050D	8/3/2009	44297	< 60.00	40.00
Little Beaver Creek	OK311210-00-0050D	9/8/2009	44518	80.00	120.00
Little Beaver Creek	OK311210-00-0050D	9/14/2009	44562	280.00	880.00
Little Beaver Creek	OK311210-00-0050D	5/24/2010	46292	110.00	150.00
Little Beaver Creek	OK311210-00-0050D	6/28/2010	46314	1300.00	4200.00
Little Beaver Creek	OK311210-00-0050D	8/2/2010	46553	30.00	240.00
Little Beaver Creek	OK311210-00-0050D	8/24/2010	46565	50.00	110.00
Little Beaver Creek	OK311210-00-0050D	9/13/2010	46641	8200.00	6800.00
Little Deep Red Creek	OK311310-03-0040D	5/26/2009	43586	80.00	60.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Little Deep Red Creek	OK311310-03-0040D	6/29/2009	43910	180.00	520.00
Little Deep Red Creek	OK311310-03-0040D	8/3/2009	44310	< 140.00	1000.00
Little Deep Red Creek	OK311310-03-0040D	9/15/2009	44597	680.00	480.00
Little Deep Red Creek	OK311310-03-0040D	5/5/2010	46230	80.00	310.00
Little Deep Red Creek	OK311310-03-0040D	5/24/2010	46283	90.00	370.00
Little Deep Red Creek	OK311310-03-0040D	6/28/2010	46305	180.00	2400.00
Little Deep Red Creek	OK311310-03-0040D	8/2/2010	46544	40.00	130.00
Little Deep Red Creek	OK311310-03-0040D	9/13/2010	46632	240.00	420.00
Little Deep Red Creek	OK311310-03-0040D	9/20/2010	46654	70.00	860.00
Little Elk Creek	OK311500-03-0040D	5/19/2009	43551	< 10.00	100.00
Little Elk Creek	OK311500-03-0040D	6/23/2009	43861	30.00	265.00
Little Elk Creek	OK311500-03-0040D	7/28/2009	44156	< 90.00	210.00
Little Elk Creek	OK311500-03-0040D	9/1/2009	44466	< 5.00	115.00
Little Elk Creek	OK311500-03-0040D	5/18/2010	46262	340.00	100.00
Little Elk Creek	OK311500-03-0040D	6/22/2010	46454	70.00	30.00
Little Elk Creek	OK311500-03-0040D	7/27/2010	46538	90.00	130.00
Little Elk Creek	OK311500-03-0040D	8/31/2010	46585	40.00	430.00
Little Elk Creek	OK311500-03-0040D	9/8/2010	46611	290.00	4400.00
Medicine Creek	OK311300-04-0060H	5/26/2009	43583	450.00	430.00
Medicine Creek	OK311300-04-0060H	6/29/2009	43907	5.00	15.00
Medicine Creek	OK311300-04-0060H	8/3/2009	44307	< 20.00	90.00
Medicine Creek	OK311300-04-0060H	9/15/2009	44594	140.00	820.00
Medicine Creek	OK311300-04-0060H	5/5/2010	46226	40.00	50.00
Medicine Creek	OK311300-04-0060H	5/24/2010	46280	140.00	100.00
Medicine Creek	OK311300-04-0060H	6/28/2010	46302	120.00	530.00
Medicine Creek	OK311300-04-0060H	8/2/2010	46540	60.00	100.00
Medicine Creek	OK311300-04-0060H	9/13/2010	46629	40.00	170.00
Medicine Creek	OK311300-04-0060H	9/20/2010	46650	120.00	180.00
Mill Creek: Lower	OK310800-01-0190G	5/19/2009	43539	90.00	150.00
Mill Creek: Lower	OK310800-01-0190G	6/23/2009	43847	30.00	70.00
Mill Creek: Lower	OK310800-01-0190G	7/27/2009	44135	< 140.00	140.00
Mill Creek: Lower	OK310800-01-0190G	9/1/2009	44452	65.00	80.00
Mill Creek: Lower	OK310800-01-0190G	5/4/2010	46222	20.00	20.00
Mill Creek: Lower	OK310800-01-0190G	5/17/2010	46242	340.00	740.00
Mill Creek: Lower	OK310800-01-0190G	6/21/2010	46433	195.00	150.00
Mill Creek: Lower	OK310800-01-0190G	7/26/2010	46518	25.00	85.00
Mill Creek: Lower	OK310800-01-0190G	9/8/2010	46597	1640.00	3600.00
Mill Creek: Lower	OK310800-01-0190G	9/21/2010	46667	100.00	480.00
Mud Creek	OK311100-04-0010G	5/27/2009	43601	1200.00	1300.00
Mud Creek	OK311100-04-0010G	8/4/2009	44303	< 260.00	170.00
Mud Creek	OK311100-04-0010G	9/9/2009	44523	20.00	50.00
Mud Creek	OK311100-04-0010G	9/14/2009	44568	3000.00	3400.00
Mud Creek	OK311100-04-0010G	5/25/2010	46298	120.00	210.00
Mud Creek	OK311100-04-0010G	6/29/2010	46320	40.00	300.00
Mud Creek	OK311100-04-0010G	8/3/2010	46559	10.00	250.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Mud Creek	OK311100-04-0010G	8/24/2010	46571	20.00	170.00
Mud Creek	OK311100-04-0010G	9/14/2010	46647	5400.00	4300.00
North Elm Creek	OK311800-00-0170G	6/10/2009	43773	< 320.00	670.00
North Elm Creek	OK311800-00-0170G	6/23/2009	43856	45.00	65.00
North Elm Creek	OK311800-00-0170G	7/28/2009	44150	< 160.00	640.00
North Elm Creek	OK311800-00-0170G	9/1/2009	44461	< 5.00	670.00
North Elm Creek	OK311800-00-0170G	5/18/2010	46257	700.00	420.00
North Elm Creek	OK311800-00-0170G	6/22/2010	46449	30.00	40.00
North Elm Creek	OK311800-00-0170G	7/27/2010	46533	100.00	3150.00
North Elm Creek	OK311800-00-0170G	8/31/2010	46580	5.00	90.00
Oil Creek	OK310800-01-0240P	5/19/2009	43538	< 10.00	100.00
Oil Creek	OK310800-01-0240P	6/23/2009	43846	5.00	100.00
Oil Creek	OK310800-01-0240P	7/27/2009	44134	< 25.00	85.00
Oil Creek	OK310800-01-0240P	9/1/2009	44451	< 5.00	15.00
Oil Creek	OK310800-01-0240P	5/4/2010	46221	350.00	60.00
Oil Creek	OK310800-01-0240P	5/17/2010	46241	200.00	280.00
Oil Creek	OK310800-01-0240P	6/21/2010	46432	25.00	20.00
Oil Creek	OK310800-01-0240P	7/26/2010	46517	15.00	115.00
Oil Creek	OK310800-01-0240P	9/8/2010	46596	600.00	1500.00
Oil Creek	OK310800-01-0240P	9/21/2010	46666	60.00	90.00
Otter Creek	OK311500-01-0080F	5/26/2009	43588	400.00	500.00
Otter Creek	OK311500-01-0080F	6/29/2009	43912	110.00	130.00
Otter Creek	OK311500-01-0080F	8/3/2009	44312	< 120.00	110.00
Otter Creek	OK311500-01-0080F	9/15/2009	44599	580.00	820.00
Otter Creek	OK311500-01-0080F	5/5/2010	46232	60.00	30.00
Otter Creek	OK311500-01-0080F	5/24/2010	46285	70.00	80.00
Otter Creek	OK311500-01-0080F	6/28/2010	46307	160.00	200.00
Otter Creek	OK311500-01-0080F	8/2/2010	46546	50.00	40.00
Otter Creek	OK311500-01-0080F	9/13/2010	46634	130.00	360.00
Otter Creek	OK311500-01-0080F	9/20/2010	46656	120.00	460.00
Pennington Creek	OK310800-01-0120G	5/19/2009	43540	20.00	230.00
Pennington Creek	OK310800-01-0120G	6/23/2009	43848	< 5.00	< 5.00
Pennington Creek	OK310800-01-0120G	7/27/2009	44136	< 5.00	< 5.00
Pennington Creek	OK310800-01-0120G	9/1/2009	44453	5.00	25.00
Pennington Creek	OK310800-01-0120G	5/4/2010	46223	50.00	10.00
Pennington Creek	OK310800-01-0120G	5/17/2010	46243	< 20.00	40.00
Pennington Creek	OK310800-01-0120G	6/21/2010	46434	5.00	20.00
Pennington Creek	OK310800-01-0120G	7/26/2010	46519	5.00	35.00
Pennington Creek	OK310800-01-0120G	9/8/2010	46598	120.00	450.00
Pennington Creek	OK310800-01-0120G	9/21/2010	46668	10.00	20.00
Quartermaster Creek	OK310840-01-0060L	5/18/2009	43545	580.00	290.00
Quartermaster Creek	OK310840-01-0060L	6/22/2009	43855	400.00	170.00
Quartermaster Creek	OK310840-01-0060L	7/27/2009	44149	< 110.00	450.00
Quartermaster Creek	OK310840-01-0060L	8/31/2009	44460	30.00	500.00
Quartermaster Creek	OK310840-01-0060L	5/17/2010	46256	20.00	440.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Quartermaster Creek	OK310840-01-0060L	6/21/2010	46448	40.00	100.00
Quartermaster Creek	OK310840-01-0060L	7/26/2010	46532	90.00	960.00
Quartermaster Creek	OK310840-01-0060L	8/31/2010	46574	35.00	990.00
Quartermaster Creek	OK310840-01-0060L	9/7/2010	46605	10.00	730.00
Rainy Mountain Creek	OK310830-02-0060G	5/19/2009	43558	90.00	40.00
Rainy Mountain Creek	OK310830-02-0060G	6/22/2009	43832	10.00	20.00
Rainy Mountain Creek	OK310830-02-0060G	8/3/2009	44277	< 200.00	480.00
Rainy Mountain Creek	OK310830-02-0060G	9/1/2009	44503	30.00	150.00
Rainy Mountain Creek	OK310830-02-0060G	9/16/2009	44605	400.00	3400.00
Rainy Mountain Creek	OK310830-02-0060G	5/25/2010	46278	70.00	80.00
Rainy Mountain Creek	OK310830-02-0060G	6/29/2010	46470	1280.00	1060.00
Rainy Mountain Creek	OK310830-02-0060G	7/26/2010	46337	200.00	1140.00
Rainy Mountain Creek	OK310830-02-0060G	9/14/2010	46627	370.00	900.00
Rainy Mountain Creek	OK310830-02-0060G	9/21/2010	46676	190.00	420.00
Red Creek	OK311100-01-0290D	5/27/2009	43600	500.00	800.00
Red Creek	OK311100-01-0290D	8/4/2009	44302	< 160.00	740.00
Red Creek	OK311100-01-0290D	9/9/2009	44522	220.00	20.00
Red Creek	OK311100-01-0290D	9/14/2009	44567	4600.00	6900.00
Red Creek	OK311100-01-0290D	5/25/2010	46297	70.00	100.00
Red Creek	OK311100-01-0290D	6/28/2010	46318	380.00	60.00
Red Creek	OK311100-01-0290D	8/3/2010	46558	10.00	130.00
Red Creek	OK311100-01-0290D	8/24/2010	46570	30.00	120.00
Red Creek	OK311100-01-0290D	9/14/2010	46646	560.00	8900.00
Rush Creek	OK310810-05-0010D	5/18/2009	43531	250.00	200.00
Rush Creek	OK310810-05-0010D	6/22/2009	43839	165.00	135.00
Rush Creek	OK310810-05-0010D	7/28/2009	44140	< 360.00	370.00
Rush Creek	OK310810-05-0010D	8/31/2009	44444	190.00	270.00
Rush Creek	OK310810-05-0010D	5/4/2010	46215	230.00	120.00
Rush Creek	OK310810-05-0010D	5/18/2010	46248	650.00	750.00
Rush Creek	OK310810-05-0010D	6/22/2010	46438	140.00	210.00
Rush Creek	OK310810-05-0010D	7/27/2010	46523	95.00	95.00
Rush Creek	OK310810-05-0010D	9/7/2010	46590	210.00	140.00
Rush Creek	OK310810-05-0010D	9/21/2010	46672	50.00	90.00
Salt Creek	OK310810-03-0080G	5/19/2009	43535	60.00	120.00
Salt Creek	OK310810-03-0080G	6/23/2009	43843	270.00	435.00
Salt Creek	OK310810-03-0080G	7/27/2009	44131	< 265.00	> 500.00
Salt Creek	OK310810-03-0080G	9/1/2009	44448	50.00	265.00
Salt Creek	OK310810-03-0080G	5/4/2010	46218	150.00	130.00
Salt Creek	OK310810-03-0080G	5/17/2010	46238	650.00	1200.00
Salt Creek	OK310810-03-0080G	6/21/2010	46429	290.00	820.00
Salt Creek	OK310810-03-0080G	7/26/2010	46514	75.00	275.00
Salt Creek	OK310810-03-0080G	9/8/2010	46593	300.00	2650.00
Salt Creek	OK310810-03-0080G	9/21/2010	46663	70.00	360.00
Sandstone Creek	OK310840-02-0020C	5/18/2009	43544	100.00	50.00
Sandstone Creek	OK310840-02-0020C	6/22/2009	43854	15.00	95.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Sandstone Creek	OK310840-02-0020C	7/27/2009	44148	< 60.00	60.00
Sandstone Creek	OK310840-02-0020C	8/31/2009	44459	60.00	150.00
Sandstone Creek	OK310840-02-0020C	5/17/2010	46255	40.00	200.00
Sandstone Creek	OK310840-02-0020C	6/21/2010	46447	40.00	40.00
Sandstone Creek	OK310840-02-0020C	7/26/2010	46531	170.00	590.00
Sandstone Creek	OK310840-02-0020C	8/31/2010	46575	70.00	970.00
Sandstone Creek	OK310840-02-0020C	9/7/2010	46604	10.00	320.00
Sandy Creek	OK311600-01-0040G	5/27/2009	43590	120.00	20.00
Sandy Creek	OK311600-01-0040G	6/30/2009	43915	10.00	10.00
Sandy Creek	OK311600-01-0040G	8/4/2009	44315	< 20.00	200.00
Sandy Creek	OK311600-01-0040G	9/16/2009	44602	140.00	420.00
Sandy Creek	OK311600-01-0040G	5/5/2010	46234	200.00	10.00
Sandy Creek	OK311600-01-0040G	5/25/2010	46288	50.00	220.00
Sandy Creek	OK311600-01-0040G	6/29/2010	46310	40.00	220.00
Sandy Creek	OK311600-01-0040G	8/3/2010	46549	10.00	490.00
Sandy Creek	OK311600-01-0040G	9/14/2010	46637	120.00	320.00
Sandy Creek	OK311600-01-0040G	9/20/2010	46658	10.00	40.00
Spring Creek	OK310830-04-0010G	5/19/2009	43553	< 10.00	90.00
Spring Creek	OK310830-04-0010G	6/22/2009	43827	180.00	115.00
Spring Creek	OK310830-04-0010G	8/3/2009	44272	< 10.00	90.00
Spring Creek	OK310830-04-0010G	9/1/2009	44498	105.00	305.00
Spring Creek	OK310830-04-0010G	9/16/2009	44609	160.00	380.00
Spring Creek	OK310830-04-0010G	5/25/2010	46273	600.00	430.00
Spring Creek	OK310830-04-0010G	6/29/2010	46465	1320.00	620.00
Spring Creek	OK310830-04-0010G	7/26/2010	46332	1820.00	1960.00
Spring Creek	OK310830-04-0010G	9/14/2010	46622	220.00	700.00
Spring Creek	OK310830-04-0010G	9/23/2010	46687	580.00	690.00
Spring Creek	OK310840-02-0240D	5/19/2009	43546	90.00	60.00
Spring Creek	OK310840-02-0240D	6/22/2009	43853	220.00	240.00
Spring Creek	OK310840-02-0240D	7/27/2009	44147	< 160.00	220.00
Spring Creek	OK310840-02-0240D	8/31/2009	44458	170.00	210.00
Spring Creek	OK310840-02-0240D	5/17/2010	46254	100.00	160.00
Spring Creek	OK310840-02-0240D	6/21/2010	46446	250.00	410.00
Spring Creek	OK310840-02-0240D	7/26/2010	46530	170.00	270.00
Spring Creek	OK310840-02-0240D	8/31/2010	46576	80.00	500.00
Spring Creek	OK310840-02-0240D	9/7/2010	46603	200.00	680.00
Station Creek	OK311800-00-0060G	5/19/2009	43548	60.00	10.00
Station Creek	OK311800-00-0060G	6/23/2009	43858	20.00	45.00
Station Creek	OK311800-00-0060G	7/28/2009	44152	< 40.00	270.00
Station Creek	OK311800-00-0060G	9/1/2009	44463	400.00	110.00
Station Creek	OK311800-00-0060G	5/18/2010	46259	100.00	620.00
Station Creek	OK311800-00-0060G	6/22/2010	46451	20.00	250.00
Station Creek	OK311800-00-0060G	7/27/2010	46535	80.00	90.00
Station Creek	OK311800-00-0060G	8/31/2010	46582	5.00	5.00
Station Creek	OK311800-00-0060G	9/8/2010	46608	360.00	1520.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Stinking Creek	OK310830-02-0020D	5/19/2009	43557	160.00	140.00
Stinking Creek	OK310830-02-0020D	6/22/2009	43831	115.00	45.00
Stinking Creek	OK310830-02-0020D	8/3/2009	44276	< 420.00	240.00
Stinking Creek	OK310830-02-0020D	9/1/2009	44502	120.00	110.00
Stinking Creek	OK310830-02-0020D	9/16/2009	44606	600.00	3400.00
Stinking Creek	OK310830-02-0020D	5/25/2010	46277	140.00	110.00
Stinking Creek	OK310830-02-0020D	6/29/2010	46469	20.00	280.00
Stinking Creek	OK310830-02-0020D	7/26/2010	46336	60.00	430.00
Stinking Creek	OK310830-02-0020D	9/14/2010	46626	110.00	440.00
Stinking Creek	OK310830-02-0020D	9/21/2010	46675	90.00	330.00
Stinking Creek	OK310830-04-0030K	5/19/2009	43554	< 10.00	40.00
Stinking Creek	OK310830-04-0030K	6/22/2009	43828	5.00	65.00
Stinking Creek	OK310830-04-0030K	8/3/2009	44273	< 40.00	170.00
Stinking Creek	OK310830-04-0030K	9/1/2009	44499	25.00	80.00
Stinking Creek	OK310830-04-0030K	9/16/2009	44610	60.00	260.00
Stinking Creek	OK310830-04-0030K	5/25/2010	46274	80.00	110.00
Stinking Creek	OK310830-04-0030K	6/29/2010	46466	20.00	240.00
Stinking Creek	OK310830-04-0030K	7/26/2010	46333	135.00	410.00
Stinking Creek	OK310830-04-0030K	9/14/2010	46623	140.00	460.00
Stinking Creek	OK310830-04-0030K	9/23/2010	46688	220.00	610.00
Sugar Creek	OK310830-05-0010D	5/19/2009	43552	420.00	140.00
Sugar Creek	OK310830-05-0010D	6/22/2009	43826	95.00	335.00
Sugar Creek	OK310830-05-0010D	8/3/2009	44271	< 10.00	10.00
Sugar Creek	OK310830-05-0010D	9/1/2009	44497	40.00	195.00
Sugar Creek	OK310830-05-0010D	9/16/2009	44608	260.00	460.00
Sugar Creek	OK310830-05-0010D	5/25/2010	46272	240.00	520.00
Sugar Creek	OK310830-05-0010D	6/29/2010	46464	200.00	560.00
Sugar Creek	OK310830-05-0010D	7/26/2010	46331	50.00	100.00
Sugar Creek	OK310830-05-0010D	9/14/2010	46621	370.00	1520.00
Sugar Creek	OK310830-05-0010D	9/23/2010	46686	40.00	220.00
Suttle Creek	OK311310-01-0070H	5/26/2009	43587	620.00	480.00
Suttle Creek	OK311310-01-0070H	6/29/2009	43911	> 1000.00	> 1000.00
Suttle Creek	OK311310-01-0070H	8/3/2009	44311	< 120.00	> 1000.00
Suttle Creek	OK311310-01-0070H	9/15/2009	44598	1160.00	> 2000.00
Suttle Creek	OK311310-01-0070H	5/5/2010	46231	270.00	180.00
Suttle Creek	OK311310-01-0070H	5/24/2010	46284	1420.00	600.00
Suttle Creek	OK311310-01-0070H	6/28/2010	46306	310.00	7600.00
Suttle Creek	OK311310-01-0070H	8/2/2010	46545	170.00	670.00
Suttle Creek	OK311310-01-0070H	9/13/2010	46633	1040.00	880.00
Suttle Creek	OK311310-01-0070H	9/20/2010	46655	350.00	720.00
Sweetwater Creek	OK311510-02-0120D	5/18/2009	43543	470.00	60.00
Sweetwater Creek	OK311510-02-0120D	6/22/2009	43852	320.00	420.00
Sweetwater Creek	OK311510-02-0120D	7/27/2009	44146	< 3600.00	6100.00
Sweetwater Creek	OK311510-02-0120D	8/31/2009	44457	225.00	460.00
Sweetwater Creek	OK311510-02-0120D	5/17/2010	46253	250.00	500.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Sweetwater Creek	OK311510-02-0120D	6/21/2010	46445	480.00	730.00
Sweetwater Creek	OK311510-02-0120D	7/26/2010	46529	640.00	1020.00
Sweetwater Creek	OK311510-02-0120D	8/31/2010	46577	230.00	1260.00
Sweetwater Creek	OK311510-02-0120D	9/7/2010	46602	395.00	1945.00
Tepee Creek	OK311500-01-0110D	5/27/2009	43593	200.00	280.00
Tepee Creek	OK311500-01-0110D	6/30/2009	43917	190.00	410.00
Tepee Creek	OK311500-01-0110D	8/4/2009	44317	< 500.00	> 1000.00
Tepee Creek	OK311500-01-0110D	9/16/2009	44604	1020.00	> 2000.00
Tepee Creek	OK311500-01-0110D	5/5/2010	46237	140.00	300.00
Tepee Creek	OK311500-01-0110D	5/25/2010	46290	180.00	230.00
Tepee Creek	OK311500-01-0110D	6/29/2010	46312	80.00	680.00
Tepee Creek	OK311500-01-0110D	8/3/2010	46551	70.00	270.00
Tepee Creek	OK311500-01-0110D	9/14/2010	46639	330.00	1380.00
Tepee Creek	OK311500-01-0110D	9/20/2010	46661	60.00	580.00
Timber Creek	OK311510-01-0090G	5/18/2009	43541	60.00	500.00
Timber Creek	OK311510-01-0090G	6/22/2009	43850	85.00	215.00
Timber Creek	OK311510-01-0090G	7/27/2009	44144	> 1000.00	> 1000.00
Timber Creek	OK311510-01-0090G	8/31/2009	44455	80.00	285.00
Timber Creek	OK311510-01-0090G	5/17/2010	46251	600.00	2600.00
Timber Creek	OK311510-01-0090G	6/21/2010	46443	270.00	390.00
Timber Creek	OK311510-01-0090G	7/26/2010	46527	660.00	140.00
Timber Creek	OK311510-01-0090G	8/31/2010	46579	960.00	1380.00
Timber Creek	OK311510-01-0090G	9/7/2010	46600	660.00	10.00
Trail Creek	OK311500-03-0070D	6/10/2009	43774	< 120.00	610.00
Trail Creek	OK311500-03-0070D	6/23/2009	43862	20.00	100.00
Trail Creek	OK311500-03-0070D	7/28/2009	44155	< 30.00	50.00
Trail Creek	OK311500-03-0070D	9/1/2009	44467	< 5.00	85.00
Trail Creek	OK311500-03-0070D	5/18/2010	46263	60.00	220.00
Trail Creek	OK311500-03-0070D	6/22/2010	46455	< 10.00	< 10.00
Trail Creek	OK311500-03-0070D	7/27/2010	46539	10.00	140.00
Trail Creek	OK311500-03-0070D	8/31/2010	46586	5.00	60.00
Trail Creek	OK311500-03-0070D	9/8/2010	46612	340.00	840.00
Turkey Creek	OK311600-02-0060J	5/27/2009	43589	2800.00	1200.00
Turkey Creek	OK311600-02-0060J	6/30/2009	43914	230.00	> 1000.00
Turkey Creek	OK311600-02-0060J	8/4/2009	44314	< 410.00	> 1000.00
Turkey Creek	OK311600-02-0060J	9/16/2009	44601	180.00	1000.00
Turkey Creek	OK311600-02-0060J	5/5/2010	46235	20.00	1700.00
Turkey Creek	OK311600-02-0060J	5/25/2010	46287	100.00	200.00
Turkey Creek	OK311600-02-0060J	6/29/2010	46309	980.00	1620.00
Turkey Creek	OK311600-02-0060J	8/3/2010	46548	20.00	780.00
Turkey Creek	OK311600-02-0060J	9/14/2010	46636	100.00	
Turkey Creek	OK311600-02-0060J	9/20/2010	46659	30.00	520.00
Walnut Bayou	OK311100-03-0010G	5/27/2009	43602	350.00	70.00
Walnut Bayou	OK311100-03-0010G	8/4/2009	44304	< 10.00	50.00
Walnut Bayou	OK311100-03-0010G	9/9/2009	44524	< 5.00	40.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Walnut Bayou	OK311100-03-0010G	9/14/2009	44569	320.00	1400.00
Walnut Bayou	OK311100-03-0010G	5/25/2010	46299	50.00	150.00
Walnut Bayou	OK311100-03-0010G	6/29/2010	46321	60.00	180.00
Walnut Bayou	OK311100-03-0010G	8/3/2010	46560	20.00	40.00
Walnut Bayou	OK311100-03-0010G	8/24/2010	46572	25.00	55.00
Walnut Bayou	OK311100-03-0010G	9/14/2010	46648	120.00	240.00
Washington Creek	OK310810-01-0190G	5/18/2009	43530	40.00	220.00
Washington Creek	OK310810-01-0190G	6/22/2009	43838	> 1000.00	305.00
Washington Creek	OK310810-01-0190G	7/28/2009	44139	> 1000.00	> 1000.00
Washington Creek	OK310810-01-0190G	5/4/2010	46214	410.00	410.00
Washington Creek	OK310810-01-0190G	5/18/2010	46247	800.00	1300.00
Washington Creek	OK310810-01-0190G	6/22/2010	46437	1180.00	1800.00
Washington Creek	OK310810-01-0190G	7/27/2010	46522	1120.00	1100.00
Washington Creek	OK310810-01-0190G	9/7/2010	46591	50.00	1060.00
Washington Creek	OK310810-01-0190G	9/21/2010	46673	580.00	980.00
West Barnitz Creek	OK310830-03-0230C	5/26/2009	43578	890.00	3100.00
West Barnitz Creek	OK310830-03-0230C	6/29/2009	43898	60.00	240.00
West Barnitz Creek	OK310830-03-0230C	7/27/2009	44282	< 50.00	175.00
West Barnitz Creek	OK310830-03-0230C	9/9/2009	44532	85.00	125.00
West Barnitz Creek	OK310830-03-0230C	9/22/2009	44630	50.00	430.00
West Barnitz Creek	OK310830-03-0230C	5/18/2010	46265	550.00	600.00
West Barnitz Creek	OK310830-03-0230C	6/22/2010	46457	210.00	790.00
West Barnitz Creek	OK310830-03-0230C	7/20/2010	46324	70.00	1420.00
West Barnitz Creek	OK310830-03-0230C	9/8/2010	46618	160.00	1520.00
West Barnitz Creek	OK310830-03-0230C	9/21/2010	46680	120.00	320.00
West Cache Creek	OK311310-02-0010M	5/26/2009	43584	340.00	430.00
West Cache Creek	OK311310-02-0010M	6/29/2009	43908	30.00	130.00
West Cache Creek	OK311310-02-0010M	8/3/2009	44308	< 10.00	< 10.00
West Cache Creek	OK311310-02-0010M	9/15/2009	44595	320.00	800.00
West Cache Creek	OK311310-02-0010M	5/5/2010	46228	130.00	200.00
West Cache Creek	OK311310-02-0010M	5/24/2010	46281	65.00	90.00
West Cache Creek	OK311310-02-0010M	6/28/2010	46303	150.00	660.00
West Cache Creek	OK311310-02-0010M	8/2/2010	46542	10.00	20.00
West Cache Creek	OK311310-02-0010M	9/13/2010	46630	80.00	380.00
West Cache Creek	OK311310-02-0010M	9/20/2010	46652	30.00	80.00
Wildhorse Creek: near Davis	OK310810-01-0020G	5/18/2009	43534	340.00	< 10.00
Wildhorse Creek: near Davis	OK310810-01-0020G	6/22/2009	43842	10.00	20.00
Wildhorse Creek: near Davis	OK310810-01-0020G	7/28/2009	44143	< 5.00	20.00
Wildhorse Creek: near Davis	OK310810-01-0020G	8/31/2009	44447	255.00	75.00
Wildhorse Creek: near Davis	OK310810-01-0020G	5/4/2010	46225	10.00	10.00
Wildhorse Creek: near Davis	OK310810-01-0020G	5/17/2010	46245	1000.00	350.00
Wildhorse Creek: near Davis	OK310810-01-0020G	6/22/2010	46441	25.00	80.00
Wildhorse Creek: near Davis	OK310810-01-0020G	7/27/2010	46526	55.00	20.00
Wildhorse Creek: near Davis	OK310810-01-0020G	9/7/2010	46587	100.00	70.00
Wildhorse Creek: near Davis	OK310810-01-0020G	9/21/2010	46662	170.00	60.00

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Wildhorse Creek: near Duncan	OK310810-04-0140D	5/26/2009	43594	210.00	3300.00
Wildhorse Creek: near Duncan	OK310810-04-0140D	8/3/2009	44296	< 140.00	< 10.00
Wildhorse Creek: near Duncan	OK310810-04-0140D	9/8/2009	44517	510.00	370.00
Wildhorse Creek: near Duncan	OK310810-04-0140D	9/14/2009	44561	1620.00	> 2000.00
Wildhorse Creek: near Duncan	OK310810-04-0140D	5/24/2010	46291	340.00	240.00
Wildhorse Creek: near Duncan	OK310810-04-0140D	6/28/2010	46313	3100.00	> 10000.00
Wildhorse Creek: near Duncan	OK310810-04-0140D	8/2/2010	46552	220.00	570.00
Wildhorse Creek: near Duncan	OK310810-04-0140D	8/24/2010	46564	200.00	1700.00
Wildhorse Creek: near Duncan	OK310810-04-0140D	9/13/2010	46640	880.00	1220.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	5/19/2009	43536	360.00	110.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	6/23/2009	43844	25.00	55.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	7/27/2009	44132	< 15.00	40.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	9/1/2009	44449	175.00	95.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	5/4/2010	46219	80.00	10.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	5/17/2010	46239	700.00	1200.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	6/21/2010	46430	300.00	510.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	7/26/2010	46515	5.00	55.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	9/8/2010	46594	620.00	2700.00
Wildhorse Creek: near Tatums	OK310810-03-0010R	9/21/2010	46664	630.00	260.00
Armstrong Creek	OKR09730-095	6/30/2009	43637	225	325
Barnitz Creek	OKR09730-106	6/9/2009	43800	< 15	340
Beaver Creek	OKR09730-091	7/21/2009	44094	< 60	90
Bitter Creek	OKR09730-005	7/22/2009	44106	< 140	425
Buffalo Creek	OKR09730-012	6/10/2009	43803	< 590	630
Cavalry Creek	OKR09730-058	6/30/2009	43889	10	60
Chandler Creek	OKR09730-085	6/25/2009	43634	20	290
Cow Creek	OKR09730-098	6/30/2009	43638	55	50
East Winter Creek	OKR09730-046	6/2/2009	43786	> 10000	> 10000
East Winter Creek	OKR09730-119	6/24/2009	43632	55	490
Elk Creek	OKR09730-041	7/22/2009	44108	< 10	305
Elk Creek	OKR09730-057	7/22/2009	44107	< 15	25
Lafin Creek	OKR09730-003	6/2/2009	43787	< 860	450
Lake Creek	OKR09730-080	6/30/2009	43884	< 470	560
Little Turkey Creek	OKR09730-069	6/10/2009	43804	< 400	740
Medicine Creek	OKR09730-026	8/4/2009	43641	< 10	< 10
Mud Creek	OKR09730-031	6/29/2009	43635	370	100
Mud Creek	OKR09730-110	6/29/2009	43636	30	30
North Fork Red River	OKR09730-025	7/21/2009	44103	< 5	65
North Fork Red River	OKR09730-075	7/21/2009	44102	5	< 5
North Fork Red River	OKR09730-096	6/10/2009	43802	< 160	450
Owens Creek	OKR09730-059	6/23/2009	43630	255	355
Pennington Creek	OKR09730-124	7/14/2009	43639	25	25
Quartermaster Creek	OKR09730-116	6/1/2009	43783	< 40	120
Rabbit Creek	OKR09730-045	7/22/2009	44113	< 210	160
Rainy Mountain Creek	OKR09730-014	6/30/2009	43888	10	160

Appendix A.2. Raw bacteria data.

Site Name	WBID	Date	SAMPLEID	EColi	Enterococcus
Rainy Mountain Creek	OKR09730-071	6/30/2009	43887	10	40
Rush Creek	OKR09730-019	6/18/2009	43626	< 10	320
Rush Creek	OKR09730-084	6/22/2009	43628	< 5	85
Salt Creek	OKR09730-062	6/2/2009	43785	< 90	50
Sand Creek	OKR09730-139	6/24/2009	43902	360	570
Sandstone Creek	OKR09730-060	6/1/2009	43782	< 30	200
Station Creek	OKR09730-123	7/21/2009	44104	< 5	105
Timber Creek	OKR09730-136	6/24/2009	43901	180	880
Turkey Creek	OKR09730-109	7/21/2009	44105	< 160	190
Walnut Bayou	OKR09730-027	7/21/2009	44095	< 15	5
Washita River	OKR09730-020	6/9/2009	43801	< 70	275
Washita River	OKR09730-047	7/14/2009	43640	< 5	< 5
Washita River	OKR09730-074	6/30/2009	43885	110	200
Washita River	OKR09730-078	6/9/2009	43797	< 185	200
Washita River	OKR09730-081	6/10/2010	46428	25	20
Washita River	OKR09730-127	6/10/2010	46427	55	80
White Shield Creek	OKR09730-052	6/9/2009	43798	< 280	> 500
White Shield Creek	OKR09730-094	6/9/2009	43799	< 40	460
Wild Horse Creek	OKR09730-008	6/1/2009	43784	< 640	190

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Alkalinity (CaCO3)	Barnitz Creek	OK310830-03-0200C	21	1	168.15	6.93	30.99	109	152.75	169.5	184.75	228
Alkalinity (CaCO3)	Beaver Creek	OK310830-03-0190C	21	1	163.85	6.2	27.74	119	137.25	166.5	188	205
Alkalinity (CaCO3)	Beaver Creek	OK311200-00-0030L	23	2	212.3	19.3	88.5	63	162	191	265	417
Alkalinity (CaCO3)	Big Sandy Creek	OK310800-01-0090G	21	0	160.05	6.23	28.56	83	139	162	180	210
Alkalinity (CaCO3)	Boggy Creek	OK310830-03-0100C	21	1	240.7	11.7	52.4	121	208.5	242	279.8	326
Alkalinity (CaCO3)	Buffalo Creek	OK311510-02-0090D	22	1	260	11.2	51.4	98	230	270	293.5	342
Alkalinity (CaCO3)	Caddo Creek	OK310800-03-0010F	21	0	160.48	6.52	29.86	95	138	170	179.5	206
Alkalinity (CaCO3)	Cavalry Creek	OK310830-03-0070D	21	1	215.5	11.4	50.9	134	170.3	210	257	320
Alkalinity (CaCO3)	Chigley Sandy Creek	OK310800-02-0190D	21	0	273.2	11.3	52	135	238.5	282	317	329
Alkalinity (CaCO3)	Cobb Creek	OK310830-06-0050M	21	0	197.9	12	54.9	1.9	174	204	226	283
Alkalinity (CaCO3)	Cow Creek	OK311200-00-0060L	24	3	246.1	17.1	78.6	58	189.5	248	310	366
Alkalinity (CaCO3)	Deep Red Creek	OK311310-03-0010D	21	0	225.3	19	87.1	72	152.5	221	309.5	363
Alkalinity (CaCO3)	Delaware Creek	OK310830-01-0030G	21	1	212.8	7.8	34.87	120	192.25	218	239.25	268
Alkalinity (CaCO3)	East Barnitz Creek	OK310830-03-0210C	21	1	162.75	7.27	32.51	90	147.75	168.5	186.75	203
Alkalinity (CaCO3)	East Cache Creek: Lower	OK311300-01-0020G	21	1	184.4	13.2	58.8	89	128.5	200.5	229.3	287
Alkalinity (CaCO3)	East Cache Creek: Upper	OK311300-02-0010M	21	0	214.7	15.5	71.2	19.3	170.5	230	270	322
Alkalinity (CaCO3)	Elk Creek	OK311500-03-0010G	21	0	248.4	12.3	56.6	82	221	269	283.5	323
Alkalinity (CaCO3)	Finn Creek	OK310810-02-0020D	22	0	385.7	19.6	92.1	144	356.3	419	447.3	491
Alkalinity (CaCO3)	Fish Creek	OK311800-00-0130G	22	2	172.9	14	62.6	2.1	135.8	181.5	198.8	273
Alkalinity (CaCO3)	Fivemile Creek	OK310830-06-0080D	21	0	228.9	8.86	40.62	143	197	237	264.5	280
Alkalinity (CaCO3)	Fleetwood Creek	OK311100-01-0300D	21	1	342.2	35	156.4	71	170.5	430	462.3	500
Alkalinity (CaCO3)	Gypsum Creek	OK311600-01-0020F	22	1	136.57	6.49	29.75	56	119.5	136	162.5	182
Alkalinity (CaCO3)	Haystack Creek	OK311800-00-0040D	21	1	170.1	13.2	59	69	130	157.5	218.5	297
Alkalinity (CaCO3)	Hickory Creek: HWY 775	OK311100-02-0010M	23	1	179.05	7.74	36.3	110	152	187.5	203.5	241
Alkalinity (CaCO3)	Ionine Creek	OK310820-01-0160L	20	0	271	10.6	47.5	182	237.3	273	292	369
Alkalinity (CaCO3)	Kickapoo Sandy Creek	OK310810-01-0050G	21	0	230.1	14.4	65.8	104	188	255	276.5	329
Alkalinity (CaCO3)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	260	11.6	51.7	153	221.8	260	307	355
Alkalinity (CaCO3)	Little Beaver Creek	OK311210-00-0050D	24	4	278.4	8.45	37.77	204	253.25	291	306	327
Alkalinity (CaCO3)	Little Deep Red Creek	OK311310-03-0040D	21	1	280	21.9	98	90	246.8	291.5	354.5	445
Alkalinity (CaCO3)	Little Elk Creek	OK311500-03-0040D	22	2	275.8	21.2	94.9	29.5	257.5	290	344	424
Alkalinity (CaCO3)	Medicine Creek	OK311300-04-0060H	21	0	155.3	11	50.3	52	132	159	191	243
Alkalinity (CaCO3)	Mill Creek: Lower	OK310800-01-0190G	21	0	183.1	7.88	36.13	107	165.5	175	220.5	234
Alkalinity (CaCO3)	Mud Creek	OK311100-04-0010G	23	3	236	24.8	111	55	144.3	235.5	319	445
Alkalinity (CaCO3)	North Elm Creek	OK311800-00-0170G	21	3	101.1	10.5	44.5	24	74.3	87	145.8	170
Alkalinity (CaCO3)	Oil Creek	OK310800-01-0240P	21	0	227.9	16	73.1	0	185	246	271.5	364
Alkalinity (CaCO3)	Otter Creek	OK311500-01-0080F	21	0	210.5	16.1	73.9	55	138	237	264	314
Alkalinity (CaCO3)	Pennington Creek	OK310800-01-0120G	21	0	245.05	3.84	17.62	222	228	245	261.5	275
Alkalinity (CaCO3)	Quartermaster Creek	OK310840-01-0060L	22	3	263.5	12.6	55	162	240	257	316	352
Alkalinity (CaCO3)	Rainy Mountain Creek	OK310830-02-0060G	21	1	245.2	15	67.3	98	214	256	289	363
Alkalinity (CaCO3)	Red Creek	OK311100-01-0290D	22	1	145.5	18.3	83.9	46	70.5	125	203.5	343
Alkalinity (CaCO3)	Rush Creek	OK310810-05-0010D	21	0	317	17.4	79.6	59	282.5	340	375.5	406
Alkalinity (CaCO3)	Salt Creek	OK310810-03-0080G	21	0	360	19.3	88.6	119	294	387	407.5	491
Alkalinity (CaCO3)	Sandstone Creek	OK310840-02-0020C	21	2	263.37	7.93	34.57	201	244	261	290	340
Alkalinity (CaCO3)	Sandy Creek	OK311600-01-0040G	21	0	178.1	16.1	73.8	110	151.5	172	182	483
Alkalinity (CaCO3)	Spring Creek	OK310830-04-0010G	20	0	202	14.7	65.6	2.7	162.3	215.5	250.8	285
Alkalinity (CaCO3)	Spring Creek	OK310840-02-0240D	23	3	291.65	5.07	22.67	253	276.25	292	314.75	325
Alkalinity (CaCO3)	Station Creek	OK311800-00-0060G	22	2	131.85	6.06	27.09	63	119	130.5	145.5	198
Alkalinity (CaCO3)	Stinking Creek	OK310830-02-0020D	20	0	254.6	17	75.9	44	225.8	275	297.3	381
Alkalinity (CaCO3)	Stinking Creek	OK310830-04-0030K	19	0	245.42	7.07	30.82	180	229	246	263	307
Alkalinity (CaCO3)	Sugar Creek	OK310830-05-0010D	20	0	232.5	8.12	36.33	125	206.25	238.5	256.75	290
Alkalinity (CaCO3)	Suttle Creek	OK311310-01-0070H	21	0	379.5	37.1	169.9	101	284.5	371	530	700
Alkalinity (CaCO3)	Sweetwater Creek	OK311510-02-0120D	23	2	244.6	10.6	48.7	70	227	245	275.5	298
Alkalinity (CaCO3)	Tepee Creek	OK311500-01-0110D	20	0	151.45	9.58	42.87	67	115	164.5	177.5	210
Alkalinity (CaCO3)	Timber Creek	OK311510-01-0090G	22	1	348.8	10.1	46.2	202	328	357	381	406
Alkalinity (CaCO3)	Trail Creek	OK311500-03-0070D	23	3	286.6	10.2	45.8	158	259.3	294.5	327.3	344
Alkalinity (CaCO3)	Turkey Creek	OK311600-02-0060J	21	0	161.76	6.09	27.91	127	141.5	160	174.5	233
Alkalinity (CaCO3)	Walnut Bayou	OK311100-03-0010G	22	1	190.2	11.3	52	80	153.5	203	225.5	256
Alkalinity (CaCO3)	Washington Creek	OK310810-01-0190G	20	1	269.9	23.7	103.5	54	197	297	345	405
Alkalinity (CaCO3)	West Barnitz Creek	OK310830-03-0230C	21	1	161.1	11.8	52.9	12.2	120.8	177	196	226
Alkalinity (CaCO3)	West Cache Creek	OK311310-02-0010M	21	0	125.29	6.73	30.86	57	104.5	127	143.5	183
Alkalinity (CaCO3)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	275.5	15	67.2	155	208	278	320	383
Alkalinity (CaCO3)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	1	306.7	26.1	119.7	134	174	377	418.5	434
Alkalinity (CaCO3)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	1	293.5	19.7	90.2	104	229	288	369	460
Ammonia (mg/L)	Barnitz Creek	OK310830-03-0200C	21	1	0.0335	0.00553	0.02472	0.015	0.015	0.017	0.062	0.082
Ammonia (mg/L)	Beaver Creek	OK310830-03-0190C	21	1	0.061	0.0103	0.0461	0.015	0.0233	0.0435	0.0828	0.186
Ammonia (mg/L)	Beaver Creek	OK311200-00-0030L	23	3	0.0498	0.0141	0.0629	0.015	0.015	0.018	0.0585	0.256
Ammonia (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	1	0.0214	0.00177	0.0079	0.015	0.015	0.0155	0.0305	0.034
Ammonia (mg/L)	Boggy Creek	OK310830-03-0100C	21	1	0.0529	0.0101	0.0452	0.015	0.015	0.026	0.0843	0.158
Ammonia (mg/L)	Buffalo Creek	OK311510-02-0090D	22	2	0.03645	0.00786	0.03516	0.015	0.015	0.0245	0.05	0.169
Ammonia (mg/L)	Caddo Creek	OK310800-03-0010F	21	1	0.1296	0.0889	0.3975	0.015	0.0215	0.0375	0.0603	1.815
Ammonia (mg/L)	Cavalry Creek	OK310830-03-0070D	21	1	0.0574	0.0176	0.0786	0.015	0.015	0.0215	0.0765	0.331
Ammonia (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	1	0.02335	0.00365	0.01634	0.015	0.015	0.0155	0.0285	0.081
Ammonia (mg/L)	Cobb Creek	OK310830-06-0050M	21	1	0.0671	0.0123	0.055	0.015	0.0238	0.0415	0.0995	0.205
Ammonia (mg/L)	Cow Creek	OK311200-00-0060L	24	4	0.1087	0.0293	0.1309	0.015	0.0225	0.0545	0.1438	0.494
Ammonia (mg/L)	Deep Red Creek	OK311310-03-0010D	21	1	0.03525	0.00826	0.03694	0.015	0.015	0.017	0.03925	0.144
Ammonia (mg/L)	Delaware Creek	OK310830-01-0030G	21	2	0.06253	0.00798	0.03479	0.015	0.031	0.06	0.09	0.13
Ammonia (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	1	0.04085	0.00625	0.02797	0.015	0.015	0.0345	0.0515	0.118
Ammonia (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	2	0.0501	0.0135	0.0589	0.015	0.015	0.033	0.055	0.258
Ammonia (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	1	0.0522	0.00841	0.03762	0.015	0.015	0.0375	0.0945	0.109
Ammonia (mg/L)	Elk Creek	OK311500-03-0010G	21	1	0.0238	0.00405	0.01809	0.015	0.015	0.015	0.02375	0.08

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Ammonia (mg/L)	Finn Creek	OK310810-02-0020D	22	2	0.0426	0.0071	0.03175	0.015	0.015	0.0295	0.0655	0.112
Ammonia (mg/L)	Fish Creek	OK311800-00-0130G	22	2	0.0583	0.0259	0.1159	0.015	0.015	0.015	0.03	0.521
Ammonia (mg/L)	Fivemile Creek	OK310830-06-0080D	21	1	0.0847	0.0241	0.1076	0.015	0.0353	0.052	0.0878	0.503
Ammonia (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	0.272	0.108	0.472	0.015	0.032	0.053	0.184	1.61
Ammonia (mg/L)	Gypsum Creek	OK311600-01-0020F	22	2	0.0668	0.0164	0.0734	0.015	0.015	0.037	0.0938	0.284
Ammonia (mg/L)	Haystack Creek	OK311800-00-0040D	21	1	0.0221	0.00414	0.01852	0.015	0.015	0.015	0.0225	0.096
Ammonia (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	0.0232	0.00279	0.0125	0.015	0.015	0.0185	0.0295	0.064
Ammonia (mg/L)	Ionine Creek	OK310820-01-0160L	20	1	0.0974	0.0427	0.1862	0.015	0.021	0.036	0.085	0.804
Ammonia (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	0.05235	0.00726	0.03248	0.015	0.02775	0.0495	0.06725	0.153
Ammonia (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	0.0388	0.00831	0.03715	0.015	0.015	0.027	0.044	0.173
Ammonia (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	4	0.0416	0.0126	0.0566	0.015	0.015	0.023	0.036	0.261
Ammonia (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	2	0.0387	0.013	0.0568	0.015	0.015	0.015	0.034	0.252
Ammonia (mg/L)	Little Elk Creek	OK311500-03-0040D	22	2	0.0734	0.0179	0.0799	0.015	0.0153	0.0355	0.1008	0.248
Ammonia (mg/L)	Medicine Creek	OK311300-04-0060H	21	1	0.0192	0.00224	0.01002	0.015	0.015	0.015	0.018	0.058
Ammonia (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	1	0.0335	0.00523	0.02339	0.015	0.015	0.0195	0.05125	0.092
Ammonia (mg/L)	Mud Creek	OK311100-04-0010G	23	3	0.0469	0.0105	0.0468	0.015	0.015	0.023	0.0555	0.174
Ammonia (mg/L)	North Elm Creek	OK311800-00-0170G	21	3	0.0728	0.027	0.1144	0.015	0.015	0.0165	0.0655	0.378
Ammonia (mg/L)	Oil Creek	OK310800-01-0240P	21	1	0.02865	0.00366	0.01637	0.015	0.015	0.023	0.03925	0.067
Ammonia (mg/L)	Otter Creek	OK311500-01-0080F	21	1	0.0706	0.0163	0.0727	0.015	0.015	0.053	0.082	0.271
Ammonia (mg/L)	Pennington Creek	OK310800-01-0120G	21	1	0.02165	0.00245	0.01094	0.015	0.015	0.015	0.0255	0.049
Ammonia (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	2	0.0714	0.0179	0.08	0.015	0.0155	0.0395	0.1093	0.289
Ammonia (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	2	0.03021	0.00802	0.03497	0.015	0.015	0.017	0.024	0.146
Ammonia (mg/L)	Red Creek	OK311100-01-0290D	22	2	0.0706	0.0236	0.1054	0.015	0.0208	0.045	0.0685	0.494
Ammonia (mg/L)	Rush Creek	OK310810-05-0010D	21	1	0.0616	0.037	0.1655	0.015	0.015	0.0195	0.0365	0.762
Ammonia (mg/L)	Salt Creek	OK310810-03-0080G	21	1	0.02395	0.00296	0.01322	0.015	0.015	0.0175	0.02975	0.066
Ammonia (mg/L)	Sandstone Creek	OK310840-02-0020C	21	1	0.0505	0.0117	0.0523	0.015	0.015	0.03	0.0615	0.188
Ammonia (mg/L)	Sandy Creek	OK311600-01-0040G	21	1	0.0829	0.0226	0.1013	0.015	0.015	0.042	0.1033	0.407
Ammonia (mg/L)	Spring Creek	OK310830-04-0010G	20	1	0.067	0.011	0.048	0.015	0.016	0.05	0.108	0.141
Ammonia (mg/L)	Spring Creek	OK310840-02-0240D	23	3	0.1607	0.0292	0.1306	0.015	0.0715	0.119	0.2308	0.556
Ammonia (mg/L)	Station Creek	OK311800-00-0060G	22	2	0.04565	0.00886	0.03964	0.015	0.015	0.0245	0.069	0.137
Ammonia (mg/L)	Stinking Creek	OK310830-02-0020D	20	1	0.05342	0.00959	0.04178	0.01	0.015	0.052	0.072	0.17
Ammonia (mg/L)	Stinking Creek	OK310830-04-0030K	19	1	0.0468	0.0129	0.0546	0.015	0.015	0.015	0.0568	0.167
Ammonia (mg/L)	Sugar Creek	OK310830-05-0010D	20	1	0.1813	0.0243	0.106	0.015	0.099	0.178	0.277	0.376
Ammonia (mg/L)	Suttle Creek	OK311310-01-0070H	21	1	0.08	0.0239	0.1069	0.015	0.015	0.035	0.1035	0.428
Ammonia (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	3	0.0445	0.009	0.04024	0.015	0.015	0.0275	0.06575	0.155
Ammonia (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	0.0497	0.0199	0.0868	0.015	0.015	0.015	0.034	0.368
Ammonia (mg/L)	Timber Creek	OK311510-01-0090G	22	2	0.0757	0.0221	0.0987	0.015	0.015	0.0425	0.0655	0.384
Ammonia (mg/L)	Trail Creek	OK311500-03-0070D	23	3	0.071	0.0148	0.066	0.015	0.024	0.06	0.0798	0.249
Ammonia (mg/L)	Turkey Creek	OK311600-02-0060J	21	1	0.0681	0.0164	0.0735	0.015	0.015	0.0345	0.1253	0.261
Ammonia (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	0.0502	0.0208	0.0932	0.015	0.015	0.0215	0.0443	0.431
Ammonia (mg/L)	Washington Creek	OK310810-01-0190G	20	2	0.03661	0.00589	0.02501	0.015	0.015	0.03	0.05525	0.094
Ammonia (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	1	0.0596	0.0112	0.0503	0.015	0.015	0.044	0.0975	0.19
Ammonia (mg/L)	West Cache Creek	OK311310-02-0010M	21	1	0.02495	0.00498	0.02228	0.015	0.015	0.015	0.02175	0.109
Ammonia (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	0.02035	0.00192	0.0086	0.015	0.015	0.015	0.024	0.04
Ammonia (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	0.0749	0.0154	0.0691	0.015	0.0245	0.057	0.1078	0.317
Ammonia (mg/L)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	2	0.02295	0.00204	0.00913	0.015	0.015	0.0205	0.0295	0.043
Chloride (mg/L)	Barnitz Creek	OK310830-03-0200C	21	1	29.25	0.713	3.19	25	26.275	28.9	30.975	36
Chloride (mg/L)	Beaver Creek	OK310830-03-0190C	21	1	28.45	1.01	4.52	20.7	26.25	27.95	30.2	38.8
Chloride (mg/L)	Beaver Creek	OK311200-00-0030L	23	3	69.2	10.3	46.1	10.5	34.3	58.3	97.9	186.3
Chloride (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	1	11.07	0.927	4.145	0.9	9.15	10.85	14.55	16.7
Chloride (mg/L)	Boggy Creek	OK310830-03-0100C	21	1	471	398	1780	38	59	68	89	8034
Chloride (mg/L)	Buffalo Creek	OK311510-02-0090D	22	2	355.8	45.5	203.5	29.1	221.9	299.3	489	944.6
Chloride (mg/L)	Caddo Creek	OK310800-03-0010F	21	1	62.68	6.57	29.4	12.1	35.98	66.2	87.73	109.2
Chloride (mg/L)	Cavalry Creek	OK310830-03-0070D	21	1	95.78	3.74	16.74	55.9	91.05	97.25	100	129.8
Chloride (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	1	46.06	5.81	25.96	9.3	21.8	48.05	64.28	88.4
Chloride (mg/L)	Cobb Creek	OK310830-06-0050M	21	1	19.81	6.29	28.11	10	11.63	13.25	16.4	138.7
Chloride (mg/L)	Cow Creek	OK311200-00-0060L	24	4	108.6	11.9	53.3	15.8	73.9	107.6	143.7	201.7
Chloride (mg/L)	Deep Red Creek	OK311310-03-0010D	21	1	497.1	77.1	345	41.6	183.9	481.5	779	1097.9
Chloride (mg/L)	Delaware Creek	OK310830-01-0030G	21	2	235.5	13	56.7	148.7	165.8	244.7	265.9	346.9
Chloride (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	1	34.15	6.34	28.33	21.9	25.95	29	30.48	153.7
Chloride (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	2	61.72	7.31	31.85	13.9	26.2	69.3	81.5	126.8
Chloride (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	1	31.47	3.7	16.54	11	18.53	29.55	40.1	86.1
Chloride (mg/L)	Elk Creek	OK311500-03-0010G	21	1	436	77.9	348.6	122.7	167	247.2	837.6	1057.3
Chloride (mg/L)	Finn Creek	OK310810-02-0020D	22	2	36.42	2.94	13.14	11.8	25.98	37.2	46	59
Chloride (mg/L)	Fish Creek	OK311800-00-0130G	22	2	4244	797	3566	481	1160	2578	6863	11151
Chloride (mg/L)	Fivemile Creek	OK310830-06-0080D	21	1	14.665	0.784	3.506	9.7	12	13.65	16.675	24.1
Chloride (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	49.35	6.59	28.74	6.8	29.3	48.1	69.6	111.4
Chloride (mg/L)	Gypsum Creek	OK311600-01-0020F	22	2	4787	322	1442	1308	4087	4505	5622	7420
Chloride (mg/L)	Haystack Creek	OK311800-00-0040D	21	1	1114	173	776	18	438	1143	1682	2579
Chloride (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	79.53	7.67	34.29	12.7	60.7	76.95	102.08	163.8
Chloride (mg/L)	Ionine Creek	OK310820-01-0160L	20	1	71.52	3.04	13.25	46.2	60.7	70.8	84.3	89.1
Chloride (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	53.78	5.7	25.51	14.6	25.45	57.95	73.38	97.9
Chloride (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	261.8	44.5	199	30.5	96.3	191.7	449	761.3
Chloride (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	4	44.54	3.46	15.47	13.6	36.8	42.3	53	74
Chloride (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	2	1634	176	769	230	1147	1889	2052	3120
Chloride (mg/L)	Little Elk Creek	OK311500-03-0040D	22	2	131.1	14	62.5	35.5	91.2	123.6	183.4	256.2
Chloride (mg/L)	Medicine Creek	OK311300-04-0060H	21	1	20.5	1.74	7.79	5.8	15.23	19.8	26.18	37.1
Chloride (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	1	13.51	1.79	8.03	4.8	8.98	12	14.88	40
Chloride (mg/L)	Mud Creek	OK311100-04-0010G	23	3	132.9	22.4	100	9.7	54.6	128.9	193.2	436.2
Chloride (mg/L)	North Elm Creek	OK311800-00-0170G	21	3	5397	630	2675	810	3048	4943	7996	9970

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Chloride (mg/L)	Oil Creek	OK310800-01-0240P	21	1	21.04	8.86	39.63	3.9	5.94	10.95	13.28	181.7
Chloride (mg/L)	Otter Creek	OK311500-01-0080F	21	1	282.8	35.2	157.3	17.6	147.4	288.3	430	545.2
Chloride (mg/L)	Pennington Creek	OK310800-01-0120G	21	1	4.425	0.236	1.054	3	3.825	4.3	4.8	7.9
Chloride (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	2	66.7	18.8	83.9	30.9	39.5	47.3	57.7	420.7
Chloride (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	2	232.1	26	113.2	38	133.4	231.6	317.6	461.1
Chloride (mg/L)	Red Creek	OK311100-01-0290D	22	2	99.8	25.8	115.4	6.8	25.7	47.3	178.6	481.8
Chloride (mg/L)	Rush Creek	OK310810-05-0010D	21	1	136.7	15.2	68.1	20.7	80.3	125.3	187.4	243.2
Chloride (mg/L)	Salt Creek	OK310810-03-0080G	21	1	163.9	30	134.1	30.4	85.4	128.6	186.5	609.8
Chloride (mg/L)	Sandstone Creek	OK310840-02-0020C	21	1	50.64	2.73	12.21	35.4	45.23	49	51.78	98
Chloride (mg/L)	Sandy Creek	OK311600-01-0040G	21	1	5161	378	1690	1870	4439	4711	5942	8994
Chloride (mg/L)	Spring Creek	OK310830-04-0010G	20	1	54.89	5.56	24.23	0.5	41.2	52.2	68.4	101
Chloride (mg/L)	Spring Creek	OK310840-02-0240D	23	3	29.08	1.75	7.81	22.5	24.15	26.25	31.5	49.9
Chloride (mg/L)	Station Creek	OK311800-00-0060G	22	2	1069	106	476	201	750	1020	1413	1971
Chloride (mg/L)	Stinking Creek	OK310830-02-0020D	20	1	179.7	19.7	85.8	30.5	119.9	174.6	267.6	334
Chloride (mg/L)	Stinking Creek	OK310830-04-0030K	19	1	42.48	2.07	8.78	22.1	37.2	43.15	48.2	55.4
Chloride (mg/L)	Sugar Creek	OK310830-05-0010D	20	1	105.73	9.27	40.39	52.9	76.6	96.3	131.6	205.3
Chloride (mg/L)	Suttle Creek	OK311310-01-0070H	21	1	932	108	485	63	537	1001	1155	1927
Chloride (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	3	134.9	19.2	86	16.6	74.1	101.9	171.1	323.1
Chloride (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	808.9	90.3	393.4	100.5	607.4	861	1115.2	1605
Chloride (mg/L)	Timber Creek	OK311510-01-0090G	22	2	67.17	6.4	28.62	39.3	44.38	53.4	92.35	120.7
Chloride (mg/L)	Trail Creek	OK311500-03-0070D	23	3	73.36	4.62	20.67	29.6	61.48	72.05	85.7	128.6
Chloride (mg/L)	Turkey Creek	OK311600-02-0060J	21	1	1417	105	470	413	1135	1347	1608	2456
Chloride (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	138	20	89.3	55.2	71.3	93.1	186.2	358.1
Chloride (mg/L)	Washington Creek	OK310810-01-0190G	20	2	30.31	3.68	15.63	7	11.88	32.15	44.23	53.4
Chloride (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	1	29.575	0.957	4.282	22.6	26.85	28.7	31.875	41.4
Chloride (mg/L)	West Cache Creek	OK311310-02-0010M	21	1	54	10.9	48.7	10	27.5	37.1	62.7	186.5
Chloride (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	131	14.3	63.8	19.9	64.4	147	178.4	226.6
Chloride (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	14.41	0.468	2.092	10.6	12.475	14.85	16.075	18.2
Chloride (mg/L)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	2	174.2	19.7	88.2	15.4	85.5	195.6	240.5	313.9
Conductivity (µS/cm)	Barnitz Creek	OK310830-03-0200C	21	2	2755.9	52.3	228.2	2183	2620	2850	2919	3051
Conductivity (µS/cm)	Beaver Creek	OK310830-03-0190C	21	1	2492.5	48.5	216.7	1967	2343.8	2517.5	2655	2848
Conductivity (µS/cm)	Beaver Creek	OK311200-00-0030L	23	2	741.2	65.5	300.1	193.9	562	679	991.5	1380
Conductivity (µS/cm)	Big Sandy Creek	OK310800-01-0090G	21	0	365.8	17.3	79.2	196.5	317.2	381	409	548
Conductivity (µS/cm)	Boggy Creek	OK310830-03-0100C	21	2	1691.8	80.1	349	884	1518	1712	1944	2264
Conductivity (µS/cm)	Buffalo Creek	OK311510-02-0090D	22	4	3145	587	2489	958	2102	2616	3333	12480
Conductivity (µS/cm)	Caddo Creek	OK310800-03-0010F	21	0	523.5	37.9	173.5	6.4	429.2	575	634	744
Conductivity (µS/cm)	Cavalry Creek	OK310830-03-0070D	21	2	2825.3	86.3	376.4	1962	2624	2810	3011	3560
Conductivity (µS/cm)	Chigley Sandy Creek	OK310800-02-0190D	21	0	631	36.5	167.2	310	499.7	616	786	875
Conductivity (µS/cm)	Cobb Creek	OK310830-06-0050M	20	0	831.2	26.7	122.4	552	792.5	847	905	1094
Conductivity (µS/cm)	Cow Creek	OK311200-00-0060L	24	3	912.8	68.7	314.7	153.8	660.5	1012	1108	1420
Conductivity (µS/cm)	Deep Red Creek	OK311310-03-0010D	21	0	2060	287	1317	235	1073	1776	3191	4325
Conductivity (µS/cm)	Delaware Creek	OK310830-01-0030G	21	0	2471	263	1203	1548	2192	2281	2325	7650
Conductivity (µS/cm)	East Barnitz Creek	OK310830-03-0210C	21	1	2714	63.2	282.6	1975	2530.8	2827	2894.5	3178
Conductivity (µS/cm)	East Cache Creek: Lower	OK311300-01-0020G	21	1	715.6	59	264	251.8	439.4	804.5	899	1121
Conductivity (µS/cm)	East Cache Creek: Upper	OK311300-02-0010M	21	0	734.7	37.7	172.7	405.7	573	744	872	964
Conductivity (µS/cm)	Elk Creek	OK311500-03-0010G	21	2	1874	100	438	315	1783	1945	2164	2355
Conductivity (µS/cm)	Finn Creek	OK310810-02-0020D	22	1	760.9	56	256.7	7.8	620	843	937.5	1016
Conductivity (µS/cm)	Fish Creek	OK311800-00-0130G	22	5	13880	1950	8040	1265	6105	14730	20380	28140
Conductivity (µS/cm)	Fivemile Creek	OK310830-06-0080D	21	0	535.4	36.7	168.1	58.8	554.5	578	606	880
Conductivity (µS/cm)	Fleetwood Creek	OK311100-01-0300D	21	2	794	82.4	359.2	197.2	431.3	908	1080	1370
Conductivity (µS/cm)	Gypsum Creek	OK311600-01-0020F	22	1	14228	350	1603	8940	13895	14500	15185	16160
Conductivity (µS/cm)	Haystack Creek	OK311800-00-0040D	21	3	5040	658	2793	954	2382	5595	7113	9850
Conductivity (µS/cm)	Hickory Creek: HWY 775	OK311100-02-0010M	23	1	633.1	41.1	192.6	6.8	564.5	688	774	839
Conductivity (µS/cm)	Ionine Creek	OK310820-01-0160L	20	0	2736.2	85.5	382.2	1600	2579.8	2865.5	2955.8	3191
Conductivity (µS/cm)	Kickapoo Sandy Creek	OK310810-01-0050G	21	0	581.9	46.3	212	215	409.6	681	752.5	883
Conductivity (µS/cm)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	3	1479	145	631	327	863	1663	1845	2455
Conductivity (µS/cm)	Little Beaver Creek	OK311210-00-0050D	24	4	951	66.1	295.4	9.8	963.5	1027	1111.8	1213
Conductivity (µS/cm)	Little Deep Red Creek	OK311310-03-0040D	21	1	5482	535	2391	927	4113	6325	7060	8740
Conductivity (µS/cm)	Little Elk Creek	OK311500-03-0040D	22	5	1651	281	1160	665	1178	1335	1870	5840
Conductivity (µS/cm)	Medicine Creek	OK311300-04-0060H	21	0	370.8	22.2	101.6	159	301.6	385	446.1	522
Conductivity (µS/cm)	Mill Creek: Lower	OK310800-01-0190G	21	0	419.3	21.1	96.8	131	373.5	437	485.2	518
Conductivity (µS/cm)	Mud Creek	OK311100-04-0010G	23	3	970	117	524	170	499	965	1309	2050
Conductivity (µS/cm)	North Elm Creek	OK311800-00-0170G	21	7	13637	2882	10783	9	3117	14315	19196	38240
Conductivity (µS/cm)	Oil Creek	OK310800-01-0240P	21	0	487.7	20.5	93.9	271	422.1	511	560	621
Conductivity (µS/cm)	Otter Creek	OK311500-01-0080F	21	0	1366	139	637	243	825	1419	1862	2369
Conductivity (µS/cm)	Pennington Creek	OK310800-01-0120G	21	0	430.8	12.3	56.5	255	411.7	428	474.5	512
Conductivity (µS/cm)	Quartermaster Creek	OK310840-01-0060L	22	3	3682	561	2447	312	2246	3260	3741	10650
Conductivity (µS/cm)	Rainy Mountain Creek	OK310830-02-0060G	21	2	2024	230	1001	486	1292	2023	2700	4183
Conductivity (µS/cm)	Red Creek	OK311100-01-0290D	22	2	548	106	475	6	252	332	857	2011
Conductivity (µS/cm)	Rush Creek	OK310810-05-0010D	21	1	1223.5	73.3	328	480	932.5	1273	1448	1684
Conductivity (µS/cm)	Salt Creek	OK310810-03-0080G	21	2	1129.8	95	414.2	230	800	1210	1399	1882
Conductivity (µS/cm)	Sandstone Creek	OK310840-02-0020C	21	3	2523	343	1456	249	2035	2209	2784	7740
Conductivity (µS/cm)	Sandy Creek	OK311600-01-0040G	21	1	14691	652	2914	6120	13670	15350	16343	18360
Conductivity (µS/cm)	Spring Creek	OK310830-04-0010G	20	0	2506	345	1545	1524	1937	2101	2554	8880
Conductivity (µS/cm)	Spring Creek	OK310840-02-0240D	23	4	650.26	7.75	33.8	591	618	652	676	706
Conductivity (µS/cm)	Station Creek	OK311800-00-0060G	22	3	4765	224	978	2361	4099	5060	5610	5910
Conductivity (µS/cm)	Stinking Creek	OK310830-02-0020D	20	1	1451	111	486	394	1109	1534	1908	2054
Conductivity (µS/cm)	Stinking Creek	OK310830-04-0030K	19	0	2442.7	71.8	313.1	1800	2154	2467	2642	2905
Conductivity (µS/cm)	Sugar Creek	OK310830-05-0010D	20	1	2422	178	775	962	1797	2270	3010	3793
Conductivity (µS/cm)	Suttle Creek	OK311310-01-0070H	21	0	3932	399	1829	103	3052	4653	5117	5790

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Conductivity (µS/cm)	Sweetwater Creek	OK311510-02-0120D	23	5	1575	254	1079	412	1055	1231	1758	5310
Conductivity (µS/cm)	Tepee Creek	OK311500-01-0110D	20	2	3263	377	1598	242	1835	3563	4146	6250
Conductivity (µS/cm)	Timber Creek	OK311510-01-0090G	22	5	1262	106	439	506	995	1092	1695	2035
Conductivity (µS/cm)	Trail Creek	OK311500-03-0070D	23	5	1726	186	789	17	1320	1860	2414	2709
Conductivity (µS/cm)	Turkey Creek	OK311600-02-0060J	21	2	5240	482	2100	656	3456	5930	6410	8320
Conductivity (µS/cm)	Walnut Bayou	OK311100-03-0010G	22	1	846.3	67.5	309.1	482.3	614.5	739	1059	1540
Conductivity (µS/cm)	Washington Creek	OK310810-01-0190G	20	4	640.7	58	232.1	230	430.2	689	861	912
Conductivity (µS/cm)	West Barnitz Creek	OK310830-03-0230C	21	1	2824.7	63.1	282	1869	2739	2895	2992.5	3124
Conductivity (µS/cm)	West Cache Creek	OK311310-02-0010M	21	0	427.1	38.8	177.9	167	307.5	395	496	903
Conductivity (µS/cm)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	979.8	86.8	388.2	102.3	634.5	1047.5	1311.5	1442
Conductivity (µS/cm)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	1	659.5	38.4	175.9	51	570.5	721	786.5	820
Conductivity (µS/cm)	Wildhorse Creek: near Tatum	OK310810-03-0010R	22	3	1148.8	98.7	430.2	170	685	1214	1538	1687
DO (mg/L)	Barnitz Creek	OK310830-03-0200C	21	0	9.994	0.624	2.859	5.92	7.92	9.32	12.485	16.04
DO (mg/L)	Beaver Creek	OK310830-03-0190C	21	0	9.99	0.734	3.364	5.3	7.105	9.94	12.565	16.19
DO (mg/L)	Beaver Creek	OK311200-00-0030L	23	2	8.472	0.673	3.086	3.61	6.25	8.48	10.46	14.59
DO (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	0	8.44	0.729	3.339	3.05	5.08	8.43	11.58	13.59
DO (mg/L)	Boggy Creek	OK310830-03-0100C	21	0	10.174	0.691	3.169	5.41	8.09	9.24	13.63	15.49
DO (mg/L)	Buffalo Creek	OK311510-02-0090D	22	3	9.574	0.443	1.932	5.36	8.31	9.73	11.1	12.97
DO (mg/L)	Caddo Creek	OK310800-03-0010F	21	0	7.978	0.543	2.486	5	6.185	7.41	9.725	13.22
DO (mg/L)	Cavalry Creek	OK310830-03-0070D	21	0	9.953	0.805	3.688	4.93	7.125	9.31	12.79	18.9
DO (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	0	8.339	0.547	2.505	1.9	6.98	8.02	10.745	12.05
DO (mg/L)	Cobb Creek	OK310830-06-0050M	21	0	9.103	0.592	2.715	4.45	7.12	8.83	11.45	13.75
DO (mg/L)	Cow Creek	OK311200-00-0060L	24	4	9.451	0.579	2.589	5.51	7.475	9.26	11.115	14.72
DO (mg/L)	Deep Red Creek	OK311310-03-0010D	21	0	7.305	0.609	2.792	4.09	5.2	6.64	9.615	13.08
DO (mg/L)	Delaware Creek	OK310830-01-0030G	21	0	11.058	0.742	3.401	4.18	8.48	11.57	13.685	16.59
DO (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	0	10.19	0.624	2.858	5.57	8.065	10.03	12.595	15.18
DO (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	1	8.396	0.571	2.555	3.79	6.36	7.94	10.913	13.65
DO (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	0	7.1	0.716	3.28	2.21	4.47	6.92	10.565	14.09
DO (mg/L)	Elk Creek	OK311500-03-0010G	21	0	8.88	0.641	2.938	5.29	6.43	8.09	11.115	14.74
DO (mg/L)	Finn Creek	OK310810-02-0020D	22	1	7.906	0.673	3.082	2.32	5.64	7.29	9.815	13.79
DO (mg/L)	Fish Creek	OK311800-00-0130G	22	3	10.486	0.737	3.212	3.38	8.92	9.59	13.49	15.06
DO (mg/L)	Fivemile Creek	OK310830-06-0080D	21	0	9.156	0.558	2.558	4.01	7.32	8.55	11.69	13.26
DO (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	1	6.48	0.976	4.365	0.39	3.32	5.56	9.54	15.44
DO (mg/L)	Gypsum Creek	OK311600-01-0020F	22	0	12.892	0.649	3.046	5.55	11.985	13.57	15.073	15.91
DO (mg/L)	Haystack Creek	OK311800-00-0040D	21	2	8.368	0.479	2.089	4.63	6.98	8.33	10.06	12.32
DO (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	1	9.183	0.467	2.189	5.65	7.863	8.515	10.418	14.04
DO (mg/L)	Ionine Creek	OK310820-01-0160L	20	0	10.589	0.766	3.426	4.91	6.728	11.345	13.033	16.2
DO (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	0	9.6	0.521	2.387	6.05	7.92	8.4	12.02	13.37
DO (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	3	11.336	0.55	2.398	7.06	9.19	12.26	12.85	15.84
DO (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	3	8.927	0.577	2.646	5.11	6.805	8.5	10.625	15.56
DO (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	1	7.029	0.584	2.61	3.51	5.275	6.395	8.605	13.77
DO (mg/L)	Little Elk Creek	OK311500-03-0040D	22	3	8.511	0.58	2.526	4.11	6.75	8.34	10.49	12.76
DO (mg/L)	Medicine Creek	OK311300-04-0060H	21	0	8.886	0.542	2.482	6.2	6.865	7.77	10.795	13.8
DO (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	0	8.151	0.639	2.93	3.91	5.495	7.76	10.19	13.59
DO (mg/L)	Mud Creek	OK311100-04-0010G	23	2	6.97	0.879	4.027	1.63	3.71	6.29	9.105	17.45
DO (mg/L)	North Elm Creek	OK311800-00-0170G	21	5	8.019	0.728	2.912	2.27	6.153	7.83	10.665	13.44
DO (mg/L)	Oil Creek	OK310800-01-0240P	21	0	7.967	0.556	2.548	3.67	5.705	7.64	10.43	12.45
DO (mg/L)	Otter Creek	OK311500-01-0080F	21	0	8.186	0.962	4.411	3.53	5.365	6.05	10.67	18.08
DO (mg/L)	Pennington Creek	OK310800-01-0120G	21	0	8.577	0.391	1.79	4.9	7.44	8.23	9.955	11.37
DO (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	3	11.78	0.755	3.29	7.28	9.18	11.71	13.33	18.63
DO (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	1	9.29	0.658	2.943	4.88	7.143	8.65	10.965	16.27
DO (mg/L)	Red Creek	OK311100-01-0290D	22	1	6.174	0.735	3.37	2.07	3.44	4.96	8.825	13.77
DO (mg/L)	Rush Creek	OK310810-05-0010D	21	0	8.843	0.619	2.836	5.11	6.57	8.05	11.185	15.3
DO (mg/L)	Salt Creek	OK310810-03-0080G	21	0	9.026	0.507	2.323	6.03	7.39	8.06	10.465	14.69
DO (mg/L)	Sandstone Creek	OK310840-02-0020C	21	2	9.678	0.576	2.512	5.33	8.15	8.92	11.68	14.68
DO (mg/L)	Sandy Creek	OK311600-01-0040G	21	0	8.648	0.623	2.854	5.82	6.9	7.54	10.03	17.37
DO (mg/L)	Spring Creek	OK310830-04-0010G	20	0	10.713	0.433	1.937	7.85	9.25	10.13	12.605	14.53
DO (mg/L)	Spring Creek	OK310840-02-0240D	23	3	8.182	0.654	2.925	3.68	5.593	7.745	10.605	13.21
DO (mg/L)	Station Creek	OK311800-00-0060G	22	3	8.045	0.55	2.399	4.35	6.08	7.3	10.39	12.06
DO (mg/L)	Stinking Creek	OK310830-02-0020D	20	0	8.393	0.602	2.694	4.59	6.233	7.82	9.708	14.06
DO (mg/L)	Stinking Creek	OK310830-04-0030K	19	0	9.546	0.463	2.02	7.05	7.97	9.19	10.6	14.6
DO (mg/L)	Sugar Creek	OK310830-05-0010D	20	0	9.319	0.517	2.314	6.23	7.058	8.99	11.355	14.44
DO (mg/L)	Suttle Creek	OK311310-01-0070H	21	0	7.988	0.654	2.995	0.94	6.605	7.75	9.12	16.6
DO (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	5	9.612	0.594	2.518	5.19	8.09	9.57	10.795	14.62
DO (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	9.269	0.636	2.773	5.2	7.31	8.68	11.28	14.11
DO (mg/L)	Timber Creek	OK311510-01-0090G	22	2	8.178	0.707	3.164	3.46	5.88	7.32	10.748	13.77
DO (mg/L)	Trail Creek	OK311500-03-0070D	23	4	11.179	0.686	2.99	6.79	8.98	10.41	13.66	17.67
DO (mg/L)	Turkey Creek	OK311600-02-0060J	21	0	7.63	0.796	3.646	2.71	4.82	6.28	9.775	15.8
DO (mg/L)	Walnut Bayou	OK311100-03-0010G	22	1	9.245	0.557	2.555	3.41	7.88	8.86	11.025	14.11
DO (mg/L)	Washington Creek	OK310810-01-0190G	20	1	8.06	0.749	3.264	3.99	5.51	7.28	11.16	14.47
DO (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	0	10.189	0.809	3.706	5.12	6.94	9.61	13.37	17.69
DO (mg/L)	West Cache Creek	OK311310-02-0010M	21	0	7.147	0.491	2.251	3.66	5.255	6.92	8.945	12.07
DO (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	9.661	0.453	2.024	6.6	8.195	8.88	11.28	13.95
DO (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	1	8.214	0.478	2.189	5.14	6.455	8.08	9.77	13.45
DO (mg/L)	Wildhorse Creek: near Tatum	OK310810-03-0010R	22	1	8.969	0.531	2.431	5.97	7.15	8.13	10.55	14.33
Hardness	Barnitz Creek	OK310830-03-0200C	21	1	1880	47.9	214	1290	1785	1910	2057.5	2200
Hardness	Beaver Creek	OK310830-03-0190C	21	1	1729.5	46.3	207.2	1345	1617	1730	1852.5	2260
Hardness	Beaver Creek	OK311200-00-0030L	23	3	288.1	31.1	139	94	168.8	274.5	343.5	600
Hardness	Big Sandy Creek	OK310800-01-0090G	21	1	165.7	9.14	40.89	88	141.25	167.5	183.75	275
Hardness	Boggy Creek	OK310830-03-0100C	21	2	954.2	49.7	216.8	510	870	980	1120	1290

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Hardness	Buffalo Creek	OK311510-02-0090D	22	2	1010.5	68	304.1	475	801.3	1022.5	1248	1580
Hardness	Caddo Creek	OK310800-03-0010F	21	1	191.6	8.68	38.82	140	161.25	182.5	219.25	261
Hardness	Cavalry Creek	OK310830-03-0070D	21	1	1784	64.1	286.8	1170	1635	1835	2025	2240
Hardness	Chigley Sandy Creek	OK310800-02-0190D	21	1	256.5	10.8	48.5	140	232	262	297	316
Hardness	Cobb Creek	OK310830-06-0050M	21	1	443	22.3	99.8	199	409.8	442	502.5	600
Hardness	Cow Creek	OK311200-00-0060L	24	3	317.6	21.5	98.4	125	235	325	390	500
Hardness	Deep Red Creek	OK311310-03-0010D	21	2	505.9	72.2	314.9	89	230	405	825	1040
Hardness	Delaware Creek	OK310830-01-0030G	21	2	1122.1	25.2	109.7	920	1040	1110	1180	1340
Hardness	East Barnitz Creek	OK310830-03-0210C	21	1	1880.3	51.2	229	1360	1738.8	1935	2027.5	2210
Hardness	East Cache Creek: Lower	OK311300-01-0020G	21	2	231.3	20	87.3	20	175	240	275	425
Hardness	East Cache Creek: Upper	OK311300-02-0010M	21	1	280.1	17.2	76.8	185	196	297.5	349	435
Hardness	Elk Creek	OK311500-03-0010G	21	1	785.2	48.2	215.4	162	646.5	820	911.5	1140
Hardness	Finn Creek	OK310810-02-0020D	22	2	405.1	23.4	104.8	157	337.5	441	464.8	550
Hardness	Fish Creek	OK311800-00-0130G	22	6	2967	181	724	2090	2411	2826	3271	5015
Hardness	Fivemile Creek	OK310830-06-0080D	21	1	259.2	18.6	83.4	30	238.5	249.5	280	468
Hardness	Fleetwood Creek	OK311100-01-0300D	21	2	327.1	36.2	157.6	89	225	330	425	810
Hardness	Gypsum Creek	OK311600-01-0020F	22	1	3821	122	561	2726	3400	3910	4275	4820
Hardness	Haystack Creek	OK311800-00-0040D	21	6	1868	234	907	510	1055	1725	2605	3180
Hardness	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	250.3	15.1	67.5	155	188	247	300.3	375
Hardness	Ionine Creek	OK310820-01-0160L	20	1	1650.3	47.2	205.7	1050	1550	1670	1760	2070
Hardness	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	193.8	12.5	56.1	62	155.5	205	238.8	256
Hardness	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	6	514.6	38.7	154.9	252	408.5	507.5	637.5	832
Hardness	Little Beaver Creek	OK311210-00-0050D	24	4	507.4	21.7	97.1	290	450	493	590	740
Hardness	Little Deep Red Creek	OK311310-03-0040D	21	2	1145	127	555	184	668	1300	1580	1830
Hardness	Little Elk Creek	OK311500-03-0040D	22	6	591.4	53.9	215.7	250	419.5	600	719.5	1065
Hardness	Medicine Creek	OK311300-04-0060H	21	1	148.7	10.7	47.7	56	120.5	152.5	181.3	224
Hardness	Mill Creek: Lower	OK310800-01-0190G	21	1	217.55	8.8	39.34	163	183	218	244.25	309
Hardness	Mud Creek	OK311100-04-0010G	23	3	284.6	32.5	145.2	12	205.5	235.5	371.3	710
Hardness	North Elm Creek	OK311800-00-0170G	21	4	3157	240	988	1520	2568	3040	3690	5800
Hardness	Oil Creek	OK310800-01-0240P	21	1	257.4	14	62.8	127	202.5	270.5	311.3	355
Hardness	Otter Creek	OK311500-01-0080F	21	1	316.7	30.4	135.8	70	177.3	342.5	419.3	570
Hardness	Pennington Creek	OK310800-01-0120G	21	1	247.4	2.89	12.92	222	236.25	250	258.75	264
Hardness	Quartermaster Creek	OK310840-01-0060L	22	5	2345	103	424	1320	2147	2425	2624	2855
Hardness	Rainy Mountain Creek	OK310830-02-0060G	21	2	666.1	60.6	263.9	165	515	715	850	1110
Hardness	Red Creek	OK311100-01-0290D	22	2	216.5	25.6	114.5	55	150	202	290	470
Hardness	Rush Creek	OK310810-05-0010D	21	1	431.3	22.7	101.5	220	345	455	517.5	572
Hardness	Salt Creek	OK310810-03-0080G	21	1	472.4	33.1	148.1	120	337.5	516	577.8	670
Hardness	Sandstone Creek	OK310840-02-0020C	21	3	1369.7	87.3	370.5	830	1102.3	1262.5	1578.8	2240
Hardness	Sandy Creek	OK311600-01-0040G	21	0	3248	171	783	1300	2815	3430	3820	4260
Hardness	Spring Creek	OK310830-04-0010G	20	1	1324.4	94.8	413	53.4	1100	1400	1670	1880
Hardness	Spring Creek	OK310840-02-0240D	23	4	246.4	15.7	68.5	175	200	225	270	435
Hardness	Station Creek	OK311800-00-0060G	22	6	2117	160	642	455	2166	2285	2458	2675
Hardness	Stinking Creek	OK310830-02-0020D	20	1	462.7	31.7	138.3	150	410	466	560	700
Hardness	Stinking Creek	OK310830-04-0030K	19	1	1613.3	66.4	281.7	1170	1372.5	1560	1795	2180
Hardness	Sugar Creek	OK310830-05-0010D	20	1	1173.8	79.6	346.9	715	870	1072	1570	1750
Hardness	Suttle Creek	OK311310-01-0070H	21	1	787	100	449	11	284	910	1101	1540
Hardness	Sweetwater Creek	OK311510-02-0120D	23	2	654.6	66.1	303	186	482	586	842.5	1260
Hardness	Tepee Creek	OK311500-01-0110D	20	1	1156	130	568	7	800	1200	1650	1970
Hardness	Timber Creek	OK311510-01-0090G	22	1	572.2	54.6	250.1	7.5	448	521	673.5	1175
Hardness	Trail Creek	OK311500-03-0070D	23	7	887.1	80.8	323.1	440	650.5	865.5	1142.5	1465
Hardness	Turkey Creek	OK311600-02-0060J	21	0	2499	211	965	536	1802	2700	3220	4520
Hardness	Walnut Bayou	OK311100-03-0010G	22	1	264.7	18.1	82.8	142	209.5	250	322	490
Hardness	Washington Creek	OK310810-01-0190G	20	2	231.8	18	76.2	117	153.3	251	292	358
Hardness	West Barnitz Creek	OK310830-03-0230C	21	1	1931.5	75.3	336.6	880	1827.5	2030	2082.5	2470
Hardness	West Cache Creek	OK311310-02-0010M	21	1	118.4	8.23	36.79	59	98	113	130.25	241
Hardness	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	376.2	21.7	97	187	321.3	387	450	534
Hardness	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	1	388.7	19.1	87.7	226	322	400	452.5	530
Hardness	Wildhorse Creek: near Tatum	OK310810-03-0010R	22	2	461.4	34.2	153	129	351	477.5	604.3	700
Nitrate (mg/L)	Barnitz Creek	OK310830-03-0200C	21	1	0.1525	0.0278	0.1242	0.02	0.0275	0.115	0.275	0.41
Nitrate (mg/L)	Beaver Creek	OK310830-03-0190C	21	1	0.2295	0.0291	0.1302	0.02	0.135	0.215	0.3675	0.43
Nitrate (mg/L)	Beaver Creek	OK311200-00-0030L	23	4	1.293	0.504	2.197	0.02	0.13	0.59	1.02	7.72
Nitrate (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	2	0.04211	0.00642	0.028	0.02	0.02	0.03	0.06	0.11
Nitrate (mg/L)	Boggy Creek	OK310830-03-0100C	21	1	1.136	0.142	0.634	0.28	0.573	1.05	1.698	2.18
Nitrate (mg/L)	Buffalo Creek	OK311510-02-0090D	22	2	0.8785	0.0697	0.3119	0.38	0.5675	0.845	1.115	1.53
Nitrate (mg/L)	Caddo Creek	OK310800-03-0010F	21	1	1.051	0.262	1.17	0.02	0.208	0.52	1.785	4.23
Nitrate (mg/L)	Cavalry Creek	OK310830-03-0070D	21	1	1.136	0.175	0.785	0.02	0.533	1.05	1.825	2.66
Nitrate (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	1	0.2185	0.0331	0.148	0.02	0.085	0.195	0.32	0.53
Nitrate (mg/L)	Cobb Creek	OK310830-06-0050M	21	1	1.302	0.0507	0.2268	0.85	1.115	1.345	1.465	1.7
Nitrate (mg/L)	Cow Creek	OK311200-00-0060L	24	4	4.492	0.804	3.594	0.53	1.488	2.955	7.815	12.27
Nitrate (mg/L)	Deep Red Creek	OK311310-03-0010D	21	1	0.318	0.104	0.466	0.02	0.02	0.05	0.535	1.75
Nitrate (mg/L)	Delaware Creek	OK310830-01-0030G	21	2	0.1658	0.0283	0.1232	0.02	0.09	0.11	0.28	0.44
Nitrate (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	1	0.1355	0.0244	0.109	0.02	0.025	0.125	0.2325	0.37
Nitrate (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	2	1.601	0.231	1.007	0.02	0.51	1.73	2.46	3.35
Nitrate (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	1	0.51	0.216	0.965	0.02	0.1	0.25	0.488	4.42
Nitrate (mg/L)	Elk Creek	OK311500-03-0010G	21	1	0.462	0.114	0.511	0.02	0.02	0.125	0.94	1.62
Nitrate (mg/L)	Finn Creek	OK310810-02-0020D	22	2	0.3465	0.0307	0.1375	0.05	0.225	0.335	0.4475	0.42
Nitrate (mg/L)	Fish Creek	OK311800-00-0130G	22	3	0.1174	0.0782	0.3407	0.02	0.02	0.02	0.02	1.51
Nitrate (mg/L)	Fivemile Creek	OK310830-06-0080D	21	1	0.8315	0.0568	0.2541	0.41	0.66	0.845	0.8875	1.57
Nitrate (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	0.808	0.181	0.789	0.02	0.13	0.77	1.14	2.95
Nitrate (mg/L)	Gypsum Creek	OK311600-01-0020F	22	2	1.19	0.219	0.98	0.02	0.31	0.795	2.13	2.56

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Nitrate (mg/L)	Haystack Creek	OK311800-00-0040D	21	1	0.246	0.0601	0.2686	0.02	0.02	0.15	0.4025	1.01
Nitrate (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	0.054	0.0157	0.0701	0.02	0.02	0.02	0.05	0.27
Nitrate (mg/L)	Ionine Creek	OK310820-01-0160L	20	1	0.8816	0.0924	0.403	0.08	0.61	0.86	1.17	1.58
Nitrate (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	0.506	0.0778	0.3481	0.04	0.1525	0.605	0.8225	1.07
Nitrate (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	0.961	0.227	1.014	0.02	0.085	0.6	1.738	3.21
Nitrate (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	4	0.1925	0.0376	0.168	0.02	0.02	0.155	0.3675	0.5
Nitrate (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	2	0.241	0.103	0.448	0.02	0.02	0.02	0.17	1.54
Nitrate (mg/L)	Little Elk Creek	OK311500-03-0040D	22	2	0.4935	0.0738	0.33	0.03	0.225	0.44	0.7725	1.21
Nitrate (mg/L)	Medicine Creek	OK311300-04-0060H	21	1	0.043	0.00802	0.03585	0.02	0.02	0.02	0.07	0.13
Nitrate (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	1	0.1375	0.0366	0.1638	0.02	0.02	0.05	0.255	0.48
Nitrate (mg/L)	Mud Creek	OK311100-04-0010G	23	3	0.094	0.0205	0.0917	0.02	0.02	0.04	0.21	0.25
Nitrate (mg/L)	North Elm Creek	OK311800-00-0170G	21	4	0.1776	0.066	0.2721	0.02	0.02	0.02	0.3	0.76
Nitrate (mg/L)	Oil Creek	OK310800-01-0240P	21	1	0.687	0.173	0.772	0.02	0.065	0.3	1.258	2.2
Nitrate (mg/L)	Otter Creek	OK311500-01-0080F	21	1	0.639	0.134	0.598	0.02	0.233	0.56	0.808	2.75
Nitrate (mg/L)	Pennington Creek	OK310800-01-0120G	21	1	0.123	0.0229	0.1024	0.02	0.02	0.1	0.22	0.29
Nitrate (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	3	0.2979	0.0573	0.25	0.02	0.08	0.28	0.38	0.82
Nitrate (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	2	0.1358	0.0351	0.153	0.02	0.02	0.02	0.28	0.46
Nitrate (mg/L)	Red Creek	OK311100-01-0290D	22	2	0.29	0.13	0.584	0.02	0.023	0.155	0.243	2.6
Nitrate (mg/L)	Rush Creek	OK310810-05-0010D	21	1	0.1185	0.0228	0.1021	0.02	0.02	0.09	0.22	0.35
Nitrate (mg/L)	Salt Creek	OK310810-03-0080G	21	1	0.143	0.0456	0.2038	0.02	0.02	0.105	0.17	0.95
Nitrate (mg/L)	Sandstone Creek	OK310840-02-0020C	21	1	0.18	0.0143	0.0641	0.09	0.1175	0.175	0.23	0.31
Nitrate (mg/L)	Sandy Creek	OK311600-01-0040G	21	1	1.728	0.229	1.023	0.02	0.81	1.81	2.455	3.47
Nitrate (mg/L)	Spring Creek	OK310830-04-0010G	20	1	0.2284	0.0433	0.1887	0.02	0.07	0.18	0.39	0.61
Nitrate (mg/L)	Spring Creek	OK310840-02-0240D	23	3	0.145	0.0271	0.1213	0.02	0.035	0.1	0.2375	0.38
Nitrate (mg/L)	Station Creek	OK311800-00-0060G	22	2	1.673	0.177	0.793	0.45	1.045	1.84	2.195	3.47
Nitrate (mg/L)	Stinking Creek	OK310830-02-0020D	20	1	0.3363	0.0577	0.2515	0.02	0.13	0.31	0.58	0.74
Nitrate (mg/L)	Stinking Creek	OK310830-04-0030K	19	1	0.1772	0.0337	0.1429	0.02	0.0825	0.145	0.24	0.59
Nitrate (mg/L)	Sugar Creek	OK310830-05-0010D	20	1	0.3989	0.0347	0.1515	0.05	0.3	0.43	0.49	0.71
Nitrate (mg/L)	Suttle Creek	OK311310-01-0070H	21	1	0.2635	0.0931	0.4166	0.02	0.02	0.095	0.3575	1.72
Nitrate (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	3	0.4165	0.0846	0.3783	0.02	0.1675	0.29	0.6425	1.72
Nitrate (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	0.376	0.114	0.495	0.02	0.03	0.1	0.6	1.69
Nitrate (mg/L)	Timber Creek	OK311510-01-0090G	22	2	0.291	0.0538	0.2405	0.03	0.125	0.27	0.345	1.12
Nitrate (mg/L)	Trail Creek	OK311500-03-0070D	23	3	1.523	0.171	0.764	0.63	0.97	1.32	2.21	3.11
Nitrate (mg/L)	Turkey Creek	OK311600-02-0060J	21	1	1.744	0.357	1.596	0.02	0.523	0.97	3.533	4.9
Nitrate (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	0.056	0.0162	0.0724	0.02	0.02	0.02	0.05	0.26
Nitrate (mg/L)	Washington Creek	OK310810-01-0190G	20	2	0.045	0.00793	0.03365	0.02	0.02	0.03	0.0525	0.12
Nitrate (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	1	0.131	0.0314	0.1403	0.02	0.02	0.06	0.235	0.48
Nitrate (mg/L)	West Cache Creek	OK311310-02-0010M	21	1	0.221	0.11	0.493	0.02	0.02	0.02	0.178	2.1
Nitrate (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	0.0415	0.0073	0.03265	0.02	0.02	0.02	0.0675	0.12
Nitrate (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	0.245	0.0288	0.1287	0.02	0.1575	0.22	0.3625	0.5
Nitrate (mg/L)	Wildhorse Creek: near Tatum	OK310810-03-0010R	22	2	0.0695	0.0128	0.0571	0.02	0.02	0.04	0.1275	0.19
Nitrite (mg/L)	Barnitz Creek	OK310830-03-0200C	21	2	0.02105	0.00105	0.00459	0.02	0.02	0.02	0.02	0.04
Nitrite (mg/L)	Beaver Creek	OK310830-03-0190C	21	2	0.02211	0.00211	0.00918	0.02	0.02	0.02	0.02	0.06
Nitrite (mg/L)	Beaver Creek	OK311200-00-0030L	23	3	0.0355	0.0114	0.0509	0.02	0.02	0.02	0.02	0.23
Nitrite (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Boggy Creek	OK310830-03-0100C	21	2	0.03	0.00713	0.03109	0.02	0.02	0.02	0.02	0.14
Nitrite (mg/L)	Buffalo Creek	OK311510-02-0090D	22	3	0.02474	0.00474	0.02065	0.02	0.02	0.02	0.02	0.11
Nitrite (mg/L)	Caddo Creek	OK310800-03-0010F	21	2	0.02316	0.00316	0.01376	0.02	0.02	0.02	0.02	0.08
Nitrite (mg/L)	Cavalry Creek	OK310830-03-0070D	21	2	0.02316	0.00316	0.01376	0.02	0.02	0.02	0.02	0.08
Nitrite (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Cobb Creek	OK310830-06-0050M	21	2	0.0742	0.014	0.061	0.02	0.02	0.06	0.1	0.21
Nitrite (mg/L)	Cow Creek	OK311200-00-0060L	24	4	0.2055	0.0589	0.2632	0.02	0.02	0.065	0.335	0.83
Nitrite (mg/L)	Deep Red Creek	OK311310-03-0010D	21	1	0.0255	0.0055	0.0246	0.02	0.02	0.02	0.02	0.13
Nitrite (mg/L)	Delaware Creek	OK310830-01-0030G	21	3	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	2	0.020526	0.000526	0.002294	0.02	0.02	0.02	0.02	0.03
Nitrite (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	3	0.0483	0.0153	0.0651	0.02	0.02	0.02	0.06	0.28
Nitrite (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	2	0.03316	0.00671	0.02926	0.02	0.02	0.02	0.02	0.13
Nitrite (mg/L)	Elk Creek	OK311500-03-0010G	21	1	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Finn Creek	OK310810-02-0020D	22	3	0.03	0.00671	0.02925	0.02	0.02	0.02	0.02	0.14
Nitrite (mg/L)	Fish Creek	OK311800-00-0130G	22	4	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Fivemile Creek	OK310830-06-0080D	21	2	0.0795	0.0182	0.0793	0.02	0.02	0.05	0.13	0.26
Nitrite (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	0.0726	0.02	0.0872	0.02	0.02	0.02	0.16	0.26
Nitrite (mg/L)	Gypsum Creek	OK311600-01-0020F	22	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Haystack Creek	OK311800-00-0040D	21	3	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Ionine Creek	OK310820-01-0160L	20	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	2	0.02632	0.00632	0.02753	0.02	0.02	0.02	0.02	0.14
Nitrite (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	4	0.035	0.015	0.0636	0.02	0.02	0.02	0.02	0.29
Nitrite (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	5	0.02316	0.00316	0.01376	0.02	0.02	0.02	0.02	0.08
Nitrite (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	2	0.0574	0.0277	0.1206	0.02	0.02	0.02	0.02	0.51
Nitrite (mg/L)	Little Elk Creek	OK311500-03-0040D	22	4	0.0394	0.0134	0.0568	0.02	0.02	0.02	0.02	0.21
Nitrite (mg/L)	Medicine Creek	OK311300-04-0060H	21	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Mud Creek	OK311100-04-0010G	23	3	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	North Elm Creek	OK311800-00-0170G	21	4	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Oil Creek	OK310800-01-0240P	21	2	0.02316	0.0023	0.01003	0.02	0.02	0.02	0.02	0.06
Nitrite (mg/L)	Otter Creek	OK311500-01-0080F	21	1	0.024	0.004	0.01789	0.02	0.02	0.02	0.02	0.1
Nitrite (mg/L)	Pennington Creek	OK310800-01-0120G	21	3	0.02222	0.00222	0.00943	0.02	0.02	0.02	0.02	0.06
Nitrite (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	3	0.02737	0.00592	0.02579	0.02	0.02	0.02	0.02	0.13
Nitrite (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	3	0.02	0	0	0.02	0.02	0.02	0.02	0.02

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Nitrite (mg/L)	Red Creek	OK311100-01-0290D	22	2	0.028	0.00516	0.02308	0.02	0.02	0.02	0.02	0.1
Nitrite (mg/L)	Rush Creek	OK310810-05-0010D	21	2	0.02526	0.00526	0.02294	0.02	0.02	0.02	0.02	0.12
Nitrite (mg/L)	Salt Creek	OK310810-03-0080G	21	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Sandstone Creek	OK310840-02-0020C	21	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Sandy Creek	OK311600-01-0040G	21	1	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Spring Creek	OK310830-04-0010G	20	2	0.0372	0.0121	0.0515	0.02	0.02	0.02	0.02	0.21
Nitrite (mg/L)	Spring Creek	OK310840-02-0240D	23	4	0.0616	0.0161	0.0702	0.02	0.02	0.02	0.11	0.24
Nitrite (mg/L)	Station Creek	OK311800-00-0060G	22	4	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Stinking Creek	OK310830-02-0020D	20	2	0.03389	0.00994	0.04217	0.02	0.02	0.02	0.02	0.18
Nitrite (mg/L)	Stinking Creek	OK310830-04-0030K	19	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Sugar Creek	OK310830-05-0010D	20	2	0.0389	0.011	0.0466	0.02	0.02	0.02	0.02	0.19
Nitrite (mg/L)	Suttle Creek	OK311310-01-0070H	21	2	0.02526	0.00362	0.01577	0.02	0.02	0.02	0.02	0.07
Nitrite (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	4	0.02526	0.0037	0.01611	0.02	0.02	0.02	0.02	0.08
Nitrite (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	0.02421	0.00421	0.01835	0.02	0.02	0.02	0.02	0.1
Nitrite (mg/L)	Timber Creek	OK311510-01-0090G	22	3	0.0353	0.012	0.0521	0.02	0.02	0.02	0.02	0.24
Nitrite (mg/L)	Trail Creek	OK311500-03-0070D	23	5	0.0389	0.0104	0.0443	0.02	0.02	0.02	0.02	0.16
Nitrite (mg/L)	Turkey Creek	OK311600-02-0060J	21	1	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	Washington Creek	OK310810-01-0190G	20	3	0.02471	0.00471	0.0194	0.02	0.02	0.02	0.02	0.1
Nitrite (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	2	0.02	0	0	0.02	0.02	0.02	0.02	0.02
Nitrite (mg/L)	West Cache Creek	OK311310-02-0010M	21	2	0.03	0.00769	0.0335	0.02	0.02	0.02	0.02	0.16
Nitrite (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	1	0.02263	0.00263	0.01147	0.02	0.02	0.02	0.02	0.07
Nitrite (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	3	0.02526	0.00526	0.02294	0.02	0.02	0.02	0.02	0.12
Nitrite (mg/L)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	3	0.02368	0.00368	0.01606	0.02	0.02	0.02	0.02	0.09
pH (SU)	Barnitz Creek	OK310830-03-0200C	21	0	8.0257	0.0391	0.179	7.71	7.905	8.05	8.115	8.33
pH (SU)	Beaver Creek	OK310830-03-0190C	21	0	7.794	0.138	0.632	5.19	7.74	7.98	8.04	8.44
pH (SU)	Beaver Creek	OK311200-00-0030L	23	2	8.2955	0.093	0.426	6.78	8.135	8.31	8.585	8.8
pH (SU)	Big Sandy Creek	OK310800-01-0090G	21	0	7.95	0.0849	0.3892	7.31	7.58	8.03	8.26	8.61
pH (SU)	Boggy Creek	OK310830-03-0100C	21	0	8.051	0.0414	0.1895	7.62	7.97	8.06	8.195	8.36
pH (SU)	Buffalo Creek	OK311510-02-0090D	22	1	8.1995	0.0345	0.158	7.74	8.135	8.19	8.32	8.47
pH (SU)	Caddo Creek	OK310800-03-0010F	21	0	7.9962	0.0488	0.2237	7.54	7.855	7.97	8.11	8.45
pH (SU)	Cavalry Creek	OK310830-03-0070D	21	0	7.9433	0.0417	0.1911	7.68	7.755	7.91	8.14	8.27
pH (SU)	Chigley Sandy Creek	OK310800-02-0190D	21	1	7.7755	0.0567	0.2537	7.16	7.67	7.81	7.9175	8.23
pH (SU)	Cobb Creek	OK310830-06-0050M	21	0	8.04	0.0581	0.2662	7.39	7.9	8.08	8.185	8.47
pH (SU)	Cow Creek	OK311200-00-0060L	24	3	8.401	0.0761	0.3488	7.4	8.205	8.47	8.675	8.81
pH (SU)	Deep Red Creek	OK311310-03-0010D	21	0	7.9562	0.0508	0.2327	7.51	7.735	7.99	8.175	8.34
pH (SU)	Delaware Creek	OK310830-01-0030G	21	0	8.0467	0.0426	0.1951	7.52	7.975	8.09	8.19	8.3
pH (SU)	East Barnitz Creek	OK310830-03-0210C	21	0	8.0443	0.0405	0.1854	7.65	7.975	8.09	8.185	8.29
pH (SU)	East Cache Creek: Lower	OK311300-01-0020G	21	1	8.1115	0.0767	0.3429	7.44	7.925	8.1	8.2925	9.07
pH (SU)	East Cache Creek: Upper	OK311300-02-0010M	21	0	7.6267	0.0735	0.3366	7.16	7.35	7.63	7.855	8.31
pH (SU)	Elk Creek	OK311500-03-0010G	21	0	8.1786	0.0356	0.1632	7.72	8.085	8.17	8.305	8.45
pH (SU)	Finn Creek	OK310810-02-0020D	22	1	8.0271	0.0272	0.1247	7.79	7.925	8.04	8.155	8.26
pH (SU)	Fish Creek	OK311800-00-0130G	22	1	7.8829	0.0642	0.2942	6.99	7.74	7.98	8.095	8.22
pH (SU)	Fivemile Creek	OK310830-06-0080D	21	0	8.1043	0.0442	0.2024	7.67	7.955	8.16	8.205	8.47
pH (SU)	Fleetwood Creek	OK311100-01-0300D	21	1	7.788	0.0436	0.1952	7.51	7.6275	7.805	7.8625	8.31
pH (SU)	Gypsum Creek	OK311600-01-0020F	22	1	8.1086	0.0491	0.2248	7.63	8.04	8.09	8.18	8.79
pH (SU)	Haystack Creek	OK311800-00-0040D	21	0	7.8919	0.0341	0.1562	7.49	7.84	7.9	8.015	8.08
pH (SU)	Hickory Creek: HWY 775	OK311100-02-0010M	23	1	8.0973	0.0352	0.1651	7.74	7.975	8.09	8.245	8.38
pH (SU)	Ionine Creek	OK310820-01-0160L	20	0	7.9395	0.0391	0.1749	7.53	7.8575	7.985	8.045	8.19
pH (SU)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	7.8455	0.0854	0.3817	6.39	7.77	7.935	8.015	8.2
pH (SU)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	1	8.1848	0.0554	0.2541	7.58	7.995	8.29	8.385	8.48
pH (SU)	Little Beaver Creek	OK311210-00-0050D	24	3	8.211	0.0411	0.1885	7.58	8.17	8.22	8.32	8.46
pH (SU)	Little Deep Red Creek	OK311310-03-0040D	21	1	7.9685	0.0573	0.2563	7.18	7.8125	7.965	8.1375	8.38
pH (SU)	Little Elk Creek	OK311500-03-0040D	22	1	8.0176	0.0531	0.2432	7.65	7.825	7.98	8.215	8.56
pH (SU)	Medicine Creek	OK311300-04-0060H	21	0	8.0205	0.0391	0.1794	7.52	7.925	8.01	8.2	8.26
pH (SU)	Mill Creek: Lower	OK310800-01-0190G	21	0	8.0943	0.061	0.2797	7.51	7.905	8.16	8.365	8.45
pH (SU)	Mud Creek	OK311100-04-0010G	23	2	7.8362	0.0623	0.2856	7.39	7.585	7.83	8.035	8.4
pH (SU)	North Elm Creek	OK311800-00-0170G	21	2	7.9389	0.0538	0.2346	7.51	7.75	7.97	8.13	8.4
pH (SU)	Oil Creek	OK310800-01-0240P	21	0	7.9305	0.0424	0.1943	7.6	7.76	7.94	8.1	8.22
pH (SU)	Otter Creek	OK311500-01-0080F	21	0	7.8848	0.0611	0.2798	7.4	7.665	7.85	8.17	8.45
pH (SU)	Pennington Creek	OK310800-01-0120G	21	0	8.3129	0.0286	0.1312	8	8.215	8.33	8.39	8.54
pH (SU)	Quartermaster Creek	OK310840-01-0060L	22	1	8.0795	0.0533	0.2443	7.65	7.845	8.08	8.22	8.49
pH (SU)	Rainy Mountain Creek	OK310830-02-0060G	21	1	8.153	0.0389	0.1739	7.85	7.97	8.21	8.2875	8.4
pH (SU)	Red Creek	OK311100-01-0290D	22	1	7.7171	0.0663	0.3037	7.14	7.465	7.75	7.955	8.17
pH (SU)	Rush Creek	OK310810-05-0010D	21	1	8.1275	0.0292	0.1307	7.85	8.0425	8.125	8.19	8.47
pH (SU)	Salt Creek	OK310810-03-0080G	21	0	8.1424	0.0416	0.1907	7.5	8.085	8.16	8.285	8.35
pH (SU)	Sandstone Creek	OK310840-02-0020C	21	1	7.976	0.0492	0.2198	7.6	7.84	7.94	8.21	8.33
pH (SU)	Sandy Creek	OK311600-01-0040G	21	0	7.7133	0.0327	0.15	7.5	7.615	7.69	7.795	8.19
pH (SU)	Spring Creek	OK310830-04-0010G	20	0	8.0065	0.0362	0.162	7.59	7.9175	8.04	8.115	8.23
pH (SU)	Spring Creek	OK310840-02-0240D	23	2	8.0567	0.0786	0.3604	7.45	7.73	7.97	8.38	8.59
pH (SU)	Station Creek	OK311800-00-0060G	22	1	7.7276	0.0435	0.1993	7.38	7.57	7.74	7.92	8.08
pH (SU)	Stinking Creek	OK310830-02-0020D	20	0	7.9645	0.0496	0.2217	7.48	7.7425	8.02	8.135	8.22
pH (SU)	Stinking Creek	OK310830-04-0030K	19	0	7.92	0.032	0.1397	7.6	7.9	7.92	8.02	8.12
pH (SU)	Sugar Creek	OK310830-05-0010D	20	0	8.0075	0.0256	0.1144	7.76	7.9225	8.01	8.0775	8.18
pH (SU)	Suttle Creek	OK311310-01-0070H	21	0	7.9933	0.0432	0.1978	7.33	7.93	8	8.105	8.33
pH (SU)	Sweetwater Creek	OK311510-02-0120D	23	2	8.3019	0.0296	0.1357	8.01	8.22	8.31	8.37	8.54
pH (SU)	Tepee Creek	OK311500-01-0110D	20	0	7.9215	0.0365	0.1634	7.55	7.8125	7.935	8.01	8.29
pH (SU)	Timber Creek	OK311510-01-0090G	22	1	7.9943	0.0666	0.3052	7.48	7.735	8.04	8.26	8.37
pH (SU)	Trail Creek	OK311500-03-0070D	23	2	8.1176	0.0546	0.2502	7.63	7.94	8.1	8.275	8.57
pH (SU)	Turkey Creek	OK311600-02-0060J	21	0	7.7233	0.0453	0.2076	7.34	7.53	7.78	7.9	8

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
pH (SU)	Walnut Bayou	OK311100-03-0010G	22	1	8.0933	0.0426	0.1953	7.68	7.985	8.1	8.21	8.47
pH (SU)	Washington Creek	OK310810-01-0190G	20	2	7.8628	0.0398	0.1687	7.53	7.8	7.85	7.9475	8.19
pH (SU)	West Barnitz Creek	OK310830-03-0230C	21	0	7.9819	0.0479	0.2194	7.53	7.8	8	8.15	8.37
pH (SU)	West Cache Creek	OK311310-02-0010M	21	0	7.9514	0.0574	0.2632	7.31	7.8	7.98	8.17	8.35
pH (SU)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	1	8.2342	0.0204	0.089	8.12	8.14	8.25	8.3	8.41
pH (SU)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	1	7.8338	0.0723	0.3313	6.64	7.735	7.89	8.02	8.26
pH (SU)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	1	8.1743	0.0239	0.1094	7.9	8.11	8.16	8.27	8.35
Sulfate (mg/L)	Barnitz Creek	OK310830-03-0200C	21	1	2016	63.5	283.9	1456.2	1802.9	2026.7	2179.2	2526.9
Sulfate (mg/L)	Beaver Creek	OK310830-03-0190C	21	1	1708.1	48.9	218.5	1342.4	1559.6	1638.9	1963.5	2042.4
Sulfate (mg/L)	Beaver Creek	OK311200-00-0030L	23	3	74.16	6.52	29.14	10.3	57.4	83.15	96.43	110.4
Sulfate (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	1	21.71	2.56	11.44	8.9	13.5	18.85	25.88	55.8
Sulfate (mg/L)	Boggy Creek	OK310830-03-0100C	21	1	867.5	43.7	195.3	519.6	699	871.7	1010.8	1299.9
Sulfate (mg/L)	Buffalo Creek	OK311510-02-0090D	22	2	914.8	53.6	239.6	421.5	748.2	882.5	1079.6	1302.6
Sulfate (mg/L)	Caddo Creek	OK310800-03-0010F	21	1	43.53	3.2	14.31	16.9	31.3	44	54.65	67.9
Sulfate (mg/L)	Cavalry Creek	OK310830-03-0070D	21	1	1740.9	81.3	363.4	902.4	1449.5	1763.2	2038.9	2384.5
Sulfate (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	1	14.435	0.954	4.266	6.3	10.95	14	18.775	20.3
Sulfate (mg/L)	Cobb Creek	OK310830-06-0050M	21	1	299.3	22.3	99.8	90.2	232.4	276.1	391.1	497.9
Sulfate (mg/L)	Cow Creek	OK311200-00-0060L	24	4	93.06	8.06	36.04	10.9	75.93	93.85	113.23	160.3
Sulfate (mg/L)	Deep Red Creek	OK311310-03-0010D	21	1	173.7	30.3	135.6	25.6	67.5	114.4	256.8	481
Sulfate (mg/L)	Delaware Creek	OK310830-01-0030G	21	2	883.3	38.1	165.9	612	707.8	875.9	1012.9	1126.1
Sulfate (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	1	1922	63.3	283.1	1569.9	1669.9	1901.9	2176.7	2486.4
Sulfate (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	2	83.12	8.03	35.01	18	55.9	97.1	112.6	133.8
Sulfate (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	1	162.4	20.1	90.1	59.4	96.8	141.9	192	442
Sulfate (mg/L)	Elk Creek	OK311500-03-0010G	21	1	765	58.3	260.9	143.6	659.7	752	897	1302.6
Sulfate (mg/L)	Finn Creek	OK310810-02-0020D	22	2	33.71	1.48	6.64	16.6	32.48	35.95	37.55	40.8
Sulfate (mg/L)	Fish Creek	OK311800-00-0130G	22	2	2656	144	644	1414	2128	2649	3065	3885
Sulfate (mg/L)	Fivemile Creek	OK310830-06-0080D	21	1	83.4	20.5	91.8	29	42.9	62.5	72.3	453.1
Sulfate (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	39.9	4.98	21.71	10.3	24.8	37.2	55.4	88.4
Sulfate (mg/L)	Gypsum Creek	OK311600-01-0020F	22	2	2402	160	717	678	2070	2287	2761	3995
Sulfate (mg/L)	Haystack Creek	OK311800-00-0040D	21	1	1967	221	989	46	1339	2098	2600	3922
Sulfate (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	48.03	3.42	15.27	14.1	38.43	45.9	62.25	75.9
Sulfate (mg/L)	Ionine Creek	OK310820-01-0160L	20	1	1656.5	80.3	350	1004.8	1390.3	1668.2	1920	2229.4
Sulfate (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	34.46	4.53	20.26	10.3	24.93	30	41.55	106.4
Sulfate (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	441.6	70.1	313.4	39.4	203.2	346.7	672.8	1051.9
Sulfate (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	4	230.1	12.6	56.6	63.5	217.5	232.5	252.5	309.9
Sulfate (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	2	677.8	70.3	306.3	99.1	467.4	802.8	881.6	1194.7
Sulfate (mg/L)	Little Elk Creek	OK311500-03-0040D	22	2	358	35.1	157	116.3	220.8	362.4	505.5	636.6
Sulfate (mg/L)	Medicine Creek	OK311300-04-0060H	21	1	19.48	1.71	7.64	9.2	13.95	17.6	26.93	35.8
Sulfate (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	1	35.03	4.11	18.39	10.3	22.18	31.6	45.63	74.6
Sulfate (mg/L)	Mud Creek	OK311100-04-0010G	23	3	49.82	7.47	33.43	7.9	20.65	44.5	74.75	136.8
Sulfate (mg/L)	North Elm Creek	OK311800-00-0170G	21	3	2396	131	557	1541	1874	2344	2766	3535
Sulfate (mg/L)	Oil Creek	OK310800-01-0240P	21	1	28.38	6.88	30.77	5.4	11.2	20.95	31.33	136.7
Sulfate (mg/L)	Otter Creek	OK311500-01-0080F	21	1	264	112	500	14	107	176	204	2366
Sulfate (mg/L)	Pennington Creek	OK310800-01-0120G	21	1	8.71	0.557	2.49	5.4	6.65	8.4	10.325	14.4
Sulfate (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	2	2568	171	766	1143	2042	2416	3263	3982
Sulfate (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	2	701.1	85.2	371.4	128	464	609.4	945.3	1684
Sulfate (mg/L)	Red Creek	OK311100-01-0290D	22	2	14.26	1.93	8.63	3.1	9.52	12.5	17.98	39.1
Sulfate (mg/L)	Rush Creek	OK310810-05-0010D	21	1	162.8	11	49.3	60	131.5	171.7	199.3	232.5
Sulfate (mg/L)	Salt Creek	OK310810-03-0080G	21	1	83.92	7.68	34.34	20.7	42.65	96.35	111.53	122.7
Sulfate (mg/L)	Sandstone Creek	OK310840-02-0020C	21	1	1327	103	460	672	1040	1230	1718	2190
Sulfate (mg/L)	Sandy Creek	OK311600-01-0040G	21	1	2281	158	707	648	2084	2223	2598	3773
Sulfate (mg/L)	Spring Creek	OK310830-04-0010G	20	1	1224	104	455	0	957	1296	1580	1982
Sulfate (mg/L)	Spring Creek	OK310840-02-0240D	23	3	60.5	12.4	55.4	17.3	22.2	34.9	89.9	214.3
Sulfate (mg/L)	Station Creek	OK311800-00-0060G	22	2	2249.5	80.1	358.3	1388.4	1997.6	2237.4	2471.3	2849.5
Sulfate (mg/L)	Stinking Creek	OK310830-02-0020D	20	1	321.7	27.1	118	70.4	251.8	328.3	381.6	531.5
Sulfate (mg/L)	Stinking Creek	OK310830-04-0030K	19	1	1455.5	65.6	278.2	940.6	1235.4	1516.7	1622.8	1972.6
Sulfate (mg/L)	Sugar Creek	OK310830-05-0010D	20	1	1213	108	469	662	877	987	1655	2297
Sulfate (mg/L)	Suttle Creek	OK311310-01-0070H	21	1	576.5	63.3	283.1	54.5	358	651	757	1115.8
Sulfate (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	3	404.1	45.1	201.5	148.2	229.5	390	511	828.7
Sulfate (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	879.9	82.6	360	98.1	805.5	853.4	1183.2	1568.4
Sulfate (mg/L)	Timber Creek	OK311510-01-0090G	22	2	365.8	68	303.9	74.3	137.8	190.9	656.1	1105.6
Sulfate (mg/L)	Trail Creek	OK311500-03-0070D	23	3	810	70.8	316.7	277.7	599.4	781.6	1018.8	1429.8
Sulfate (mg/L)	Turkey Creek	OK311600-02-0060J	21	1	2075	167	749	456	1707	2129	2532	3489
Sulfate (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	65.38	5.47	24.45	30.2	45.75	57.4	78.05	113.5
Sulfate (mg/L)	Washington Creek	OK310810-01-0190G	20	2	33.43	3.04	12.9	12.3	25.08	32.15	42.38	58.2
Sulfate (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	1	2024.5	74.9	335.2	1592.4	1753.2	2022.7	2189.7	2965.8
Sulfate (mg/L)	West Cache Creek	OK311310-02-0010M	21	1	15.9	1.25	5.59	9.4	10.85	14.7	20.63	28.8
Sulfate (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	94.25	8.57	38.34	28.3	61.03	104.85	127.45	161.2
Sulfate (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	67.5	11.4	51	18.9	21.7	30.6	119.8	147.7
Sulfate (mg/L)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	2	114.32	8.84	39.55	13.9	93.15	117.5	133.7	181.1
TDS (mg/L)	Barnitz Creek	OK310830-03-0200C	21	1	2715.1	51.4	229.7	2148	2530.5	2781	2908.3	3020
TDS (mg/L)	Beaver Creek	OK310830-03-0190C	21	1	2436	44.6	199.3	1914	2327.5	2448	2572.3	2821
TDS (mg/L)	Beaver Creek	OK311200-00-0030L	23	3	435.2	32.9	147	252	328.8	368.5	577.3	732
TDS (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	1	217.45	9.17	41.01	146	186.75	216	235.5	337
TDS (mg/L)	Boggy Creek	OK310830-03-0100C	21	1	1390.1	67.6	302.3	808	1146.3	1466	1659.8	1843
TDS (mg/L)	Buffalo Creek	OK311510-02-0090D	22	2	2039	128	573	686	1662	1960	2562	2971
TDS (mg/L)	Caddo Creek	OK310800-03-0010F	21	1	335.9	12.3	54.8	243	285.5	344.5	377.5	420
TDS (mg/L)	Cavalry Creek	OK310830-03-0070D	21	1	2543.6	86	384.6	1644	2406.8	2512.5	2736.3	3320
TDS (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	1	386.7	21.2	94.7	199	325.5	374	468	535
TDS (mg/L)	Cobb Creek	OK310830-06-0050M	21	1	604.5	21.6	96.5	368	559	597.5	648.5	858

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
TDS (mg/L)	Cow Creek	OK311200-00-0060L	24	4	574.8	34.6	154.7	243	435.8	621	703.8	771
TDS (mg/L)	Deep Red Creek	OK311310-03-0010D	21	2	1279	177	771	350	600	1074	1983	2689
TDS (mg/L)	Delaware Creek	OK310830-01-0030G	21	2	1673.5	30.7	133.9	1315	1595	1677	1794	1875
TDS (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	1	2636.9	52.2	233.5	2090	2528	2663	2814.5	2967
TDS (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	2	426.8	28.2	122.8	238	303	472	521	658
TDS (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	1	470.2	24.9	111.5	295	360.8	498	558.5	638
TDS (mg/L)	Elk Creek	OK311500-03-0010G	21	2	1392.8	73.6	320.7	438	1176	1434	1685	1734
TDS (mg/L)	Finn Creek	OK310810-02-0020D	22	2	469.8	20.1	89.7	274	429.5	497.5	536.8	557
TDS (mg/L)	Fish Creek	OK311800-00-0130G	22	2	9497	1083	4843	3453	5135	8545	13345	19322
TDS (mg/L)	Fivemile Creek	OK310830-06-0080D	21	1	376.8	15	66.9	308	348.3	363	382.5	642
TDS (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	526.4	38	165.8	187	398	557	653	794
TDS (mg/L)	Gypsum Creek	OK311600-01-0020F	22	3	9826	217	946	7615	9231	9987	10309	11149
TDS (mg/L)	Haystack Creek	OK311800-00-0040D	21	1	4345	438	1960	1287	2620	4492	6031	7365
TDS (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	382	15.4	68.9	240	328.5	391.5	431.8	492
TDS (mg/L)	Ionine Creek	OK310820-01-0160L	20	1	2487.7	69.8	304.2	1720	2334	2572	2622	2858
TDS (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	377	25	111.9	162	282.8	413	472.8	521
TDS (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	933.6	94.4	422.3	332	540.5	1026	1107.8	1810
TDS (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	4	652.4	24.7	110.6	329	621.3	672.5	723.3	764
TDS (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	3	3468	379	1609	605	2197	3991	4545	5767
TDS (mg/L)	Little Elk Creek	OK311500-03-0040D	22	2	937	71.5	319.6	401	697.8	862.5	1276.5	1413
TDS (mg/L)	Medicine Creek	OK311300-04-0060H	21	2	213.2	12.4	54.1	107	178	207	250	308
TDS (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	1	258.2	7.52	33.61	203	229.5	257.5	293.5	308
TDS (mg/L)	Mud Creek	OK311100-04-0010G	23	3	556.6	49.1	219.4	271	366	515.5	724	1117
TDS (mg/L)	North Elm Creek	OK311800-00-0170G	21	3	9442	920	3902	2465	6706	9195	11912	17670
TDS (mg/L)	Oil Creek	OK310800-01-0240P	21	1	293	15.1	67.7	150	236.3	313	332.3	413
TDS (mg/L)	Otter Creek	OK311500-01-0080F	21	2	796.6	80.2	349.8	207	423	744	1093	1425
TDS (mg/L)	Pennington Creek	OK310800-01-0120G	21	1	241.15	4.99	22.33	201	223.25	243	253.75	280
TDS (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	2	3271	119	532	1947	3089	3308	3634	3900
TDS (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	2	1521	164	713	423	990	1480	1968	3034
TDS (mg/L)	Red Creek	OK311100-01-0290D	22	2	415.7	44.1	197.2	226	284.8	362	524.5	1066
TDS (mg/L)	Rush Creek	OK310810-05-0010D	21	1	732	44.1	197.1	344	555.5	720.5	888	1075
TDS (mg/L)	Salt Creek	OK310810-03-0080G	21	1	702.3	46.1	206.1	379	542.5	729	772	1258
TDS (mg/L)	Sandstone Creek	OK310840-02-0020C	21	1	2040	119	532	1272	1633	1884	2486	3035
TDS (mg/L)	Sandy Creek	OK311600-01-0040G	21	2	9987	470	2048	3775	9471	10620	11015	12228
TDS (mg/L)	Spring Creek	OK310830-04-0010G	20	1	1898	130	566	10	1713	1872	2291	2623
TDS (mg/L)	Spring Creek	OK310840-02-0240D	23	3	390.1	4.5	20.14	355	380	391	406.5	421
TDS (mg/L)	Station Creek	OK311800-00-0060G	22	2	4047	160	717	1693	3700	4244	4580	4718
TDS (mg/L)	Stinking Creek	OK310830-02-0020D	20	1	930.2	66.3	289	304	677	959	1194	1355
TDS (mg/L)	Stinking Creek	OK310830-04-0030K	19	1	2236.1	71.8	304.5	1660	2092.8	2230.5	2438.3	2754
TDS (mg/L)	Sugar Creek	OK310830-05-0010D	20	1	1962	139	608	1083	1377	1794	2519	3102
TDS (mg/L)	Suttle Creek	OK311310-01-0070H	21	2	2502	268	1170	347	1273	2943	3179	3803
TDS (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	3	940.3	77	344.4	289	686.5	855	1203.8	1612
TDS (mg/L)	Tepee Creek	OK311500-01-0110D	20	2	2398	240	1019	421	1644	2511	2937	4367
TDS (mg/L)	Timber Creek	OK311510-01-0090G	22	2	877.2	83.1	371.5	504	594	689	1167	1700
TDS (mg/L)	Trail Creek	OK311500-03-0070D	23	3	1461	108	482	764	1050	1418	1845	2261
TDS (mg/L)	Turkey Creek	OK311600-02-0060J	21	2	4395	316	1375	983	4045	4795	5155	6425
TDS (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	483.2	40.8	182.6	10	383.3	447	610.3	852
TDS (mg/L)	Washington Creek	OK310810-01-0190G	20	2	391	29.6	125.6	207	275	419.5	504	570
TDS (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	1	2762.9	51.5	230.1	2268	2575.3	2750	2959	3143
TDS (mg/L)	West Cache Creek	OK311310-02-0010M	21	2	249.4	20.8	90.6	140	199	234	248	513
TDS (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	604.1	39.7	177.5	305	448.8	615	766	828
TDS (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	403.15	9.72	43.46	321	366.25	410.5	438.75	461
TDS (mg/L)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	2	715.5	51.9	232.2	291	486.8	767	889.3	1061
Temperature (°C)	Barnitz Creek	OK310830-03-0200C	21	0	16.02	2.01	9.23	0.1	6.8	16.6	24.8	27.7
Temperature (°C)	Beaver Creek	OK310830-03-0190C	21	0	15.38	1.85	8.5	0.5	6.9	16.3	23.45	25.8
Temperature (°C)	Beaver Creek	OK311200-00-0030L	23	2	18.78	2.15	9.85	2.4	9.55	19.9	28.15	31.7
Temperature (°C)	Big Sandy Creek	OK310800-01-0090G	21	0	19.41	1.83	8.37	4.5	11.7	20.4	25.55	34.3
Temperature (°C)	Boggy Creek	OK310830-03-0100C	21	0	16.14	1.88	8.63	0.8	8.3	16.6	23.9	28
Temperature (°C)	Buffalo Creek	OK311510-02-0090D	22	3	14.29	1.76	7.66	0.8	6.2	14.9	20.5	27.8
Temperature (°C)	Caddo Creek	OK310800-03-0010F	21	0	17.4	1.86	8.51	2.1	9.65	18.9	24.85	29.6
Temperature (°C)	Cavalry Creek	OK310830-03-0070D	21	0	15.61	1.88	8.6	0.2	7.65	15.9	23.2	28
Temperature (°C)	Chigley Sandy Creek	OK310800-02-0190D	21	0	17.35	1.71	7.82	3.5	9.7	19.8	24.4	26.8
Temperature (°C)	Cobb Creek	OK310830-06-0050M	21	0	16	1.67	7.67	3.2	8.95	15.7	22.55	28.3
Temperature (°C)	Cow Creek	OK311200-00-0060L	24	3	18.08	2.04	9.34	2.2	9.05	18.9	26.15	30.6
Temperature (°C)	Deep Red Creek	OK311310-03-0010D	21	1	17.09	1.9	8.51	4	9.45	17.9	24.78	28.5
Temperature (°C)	Delaware Creek	OK310830-01-0030G	21	0	19.51	1.75	8.01	4	13.3	22.3	25.95	29.3
Temperature (°C)	East Barnitz Creek	OK310830-03-0210C	21	0	16.16	2	9.18	0.3	6.65	16.7	24.55	27.4
Temperature (°C)	East Cache Creek: Lower	OK311300-01-0020G	21	1	18.33	2.1	9.38	2	10	18.9	26.7	29.7
Temperature (°C)	East Cache Creek: Upper	OK311300-02-0010M	21	0	16.89	1.86	8.53	3.8	8.55	18.5	24.9	28.9
Temperature (°C)	Elk Creek	OK311500-03-0010G	21	0	16.28	1.96	9	0.5	6.9	17.9	25	27.7
Temperature (°C)	Finn Creek	OK310810-02-0020D	22	0	15.23	1.89	8.88	0.4	4.95	17.95	23.9	26.7
Temperature (°C)	Fish Creek	OK311800-00-0130G	22	3	14.85	2.1	9.18	0.1	6.2	15.1	22.6	30.8
Temperature (°C)	Fivemile Creek	OK310830-06-0080D	21	0	15.81	1.71	7.85	2.2	8.7	16	22.3	29.2
Temperature (°C)	Fleetwood Creek	OK311100-01-0300D	21	1	16.11	1.97	8.83	1.6	6.93	16.75	24.6	28.4
Temperature (°C)	Gypsum Creek	OK311600-01-0020F	22	0	19.06	1.9	8.93	3.4	10.78	20.1	25.45	33.4
Temperature (°C)	Haystack Creek	OK311800-00-0040D	21	2	17.9	2.16	9.43	2.2	7.7	21.6	25.5	29.9
Temperature (°C)	Hickory Creek: HWY 775	OK311100-02-0010M	23	1	20.15	2.23	10.47	1.1	11.03	20.95	29.45	34.9
Temperature (°C)	Ionine Creek	OK310820-01-0160L	20	0	18.47	1.89	8.45	2.8	11.03	19.75	25.93	28.8
Temperature (°C)	Kickapoo Sandy Creek	OK310810-01-0050G	21	0	16.68	1.73	7.93	3.3	7.3	19.2	23.85	26.7
Temperature (°C)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	3	17.88	2.15	9.39	2.8	9.6	19.8	25.9	34.3

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Temperature (°C)	Little Beaver Creek	OK311210-00-0050D	24	3	17.03	2.03	9.32	0.8	7.35	18	25.4	28.7
Temperature (°C)	Little Deep Red Creek	OK311310-03-0040D	21	1	18.4	1.95	8.74	3.4	11.88	19.55	25.63	30.7
Temperature (°C)	Little Elk Creek	OK311500-03-0040D	22	3	16.79	2.08	9.08	1.4	8.4	18.6	23.2	30.4
Temperature (°C)	Medicine Creek	OK311300-04-0060H	21	0	16.26	1.83	8.39	2.1	8.95	17.6	24.05	27.2
Temperature (°C)	Mill Creek: Lower	OK310800-01-0190G	21	0	18.01	1.86	8.54	3.3	10.3	18.4	25.5	31.4
Temperature (°C)	Mud Creek	OK311100-04-0010G	23	2	17.22	1.99	9.1	1.4	8.15	18.3	25.9	28.6
Temperature (°C)	North Elm Creek	OK311800-00-0170G	21	4	14.25	2.36	9.71	0.1	4.8	15	22.9	28.1
Temperature (°C)	Oil Creek	OK310800-01-0240P	21	0	18.01	1.64	7.52	4.4	11.75	18.5	24.7	29.3
Temperature (°C)	Otter Creek	OK311500-01-0080F	21	0	17.89	1.91	8.73	4.1	10.05	19.1	26.4	29.6
Temperature (°C)	Pennington Creek	OK310800-01-0120G	21	0	19.08	1.74	7.96	4.3	11.75	20.5	25.85	30.4
Temperature (°C)	Quartermaster Creek	OK310840-01-0060L	22	2	17.53	2.12	9.47	4.2	6.78	19.05	25.25	34.1
Temperature (°C)	Rainy Mountain Creek	OK310830-02-0060G	21	2	19.97	1.96	8.53	1.6	13.3	21.8	28.3	30.9
Temperature (°C)	Red Creek	OK311100-01-0290D	22	1	17.34	2.02	9.25	1.1	8	18.9	25.85	29.2
Temperature (°C)	Rush Creek	OK310810-05-0010D	21	0	16.96	2.07	9.48	0.3	7.45	19.3	25.35	29.2
Temperature (°C)	Salt Creek	OK310810-03-0080G	21	0	15.3	1.84	8.44	0.1	7.9	17.2	23.75	25.6
Temperature (°C)	Sandstone Creek	OK310840-02-0020C	21	2	15.56	1.93	8.41	2.9	7.3	17	21.9	29.5
Temperature (°C)	Sandy Creek	OK311600-01-0040G	21	0	15.99	1.79	8.19	1.2	7.55	17.2	24.35	25.5
Temperature (°C)	Spring Creek	OK310830-04-0010G	20	1	16.64	1.92	8.36	2.1	8.7	16.4	24.4	26.9
Temperature (°C)	Spring Creek	OK310840-02-0240D	23	4	16.92	1.93	8.4	5.2	9.5	18	23.5	32.6
Temperature (°C)	Station Creek	OK311800-00-0060G	22	3	16.14	1.9	8.29	3.8	8.1	15.9	22.1	29.5
Temperature (°C)	Stinking Creek	OK310830-02-0020D	20	0	17.77	1.92	8.57	1.3	10.08	20.1	23.95	28.5
Temperature (°C)	Stinking Creek	OK310830-04-0030K	19	0	19.44	1.79	7.8	2.1	13.5	21.4	25.3	28.8
Temperature (°C)	Sugar Creek	OK310830-05-0010D	20	0	15.37	1.73	7.72	0.9	8.3	15.95	22.75	25.8
Temperature (°C)	Suttle Creek	OK311310-01-0070H	21	0	17.59	1.82	8.33	2.8	9.45	19	24.85	29.2
Temperature (°C)	Sweetwater Creek	OK311510-02-0120D	23	3	14.53	1.97	8.82	-0.2	6.93	15.55	20.85	28.9
Temperature (°C)	Tepee Creek	OK311500-01-0110D	20	0	15.91	1.93	8.62	0.7	6.48	17.65	23.8	26.5
Temperature (°C)	Timber Creek	OK311510-01-0090G	22	2	13.06	1.77	7.93	0.2	6.3	14.4	19.53	25.5
Temperature (°C)	Trail Creek	OK311500-03-0070D	23	4	18.06	2.16	9.43	1.9	9.3	20.5	24.8	32.7
Temperature (°C)	Turkey Creek	OK311600-02-0060J	21	0	15.82	1.9	8.72	-0.1	6.95	17.9	23.35	26.8
Temperature (°C)	Walnut Bayou	OK311100-03-0010G	22	1	19.23	2.27	10.42	1.7	9.45	20.3	28.15	33.4
Temperature (°C)	Washington Creek	OK310810-01-0190G	20	1	14.41	2.1	9.14	0.2	4.2	17.5	22.7	25.1
Temperature (°C)	West Barnitz Creek	OK310830-03-0230C	21	0	15.75	1.98	9.05	0.1	6.5	16.1	24.1	26.6
Temperature (°C)	West Cache Creek	OK311310-02-0010M	21	0	17.77	1.82	8.35	4.4	10.5	18.7	25.9	29.3
Temperature (°C)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	18.29	2.09	9.34	2.6	8.58	20.65	26.2	31.3
Temperature (°C)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	1	16.07	1.81	8.29	2.2	7.35	16.4	24.2	25.6
Temperature (°C)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	1	16.84	1.95	8.96	0.3	9.2	19	25.65	28
TKN (mg/L)	Barnitz Creek	OK310830-03-0200C	21	1	0.734	0.0844	0.3773	0.11	0.5125	0.805	0.985	1.35
TKN (mg/L)	Beaver Creek	OK310830-03-0190C	21	1	0.7315	0.0729	0.326	0.11	0.44	0.72	0.9675	1.38
TKN (mg/L)	Beaver Creek	OK311200-00-0030L	23	3	0.967	0.146	0.654	0.11	0.558	0.92	1.233	3.13
TKN (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	1	0.282	0.0316	0.1411	0.11	0.1825	0.295	0.345	0.65
TKN (mg/L)	Boggy Creek	OK310830-03-0100C	21	1	0.689	0.14	0.628	0.011	0.155	0.52	1.008	2.1
TKN (mg/L)	Buffalo Creek	OK311510-02-0090D	22	2	0.736	0.208	0.931	0.26	0.353	0.515	0.695	4.59
TKN (mg/L)	Caddo Creek	OK310800-03-0010F	21	1	0.701	0.129	0.576	0.11	0.295	0.605	0.923	2.71
TKN (mg/L)	Cavalry Creek	OK310830-03-0070D	21	1	0.982	0.148	0.662	0.11	0.455	0.855	1.435	2.58
TKN (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	1	0.2495	0.0329	0.1472	0.11	0.11	0.23	0.36	0.6
TKN (mg/L)	Cobb Creek	OK310830-06-0050M	21	1	0.565	0.12	0.538	0.11	0.315	0.44	0.625	2.69
TKN (mg/L)	Cow Creek	OK311200-00-0060L	24	4	2.86	1.78	7.98	0.11	0.65	1.05	1.83	36.66
TKN (mg/L)	Deep Red Creek	OK311310-03-0010D	21	1	0.954	0.105	0.47	0.11	0.55	1.03	1.26	1.79
TKN (mg/L)	Delaware Creek	OK310830-01-0030G	21	2	0.7658	0.0617	0.269	0.16	0.63	0.75	0.96	1.23
TKN (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	1	0.7405	0.0858	0.3835	0.11	0.375	0.775	1.11	1.34
TKN (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	2	1.057	0.179	0.78	0.12	0.67	0.99	1.09	3.63
TKN (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	1	0.48	0.0454	0.2029	0.11	0.3	0.49	0.6275	0.85
TKN (mg/L)	Elk Creek	OK311500-03-0010G	21	1	0.911	0.0815	0.3646	0.4	0.54	0.9	1.225	1.47
TKN (mg/L)	Finn Creek	OK310810-02-0020D	22	2	0.559	0.0577	0.2582	0.11	0.385	0.52	0.7625	1.16
TKN (mg/L)	Fish Creek	OK311800-00-0130G	22	2	0.755	0.11	0.494	0.11	0.373	0.745	1.15	1.62
TKN (mg/L)	Fivemile Creek	OK310830-06-0080D	21	1	0.585	0.175	0.781	0.11	0.253	0.415	0.628	3.8
TKN (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	1.193	0.227	0.991	0.11	0.6	0.87	1.84	3.84
TKN (mg/L)	Gypsum Creek	OK311600-01-0020F	22	2	0.754	0.103	0.46	0.11	0.288	0.735	1.178	1.51
TKN (mg/L)	Haystack Creek	OK311800-00-0040D	21	1	0.994	0.178	0.798	0.11	0.475	0.855	1.125	3.89
TKN (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	0.3565	0.0346	0.1547	0.11	0.215	0.38	0.4375	0.73
TKN (mg/L)	Ionine Creek	OK310820-01-0160L	20	1	0.82	0.0833	0.3632	0.39	0.55	0.78	0.87	1.89
TKN (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	0.5465	0.0729	0.3261	0.11	0.25	0.535	0.8225	1.06
TKN (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	0.788	0.103	0.463	0.11	0.443	0.78	1.075	2
TKN (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	4	0.57	0.155	0.692	0.11	0.218	0.415	0.58	3.32
TKN (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	2	1.146	0.117	0.512	0.44	0.78	1.07	1.39	2.24
TKN (mg/L)	Little Elk Creek	OK311500-03-0040D	22	2	0.7555	0.0844	0.3777	0.25	0.515	0.645	0.9175	1.84
TKN (mg/L)	Medicine Creek	OK311300-04-0060H	21	1	0.267	0.0373	0.1668	0.11	0.1425	0.2	0.4025	0.68
TKN (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	1	0.334	0.044	0.1967	0.11	0.125	0.305	0.505	0.71
TKN (mg/L)	Mud Creek	OK311100-04-0010G	23	3	1.0195	0.0841	0.3761	0.42	0.745	1.005	1.2825	2.04
TKN (mg/L)	North Elm Creek	OK311800-00-0170G	21	3	0.849	0.157	0.668	0.11	0.33	0.62	1.32	2.17
TKN (mg/L)	Oil Creek	OK310800-01-0240P	21	1	0.374	0.0503	0.225	0.11	0.2025	0.335	0.525	1.02
TKN (mg/L)	Otter Creek	OK311500-01-0080F	21	1	0.9665	0.0852	0.3812	0.15	0.6525	0.935	1.255	1.83
TKN (mg/L)	Pennington Creek	OK310800-01-0120G	21	1	0.189	0.0192	0.086	0.11	0.11	0.15	0.25	0.38
TKN (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	2	1.031	0.123	0.548	0.26	0.59	0.935	1.44	2.24
TKN (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	2	0.842	0.108	0.471	0.11	0.54	0.78	1.14	1.93
TKN (mg/L)	Red Creek	OK311100-01-0290D	22	2	1.24	0.176	0.785	0.15	0.748	1.115	1.603	3.81
TKN (mg/L)	Rush Creek	OK310810-05-0010D	21	1	0.538	0.0741	0.3316	0.05	0.2725	0.58	0.7025	1.39
TKN (mg/L)	Salt Creek	OK310810-03-0080G	21	1	0.72	0.281	1.258	0.11	0.3	0.47	0.545	6
TKN (mg/L)	Sandstone Creek	OK310840-02-0020C	21	1	0.4755	0.0546	0.2444	0.11	0.24	0.48	0.65	0.9
TKN (mg/L)	Sandy Creek	OK311600-01-0040G	21	1	0.873	0.145	0.648	0.11	0.135	0.99	1.3	2.05

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
TKN (mg/L)	Spring Creek	OK310830-04-0010G	20	1	0.771	0.112	0.487	0.11	0.55	0.68	0.83	2.57
TKN (mg/L)	Spring Creek	OK310840-02-0240D	23	3	0.6395	0.0993	0.3097	0.11	0.425	0.65	0.8375	1.23
TKN (mg/L)	Station Creek	OK311800-00-0060G	22	2	0.8555	0.0986	0.4409	0.13	0.555	0.66	1.3275	1.79
TKN (mg/L)	Stinking Creek	OK310830-02-0020D	20	1	0.7216	0.0551	0.2403	0.45	0.51	0.7	0.92	1.27
TKN (mg/L)	Stinking Creek	OK310830-04-0030K	19	1	0.6194	0.0474	0.201	0.25	0.4775	0.61	0.7625	0.96
TKN (mg/L)	Sugar Creek	OK310830-05-0010D	20	1	0.9489	0.0982	0.4278	0.14	0.68	0.92	1.21	1.93
TKN (mg/L)	Suttle Creek	OK311310-01-0070H	21	1	1.469	0.308	1.379	0.11	0.7	1.19	1.555	6.35
TKN (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	3	0.7083	0.0999	0.4467	0.13	0.39	0.605	1.0375	1.99
TKN (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	0.775	0.111	0.482	0.16	0.48	0.55	0.96	2.15
TKN (mg/L)	Timber Creek	OK311510-01-0090G	22	2	0.4965	0.0555	0.2482	0.2	0.3225	0.445	0.605	1.24
TKN (mg/L)	Trail Creek	OK311500-03-0070D	23	3	0.6595	0.0626	0.2801	0.11	0.48	0.67	0.775	1.4
TKN (mg/L)	Turkey Creek	OK311600-02-0060J	21	1	0.8045	0.092	0.4113	0.11	0.4425	0.875	1.135	1.5
TKN (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	0.5495	0.0638	0.2852	0.11	0.3825	0.495	0.6475	1.3
TKN (mg/L)	Washington Creek	OK310810-01-0190G	20	2	0.633	0.227	0.962	0.11	0.235	0.365	0.585	4.37
TKN (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	1	0.7865	0.0925	0.4138	0.11	0.515	0.79	1.105	1.83
TKN (mg/L)	West Cache Creek	OK311310-02-0010M	21	1	0.596	0.1	0.448	0.11	0.303	0.485	0.813	1.82
TKN (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	0.4565	0.0533	0.2383	0.11	0.29	0.365	0.6175	1.09
TKN (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	0.5355	0.0491	0.2194	0.14	0.4025	0.485	0.635	1.04
TKN (mg/L)	Wildhorse Creek: near Tatum	OK310810-03-0010R	22	2	0.699	0.184	0.823	0.11	0.368	0.465	0.833	3.97
Total OrthoPhos (mg/L)	Barnitz Creek	OK310830-03-0200C	21	1	0.035	0.00588	0.0263	0.005	0.01525	0.0245	0.05825	0.095
Total OrthoPhos (mg/L)	Beaver Creek	OK310830-03-0190C	21	1	0.0301	0.0036	0.0161	0.006	0.014	0.033	0.045	0.055
Total OrthoPhos (mg/L)	Beaver Creek	OK311200-00-0030L	23	3	0.3996	0.0827	0.3697	0.017	0.1303	0.304	0.4683	1.258
Total OrthoPhos (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	1	0.03145	0.00815	0.03647	0.005	0.01525	0.0195	0.037	0.171
Total OrthoPhos (mg/L)	Boggy Creek	OK310830-03-0100C	21	1	0.0407	0.0143	0.0639	0.005	0.008	0.0145	0.0408	0.281
Total OrthoPhos (mg/L)	Buffalo Creek	OK311510-02-0090D	22	2	0.0574	0.028	0.1253	0.005	0.0153	0.025	0.0485	0.584
Total OrthoPhos (mg/L)	Caddo Creek	OK310800-03-0010F	21	1	0.399	0.107	0.479	0.018	0.072	0.174	0.502	1.499
Total OrthoPhos (mg/L)	Cavalry Creek	OK310830-03-0070D	21	1	0.0501	0.0148	0.0661	0.005	0.012	0.0185	0.0728	0.261
Total OrthoPhos (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	1	0.02695	0.00277	0.01237	0.005	0.0215	0.025	0.0345	0.052
Total OrthoPhos (mg/L)	Cobb Creek	OK310830-06-0050M	21	1	0.0927	0.0224	0.1002	0.028	0.0398	0.069	0.1118	0.497
Total OrthoPhos (mg/L)	Cow Creek	OK311200-00-0060L	24	4	1.022	0.179	0.801	0.174	0.381	0.815	1.535	3.242
Total OrthoPhos (mg/L)	Deep Red Creek	OK311310-03-0010D	21	1	0.1611	0.0366	0.1637	0.012	0.037	0.111	0.2223	0.551
Total OrthoPhos (mg/L)	Delaware Creek	OK310830-01-0030G	22	2	0.05116	0.00648	0.02826	0.016	0.028	0.047	0.067	0.112
Total OrthoPhos (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	1	0.04515	0.00692	0.03093	0.006	0.023	0.035	0.06775	0.104
Total OrthoPhos (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	2	0.5192	0.0716	0.312	0.059	0.357	0.365	0.757	1.123
Total OrthoPhos (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	1	0.0298	0.0103	0.0462	0.005	0.006	0.017	0.0268	0.205
Total OrthoPhos (mg/L)	Elk Creek	OK311500-03-0010G	21	1	0.0539	0.0168	0.0752	0.005	0.0193	0.032	0.0503	0.339
Total OrthoPhos (mg/L)	Finn Creek	OK310810-02-0020D	22	2	0.097	0.0136	0.0608	0.022	0.051	0.088	0.129	0.291
Total OrthoPhos (mg/L)	Fish Creek	OK311800-00-0130G	22	2	0.0173	0.00375	0.01677	0.005	0.0055	0.0115	0.02475	0.075
Total OrthoPhos (mg/L)	Fivemile Creek	OK310830-06-0080D	21	1	0.1	0.0314	0.1406	0.017	0.0328	0.0645	0.1073	0.674
Total OrthoPhos (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	0.154	0.0393	0.1713	0.022	0.042	0.08	0.171	0.599
Total OrthoPhos (mg/L)	Gypsum Creek	OK311600-01-0020F	22	2	0.01525	0.00321	0.01434	0.005	0.005	0.0095	0.0185	0.059
Total OrthoPhos (mg/L)	Haystack Creek	OK311800-00-0040D	21	1	0.1032	0.0789	0.3527	0.005	0.005	0.0155	0.028	1.597
Total OrthoPhos (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	0.0154	0.00334	0.01492	0.005	0.0055	0.009	0.01975	0.067
Total OrthoPhos (mg/L)	Ionine Creek	OK310820-01-0160L	20	1	0.041	0.0187	0.0815	0.005	0.013	0.02	0.03	0.373
Total OrthoPhos (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	0.06595	0.00813	0.03635	0.017	0.04425	0.059	0.08425	0.168
Total OrthoPhos (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	0.0333	0.0155	0.0694	0.005	0.006	0.0085	0.0185	0.251
Total OrthoPhos (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	4	0.0511	0.0195	0.0874	0.005	0.0093	0.026	0.0603	0.402
Total OrthoPhos (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	2	0.1109	0.0295	0.1287	0.007	0.024	0.069	0.119	0.466
Total OrthoPhos (mg/L)	Little Elk Creek	OK311500-03-0040D	22	2	0.0666	0.0132	0.0591	0.005	0.0213	0.0415	0.1008	0.226
Total OrthoPhos (mg/L)	Medicine Creek	OK311300-04-0060H	21	1	0.0101	0.00221	0.0099	0.005	0.005	0.005	0.01125	0.044
Total OrthoPhos (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	1	0.03435	0.00708	0.03165	0.005	0.00925	0.021	0.053	0.123
Total OrthoPhos (mg/L)	Mud Creek	OK311100-04-0010G	23	3	0.157	0.031	0.1384	0.026	0.0645	0.1105	0.1845	0.546
Total OrthoPhos (mg/L)	North Elm Creek	OK311800-00-0170G	21	3	0.01978	0.00785	0.03332	0.005	0.005	0.0095	0.02125	0.148
Total OrthoPhos (mg/L)	Oil Creek	OK310800-01-0240F	21	1	0.0446	0.0125	0.0559	0.005	0.0093	0.0195	0.0658	0.225
Total OrthoPhos (mg/L)	Otter Creek	OK311500-01-0080F	21	1	0.1577	0.0295	0.1319	0.005	0.0313	0.1415	0.2695	0.448
Total OrthoPhos (mg/L)	Pennington Creek	OK310800-01-0120G	21	1	0.0098	0.00189	0.00845	0.005	0.005	0.006	0.012	0.039
Total OrthoPhos (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	2	0.0713	0.0139	0.0621	0.005	0.0265	0.0465	0.1098	0.21
Total OrthoPhos (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	2	0.0935	0.0193	0.0841	0.005	0.039	0.07	0.102	0.296
Total OrthoPhos (mg/L)	Red Creek	OK311100-01-0290D	22	2	0.0877	0.0164	0.0735	0.017	0.035	0.0545	0.1193	0.289
Total OrthoPhos (mg/L)	Rush Creek	OK310810-05-0010D	21	1	0.0305	0.00608	0.02718	0.005	0.01025	0.0215	0.0385	0.093
Total OrthoPhos (mg/L)	Salt Creek	OK310810-03-0080G	21	1	0.0684	0.0494	0.2207	0.005	0.009	0.0115	0.0318	1.004
Total OrthoPhos (mg/L)	Sandstone Creek	OK310840-02-0020C	21	1	0.02275	0.0036	0.01608	0.005	0.008	0.02	0.032	0.058
Total OrthoPhos (mg/L)	Sandy Creek	OK311600-01-0040G	21	1	0.0233	0.00666	0.02978	0.005	0.00575	0.012	0.02975	0.13
Total OrthoPhos (mg/L)	Spring Creek	OK310830-04-0010G	20	1	0.0529	0.0156	0.068	0.005	0.016	0.039	0.063	0.31
Total OrthoPhos (mg/L)	Spring Creek	OK310840-02-0240D	23	3	0.0504	0.00587	0.02626	0.005	0.03025	0.0485	0.06775	0.11
Total OrthoPhos (mg/L)	Station Creek	OK311800-00-0060G	22	2	0.01395	0.00258	0.01153	0.005	0.00625	0.0105	0.018	0.048
Total OrthoPhos (mg/L)	Stinking Creek	OK310830-02-0020D	20	1	0.0871	0.0193	0.0843	0.008	0.03	0.06	0.11	0.327
Total OrthoPhos (mg/L)	Stinking Creek	OK310830-04-0030K	19	1	0.0321	0.0133	0.0566	0.005	0.005	0.0175	0.026	0.25
Total OrthoPhos (mg/L)	Sugar Creek	OK310830-05-0010D	20	1	0.1483	0.0217	0.0945	0.057	0.097	0.118	0.162	0.484
Total OrthoPhos (mg/L)	Suttle Creek	OK311310-01-0070H	21	1	0.2662	0.0492	0.2201	0.005	0.0763	0.228	0.4495	0.777
Total OrthoPhos (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	3	0.1274	0.0406	0.1816	0.005	0.0378	0.0655	0.1363	0.695
Total OrthoPhos (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	0.0901	0.022	0.0961	0.006	0.022	0.054	0.1	0.3
Total OrthoPhos (mg/L)	Timber Creek	OK311510-01-0090G	22	2	0.0337	0.00731	0.03268	0.005	0.01125	0.0255	0.0445	0.147
Total OrthoPhos (mg/L)	Trail Creek	OK311500-03-0070D	23	3	0.0416	0.0108	0.0483	0.005	0.0208	0.028	0.0475	0.231
Total OrthoPhos (mg/L)	Turkey Creek	OK311600-02-0060J	21	1	0.0414	0.0129	0.0576	0.005	0.006	0.0215	0.0363	0.204
Total OrthoPhos (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	0.03695	0.0056	0.02503	0.007	0.01425	0.034	0.0585	0.088
Total OrthoPhos (mg/L)	Washington Creek	OK310810-01-0190G	20	2	0.04217	0.00789	0.03348	0.005	0.0185	0.0325	0.05325	0.122
Total OrthoPhos (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	1	0.02885	0.00696	0.03114	0.005	0.009	0.0195	0.03775	0.127
Total OrthoPhos (mg/L)	West Cache Creek	OK311310-02-0010M	21	1	0.0855	0.0176	0.0786	0.005	0.026	0.0595	0.1288	0.263
Total OrthoPhos (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	0.025	0.00487	0.02177	0.005	0.00575	0.015	0.042	0.069

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Total OrthoPhos (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	0.02275	0.00429	0.01919	0.005	0.01225	0.0175	0.02975	0.092
Total OrthoPhos (mg/L)	Wildhorse Creek: near Tatum	OK310810-03-0010R	22	2	0.0548	0.0281	0.1255	0.005	0.009	0.019	0.058	0.579
Total Phosphorus (mg/l)	Barnitz Creek	OK310830-03-0200C	21	1	0.0734	0.0118	0.0528	0.011	0.0365	0.063	0.0975	0.215
Total Phosphorus (mg/l)	Beaver Creek	OK310830-03-0190C	21	1	0.06625	0.00815	0.03643	0.026	0.04025	0.0525	0.0995	0.15
Total Phosphorus (mg/l)	Beaver Creek	OK311200-00-0030L	23	3	0.4812	0.0794	0.3552	0.114	0.231	0.373	0.5845	1.392
Total Phosphorus (mg/l)	Big Sandy Creek	OK310800-01-0090G	21	2	0.04063	0.00788	0.03433	0.005	0.022	0.027	0.051	0.151
Total Phosphorus (mg/l)	Boggy Creek	OK310830-03-0100C	21	1	0.0876	0.0312	0.1393	0.005	0.018	0.0405	0.1035	0.628
Total Phosphorus (mg/l)	Buffalo Creek	OK311510-02-0090D	22	3	0.0964	0.0414	0.1803	0.016	0.032	0.047	0.077	0.828
Total Phosphorus (mg/l)	Caddo Creek	OK310800-03-0010F	21	2	0.479	0.123	0.536	0.018	0.094	0.275	0.586	1.697
Total Phosphorus (mg/l)	Cavalry Creek	OK310830-03-0070D	21	1	0.1114	0.0238	0.1066	0.011	0.0318	0.0935	0.1543	0.479
Total Phosphorus (mg/l)	Chigley Sandy Creek	OK310800-02-0190D	21	2	0.04447	0.00606	0.02641	0.013	0.026	0.035	0.062	0.109
Total Phosphorus (mg/l)	Cobb Creek	OK310830-06-0050M	21	1	0.1337	0.0296	0.1323	0.026	0.0723	0.102	0.1413	0.629
Total Phosphorus (mg/l)	Cow Creek	OK311200-00-0060L	24	4	1.085	0.176	0.786	0.214	0.444	0.861	1.569	3.233
Total Phosphorus (mg/l)	Deep Red Creek	OK311310-03-0010D	21	2	0.2351	0.0463	0.202	0.017	0.092	0.18	0.302	0.731
Total Phosphorus (mg/l)	Delaware Creek	OK310830-01-0030G	21	2	0.096	0.0108	0.047	0.01	0.06	0.093	0.126	0.174
Total Phosphorus (mg/l)	East Barnitz Creek	OK310830-03-0210C	21	1	0.0957	0.0246	0.1098	0.008	0.0353	0.058	0.1305	0.513
Total Phosphorus (mg/l)	East Cache Creek: Lower	OK311300-01-0020G	21	2	0.5995	0.0771	0.3362	0.073	0.392	0.45	0.831	1.426
Total Phosphorus (mg/l)	East Cache Creek: Upper	OK311300-02-0010M	21	2	0.0558	0.0137	0.0599	0.018	0.022	0.04	0.055	0.27
Total Phosphorus (mg/l)	Elk Creek	OK311500-03-0010G	21	2	0.1216	0.0181	0.0791	0.018	0.071	0.109	0.164	0.357
Total Phosphorus (mg/l)	Finn Creek	OK310810-02-0020D	22	3	0.1365	0.0184	0.0803	0.039	0.078	0.105	0.187	0.323
Total Phosphorus (mg/l)	Fish Creek	OK311800-00-0130G	22	3	0.0525	0.014	0.0609	0.005	0.015	0.028	0.058	0.261
Total Phosphorus (mg/l)	Fivemile Creek	OK310830-06-0080D	21	1	0.1386	0.0497	0.2223	0.036	0.0575	0.092	0.1235	1.068
Total Phosphorus (mg/l)	Fleetwood Creek	OK311100-01-0300D	21	2	0.2192	0.0505	0.22	0.026	0.059	0.138	0.311	0.878
Total Phosphorus (mg/l)	Gypsum Creek	OK311600-01-0020F	22	3	0.0444	0.01	0.0438	0.005	0.008	0.039	0.06	0.196
Total Phosphorus (mg/l)	Haystack Creek	OK311800-00-0040D	21	2	0.1505	0.0904	0.3942	0.014	0.035	0.05	0.087	1.771
Total Phosphorus (mg/l)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	0.0376	0.00533	0.02385	0.005	0.0185	0.0335	0.05	0.088
Total Phosphorus (mg/l)	Ionine Creek	OK310820-01-0160L	20	1	0.0723	0.0207	0.0903	0.017	0.026	0.049	0.069	0.427
Total Phosphorus (mg/l)	Kickapoo Sandy Creek	OK310810-01-0050G	21	2	0.0988	0.0128	0.056	0.014	0.06	0.082	0.133	0.231
Total Phosphorus (mg/l)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	3	0.0872	0.0218	0.0948	0.01	0.04	0.055	0.094	0.373
Total Phosphorus (mg/l)	Little Beaver Creek	OK311210-00-0050D	24	5	0.1083	0.0419	0.1827	0.005	0.036	0.056	0.116	0.837
Total Phosphorus (mg/l)	Little Deep Red Creek	OK311310-03-0040D	21	3	0.1951	0.0326	0.1381	0.043	0.1055	0.166	0.2428	0.552
Total Phosphorus (mg/l)	Little Elk Creek	OK311500-03-0040D	22	3	0.1278	0.0181	0.0788	0.031	0.072	0.101	0.173	0.296
Total Phosphorus (mg/l)	Medicine Creek	OK311300-04-0060H	21	2	0.02337	0.00628	0.02739	0.005	0.005	0.011	0.048	0.09
Total Phosphorus (mg/l)	Mill Creek: Lower	OK310800-01-0190G	21	2	0.05353	0.0093	0.04055	0.005	0.017	0.045	0.09	0.134
Total Phosphorus (mg/l)	Mud Creek	OK311100-04-0010G	23	3	0.2381	0.0366	0.1636	0.076	0.1248	0.1925	0.2798	0.626
Total Phosphorus (mg/l)	North Elm Creek	OK311800-00-0170G	21	4	0.0462	0.0143	0.0589	0.005	0.012	0.02	0.06	0.185
Total Phosphorus (mg/l)	Oil Creek	OK310800-01-0240P	21	2	0.0836	0.0257	0.112	0.005	0.021	0.036	0.095	0.488
Total Phosphorus (mg/l)	Otter Creek	OK311500-01-0080F	21	2	0.2128	0.0292	0.1272	0.005	0.127	0.187	0.308	0.489
Total Phosphorus (mg/l)	Pennington Creek	OK310800-01-0120G	21	2	0.02005	0.00454	0.01977	0.005	0.006	0.01	0.034	0.072
Total Phosphorus (mg/l)	Quartermaster Creek	OK310840-01-0060L	22	3	0.1284	0.0236	0.1027	0.021	0.044	0.122	0.148	0.413
Total Phosphorus (mg/l)	Rainy Mountain Creek	OK310830-02-0060G	21	2	0.1513	0.0259	0.1129	0.025	0.081	0.11	0.22	0.386
Total Phosphorus (mg/l)	Red Creek	OK311100-01-0290D	22	2	0.1847	0.0338	0.1511	0.049	0.0768	0.1375	0.2508	0.645
Total Phosphorus (mg/l)	Rush Creek	OK310810-05-0010D	21	2	0.0892	0.0174	0.0758	0.015	0.031	0.065	0.116	0.329
Total Phosphorus (mg/l)	Salt Creek	OK310810-03-0080G	21	2	0.1359	0.095	0.4139	0.008	0.017	0.029	0.071	1.841
Total Phosphorus (mg/l)	Sandstone Creek	OK310840-02-0020C	21	2	0.04895	0.00755	0.03291	0.008	0.022	0.034	0.087	0.101
Total Phosphorus (mg/l)	Sandy Creek	OK311600-01-0040G	21	2	0.0644	0.0116	0.0505	0.005	0.021	0.054	0.089	0.171
Total Phosphorus (mg/l)	Spring Creek	OK310830-04-0010G	20	1	0.0899	0.0191	0.0835	0.005	0.041	0.068	0.104	0.362
Total Phosphorus (mg/l)	Spring Creek	OK310840-02-0240D	23	4	0.07916	0.00655	0.02853	0.04	0.055	0.072	0.094	0.143
Total Phosphorus (mg/l)	Station Creek	OK311800-00-0060G	22	3	0.04105	0.00631	0.02751	0.013	0.022	0.037	0.044	0.13
Total Phosphorus (mg/l)	Stinking Creek	OK310830-02-0020D	20	1	0.1327	0.0237	0.1033	0.01	0.051	0.111	0.172	0.398
Total Phosphorus (mg/l)	Stinking Creek	OK310830-04-0030K	19	1	0.0565	0.0178	0.0757	0.005	0.0183	0.034	0.0598	0.333
Total Phosphorus (mg/l)	Sugar Creek	OK310830-05-0010D	20	1	0.2178	0.0293	0.1275	0.134	0.154	0.175	0.208	0.675
Total Phosphorus (mg/l)	Suttle Creek	OK311310-01-0070H	21	2	0.3768	0.0692	0.3018	0.009	0.121	0.356	0.512	0.993
Total Phosphorus (mg/l)	Sweetwater Creek	OK311510-02-0120D	23	4	0.1876	0.0524	0.2282	0.019	0.066	0.102	0.243	0.8625
Total Phosphorus (mg/l)	Tepee Creek	OK311500-01-0110D	20	2	0.277	0.161	0.684	0.016	0.03	0.076	0.255	2.981
Total Phosphorus (mg/l)	Timber Creek	OK311510-01-0090G	22	3	0.0632	0.0117	0.0508	0.012	0.026	0.047	0.085	0.194
Total Phosphorus (mg/l)	Trail Creek	OK311500-03-0070D	23	4	0.0831	0.0169	0.0735	0.024	0.051	0.062	0.079	0.342
Total Phosphorus (mg/l)	Turkey Creek	OK311600-02-0060J	21	2	0.0853	0.0137	0.0598	0.01	0.039	0.083	0.107	0.235
Total Phosphorus (mg/l)	Walnut Bayou	OK311100-03-0010G	22	2	0.0685	0.0131	0.0584	0.022	0.033	0.052	0.0805	0.277
Total Phosphorus (mg/l)	Washington Creek	OK310810-01-0190G	20	3	0.0794	0.012	0.0494	0.017	0.043	0.058	0.123	0.163
Total Phosphorus (mg/l)	West Barnitz Creek	OK310830-03-0230C	21	1	0.0521	0.0117	0.0523	0.005	0.0178	0.0395	0.0695	0.221
Total Phosphorus (mg/l)	West Cache Creek	OK311310-02-0010M	21	2	0.1269	0.0231	0.1005	0.017	0.065	0.088	0.184	0.415
Total Phosphorus (mg/l)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	1	0.0634	0.0146	0.0637	0.013	0.024	0.047	0.069	0.293
Total Phosphorus (mg/l)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	3	0.0795	0.0234	0.1021	0.017	0.038	0.053	0.085	0.478
Total Phosphorus (mg/l)	Wildhorse Creek: near Tatum	OK310810-03-0010R	22	3	0.1269	0.0602	0.2624	0.01	0.02	0.048	0.1	1.182
TotSusSolids (mg/L)	Barnitz Creek	OK310830-03-0200C	21	1	29.9	9.73	43.49	10	10	16.5	23.5	195
TotSusSolids (mg/L)	Beaver Creek	OK310830-03-0190C	21	5	15.56	3.02	12.06	10	10	10.5	13.75	48
TotSusSolids (mg/L)	Beaver Creek	OK311200-00-0030L	23	4	35	8.46	36.89	10	11	20	33	133
TotSusSolids (mg/L)	Big Sandy Creek	OK310800-01-0090G	21	1	17.9	7.17	32.08	10	10	10	10	154
TotSusSolids (mg/L)	Boggy Creek	OK310830-03-0100C	21	1	67.8	34.9	155.9	10	10	17.5	52.8	714
TotSusSolids (mg/L)	Buffalo Creek	OK311510-02-0090D	22	2	74.6	43.6	195.1	10	10	26	48.3	896
TotSusSolids (mg/L)	Caddo Creek	OK310800-03-0010F	21	1	40.5	13.7	61.4	10	10	16	33	217
TotSusSolids (mg/L)	Cavalry Creek	OK310830-03-0070D	21	1	44.9	16.7	74.7	10	10	24.5	46.5	350
TotSusSolids (mg/L)	Chigley Sandy Creek	OK310800-02-0190D	21	1	10.3	0.3	1.342	10	10	10	10	16
TotSusSolids (mg/L)	Cobb Creek	OK310830-06-0050M	21	1	52.1	35.4	158.2	10	10	10	25.8	722
TotSusSolids (mg/L)	Cow Creek	OK311200-00-0060L	24	4	64.5	48	214.6	10	10	10	16.3	973
TotSusSolids (mg/L)	Deep Red Creek	OK311310-03-0010D	21	1	95.3	41.1	183.8	10	10	50.5	102	850
TotSusSolids (mg/L)	Delaware Creek	OK310830-01-0030G	21	2	17.47	4.28	18.67	10	10	10	17	89
TotSusSolids (mg/L)	East Barnitz Creek	OK310830-03-0210C	21	1	25.2	6.19	27.67	10	11.25	17	29.5	135
TotSusSolids (mg/L)	East Cache Creek: Lower	OK311300-01-0020G	21	2	78.8	20	87	10	14	56	101	332

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
TotSusSolids (mg/L)	East Cache Creek: Upper	OK311300-02-0010M	21	1	19.35	5.12	22.9	10	10	10	16.5	96
TotSusSolids (mg/L)	Elk Creek	OK311500-03-0010G	21	1	36	5.33	23.85	10	10	36.5	51.5	88
TotSusSolids (mg/L)	Finn Creek	OK310810-02-0020D	22	2	32.4	12.5	55.8	10	10	10	19.3	202
TotSusSolids (mg/L)	Fish Creek	OK311800-00-0130G	22	2	31.95	6.47	28.92	10	13.25	22.5	38	128
TotSusSolids (mg/L)	Fivemile Creek	OK310830-06-0080D	21	1	67.4	55.9	249.9	10	10	10	10	1129
TotSusSolids (mg/L)	Fleetwood Creek	OK311100-01-0300D	21	2	16.47	3.28	14.29	10	10	10	15	63
TotSusSolids (mg/L)	Gypsum Creek	OK311600-01-0020F	22	2	22.55	3.1	13.85	10	10.5	17.5	34.25	53
TotSusSolids (mg/L)	Haystack Creek	OK311800-00-0040D	21	1	181	153	682	10	10	18	48	3077
TotSusSolids (mg/L)	Hickory Creek: HWY 775	OK311100-02-0010M	23	3	12.95	2.69	12.04	10	10	10	10	64
TotSusSolids (mg/L)	Ionine Creek	OK310820-01-0160L	20	1	30.05	7.21	31.42	10	12	16	39	146
TotSusSolids (mg/L)	Kickapoo Sandy Creek	OK310810-01-0050G	21	1	16.25	2.57	11.51	10	10	10	19.75	52
TotSusSolids (mg/L)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	2	13.4	1.93	8.64	10	10	10	12.75	47
TotSusSolids (mg/L)	Little Beaver Creek	OK311210-00-0050D	24	4	60.2	38	170	10	10	15	29.5	777
TotSusSolids (mg/L)	Little Deep Red Creek	OK311310-03-0040D	21	2	53.2	16.9	73.8	10	10	27	50	287
TotSusSolids (mg/L)	Little Elk Creek	OK311500-03-0040D	22	2	19.05	3.27	14.62	10	10	12.5	22.5	70
TotSusSolids (mg/L)	Medicine Creek	OK311300-04-0060H	21	1	10	0	0	10	10	10	10	10
TotSusSolids (mg/L)	Mill Creek: Lower	OK310800-01-0190G	21	1	22.5	4.92	22.02	10	10	10	30.5	101
TotSusSolids (mg/L)	Mud Creek	OK311100-04-0010G	23	3	59.4	29	129.5	10	10	15.5	29	576
TotSusSolids (mg/L)	North Elm Creek	OK311800-00-0170G	21	3	29.2	13.7	58.1	10	10	15.5	20.3	261
TotSusSolids (mg/L)	Oil Creek	OK310800-01-0240P	21	1	10.2	0.2	0.894	10	10	10	10	14
TotSusSolids (mg/L)	Otter Creek	OK311500-01-0080F	21	1	21.9	4.2	18.79	10	10.25	18	24.5	94
TotSusSolids (mg/L)	Pennington Creek	OK310800-01-0120G	21	1	10.25	0.25	1.118	10	10	10	10	15
TotSusSolids (mg/L)	Quartermaster Creek	OK310840-01-0060L	22	2	57.2	23.9	106.8	10	10	11.5	50.5	460
TotSusSolids (mg/L)	Rainy Mountain Creek	OK310830-02-0060G	21	2	67.9	23.7	103.1	10	10	20	81	407
TotSusSolids (mg/L)	Red Creek	OK311100-01-0290D	22	2	32.4	10.7	47.9	10	10	16.5	31.5	225
TotSusSolids (mg/L)	Rush Creek	OK310810-05-0010D	21	1	51.9	17.5	78.1	10	10	25.5	41.3	326
TotSusSolids (mg/L)	Salt Creek	OK310810-03-0080G	21	1	367	345	1545	10	10	10	25	6929
TotSusSolids (mg/L)	Sandstone Creek	OK310840-02-0020C	21	1	16.3	1.91	8.54	10	10	12	21.5	39
TotSusSolids (mg/L)	Sandy Creek	OK311600-01-0040G	21	1	47.3	7.89	35.29	10	19.5	35	64	143
TotSusSolids (mg/L)	Spring Creek	OK310830-04-0010G	20	1	44.3	21.5	93.8	10	10	11	38	419
TotSusSolids (mg/L)	Spring Creek	OK310840-02-0240D	23	3	11.7	0.612	2.736	10	10	10	14	19
TotSusSolids (mg/L)	Station Creek	OK311800-00-0060G	22	2	18.5	3.62	16.18	10	10	13	20	81
TotSusSolids (mg/L)	Stinking Creek	OK310830-02-0020D	20	1	35.6	10.8	46.9	10	10	17	26	162
TotSusSolids (mg/L)	Stinking Creek	OK310830-04-0030K	19	1	46.3	23.7	100.7	10	10	10	36.3	433
TotSusSolids (mg/L)	Sugar Creek	OK310830-05-0010D	20	1	86.3	32.9	143.5	12	23	46	77	646
TotSusSolids (mg/L)	Suttle Creek	OK311310-01-0070H	21	1	63.6	41.6	185.9	10	10	18	32.3	851
TotSusSolids (mg/L)	Sweetwater Creek	OK311510-02-0120D	23	3	117.6	33.2	148.6	10	37.8	75.5	122.8	641
TotSusSolids (mg/L)	Tepee Creek	OK311500-01-0110D	20	1	13.74	2.06	8.99	10	10	10	15	48
TotSusSolids (mg/L)	Timber Creek	OK311510-01-0090G	22	2	11.55	0.679	3.034	10	10	10	11.5	19
TotSusSolids (mg/L)	Trail Creek	OK311500-03-0070D	23	3	21.4	4.99	22.31	10	10	14.5	20.75	104
TotSusSolids (mg/L)	Turkey Creek	OK311600-02-0060J	21	1	48.7	9.24	41.32	10	13.5	36	61	154
TotSusSolids (mg/L)	Walnut Bayou	OK311100-03-0010G	22	2	62.8	31.6	142.1	10	10	10	25.5	492
TotSusSolids (mg/L)	Washington Creek	OK310810-01-0190G	20	2	24.5	9.89	41.95	10	10	10	16.25	185
TotSusSolids (mg/L)	West Barnitz Creek	OK310830-03-0230C	21	1	29.4	11.3	50.6	10	10	10	18	208
TotSusSolids (mg/L)	West Cache Creek	OK311310-02-0010M	21	1	18.15	3.54	15.85	10	10	10	21.75	65
TotSusSolids (mg/L)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	49.9	21.8	97.4	10	10	20.5	43.3	442
TotSusSolids (mg/L)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	33.05	7.11	31.78	10	10	18.5	51.75	135
TotSusSolids (mg/L)	Wildhorse Creek: near Tatum	OK310810-03-0010R	22	2	276	217	971	10	11	23	74	4370
Turbidity (NTU)	Barnitz Creek	OK310830-03-0200C	21	0	19.34	5.86	26.86	2.75	7.94	10.4	17.9	116
Turbidity (NTU)	Beaver Creek	OK310830-03-0190C	21	0	16.7	6.18	28.3	1.39	3.95	6.66	15.1	129
Turbidity (NTU)	Beaver Creek	OK311200-00-0030J	23	3	76.4	24.6	109.8	15.4	23.6	38.9	71.8	445
Turbidity (NTU)	Big Sandy Creek	OK310800-01-0090G	21	0	3.35	0.951	4.358	0.49	0.785	1.76	4.365	18.7
Turbidity (NTU)	Boggy Creek	OK310830-03-0100C	21	0	56.8	31.5	144.4	1.9	7.6	12.4	40.3	675
Turbidity (NTU)	Buffalo Creek	OK311510-02-0090D	22	1	56.9	40.7	186.3	0.5	4.6	12.2	22.1	867
Turbidity (NTU)	Caddo Creek	OK310800-03-0010F	21	0	43.8	12.6	57.5	5.7	11.8	24.1	37.7	214
Turbidity (NTU)	Cavalry Creek	OK310830-03-0070D	21	0	37.2	19.2	88.2	1.8	7.9	13	29.8	417
Turbidity (NTU)	Chigley Sandy Creek	OK310800-02-0190D	21	0	5.83	2.14	9.79	0.33	0.77	1.56	4.17	37.3
Turbidity (NTU)	Cobb Creek	OK310830-06-0050M	21	0	32.8	21.8	100	2.7	6	8.6	17	468
Turbidity (NTU)	Cow Creek	OK311200-00-0060L	24	4	54	19.6	87.6	4.1	15	18.3	59.9	380
Turbidity (NTU)	Deep Red Creek	OK311310-03-0010D	21	0	211.4	67.6	309.6	6.6	25.5	88.9	211.5	1000
Turbidity (NTU)	Delaware Creek	OK310830-01-0030G	21	1	12.77	3.04	13.61	2.15	4.05	6.99	15.65	58
Turbidity (NTU)	East Barnitz Creek	OK310830-03-0210C	21	0	15.01	2.89	13.24	4.13	8.41	10.4	15.8	61.5
Turbidity (NTU)	East Cache Creek: Lower	OK311300-01-0020G	21	2	132.7	37.2	162.3	6.1	21.5	58.2	179	602
Turbidity (NTU)	East Cache Creek: Upper	OK311300-02-0010M	21	0	22.49	6.28	28.8	4.36	7.81	10.6	19.1	104
Turbidity (NTU)	Elk Creek	OK311500-03-0010G	21	0	46.82	9.84	45.11	4.01	19.65	41.8	59.85	219
Turbidity (NTU)	Finn Creek	OK310810-02-0020D	22	0	33.81	9.33	43.75	3.26	7.22	24.25	37.5	179
Turbidity (NTU)	Fish Creek	OK311800-00-0130G	22	1	30.83	6.02	27.57	9.74	11.2	17.8	47	101
Turbidity (NTU)	Fivemile Creek	OK310830-06-0080D	21	0	40.1	30.6	140.1	3.3	5.3	8.7	11.8	651
Turbidity (NTU)	Fleetwood Creek	OK311100-01-0300D	21	2	54.1	20.8	90.7	4.3	8.3	21.1	42.9	376
Turbidity (NTU)	Gypsum Creek	OK311600-01-0020F	22	1	12.43	1.9	8.71	3.29	6.2	9.68	14.75	36.8
Turbidity (NTU)	Haystack Creek	OK311800-00-0040D	21	1	51.1	12.2	54.4	8.4	15.3	27.1	65.3	222
Turbidity (NTU)	Hickory Creek: HWY 775	OK311100-02-0010M	23	2	16.4	8.91	40.84	1.95	4.36	5.42	11.2	193
Turbidity (NTU)	Ionine Creek	OK310820-01-0160L	20	0	22.92	6.08	27.18	1.86	9.27	14.35	26.13	130
Turbidity (NTU)	Kickapoo Sandy Creek	OK310810-01-0050G	21	0	15.39	3.1	14.2	1.72	4.45	6.72	30.45	44.6
Turbidity (NTU)	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	22	1	26.5	11.8	54	4.1	6.5	11.9	20.9	256
Turbidity (NTU)	Little Beaver Creek	OK311210-00-0050D	24	5	31.29	8.99	39.2	3.61	10.4	15.9	48.7	172
Turbidity (NTU)	Little Deep Red Creek	OK311310-03-0040D	21	1	72	23.6	105.4	5.2	13.8	40.4	65.6	450
Turbidity (NTU)	Little Elk Creek	OK311500-03-0040D	22	2	35.2	11.4	51.1	4.7	6.8	16.8	35.7	192
Turbidity (NTU)	Medicine Creek	OK311300-04-0060H	21	0	28.76	0.849	3.891	0.09	0.77	1.05	3.29	12.4
Turbidity (NTU)	Mill Creek: Lower	OK310800-01-0190G	21	0	22.7	6.12	28.04	2.63	5.63	11.7	29.4	114

Appendix A.3. Descriptive statistics by site for water quality parameters.

Variable	Site Name	WBID	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Turbidity (NTU)	Mud Creek	OK311100-04-0010G	23	4	93.1	27.5	119.8	13.8	37.4	58.1	70.8	442
Turbidity (NTU)	North Elm Creek	OK311800-00-0170G	21	2	17.69	3.96	17.28	2.39	8.08	11.7	21.6	75
Turbidity (NTU)	Oil Creek	OK310800-01-0240P	21	0	4.76	1.63	7.45	0.57	1.55	2.47	4.7	34.9
Turbidity (NTU)	Otter Creek	OK311500-01-0080F	21	0	43	11.5	52.7	2.8	12.2	21.9	53.3	214
Turbidity (NTU)	Pennington Creek	OK310800-01-0120G	21	0	3.83	1.29	5.92	0.71	1.45	1.85	3.73	27.7
Turbidity (NTU)	Quartermaster Creek	OK310840-01-0060L	22	1	40.9	14.2	65.2	2.4	8	11.5	35.5	204
Turbidity (NTU)	Rainy Mountain Creek	OK310830-02-0060G	21	1	81.9	28.9	129	6.4	18.3	33.1	72.5	470
Turbidity (NTU)	Red Creek	OK311100-01-0290D	22	3	121	28.4	123.7	16.1	50	64.6	167	520
Turbidity (NTU)	Rush Creek	OK310810-05-0010D	21	0	45.2	16.8	77.2	4.1	12.9	21.4	45.3	366
Turbidity (NTU)	Salt Creek	OK310810-03-0080G	21	0	70.3	46.9	215.1	2.5	5.5	12.3	31.2	1000
Turbidity (NTU)	Sandstone Creek	OK310840-02-0020C	21	1	21.86	4.51	20.15	2.35	8.22	14.1	31.58	76.1
Turbidity (NTU)	Sandy Creek	OK311600-01-0040G	21	0	31.04	5.57	25.51	4.47	11.52	19.7	47.55	103
Turbidity (NTU)	Spring Creek	OK310830-04-0010G	20	0	18.93	7.6	33.98	1.18	4.18	7.23	20.13	154
Turbidity (NTU)	Spring Creek	OK310840-02-0240D	23	2	11.29	1.64	7.53	2.52	6.33	10.8	12.9	37.1
Turbidity (NTU)	Station Creek	OK311800-00-0060G	22	1	26.9	5.5	25.19	5.46	13.5	20.5	35.15	127
Turbidity (NTU)	Stinking Creek	OK310830-02-0020D	20	0	51.7	15.9	71.3	4.7	18.6	24.5	39	276
Turbidity (NTU)	Stinking Creek	OK310830-04-0030K	19	0	14.94	8.27	36.06	1.43	3.31	4.07	6.07	160
Turbidity (NTU)	Sugar Creek	OK310830-05-0010D	20	0	39.4	13.7	61.1	3.6	8.9	18.6	33.5	258
Turbidity (NTU)	Suttle Creek	OK311310-01-0070H	21	0	90.3	47.7	218.5	4.3	8.6	23.2	48	1000
Turbidity (NTU)	Sweetwater Creek	OK311510-02-0120D	23	2	92.4	27.6	126.4	3.5	28.2	47.3	94.3	542
Turbidity (NTU)	Tepee Creek	OK311500-01-0110D	20	0	16.18	6.15	27.51	1.65	2.79	5.25	17.28	118
Turbidity (NTU)	Timber Creek	OK311510-01-0090G	22	1	11.6	2.3	10.54	1.79	3.67	8.05	16.7	40.4
Turbidity (NTU)	Trail Creek	OK311500-03-0070D	23	3	40.8	19.5	87.3	3.1	6.4	14.5	41.7	400
Turbidity (NTU)	Turkey Creek	OK311600-02-0060J	21	0	61.7	13.6	62.1	6	15.9	40.6	80.3	221
Turbidity (NTU)	Walnut Bayou	OK311100-03-0010G	22	2	66.9	39	174.5	4.1	8.3	14.5	28.1	782
Turbidity (NTU)	Washington Creek	OK310810-01-0190G	20	1	45.9	11.7	50.9	2.2	10.5	20.6	76.1	171
Turbidity (NTU)	West Barnitz Creek	OK310830-03-0230C	21	0	18.77	8.23	37.69	0.96	2.8	6.09	13.55	155
Turbidity (NTU)	West Cache Creek	OK311310-02-0010M	21	0	34.5	12.2	56	1	4.7	8.7	35.2	221
Turbidity (NTU)	Wildhorse Creek: near Davis	OK310810-01-0020G	20	0	52.9	20.2	90.2	3.5	12.6	26.5	52.8	416
Turbidity (NTU)	Wildhorse Creek: near Duncan	OK310810-04-0140D	22	2	32.31	8.3	37.1	4.45	12.1	24.9	34.1	168
Turbidity (NTU)	Wildhorse Creek: near Tatums	OK310810-03-0010R	22	1	90.5	47.6	218.2	4.1	7.3	19.4	69.9	1000

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Barnitz Creek	OK310830-03-0200C	43905	18-Jun-09	178	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Barnitz Creek	OK310830-03-0200C	43905	18-Jun-09	26	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Barnitz Creek	OK310830-03-0200C	43905	18-Jun-09	10	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Barnitz Creek	OK310830-03-0200C	43905	18-Jun-09	5	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Beaver Creek	OK310830-03-0190C	46407	20-May-10	1287	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Beaver Creek	OK310830-03-0190C	46407	20-May-10	79	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Beaver Creek	OK310830-03-0190C	46407	20-May-10	5	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Beaver Creek	OK310830-03-0190C	46407	20-May-10	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Beaver Creek	OK310830-03-0190C	46407	20-May-10	2	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	X					
Beaver Creek	OK310830-03-0190C	46407	20-May-10	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Beaver Creek	OK310830-03-0190C	46407	20-May-10	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	153	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	26	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	25	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	23	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	22	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	21	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	14	Cyprinidae	Notropis buchanani	Ghost shiner	interm	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	13	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	10	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	7	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	6	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	5	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	4	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	4	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	4	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	3	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	3	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	3	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	3	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			X			
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	3	Percidae	Percina caprodes	Loggerperch	interm	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	2	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	2	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	1	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	1	Ictaluridae	Ictalurus furcatus	Blue catfish	tol	X					
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	1	Percichthyidae	Morone saxatilis	Striped bass	tol			X			
Beaver Creek	OK311200-00-0030L	46415	25-Jul-10	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	71	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	62	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	24	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	21	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			X			X
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	14	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	13	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	12	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	7	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	6	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	5	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	3	Centrarchidae	Lepomis microlophus	Redear sunfish	interm	X					
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	2	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	1	Percichthyidae	Morone saxatilis	Striped bass	tol			X			
Big Sandy Creek	OK310800-01-0090G	43869	24-Jun-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Boggy Creek	OK310830-03-0100C	46409	27-May-10	675	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Boggy Creek	OK310830-03-0100C	46409	27-May-10	23	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Boggy Creek	OK310830-03-0100C	46409	27-May-10	4	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Boggy Creek	OK310830-03-0100C	46409	27-May-10	3	Ictaluridae	Noturus nocturnus	Freckled madtom	intol	X					
Boggy Creek	OK310830-03-0100C	46409	27-May-10	2	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Boggy Creek	OK310830-03-0100C	46409	27-May-10	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Boggy Creek	OK310830-03-0100C	46409	27-May-10	1	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			X			
Boggy Creek	OK310830-03-0100C	46409	27-May-10	1	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	393	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	36	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	30	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	12	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	9	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	3	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Buffalo Creek	OK311510-02-0090D	43659	03-Jun-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	120	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	119	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	110	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	63	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	49	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	43	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	36	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	19	Clupeidae	Dorosoma petenense	Threadfin shad	interm		X				
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	12	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	11	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	6	Ictaluridae	Noturus nocturnus	Freckled madtom	intol	X					
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	5	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	3	Percidae	Percina sciera	Dusky darter	interm	X					X
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	2	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			X			
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	2	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	2	Catostomidae	Carpiodes carpio	River carsucker	tol		X				
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol						
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	1	Catostomidae	Moxostoma erythrurum	Golden rehorse	interm	X					X
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	1	Atherinidae	Labidesthes sicculus	Brook silverside	interm	X					
Caddo Creek	OK310800-03-0010F	44410	24-Aug-09	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Cavalry Creek	OK310830-03-0070D	44160	29-Jul-09	110	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Cavalry Creek	OK310830-03-0070D	44160	29-Jul-09	84	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Cavalry Creek	OK310830-03-0070D	44160	29-Jul-09	17	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Cavalry Creek	OK310830-03-0070D	44160	29-Jul-09	12	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Cavalry Creek	OK310830-03-0070D	44160	29-Jul-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Cavalry Creek	OK310830-03-0070D	44160	29-Jul-09	2	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Cavalry Creek	OK310830-03-0070D	44160	29-Jul-09	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Cavalry Creek	OK310830-03-0070D	44160	29-Jul-09	1	Percidae	Percina sciera	Dusky darter	interm	X					X
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	299	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	64	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	55	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	27	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	19	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	14	Percidae	Etheostoma spectabile	Orangethroat darter	intern	X					X
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	13	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	9	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	8	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	6	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	5	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	3	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	3	Centrarchidae	Micropterus punctulatus	Spotted bass	intern			X			X
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	2	Centrarchidae	Lepomis microlophus	Redear sunfish	intern	X					
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	1	Ictaluridae	Noturus nocturnus	Freckled madtom	intol	X					
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	1	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
Chigley Sandy Creek	OK310800-02-0190D	43794	09-Jun-09	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	190	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	26	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	18	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	11	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	10	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	7	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	6	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	6	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	1	Cyprinidae	Campostoma anomalum	Central stoneroller	intern				X		X
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Cobb Creek	OK310830-06-0050M	44158	28-Jul-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	221	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	155	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	134	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	52	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	48	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	20	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	16	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	3	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Cow Creek	OK311200-00-0060L	43673	11-Aug-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol						
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	8	Cyprinidae	Notropis buchanani	Ghost shiner	intern	X					
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	5	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	2	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	1	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	1	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	1	Ictaluridae	Ictalurus furcatus	Blue catfish	tol	X		X			
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	1	Ictaluridae	Noturus nocturnus	Freckled madtom	intol	X					
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Deep Red Creek	OK311310-03-0010D	46690	23-Sep-10	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Delaware Creek	OK310830-01-0030G	44119	24-Jul-09	331	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Delaware Creek	OK310830-01-0030G	44119	24-Jul-09	122	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Delaware Creek	OK310830-01-0030G	44119	24-Jul-09	55	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Delaware Creek	OK310830-01-0030G	44119	24-Jul-09	14	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Delaware Creek	OK310830-01-0030G	44119	24-Jul-09	8	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Delaware Creek	OK310830-01-0030G	44119	24-Jul-09	4	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Delaware Creek	OK310830-01-0030G	44119	24-Jul-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Delaware Creek	OK310830-01-0030G	44119	24-Jul-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
East Barnitz Creek	OK310830-03-0210C	43903	18-Jun-09	348	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
East Barnitz Creek	OK310830-03-0210C	43903	18-Jun-09	31	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
East Barnitz Creek	OK310830-03-0210C	43903	18-Jun-09	6	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
East Barnitz Creek	OK310830-03-0210C	43903	18-Jun-09	4	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
East Barnitz Creek	OK310830-03-0210C	43903	18-Jun-09	2	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
East Barnitz Creek	OK310830-03-0210C	43903	18-Jun-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	30	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	20	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	17	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	10	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	7	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	5	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	5	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	5	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	3	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	1	Cyprinidae	Notropis buchanani	Ghost shiner	interm	X					
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	1	Catostomidae	Cariodes carpio	River carpsucker	tol		X				
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol			X			
East Cache Creek: Lower	OK311300-01-0020G	43676	26-Aug-09	1	Percichthyidae	Morone chrysops	White bass	tol			X			
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	282	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	142	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	109	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	97	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	90	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	48	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	42	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	25	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	7	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	5	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				X		X
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	3	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	3	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	2	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol						
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	2	Catostomidae	Cariodes carpio	River carpsucker	tol		X				
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	1	Centrarchidae	Lepomis microlophus	Redear sunfish	interm	X					
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	1	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			X			X
East Cache Creek: Upper	OK311300-02-0010M	43796	11-Jun-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	123	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	37	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	13	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	10	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	2	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	1	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	1	Lepisosteidae	Lepisosteus platostomus	Shortnose gar							
Elk Creek	OK311500-03-0010G	43816	18-Jun-09	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	316	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	141	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	46	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	28	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	19	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	18	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	15	Ictaluridae	Noturus nocturnus	Freckled madtom	intol	X					
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	10	Percidae	Percina sciera	Dusky darter	interm	X					X
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	7	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	5	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol		X				
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	1	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	1	Ictaluridae	Pyloodictis olivaris	Flathead catfish	tol			X			
Finn Creek	OK310810-02-0020D	43792	08-Jun-09	1	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			X			X
Fish Creek	OK311800-00-0130G	43662	09-Jun-09	117	Cyprinodontidae	Cyprinodon rubrofluvialtilis	Red River pupfish	interm	X					
Fish Creek	OK311800-00-0130G	43662	09-Jun-09	46	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Fish Creek	OK311800-00-0130G	43662	09-Jun-09	31	Cyprinidae	Hybognathus placitus	Plains minnow	tol				X		
Fish Creek	OK311800-00-0130G	43662	09-Jun-09	12	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Fish Creek	OK311800-00-0130G	43662	09-Jun-09	3	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	418	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	62	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	43	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	23	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	23	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	22	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	19	Ictaluridae	Pyloodictis olivaris	Flathead catfish	tol			X			
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	11	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	11	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Fivemile Creek	OK310830-06-0080D	44157	28-Jul-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	266	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	64	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	13	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	3	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	1	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	1	Cyprinidae	Notemigonus crysoleucas	Golden shiner	tol		X				
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Fleetwood Creek	OK311100-01-0300D	43664	15-Jul-09	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Gypsum Creek	OK311600-01-0020F	43680	29-May-09	102	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Gypsum Creek	OK311600-01-0020F	43680	29-May-09	5	Cyprinodontidae	Cyprinodon rubrofluvialtilis	Red River pupfish	interm	X					
Gypsum Creek	OK311600-01-0020F	43680	29-May-09	4	Cyprinidae	Hybognathus placitus	Plains minnow	tol				X		
Gypsum Creek	OK311600-01-0020F	43680	29-May-09	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Gypsum Creek	OK311600-01-0020F	43680	29-May-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Gypsum Creek	OK311600-01-0020F	43680	29-May-09	1	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Gypsum Creek	OK311600-01-0020F	43680	29-May-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	72	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	61	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	22	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	15	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	14	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	11	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	7	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	7	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	2	Cyprinidae	Hybognathus placitus	Plains minnow	tol				X		
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Haystack Creek	OK311800-00-0040D	43671	10-Aug-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	108	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	82	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	80	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	49	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	47	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	38	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	29	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	11	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	8	Fundulidae	Fundulus notatus	Blackstripe topminnow	interm	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	6	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	5	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	4	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	2	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	2	Percidae	Percina caprodes	Logperch	interm	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46395	02-Jun-10	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	38	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	30	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	27	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	19	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	10	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	10	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	7	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	7	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	4	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	3	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	3	Fundulidae	Fundulus notatus	Blackstripe topminnow	interm	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	3	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	1	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Hickory Creek: HWY 775	OK311100-02-0010M	46413	14-Jun-10	1	Centrarchidae	Lepomis microlophus	Redear sunfish	interm	X					
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	471	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	54	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	43	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	28	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	20	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	8	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	4	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Ionine Creek	OK310820-01-0160L	43875	25-Jun-09	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	332	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	44	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	20	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	20	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	4	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	4	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	3	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Kickapoo Sandy Creek	OK310810-01-0050G	43793	09-Jun-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	133	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	126	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	93	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	32	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	31	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	20	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	13	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	8	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	8	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	3	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			X			X
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	43672	10-Aug-09	1	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	46	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	30	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	25	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	8	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	8	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	7	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	6	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	5	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	4	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	3	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	2	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Little Beaver Creek	OK311210-00-0050D	43674	11-Aug-09	1	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Little Deep Red Creek	OK311310-03-0040D	43814	17-Jun-09	71	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Little Deep Red Creek	OK311310-03-0040D	43814	17-Jun-09	49	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Little Deep Red Creek	OK311310-03-0040D	43814	17-Jun-09	5	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Little Deep Red Creek	OK311310-03-0040D	43814	17-Jun-09	5	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Little Deep Red Creek	OK311310-03-0040D	43814	17-Jun-09	2	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Little Deep Red Creek	OK311310-03-0040D	43814	17-Jun-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Little Deep Red Creek	OK311310-03-0040D	43814	17-Jun-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Little Deep Red Creek	OK311310-03-0040D	43814	17-Jun-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	375	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	351	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	190	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	125	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	67	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	61	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	48	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	26	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	17	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Little Elk Creek	OK311500-03-0040D	43666	20-Jul-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	190	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	159	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	78	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	73	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	69	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	46	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	29	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	14	Catostomidae	Moxostoma erythrurum	Golden redbhorse	interm	X					X
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	10	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	8	Percidae	Percina caprodes	Logperch	interm	X					
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Medicine Creek	OK311300-04-0060H	43788	01-Jun-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	172	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	97	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	50	Clupeidae	Dorosoma petenense	Threadfin shad	interm		X				
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	36	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	33	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	20	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	19	Centrarchidae	Lepomis microlophus	Redear sunfish	interm	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	17	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	14	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	14	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	13	Catostomidae	Carpionoxys carpio	River carpsucker	tol		X				
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	13	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	10	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	9	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	5	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	5	Percidae	Percina caprodes	Logperch	interm	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	4	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	4	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	3	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	2	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	2	Cyprinidae	Notemigonus crysoleucas	Golden shiner	tol		X				
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	2	Percichthyidae	Morone chrysops	White bass	tol			X			
Mill Creek: Lower	OK310800-01-0190G	44162	29-Jul-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	305	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	75	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	15	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	7	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	3	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	2	Fundulidae	Fundulus notatus	Blackstripe topminnow	interm	X					
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	2	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	1	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	1	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			X			
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	1	Catostomidae	Cariodotes carpio	River carpsucker	tol		X				
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Mud Creek	OK311100-04-0010G	46396	03-Jun-10	1	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
North Elm Creek	OK311800-00-0170G	43668	05-Aug-09	106	Cyprinidae	Hybognathus placitus	Plains minnow	tol				X		
North Elm Creek	OK311800-00-0170G	43668	05-Aug-09	101	Cyprinodontidae	Cyprinodon rubrofluviatilis	Red River pupfish	interm	X					
North Elm Creek	OK311800-00-0170G	43668	05-Aug-09	33	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
North Elm Creek	OK311800-00-0170G	43668	05-Aug-09	21	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	268	Cyprinidae	Notropis boops	Bigeye shiner	intol	X					X
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	138	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	131	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	103	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	100	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	32	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				X		X
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	20	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	13	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	10	Cyprinidae	Pimephales notatus	Bluntnose minnow	interm		X				X
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	6	Fundulidae	Fundulus notatus	Blackstripe topminnow	interm	X					
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	1	Percidae	Percina caprodes	Logperch	interm	X					
Oil Creek	OK310800-01-0240P	43795	10-Jun-09	1	Percidae	Percina sciera	Dusky darter	interm	X					X
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	297	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	281	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	191	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	68	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	55	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	39	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	31	Catostomidae	Cariodotes carpio	River carpsucker	tol		X				
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	30	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	27	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	24	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	19	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	18	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	15	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	14	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	9	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	6	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	5	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	5	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	1	Catostomidae	Ictiobus niger	Black buffalo	interm	X					
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	1	Percichthyidae	Morone saxatilis	Striped bass	tol			X			
Otter Creek	OK311500-01-0080F	44335	10-Aug-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	227	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	182	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	131	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	84	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				X		X
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	32	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	30	Atherinidae	Labidesthes sicculus	Brook silverside	intern	X					
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	20	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	20	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	16	Catostomidae	Minytrema melanops	Spotted sucker	intol	X					X
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	13	Centrarchidae	Lepomis microlophus	Redear sunfish	intern	X					
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	12	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	12	Centrarchidae	Micropterus punctulatus	Spotted bass	intern			X			X
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	11	Percidae	Etheostoma spectabile	Orangethroat darter	intern	X					X
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	10	Catostomidae	Moxostoma erythrurum	Golden rehorse	intern	X					X
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	6	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	5	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	4	Cyprinidae	Notropis boops	Bigeye shiner	intol	X					X
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	4	Fundulidae	Fundulus notatus	Blackstripe topminnow	intern	X					
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	3	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	3	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	3	Centrarchidae	Micropterus dolomieu	Smallmouth bass	intol			X			X
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	2	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	2	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			X			
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	2	Percidae	Percina caprodes	Logperch	intern	X					
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	1	Cyprinidae	Notemigonus crysoleucas	Golden shiner	tol		X				
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	1	Percichthyidae	Morone saxatilis	Striped bass	tol			X			
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Pennington Creek	OK310800-01-0120G	44161	29-Jul-09	1	Percidae	Percina sciera	Dusky darter	intern	X					X
Quartermaster Creek	OK310840-01-0060L	43660	04-Jun-09	247	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Quartermaster Creek	OK310840-01-0060L	43660	04-Jun-09	73	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Quartermaster Creek	OK310840-01-0060L	43660	04-Jun-09	47	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Quartermaster Creek	OK310840-01-0060L	43660	04-Jun-09	3	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Quartermaster Creek	OK310840-01-0060L	43660	04-Jun-09	3	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	122	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	84	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	76	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	49	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	34	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	23	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	22	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	10	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	8	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	5	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	X					
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Rainy Mountain Creek	OK310830-02-0060G	44496	03-Sep-09	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Red Creek	OK311100-01-0290D	43675	25-Aug-09	141	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Red Creek	OK311100-01-0290D	43675	25-Aug-09	111	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Red Creek	OK311100-01-0290D	43675	25-Aug-09	90	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Red Creek	OK311100-01-0290D	43675	25-Aug-09	70	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Red Creek	OK311100-01-0290D	43675	25-Aug-09	9	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Red Creek	OK311100-01-0290D	43675	25-Aug-09	8	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Red Creek	OK311100-01-0290D	43675	25-Aug-09	6	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Red Creek	OK311100-01-0290D	43675	25-Aug-09	6	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Red Creek	OK311100-01-0290D	43675	25-Aug-09	6	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Red Creek	OK311100-01-0290D	43675	25-Aug-09	6	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Red Creek	OK311100-01-0290D	43675	25-Aug-09	3	Cyprinidae	Notemigonus crysoleucas	Golden shiner	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Red Creek	OK311100-01-0290D	43675	25-Aug-09	3	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Red Creek	OK311100-01-0290D	43675	25-Aug-09	3	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Red Creek	OK311100-01-0290D	43675	25-Aug-09	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Red Creek	OK311100-01-0290D	43675	25-Aug-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo							
Red Creek	OK311100-01-0290D	43675	25-Aug-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Red Creek	OK311100-01-0290D	43675	25-Aug-09	1	Ictaluridae	Pyloodictis olivaris	Flathead catfish	tol			X			
Red Creek	OK311100-01-0290D	43675	25-Aug-09	1	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
Red Creek	OK311100-01-0290D	43675	25-Aug-09	1	Percidae	Percina caprodes	Logperch	intern	X					
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	297	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	70	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	29	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	11	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	9	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	6	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	4	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	4	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	2	Ictaluridae	Noturus nocturnus	Freckled madtom	intol	X					
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	2	Ictaluridae	Pyloodictis olivaris	Flathead catfish	tol			X			
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	2	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	1	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Rush Creek	OK310810-05-0010D	44075	07-Jul-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	167	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	45	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	15	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	13	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	10	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	9	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	5	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	2	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	1	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Salt Creek	OK310810-03-0080G	43812	16-Jun-09	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Sandy Creek	OK311600-01-0040G	43679	28-May-09	43	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Sandy Creek	OK311600-01-0040G	43679	28-May-09	34	Cyprinidae	Hybognathus placitus	Plains minnow	tol				X		
Sandy Creek	OK311600-01-0040G	43679	28-May-09	8	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Sandy Creek	OK311600-01-0040G	43679	28-May-09	6	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
Sandy Creek	OK311600-01-0040G	43679	28-May-09	6	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Sandy Creek	OK311600-01-0040G	43679	28-May-09	5	Cyprinodontidae	Cyprinodon rubrofluviatilis	Red River pupfish	intern	X					
Sandy Creek	OK311600-01-0040G	43679	28-May-09	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Sandy Creek	OK311600-01-0040G	43679	28-May-09	1	Cyprinidae	Macrhybopsis aestivalis	Speckled chub	intol	X					
Sandy Creek	OK311600-01-0040G	43679	28-May-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Spring Creek	OK310830-04-0010G	44079	09-Jul-09	366	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Spring Creek	OK310830-04-0010G	44079	09-Jul-09	4	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Spring Creek	OK310830-04-0010G	44079	09-Jul-09	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Spring Creek	OK310830-04-0010G	44079	09-Jul-09	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Spring Creek	OK310840-02-0240D	43658	02-Jun-09	6	Cyprinidae	Campostoma anomalum	Central stoneroller	intern				X		X
Spring Creek	OK310840-02-0240D	43658	02-Jun-09	6	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Spring Creek	OK310840-02-0240D	43658	02-Jun-09	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Spring Creek	OK310840-02-0240D	43658	02-Jun-09	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Spring Creek	OK310840-02-0240D	43658	02-Jun-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Station Creek	OK311800-00-0060G	43669	06-Aug-09	140	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Station Creek	OK311800-00-0060G	43669	06-Aug-09	51	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Station Creek	OK311800-00-0060G	43669	06-Aug-09	40	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Station Creek	OK311800-00-0060G	43669	06-Aug-09	35	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Station Creek	OK311800-00-0060G	43669	06-Aug-09	26	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Station Creek	OK311800-00-0060G	43669	06-Aug-09	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Station Creek	OK311800-00-0060G	43669	06-Aug-09	4	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Station Creek	OK311800-00-0060G	43669	06-Aug-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Station Creek	OK311800-00-0060G	43669	06-Aug-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Station Creek	OK311800-00-0060G	43669	06-Aug-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Station Creek	OK311800-00-0060G	43669	06-Aug-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Station Creek	OK311800-00-0060G	43669	06-Aug-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	41	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	35	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	10	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	6	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	5	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	5	Ictaluridae	Noturus nocturnus	Freckled madtom	intol	X					
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	4	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	4	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	3	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol						
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	1	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Stinking Creek	OK310830-02-0020D	44117	23-Jul-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Stinking Creek	OK310830-04-0030K	44078	09-Jul-09	311	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Stinking Creek	OK310830-04-0030K	44078	09-Jul-09	3	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Stinking Creek	OK310830-04-0030K	44078	09-Jul-09	1	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Stinking Creek	OK310830-04-0030K	44078	09-Jul-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	73	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	19	Atherinidae	Labidesthes sicculus	Brook silverside	interm	X					
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	2	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Sugar Creek	OK310830-05-0010D	44118	24-Jul-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	75	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	22	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	17	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	11	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	9	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	8	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	8	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	6	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	2	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Suttle Creek	OK311310-01-0070H	43815	18-Jun-09	2	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	567	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	453	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	128	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	107	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	56	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	49	Atostomidae	Carpiodes carpio	River carsucker	tol		X				
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	41	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	26	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	22	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	20	Cyprinidae	Cyprinus carpio	Common carp	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	20	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	16	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	15	Cyprinodontidae	Cyprinodon rubrofluvialis	Red River pupfish	intern	X					
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	11	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	10	Cyprinidae	Hybognathus placitus	Plains minnow	tol				X		
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	10	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	2	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	2	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Sweetwater Creek	OK311510-02-0120D	43665	16-Jul-09	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Tepee Creek	OK311500-01-0110D	43677	21-May-09	202	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Tepee Creek	OK311500-01-0110D	43677	21-May-09	33	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Tepee Creek	OK311500-01-0110D	43677	21-May-09	7	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Tepee Creek	OK311500-01-0110D	43677	21-May-09	7	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Tepee Creek	OK311500-01-0110D	43677	21-May-09	5	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Tepee Creek	OK311500-01-0110D	43677	21-May-09	4	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Tepee Creek	OK311500-01-0110D	43677	21-May-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Tepee Creek	OK311500-01-0110D	43677	21-May-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Tepee Creek	OK311500-01-0110D	43677	21-May-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Tepee Creek	OK311500-01-0110D	43677	21-May-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	14	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	13	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	10	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	10	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	6	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	2	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	2	Centrarchidae	Micropterus punctulatus	Spotted bass	intern			X			X
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Timber Creek	OK311510-01-0090G	43661	04-Jun-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	593	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	203	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	127	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	90	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	20	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	11	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	9	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	3	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	3	Catostomidae	Cariodes carpio	River carpsucker	tol		X				
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	2	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Trail Creek	OK311500-03-0070D	43670	06-Aug-09	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Turkey Creek	OK311600-02-0060J	43678	28-May-09	322	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Turkey Creek	OK311600-02-0060J	43678	28-May-09	56	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Turkey Creek	OK311600-02-0060J	43678	28-May-09	26	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Turkey Creek	OK311600-02-0060J	43678	28-May-09	19	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Turkey Creek	OK311600-02-0060J	43678	28-May-09	9	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Turkey Creek	OK311600-02-0060J	43678	28-May-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Turkey Creek	OK311600-02-0060J	43678	28-May-09	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	146	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	59	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	43	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	31	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	20	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	11	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	5	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	5	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	4	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	2	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	2	Clupeidae	Dorosoma petenense	Threadfin shad	interm		X				
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	2	Cyprinidae	Machrybopsis storeriana	Silver chub	tol	X					
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	2	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	1	Cyprinidae	Notropis buchanani	Ghost shiner	interm	X					
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo							
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Walnut Bayou	OK311100-03-0010G	43663	12-Aug-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	310	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	242	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	21	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	21	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	10	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	4	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	2	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Washington Creek	OK310810-01-0190G	43791	08-Jun-09	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
West Barnitz Creek	OK310830-03-0230C	43904	18-Jun-09	240	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
West Barnitz Creek	OK310830-03-0230C	43904	18-Jun-09	36	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
West Barnitz Creek	OK310830-03-0230C	43904	18-Jun-09	5	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
West Barnitz Creek	OK310830-03-0230C	43904	18-Jun-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
West Barnitz Creek	OK310830-03-0230C	43904	18-Jun-09	3	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
West Barnitz Creek	OK310830-03-0230C	43904	18-Jun-09	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
West Barnitz Creek	OK310830-03-0230C	43904	18-Jun-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
West Barnitz Creek	OK310830-03-0230C	43904	18-Jun-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	172	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	143	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	129	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	113	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	108	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	13	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	5	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	4	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	2	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	1	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	1	Catostomidae	Carpodius carpio	River carpsucker	tol		X				
West Cache Creek	OK311310-02-0010M	43813	17-Jun-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	265	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	112	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	28	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	28	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	16	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	13	Centrarchidae	Pomoxis annularis	White crappie	tol			X			

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivore	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	9	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	4	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	3	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	2	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	1	Cyprinidae	Cyprinella venusta	Blacktail shiner	intern	X			X		
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol						
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	1	Atherinidae	Labidesthes sicculus	Brook silverside	intern	X					
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Wildhorse Creek: near Davis	OK310810-03-0010D	44076	08-Jul-09	1	Centrarchidae	Micropterus punctulatus	Spotted bass	intern			X			X
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	561	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	84	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	65	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	61	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	27	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	21	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	12	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	5	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	3	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	3	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	2	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	2	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	2	Percidae	Percina sciera	Dusky darter	intern	X					X
Wildhorse Creek: near Duncan	OK310810-04-0140D	43667	23-Jul-09	1	Percichthyidae	Morone chrysops	White bass	tol			X			
Wildhorse Creek: near Tatums	OK310810-03-0010R	43870	25-Jun-09	182	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Wildhorse Creek: near Tatums	OK310810-03-0010R	43870	25-Jun-09	27	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Wildhorse Creek: near Tatums	OK310810-03-0010R	43870	25-Jun-09	21	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Wildhorse Creek: near Tatums	OK310810-03-0010R	43870	25-Jun-09	6	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Wildhorse Creek: near Tatums	OK310810-03-0010R	43870	25-Jun-09	1	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Wildhorse Creek: near Tatums	OK310810-03-0010R	43870	25-Jun-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Wildhorse Creek: near Tatums	OK310810-03-0010R	43870	25-Jun-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Armstrong Creek	OKR09730-095	43637	30-Jun-09	98	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Armstrong Creek	OKR09730-095	43637	30-Jun-09	58	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Armstrong Creek	OKR09730-095	43637	30-Jun-09	46	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Armstrong Creek	OKR09730-095	43637	30-Jun-09	43	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Armstrong Creek	OKR09730-095	43637	30-Jun-09	27	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Armstrong Creek	OKR09730-095	43637	30-Jun-09	26	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Armstrong Creek	OKR09730-095	43637	30-Jun-09	19	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Armstrong Creek	OKR09730-095	43637	30-Jun-09	13	Centrarchidae	Lepomis microlophus	Redear sunfish	intern	X					
Armstrong Creek	OKR09730-095	43637	30-Jun-09	9	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Armstrong Creek	OKR09730-095	43637	30-Jun-09	9	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Armstrong Creek	OKR09730-095	43637	30-Jun-09	5	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Armstrong Creek	OKR09730-095	43637	30-Jun-09	4	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Armstrong Creek	OKR09730-095	43637	30-Jun-09	2	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Armstrong Creek	OKR09730-095	43637	30-Jun-09	1	Centrarchidae	Micropterus punctulatus	Spotted bass	intern			X			X
Armstrong Creek	OKR09730-095	43637	30-Jun-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Barnitz Creek	OKR09730-106	43644	21-May-09	614	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Barnitz Creek	OKR09730-106	43644	21-May-09	26	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Barnitz Creek	OKR09730-106	43644	21-May-09	11	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Barnitz Creek	OKR09730-106	43644	21-May-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Barnitz Creek	OKR09730-106	43644	21-May-09	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Beaver Creek	OKR09730-091	46416	28-Jul-10	62	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Beaver Creek	OKR09730-091	46416	28-Jul-10	14	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Beaver Creek	OKR09730-091	46416	28-Jul-10	12	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Beaver Creek	OKR09730-091	46416	28-Jul-10	10	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Beaver Creek	OKR09730-091	46416	28-Jul-10	7	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Beaver Creek	OKR09730-091	46416	28-Jul-10	4	Catostomidae	Cariodius carpio	River carpsucker	tol		X				
Beaver Creek	OKR09730-091	46416	28-Jul-10	3	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Beaver Creek	OKR09730-091	46416	28-Jul-10	3	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Beaver Creek	OKR09730-091	46416	28-Jul-10	3	Cyprinidae	Notropis buchanani	Ghost shiner	interm	X					
Beaver Creek	OKR09730-091	46416	28-Jul-10	3	Catostomidae	Ictiobus cyprinellus	Largemouth buffalo	tol	X					
Beaver Creek	OKR09730-091	46416	28-Jul-10	3	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Beaver Creek	OKR09730-091	46416	28-Jul-10	2	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Beaver Creek	OKR09730-091	46416	28-Jul-10	2	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Beaver Creek	OKR09730-091	46416	28-Jul-10	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Beaver Creek	OKR09730-091	46416	28-Jul-10	1	Ictaluridae	Ictalurus furcatus	Blue catfish	tol	X		X			
Beaver Creek	OKR09730-091	46416	28-Jul-10	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Beaver Creek	OKR09730-091	46416	28-Jul-10	1	Ictaluridae	Pygodictis olivaris	Flathead catfish	tol			X			
Beaver Creek	OKR09730-091	46416	28-Jul-10	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Beaver Creek	OKR09730-091	46416	28-Jul-10	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Bitter Creek	OKR09730-005	44085	15-Jul-09	99	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Bitter Creek	OKR09730-005	44085	15-Jul-09	24	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Bitter Creek	OKR09730-005	44085	15-Jul-09	16	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Bitter Creek	OKR09730-005	44085	15-Jul-09	14	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Bitter Creek	OKR09730-005	44085	15-Jul-09	4	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Bitter Creek	OKR09730-005	44085	15-Jul-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Bitter Creek	OKR09730-005	44085	15-Jul-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Buffalo Creek	OKR09730-012	43649	16-Jun-09	482	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Buffalo Creek	OKR09730-012	43649	16-Jun-09	144	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Buffalo Creek	OKR09730-012	43649	16-Jun-09	19	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Buffalo Creek	OKR09730-012	43649	16-Jun-09	9	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Buffalo Creek	OKR09730-012	43649	16-Jun-09	8	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Buffalo Creek	OKR09730-012	43649	16-Jun-09	8	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Buffalo Creek	OKR09730-012	43649	16-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Buffalo Creek	OKR09730-012	43649	16-Jun-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Buffalo Creek	OKR09730-012	43649	16-Jun-09	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Cavalry Creek	OKR09730-058	44159	29-Jul-09	161	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Cavalry Creek	OKR09730-058	44159	29-Jul-09	27	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Cavalry Creek	OKR09730-058	44159	29-Jul-09	16	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Cavalry Creek	OKR09730-058	44159	29-Jul-09	13	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Cavalry Creek	OKR09730-058	44159	29-Jul-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Cavalry Creek	OKR09730-058	44159	29-Jul-09	2	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Cavalry Creek	OKR09730-058	44159	29-Jul-09	2	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Cavalry Creek	OKR09730-058	44159	29-Jul-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Cavalry Creek	OKR09730-058	44159	29-Jul-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo							
Cavalry Creek	OKR09730-058	44159	29-Jul-09	1	Ictaluridae	Pygodictis olivaris	Flathead catfish	tol			X			
Chandler Creek	OKR09730-085	43634	25-Jun-09	113	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
Chandler Creek	OKR09730-085	43634	25-Jun-09	98	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Chandler Creek	OKR09730-085	43634	25-Jun-09	41	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Chandler Creek	OKR09730-085	43634	25-Jun-09	25	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Chandler Creek	OKR09730-085	43634	25-Jun-09	16	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Chandler Creek	OKR09730-085	43634	25-Jun-09	15	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
Chandler Creek	OKR09730-085	43634	25-Jun-09	8	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			X			X

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Chandler Creek	OKR09730-085	43634	25-Jun-09	5	Percidae	Percina caprodes	Logperch	intern	X					
Chandler Creek	OKR09730-085	43634	25-Jun-09	4	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Chandler Creek	OKR09730-085	43634	25-Jun-09	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Chandler Creek	OKR09730-085	43634	25-Jun-09	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Chandler Creek	OKR09730-085	43634	25-Jun-09	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Cow Creek	OKR09730-098	43638	30-Jun-09	880	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Cow Creek	OKR09730-098	43638	30-Jun-09	276	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Cow Creek	OKR09730-098	43638	30-Jun-09	87	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Cow Creek	OKR09730-098	43638	30-Jun-09	25	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Cow Creek	OKR09730-098	43638	30-Jun-09	18	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Cow Creek	OKR09730-098	43638	30-Jun-09	3	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Cow Creek	OKR09730-098	43638	30-Jun-09	3	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Cow Creek	OKR09730-098	43638	30-Jun-09	3	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Cow Creek	OKR09730-098	43638	30-Jun-09	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Cow Creek	OKR09730-098	43638	30-Jun-09	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Cow Creek	OKR09730-098	43638	30-Jun-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Cow Creek	OKR09730-098	43638	30-Jun-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
East Winter Creek	OKR09730-046	43633	24-Jun-09	83	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
East Winter Creek	OKR09730-046	43633	24-Jun-09	41	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
East Winter Creek	OKR09730-046	43633	24-Jun-09	22	Cyprinidae	Camptostoma anomalum	Central stoneroller	intern				X		X
East Winter Creek	OKR09730-046	43633	24-Jun-09	22	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
East Winter Creek	OKR09730-046	43633	24-Jun-09	11	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
East Winter Creek	OKR09730-046	43633	24-Jun-09	7	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
East Winter Creek	OKR09730-046	43633	24-Jun-09	4	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
East Winter Creek	OKR09730-046	43633	24-Jun-09	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
East Winter Creek	OKR09730-046	43633	24-Jun-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
East Winter Creek	OKR09730-119	43632	24-Jun-09	16	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
East Winter Creek	OKR09730-119	43632	24-Jun-09	10	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
East Winter Creek	OKR09730-119	43632	24-Jun-09	5	Cyprinidae	Camptostoma anomalum	Central stoneroller	intern				X		X
East Winter Creek	OKR09730-119	43632	24-Jun-09	2	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
East Winter Creek	OKR09730-119	43632	24-Jun-09	2	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
East Winter Creek	OKR09730-119	43632	24-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
East Winter Creek	OKR09730-119	43632	24-Jun-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Elk Creek	OKR09730-041	44083	14-Jul-09	564	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Elk Creek	OKR09730-041	44083	14-Jul-09	92	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Elk Creek	OKR09730-041	44083	14-Jul-09	17	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Elk Creek	OKR09730-041	44083	14-Jul-09	16	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Elk Creek	OKR09730-041	44083	14-Jul-09	14	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Elk Creek	OKR09730-041	44083	14-Jul-09	4	Cyprinidae	Notropis stramineus	Sand shiner	intern	X					
Elk Creek	OKR09730-041	44083	14-Jul-09	4	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Elk Creek	OKR09730-041	44083	14-Jul-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Elk Creek	OKR09730-041	44083	14-Jul-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Elk Creek	OKR09730-041	44083	14-Jul-09	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Elk Creek	OKR09730-057	44370	12-Aug-09	107	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Elk Creek	OKR09730-057	44370	12-Aug-09	103	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Elk Creek	OKR09730-057	44370	12-Aug-09	57	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Elk Creek	OKR09730-057	44370	12-Aug-09	24	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Elk Creek	OKR09730-057	44370	12-Aug-09	23	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Elk Creek	OKR09730-057	44370	12-Aug-09	15	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Elk Creek	OKR09730-057	44370	12-Aug-09	11	Catostomidae	Carpionodes carpio	River carpsucker	tol		X				
Elk Creek	OKR09730-057	44370	12-Aug-09	10	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Elk Creek	OKR09730-057	44370	12-Aug-09	10	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Elk Creek	OKR09730-057	44370	12-Aug-09	7	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Elk Creek	OKR09730-057	44370	12-Aug-09	6	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Elk Creek	OKR09730-057	44370	12-Aug-09	4	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Elk Creek	OKR09730-057	44370	12-Aug-09	2	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Elk Creek	OKR09730-057	44370	12-Aug-09	2	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Elk Creek	OKR09730-057	44370	12-Aug-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Elk Creek	OKR09730-057	44370	12-Aug-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Elk Creek	OKR09730-057	44370	12-Aug-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Lafin Creek	OKR09730-003	43629	22-Jun-09	216	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Lafin Creek	OKR09730-003	43629	22-Jun-09	11	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Lafin Creek	OKR09730-003	43629	22-Jun-09	7	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Lafin Creek	OKR09730-003	43629	22-Jun-09	7	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Lafin Creek	OKR09730-003	43629	22-Jun-09	2	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				X		X
Lake Creek	OKR09730-080	46408	27-May-10	1965	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Lake Creek	OKR09730-080	46408	27-May-10	93	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Lake Creek	OKR09730-080	46408	27-May-10	74	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Lake Creek	OKR09730-080	46408	27-May-10	70	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Lake Creek	OKR09730-080	46408	27-May-10	29	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Lake Creek	OKR09730-080	46408	27-May-10	17	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Lake Creek	OKR09730-080	46408	27-May-10	17	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Lake Creek	OKR09730-080	46408	27-May-10	9	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Lake Creek	OKR09730-080	46408	27-May-10	6	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Lake Creek	OKR09730-080	46408	27-May-10	3	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Lake Creek	OKR09730-080	46408	27-May-10	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Lake Creek	OKR09730-080	46408	27-May-10	3	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Lake Creek	OKR09730-080	46408	27-May-10	2	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Lake Creek	OKR09730-080	46408	27-May-10	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Little Turkey Creek	OKR09730-069	43650	16-Jun-09	4	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Little Turkey Creek	OKR09730-069	43650	16-Jun-09	3	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Little Turkey Creek	OKR09730-069	43650	16-Jun-09	2	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Little Turkey Creek	OKR09730-069	43650	16-Jun-09	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Little Turkey Creek	OKR09730-069	43650	16-Jun-09	1	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Little Turkey Creek	OKR09730-069	43650	16-Jun-09	1	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
Little Turkey Creek	OKR09730-069	43650	16-Jun-09	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Little Turkey Creek	OKR09730-069	43650	16-Jun-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Medicine Creek	OKR09730-026	43641	04-Aug-09	180	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Medicine Creek	OKR09730-026	43641	04-Aug-09	148	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Medicine Creek	OKR09730-026	43641	04-Aug-09	47	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Medicine Creek	OKR09730-026	43641	04-Aug-09	39	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Medicine Creek	OKR09730-026	43641	04-Aug-09	34	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Medicine Creek	OKR09730-026	43641	04-Aug-09	33	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Medicine Creek	OKR09730-026	43641	04-Aug-09	25	Catostomidae	Moxostoma	Redhorse sucker	intol	X					X
Medicine Creek	OKR09730-026	43641	04-Aug-09	11	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
Medicine Creek	OKR09730-026	43641	04-Aug-09	9	Atherinidae	Labidesthes sicculus	Brook silverside	interm	X					
Medicine Creek	OKR09730-026	43641	04-Aug-09	7	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				X		X
Medicine Creek	OKR09730-026	43641	04-Aug-09	6	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Medicine Creek	OKR09730-026	43641	04-Aug-09	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Medicine Creek	OKR09730-026	43641	04-Aug-09	1	Percidae	Percina caprodes	Logperch	interm	X					
Mud Creek	OKR09730-031	43635	29-Jun-09	67	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Mud Creek	OKR09730-031	43635	29-Jun-09	30	Cyprinidae	Notropis buchani	Ghost shiner	interm	X					
Mud Creek	OKR09730-031	43635	29-Jun-09	21	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Mud Creek	OKR09730-031	43635	29-Jun-09	20	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Mud Creek	OKR09730-031	43635	29-Jun-09	16	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Mud Creek	OKR09730-031	43635	29-Jun-09	6	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Mud Creek	OKR09730-031	43635	29-Jun-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar							
Mud Creek	OKR09730-031	43635	29-Jun-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Mud Creek	OKR09730-031	43635	29-Jun-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Mud Creek	OKR09730-110	43636	29-Jun-09	31	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Mud Creek	OKR09730-110	43636	29-Jun-09	20	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Mud Creek	OKR09730-110	43636	29-Jun-09	3	Centrarchidae	Lepomis gulosus	Warmouth sunfish	tol			X			
Mud Creek	OKR09730-110	43636	29-Jun-09	2	Cyprinidae	Notropis buchani	Ghost shiner	interm	X					
Mud Creek	OKR09730-110	43636	29-Jun-09	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Mud Creek	OKR09730-110	43636	29-Jun-09	1	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Mud Creek	OKR09730-110	43636	29-Jun-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Mud Creek	OKR09730-110	43636	29-Jun-09	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Mud Creek	OKR09730-110	43636	29-Jun-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Mud Creek	OKR09730-110	43636	29-Jun-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Mud Creek	OKR09730-110	43636	29-Jun-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Mud Creek	OKR09730-110	43636	29-Jun-09	1	Percidae	Percina caprodes	Logperch	interm	X					
North Fork Red River	OKR09730-025	44087	16-Jul-09	197	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
North Fork Red River	OKR09730-025	44087	16-Jul-09	95	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
North Fork Red River	OKR09730-025	44087	16-Jul-09	47	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
North Fork Red River	OKR09730-025	44087	16-Jul-09	20	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
North Fork Red River	OKR09730-025	44087	16-Jul-09	7	Catostomidae	Ictiobus bubalus	Smallmouth buffalo							
North Fork Red River	OKR09730-025	44087	16-Jul-09	4	Centrarchidae	Lepomis punctatus	Spotted sunfish	intol	X					
North Fork Red River	OKR09730-025	44087	16-Jul-09	3	Atherinidae	Labidesthes sicculus	Brook silverside	interm	X					
North Fork Red River	OKR09730-025	44087	16-Jul-09	3	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
North Fork Red River	OKR09730-025	44087	16-Jul-09	1	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
North Fork Red River	OKR09730-075	44102	21-Jul-09	214	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
North Fork Red River	OKR09730-075	44102	21-Jul-09	49	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
North Fork Red River	OKR09730-075	44102	21-Jul-09	26	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
North Fork Red River	OKR09730-075	44102	21-Jul-09	9	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
North Fork Red River	OKR09730-075	44102	21-Jul-09	8	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
North Fork Red River	OKR09730-075	44102	21-Jul-09	8	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
North Fork Red River	OKR09730-075	44102	21-Jul-09	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
North Fork Red River	OKR09730-075	44102	21-Jul-09	2	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
North Fork Red River	OKR09730-075	44102	21-Jul-09	2	Catostomidae	Carpiodes carpio	River carsucker	tol		X				
North Fork Red River	OKR09730-075	44102	21-Jul-09	1	Cyprinidae	Phenacobius mirabilis	Suckerminnow	intol	X					
North Fork Red River	OKR09730-075	44102	21-Jul-09	1	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
North Fork Red River	OKR09730-075	44102	21-Jul-09	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
North Fork Red River	OKR09730-096	43648	16-Jun-09	534	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
North Fork Red River	OKR09730-096	43648	16-Jun-09	79	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
North Fork Red River	OKR09730-096	43648	16-Jun-09	69	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
North Fork Red River	OKR09730-096	43648	16-Jun-09	21	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
North Fork Red River	OKR09730-096	43648	16-Jun-09	20	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
North Fork Red River	OKR09730-096	43648	16-Jun-09	5	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
North Fork Red River	OKR09730-096	43648	16-Jun-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
North Fork Red River	OKR09730-096	43648	16-Jun-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
North Fork Red River	OKR09730-096	43648	16-Jun-09	1	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Owens Creek	OKR09730-059	43630	23-Jun-09	88	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Owens Creek	OKR09730-059	43630	23-Jun-09	53	Cyprinidae	Notemigonus crysoleucas	Golden shiner	tol		X				
Owens Creek	OKR09730-059	43630	23-Jun-09	45	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Owens Creek	OKR09730-059	43630	23-Jun-09	24	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Owens Creek	OKR09730-059	43630	23-Jun-09	12	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Owens Creek	OKR09730-059	43630	23-Jun-09	6	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Owens Creek	OKR09730-059	43630	23-Jun-09	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Owens Creek	OKR09730-059	43630	23-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Pennington Creek	OKR09730-124	43627	17-Jun-09	475	Cyprinidae	Notropis boops	Bigeye shiner	intol	X					X
Pennington Creek	OKR09730-124	43627	17-Jun-09	194	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Pennington Creek	OKR09730-124	43627	17-Jun-09	45	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Pennington Creek	OKR09730-124	43627	17-Jun-09	21	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Pennington Creek	OKR09730-124	43627	17-Jun-09	17	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Pennington Creek	OKR09730-124	43627	17-Jun-09	16	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				X		X
Pennington Creek	OKR09730-124	43627	17-Jun-09	13	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Pennington Creek	OKR09730-124	43627	17-Jun-09	9	Cyprinidae	Pimephales notatus	Bluntnose minnow	interm		X				X
Pennington Creek	OKR09730-124	43627	17-Jun-09	6	Fundulidae	Fundulus olivaceus	Blackspeckled topminnow	interm	X					
Pennington Creek	OKR09730-124	43627	17-Jun-09	6	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Pennington Creek	OKR09730-124	43627	17-Jun-09	4	Percidae	Etheostoma spectabile	Orangethroat darter	interm	X					X
Pennington Creek	OKR09730-124	43627	17-Jun-09	3	Centrarchidae	Lepomis microlophus	Redear sunfish	interm	X					
Pennington Creek	OKR09730-124	43627	17-Jun-09	1	Catostomidae	Moxostoma	Redhorse sucker	intol	X					X
Pennington Creek	OKR09730-124	43627	17-Jun-09	1	Catostomidae	Moxostoma erythrurum	Golden redbhorse	interm	X					X
Pennington Creek	OKR09730-124	43627	17-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Pennington Creek	OKR09730-124	43627	17-Jun-09	1	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Pennington Creek	OKR09730-124	43627	17-Jun-09	1	Atherinidae	Labidesthes sicculus	Brook silverside	interm	X					
Quartermaster Creek	OKR09730-116	43645	28-May-09	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Quartermaster Creek	OKR09730-116	43645	28-May-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	399	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	117	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	16	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	12	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	12	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	8	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	5	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	4	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	3	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Rainy Mountain Creek	OKR09730-014	43657	01-Jul-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	463	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	49	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	7	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	4	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	1	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Rainy Mountain Creek	OKR09730-071	43656	01-Jul-09	1	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			X			
Rush Creek	OKR09730-019	43626	18-Jun-09	221	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Rush Creek	OKR09730-019	43626	18-Jun-09	87	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Rush Creek	OKR09730-019	43626	18-Jun-09	83	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Rush Creek	OKR09730-019	43626	18-Jun-09	26	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Rush Creek	OKR09730-019	43626	18-Jun-09	17	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Rush Creek	OKR09730-019	43626	18-Jun-09	9	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Rush Creek	OKR09730-019	43626	18-Jun-09	8	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Rush Creek	OKR09730-019	43626	18-Jun-09	6	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Rush Creek	OKR09730-019	43626	18-Jun-09	5	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Rush Creek	OKR09730-019	43626	18-Jun-09	2	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Rush Creek	OKR09730-019	43626	18-Jun-09	2	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Rush Creek	OKR09730-019	43626	18-Jun-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Rush Creek	OKR09730-019	43626	18-Jun-09	1	Centrarchidae	Pomoxis nigromaculatus	Black crappie	tol			X			
Rush Creek	OKR09730-084	43628	22-Jun-09	432	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Rush Creek	OKR09730-084	43628	22-Jun-09	32	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Rush Creek	OKR09730-084	43628	22-Jun-09	23	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Rush Creek	OKR09730-084	43628	22-Jun-09	13	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Rush Creek	OKR09730-084	43628	22-Jun-09	7	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Rush Creek	OKR09730-084	43628	22-Jun-09	6	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Rush Creek	OKR09730-084	43628	22-Jun-09	3	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Rush Creek	OKR09730-084	43628	22-Jun-09	2	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Rush Creek	OKR09730-084	43628	22-Jun-09	2	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Rush Creek	OKR09730-084	43628	22-Jun-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Rush Creek	OKR09730-084	43628	22-Jun-09	1	Catostomidae	Carpiodes carpio	River carsucker	tol		X				
Rush Creek	OKR09730-084	43628	22-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Salt Creek	OKR09730-062	43631	23-Jun-09	135	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Salt Creek	OKR09730-062	43631	23-Jun-09	17	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Salt Creek	OKR09730-062	43631	23-Jun-09	11	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Salt Creek	OKR09730-062	43631	23-Jun-09	10	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Salt Creek	OKR09730-062	43631	23-Jun-09	8	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Salt Creek	OKR09730-062	43631	23-Jun-09	7	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Salt Creek	OKR09730-062	43631	23-Jun-09	6	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Salt Creek	OKR09730-062	43631	23-Jun-09	4	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Salt Creek	OKR09730-062	43631	23-Jun-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Salt Creek	OKR09730-062	43631	23-Jun-09	2	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Salt Creek	OKR09730-062	43631	23-Jun-09	1	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Salt Creek	OKR09730-062	43631	23-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Sand Creek	OKR09730-139	43652	17-Jun-09	13	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Sand Creek	OKR09730-139	43652	17-Jun-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Sand Creek	OKR09730-139	43652	17-Jun-09	1	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Sandstone Creek	OKR09730-060	43647	29-May-09	186	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Sandstone Creek	OKR09730-060	43647	29-May-09	71	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Sandstone Creek	OKR09730-060	43647	29-May-09	70	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Sandstone Creek	OKR09730-060	43647	29-May-09	41	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Sandstone Creek	OKR09730-060	43647	29-May-09	37	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Sandstone Creek	OKR09730-060	43647	29-May-09	22	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Sandstone Creek	OKR09730-060	43647	29-May-09	6	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Sandstone Creek	OKR09730-060	43647	29-May-09	3	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Sandstone Creek	OKR09730-060	43647	29-May-09	3	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Sandstone Creek	OKR09730-060	43647	29-May-09	2	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Sandstone Creek	OKR09730-060	43647	29-May-09	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Station Creek	OKR09730-123	44084	14-Jul-09	274	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Station Creek	OKR09730-123	44084	14-Jul-09	144	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Station Creek	OKR09730-123	44084	14-Jul-09	48	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Station Creek	OKR09730-123	44084	14-Jul-09	41	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Station Creek	OKR09730-123	44084	14-Jul-09	27	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Station Creek	OKR09730-123	44084	14-Jul-09	6	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Station Creek	OKR09730-123	44084	14-Jul-09	2	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Station Creek	OKR09730-123	44084	14-Jul-09	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Station Creek	OKR09730-123	44084	14-Jul-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Station Creek	OKR09730-123	44084	14-Jul-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Station Creek	OKR09730-123	44084	14-Jul-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Timber Creek	OKR09730-136	43651	17-Jun-09	60	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Timber Creek	OKR09730-136	43651	17-Jun-09	45	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Timber Creek	OKR09730-136	43651	17-Jun-09	35	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Timber Creek	OKR09730-136	43651	17-Jun-09	5	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Timber Creek	OKR09730-136	43651	17-Jun-09	2	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Timber Creek	OKR09730-136	43651	17-Jun-09	1	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Timber Creek	OKR09730-136	43651	17-Jun-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Timber Creek	OKR09730-136	43651	17-Jun-09	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Turkey Creek	OKR09730-109	44086	15-Jul-09	492	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Turkey Creek	OKR09730-109	44086	15-Jul-09	116	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Turkey Creek	OKR09730-109	44086	15-Jul-09	64	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Turkey Creek	OKR09730-109	44086	15-Jul-09	60	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Turkey Creek	OKR09730-109	44086	15-Jul-09	17	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Turkey Creek	OKR09730-109	44086	15-Jul-09	9	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Turkey Creek	OKR09730-109	44086	15-Jul-09	5	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Turkey Creek	OKR09730-109	44086	15-Jul-09	1	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
Turkey Creek	OKR09730-109	44086	15-Jul-09	1	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Turkey Creek	OKR09730-109	44086	15-Jul-09	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Walnut Bayou	OKR09730-027	44112	22-Jul-09	116	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Walnut Bayou	OKR09730-027	44112	22-Jul-09	61	Catostomidae	Carpiodes carpio	River carsucker	tol		X				
Walnut Bayou	OKR09730-027	44112	22-Jul-09	51	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Walnut Bayou	OKR09730-027	44112	22-Jul-09	48	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Walnut Bayou	OKR09730-027	44112	22-Jul-09	42	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Walnut Bayou	OKR09730-027	44112	22-Jul-09	35	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Walnut Bayou	OKR09730-027	44112	22-Jul-09	15	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Walnut Bayou	OKR09730-027	44112	22-Jul-09	14	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Walnut Bayou	OKR09730-027	44112	22-Jul-09	13	Clupeidae	Dorosoma petenense	Threadfin shad	interm		X				
Walnut Bayou	OKR09730-027	44112	22-Jul-09	8	Cyprinidae	Notropis buchanani	Ghost shiner	interm	X					
Walnut Bayou	OKR09730-027	44112	22-Jul-09	6	Cyprinidae	Notropis bairdi	Red River shiner	tol	X					
Walnut Bayou	OKR09730-027	44112	22-Jul-09	5	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Walnut Bayou	OKR09730-027	44112	22-Jul-09	5	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Walnut Bayou	OKR09730-027	44112	22-Jul-09	4	Lepisosteidae	Lepisosteus oculatus	Spotted gar	tol			X			
Walnut Bayou	OKR09730-027	44112	22-Jul-09	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Walnut Bayou	OKR09730-027	44112	22-Jul-09	3	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Walnut Bayou	OKR09730-027	44112	22-Jul-09	3	Cyprinidae	Cyprinella venusta	Blacktail shiner	interm	X			X		
Walnut Bayou	OKR09730-027	44112	22-Jul-09	2	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Walnut Bayou	OKR09730-027	44112	22-Jul-09	1	Cyprinidae	Notropis atherinoides	Emerald shiner	tol	X					
Walnut Bayou	OKR09730-027	44112	22-Jul-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Walnut Bayou	OKR09730-027	44112	22-Jul-09	1	Percidae	Percina caprodes	Logperch	interm	X					
Washita River	OKR09730-020	44371	13-Aug-09	372	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Washita River	OKR09730-020	44371	13-Aug-09	159	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Washita River	OKR09730-020	44371	13-Aug-09	68	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Washita River	OKR09730-020	44371	13-Aug-09	39	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Washita River	OKR09730-020	44371	13-Aug-09	27	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Washita River	OKR09730-020	44371	13-Aug-09	24	Catostomidae	Carpiodes carpio	River carsucker	tol		X				
Washita River	OKR09730-020	44371	13-Aug-09	22	Percidae	Percina sciera	Dusky darter	interm	X					X
Washita River	OKR09730-020	44371	13-Aug-09	16	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Washita River	OKR09730-020	44371	13-Aug-09	9	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Washita River	OKR09730-020	44371	13-Aug-09	7	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Washita River	OKR09730-020	44371	13-Aug-09	6	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Washita River	OKR09730-020	44371	13-Aug-09	5	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Washita River	OKR09730-020	44371	13-Aug-09	4	Ictaluridae	Noturus nocturnus	Freckled madtom	intol	X					
Washita River	OKR09730-020	44371	13-Aug-09	1	Centrarchidae	Pomoxis annularis	White crappie	tol			X			
Washita River	OKR09730-020	44371	13-Aug-09	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Washita River	OKR09730-047	46562	12-Aug-10	380	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Washita River	OKR09730-047	46562	12-Aug-10	122	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Washita River	OKR09730-047	46562	12-Aug-10	106	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Washita River	OKR09730-047	46562	12-Aug-10	89	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Washita River	OKR09730-047	46562	12-Aug-10	34	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Washita River	OKR09730-047	46562	12-Aug-10	25	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Washita River	OKR09730-047	46562	12-Aug-10	17	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Washita River	OKR09730-047	46562	12-Aug-10	16	Percidae	Percina phoxocephala	Slenderhead darter	intol	X					X
Washita River	OKR09730-047	46562	12-Aug-10	15	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Washita River	OKR09730-047	46562	12-Aug-10	11	Cyprinidae	Campostoma anomalum	Central stoneroller	interm				X		X
Washita River	OKR09730-047	46562	12-Aug-10	8	Centrarchidae	Micropterus punctulatus	Spotted bass	interm			X			X
Washita River	OKR09730-047	46562	12-Aug-10	7	Ictaluridae	Ictalurus furcatus	Blue catfish	tol	X		X			
Washita River	OKR09730-047	46562	12-Aug-10	6	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Washita River	OKR09730-047	46562	12-Aug-10	5	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	X					
Washita River	OKR09730-047	46562	12-Aug-10	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Washita River	OKR09730-047	46562	12-Aug-10	2	Lepisosteidae	Lepisosteus osseus	Longnose gar				X			
Washita River	OKR09730-047	46562	12-Aug-10	2	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			X			
Washita River	OKR09730-047	46562	12-Aug-10	1	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Washita River	OKR09730-047	46562	12-Aug-10	1	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Washita River	OKR09730-047	46562	12-Aug-10	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Washita River	OKR09730-074	44372	14-Aug-09	318	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Washita River	OKR09730-074	44372	14-Aug-09	195	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Washita River	OKR09730-074	44372	14-Aug-09	113	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Washita River	OKR09730-074	44372	14-Aug-09	29	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Washita River	OKR09730-074	44372	14-Aug-09	14	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Washita River	OKR09730-074	44372	14-Aug-09	11	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Washita River	OKR09730-074	44372	14-Aug-09	8	Lepisosteidae	Lepisosteus osseus	Longnose gar	tol			X			
Washita River	OKR09730-074	44372	14-Aug-09	8	Percidae	Percina sciera	Dusky darter	interm	X					X
Washita River	OKR09730-074	44372	14-Aug-09	5	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Washita River	OKR09730-074	44372	14-Aug-09	4	Ictaluridae	Noturus nocturnus	Freckeled madtom	intol	X					
Washita River	OKR09730-074	44372	14-Aug-09	3	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Washita River	OKR09730-074	44372	14-Aug-09	2	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Washita River	OKR09730-074	44372	14-Aug-09	1	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Washita River	OKR09730-074	44372	14-Aug-09	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Washita River	OKR09730-074	44372	14-Aug-09	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
Washita River	OKR09730-078	46417	29-Jul-10	456	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Washita River	OKR09730-078	46417	29-Jul-10	74	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Washita River	OKR09730-078	46417	29-Jul-10	44	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Washita River	OKR09730-078	46417	29-Jul-10	34	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Washita River	OKR09730-078	46417	29-Jul-10	14	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Washita River	OKR09730-078	46417	29-Jul-10	10	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Washita River	OKR09730-078	46417	29-Jul-10	4	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Washita River	OKR09730-078	46417	29-Jul-10	2	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Washita River	OKR09730-078	46417	29-Jul-10	2	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
Washita River	OKR09730-078	46417	29-Jul-10	2	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Washita River	OKR09730-078	46417	29-Jul-10	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
Washita River	OKR09730-078	46417	29-Jul-10	1	Centrarchidae	Micropterus salmoides	Largemouth bass	tol			X			
Washita River	OKR09730-081	46563	12-Aug-10	176	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Washita River	OKR09730-081	46563	12-Aug-10	13	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Washita River	OKR09730-081	46563	12-Aug-10	9	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Washita River	OKR09730-081	46563	12-Aug-10	5	Ictaluridae	Ictalurus furcatus	Blue catfish	tol	X		X			
Washita River	OKR09730-081	46563	12-Aug-10	4	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Washita River	OKR09730-081	46563	12-Aug-10	4	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Washita River	OKR09730-081	46563	12-Aug-10	2	Fundulidae	Fundulus zebrinus	Plains killifish	tol	X					
Washita River	OKR09730-081	46563	12-Aug-10	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Washita River	OKR09730-081	46563	12-Aug-10	1	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Washita River	OKR09730-127	46414	24-Jun-10	899	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				

Appendix B. Fish collection data.

Site Name	WBID	SAMPLEID	Date	Number	Family	Species	Vernacular Name	Combined Tolerance	Insectivor	Omnivore	Piscivore	Herbivore	Generalist	Lithophilic Spawners
Washita River	OKR09730-127	46414	24-Jun-10	137	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Washita River	OKR09730-127	46414	24-Jun-10	22	Ictaluridae	Ictalurus punctatus	Channel catfish	tol			X		X	
Washita River	OKR09730-127	46414	24-Jun-10	19	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Washita River	OKR09730-127	46414	24-Jun-10	13	Ictaluridae	Pylodictis olivaris	Flathead catfish	tol			X			
Washita River	OKR09730-127	46414	24-Jun-10	11	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
Washita River	OKR09730-127	46414	24-Jun-10	9	Catostomidae	Carpiodes carpio	River carpsucker	tol		X				
Washita River	OKR09730-127	46414	24-Jun-10	9	Ictaluridae	Noturus nocturnus	Freckleled madtom	intol	X					
Washita River	OKR09730-127	46414	24-Jun-10	7	Clupeidae	Dorosoma cepedianum	Gizzard shad	tol		X				
Washita River	OKR09730-127	46414	24-Jun-10	6	Catostomidae	Ictiobus bubalus	Smallmouth buffalo	tol	X					
Washita River	OKR09730-127	46414	24-Jun-10	5	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	tol	X					
Washita River	OKR09730-127	46414	24-Jun-10	5	Percidae	Percina sciera	Dusky darter	interm	X					X
Washita River	OKR09730-127	46414	24-Jun-10	4	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
Washita River	OKR09730-127	46414	24-Jun-10	3	Ictaluridae	Ictalurus furcatus	Blue catfish	tol	X		X			
Washita River	OKR09730-127	46414	24-Jun-10	2	Lepisosteidae	Lepisosteus platostomus	Shortnose gar	tol			X			
Washita River	OKR09730-127	46414	24-Jun-10	2	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Washita River	OKR09730-127	46414	24-Jun-10	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Washita River	OKR09730-127	46414	24-Jun-10	1	Ictaluridae	Noturus gyrinus	Tadpole madtom	intol	X					
Washita River	OKR09730-127	46414	24-Jun-10	1	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Washita River	OKR09730-127	46414	24-Jun-10	1	Sciaenidae	Aplodinotus grunniens	Freshwater drum	tol	X				X	
White Shield Creek	OKR09730-052	43654	03-Jun-09	252	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
White Shield Creek	OKR09730-052	43654	03-Jun-09	237	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
White Shield Creek	OKR09730-052	43654	03-Jun-09	43	Cyprinidae	Camptostoma anomalum	Central stoneroller	interm				X		X
White Shield Creek	OKR09730-052	43654	03-Jun-09	17	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				
White Shield Creek	OKR09730-052	43654	03-Jun-09	13	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
White Shield Creek	OKR09730-052	43654	03-Jun-09	9	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
White Shield Creek	OKR09730-052	43654	03-Jun-09	4	Cyprinidae	Cyprinus carpio	Common carp	tol		X				
White Shield Creek	OKR09730-052	43654	03-Jun-09	3	Ictaluridae	Ameiurus melas	Black bullhead	tol	X				X	
White Shield Creek	OKR09730-052	43654	03-Jun-09	1	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
White Shield Creek	OKR09730-094	43653	03-Jun-09	224	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
White Shield Creek	OKR09730-094	43653	03-Jun-09	19	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
White Shield Creek	OKR09730-094	43653	03-Jun-09	6	Centrarchidae	Lepomis megalotis	Longear sunfish	tol	X					
White Shield Creek	OKR09730-094	43653	03-Jun-09	5	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
White Shield Creek	OKR09730-094	43653	03-Jun-09	3	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
White Shield Creek	OKR09730-094	43653	03-Jun-09	3	Ictaluridae	Ameiurus natalis	Yellow bullhead	tol	X				X	
White Shield Creek	OKR09730-094	43653	03-Jun-09	2	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Wild Horse Creek	OKR09730-008	43646	28-May-09	64	Cyprinidae	Cyprinella lutrensis	Red shiner	tol		X				
Wild Horse Creek	OKR09730-008	43646	28-May-09	4	Cyprinidae	Pimephales vigilax	Bullhead minnow	tol		X				
Wild Horse Creek	OKR09730-008	43646	28-May-09	3	Poeciliidae	Gambusia affinis	Mosquitofish	tol	X					
Wild Horse Creek	OKR09730-008	43646	28-May-09	2	Cyprinidae	Phenacobius mirabilis	Suckermouth minnow	intol	X					
Wild Horse Creek	OKR09730-008	43646	28-May-09	2	Centrarchidae	Lepomis cyanellus	Green sunfish	tol	X				X	
Wild Horse Creek	OKR09730-008	43646	28-May-09	2	Centrarchidae	Lepomis humilis	Orangespotted sunfish	tol	X					
Wild Horse Creek	OKR09730-008	43646	28-May-09	1	Cyprinidae	Notropis stramineus	Sand shiner	interm	X					
Wild Horse Creek	OKR09730-008	43646	28-May-09	1	Cyprinidae	Pimephales promelas	Fathead minnow	tol		X				

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder	
Riffle	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	28	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	9	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X								
Riffle	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	6	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X							
Riffle	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X						
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	122	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	69	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	40	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	33	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia	4	X								
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	23	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X							
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	17	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X								
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	8	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X							
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X							
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	5	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X				
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	5	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X		
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X							
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X								
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8		X							
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X							
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X		
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X				
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X						
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	1	ARTHROPODA	Acari	Arcarina	Hygrobatidae	Atractides	4					X				
Riffle	Beaver Creek	OK311200-00-0030L	44053	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	48	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	23	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia	4	X								
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X							
Riffle	Beaver Creek	OK311200-00-0030L	45673	03/05/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X								
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	45	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	23	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X							
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X								
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	4	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X				
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	4	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X								
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X							
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X							
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylopeus	4		X							
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X				
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X				
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia	4	X								
Riffle	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X								
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	37	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4		X							
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	32	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X		
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	20	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X							
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X						
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X							
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X							
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X						
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X				

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon	4		X	X					
Riffle	Big Sandy Creek	OK310800-01-0090G	43998	07/01/09	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	66	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	21	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia	1								X
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	2	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1			X					
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	1	ARTHROPODA	Crustacea	Isopoda	Asellidae	Lirceus	8		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Falleon	4		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	45449	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	70	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	19	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	3	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	2					X			
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	2	ARTHROPODA	Insecta	Coleoptera	Halpidae	Peltoodytes	2								X
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Acar	Tormenticolidae	Tormenticola							X			
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon	6		X			X			
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea	6		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	1						X		
Riffle	Big Sandy Creek	OK310800-01-0090G	46500	07/06/10	1	ARTHROPODA	Insecta	Odonata	Libellulidae		9					X			
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	44	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	23	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	17	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6		X						
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea	4	X							
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	5	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	3	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Falleon	4		X						
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X			
Riffle	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	4		X						
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	49	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	4		X						
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	30	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	6			X					
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	14	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Boggy Creek	OK310830-03-0100C	46081	02/18/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea	4	X							
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6		X						
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	18	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	15	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	13	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Falleon	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Camelobaetis	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	7	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	2	ANNELIDA	Hirudinea	Pharyngobdellida	Erbobdellidae	Mooreobdella	8					X			
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	1	ARTHROPODA	Insecta	Neuroptera	Sisyridae	Climacia	4					X			
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Caddo Creek	OK310800-03-0010F	43994	07/01/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	85	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	20	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Caddo Creek	OK310800-03-0010F	45445	01/19/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	24	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	6	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Camelobaetidius	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	3	ARTHROPODA	Insecta	Lepidoptera	Pyrilidae	Petrophila	5							X	
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	3	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	2	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia	4			X					
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae	Lumbricidae	5		X						
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Caddo Creek	OK310800-03-0010F	46496	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	46	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	23	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	6	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae		7					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	5		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		4		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X					
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	68	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	34	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia	1								X
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae		7					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1			X					
Riffle	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla	2					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	43	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	2	ANNELIDA	Oligochaeta	Haplotaaxida	Lumbricidae		5		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Pisidium	6	X							
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	47	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	36	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	4	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4						X		
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	1					X			
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X						X	
Riffle	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4							X	
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	96	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	16	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	2	ANNELIDA	Oligochaeta	Haplotaaxida	Tubificidae	Limnodrilus	10		X						
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	1					X			
Riffle	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	28	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	14	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloodes	4							X	
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4						X		
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9						X		
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	1	ANNELIDA	Oligochaeta	Haplotaaxida	Lumbricidae		5		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomys	8		X						
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Riffle	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	40	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	22	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	1	ANNELIDA	Oligochaeta	Haplotaaxida	Naididae	Nais	8		X						
Riffle	Elk Creek	OK311500-03-0010G	45441	01/12/10	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X		X					
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	28	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	23	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	17	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	4	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	3	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus						X			
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Riffle	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	83	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops	6		X			X			
Riffle	Finn Creek	OK310810-02-0020D	45450	01/20/10	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae		5								X
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	44	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	19	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	7	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	5	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Riffle	Finn Creek	OK310810-02-0020D	46521	07/27/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	60	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	8		X						
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	9	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	6		X						
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4			X					
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	1					X			
Riffle	Gypsum Creek	OK311600-01-0020F	44042	07/13/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Gypsum Creek	OK311600-01-0020F	44042	07/13/09	4	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X		X	
Riffle	Gypsum Creek	OK311600-01-0020F	44042	07/13/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Gypsum Creek	OK311600-01-0020F	44042	07/13/09	1	ARTHROPODA	Crustacea	Ostracoda			4		X						
Riffle	Gypsum Creek	OK311600-01-0020F	44042	07/13/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Gypsum Creek	OK311600-01-0020F	44042	07/13/09	1	ARTHROPODA	Insecta	Hemiptera	Mesoveliidae	Mesovella	4					X			
Riffle	Gypsum Creek	OK311600-01-0020F	44042	07/13/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Gypsum Creek	OK311600-01-0020F	45438	01/11/10	124	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Gypsum Creek	OK311600-01-0020F	45438	01/11/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Gypsum Creek	OK311600-01-0020F	45438	01/11/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X		X	
Riffle	Gypsum Creek	OK311600-01-0020F	45438	01/11/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
Riffle	Gypsum Creek	OK311600-01-0020F	45438	01/11/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Gypsum Creek	OK311600-01-0020F	45438	01/11/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	140	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder	
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero	10		X							
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X							
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	1	ARTHROPODA	Insecta	Collembola	Isotomidae	Isotomurus			X							
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X				
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X				
Riffle	Haystack Creek	OK311800-00-0040D	43873	06/25/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X		
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	44	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	25	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X				
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops			X			X				
Riffle	Haystack Creek	OK311800-00-0040D	45465	01/14/10	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X								
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	98	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	16	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	7	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagovelia	8					X				
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	4	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X			
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X				
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X	
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X							
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X				
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Microvelia	8					X				
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X				
Riffle	Haystack Creek	OK311800-00-0040D	46474	06/23/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X		
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	40	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	29	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X		
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	21	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X					X		
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X								
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X				X			
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X						
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X								
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	55	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allopcania	1								X	
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	4	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	3	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X				
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilydrilus	8		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	1	ARTHROPODA	Crustacea	Copepoda					X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	1	ARTHROPODA	Insecta	Collembola	Isotomidae	Isotomurus			X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X								
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	45453	01/20/10	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1			X						
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	45	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	10	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X				
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	3	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X				
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Prosternus	7					X				

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X					
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Diptera	Psychodidae	Pericoma	10		X						
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Riffle	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	122	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	10	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero	10		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	3	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	48	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	7	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	7	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	5	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomys	8			X					
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	4	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Crustacea	Ostracoda					X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	7			X					
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Paracymus	4			X		X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X						
Riffle	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	46475	06/23/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	55	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	34	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	23	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	6	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	2	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	1	ARTHROPODA	Acar	Arcarina	Hygrobatidae	Atractides	4					X			
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerochroma	6					X			
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	4		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	76	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	16	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	11	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	10	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
Riffle	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	23	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	17	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	12	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	4	ANNELIDA	Oligochaeta	Haplotaenidae	Tubificidae	Limnodrilus	10		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	4	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila	5							X	
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ANNELIDA	Oligochaeta	Haplotaenidae	Naididae	Pristina	8		X						
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloa	4							X	
Riffle	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	44	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	33	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	21	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	11	ANNELIDA	Oligochaeta	Haplotaenidae	Tubificidae	Limnodrilus	10		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	3	ANNELIDA	Oligochaeta	Haplotaenidae	Naididae	Slavina	8		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	3	ARTHROPODA	Insecta	Odonata	Libellulidae	Brechmorhoga	9					X			
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezia	6		X			X			
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	1	ANNELIDA	Oligochaeta	Haplotaenidae	Naididae	Pristina	8		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalalella	8		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	6					X			
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	1					X			
Riffle	Little Deep Red Creek	OK311310-03-0040D	44039	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Oecetis	4					X			
Riffle	Little Deep Red Creek	OK311310-03-0040D	45435	01/11/10	56	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	45435	01/11/10	45	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Little Deep Red Creek	OK311310-03-0040D	45435	01/11/10	19	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Little Deep Red Creek	OK311310-03-0040D	45435	01/11/10	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Little Deep Red Creek	OK311310-03-0040D	45435	01/11/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	71	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	3	ANNELIDA	Oligochaeta	Haplotaenidae	Naididae	Dero	10		X						
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	1	ANNELIDA	Oligochaeta	Haplotaenidae	Tubificidae	Limnodrilus	10		X						
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubirapha	4		X					X	
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X		X	
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia	4			X					
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	46	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	10	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	5	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta	4		X					X	
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	3	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalalella	8		X						
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus	6					X			
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Insecta	Coleoptera	Staphylinidae		4					X			
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	MOLLUSCA	Pelecypoda	Veneroidea	Corbiculidae	Corbicula	5	X							
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	55	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	9	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8			X					
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4			X					
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	5	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1				X				
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	4	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8			X					
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6			X					
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6			X					
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4			X					
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4				X				
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Medicine Creek	OK311300-04-0060H	45431	01/11/10	1	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Gyraulus	8							X	
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	22	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	18	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	13	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4				X				
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	13	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	10	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	7	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4				X				
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7			X					
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Medicine Creek	OK311300-04-0060H	46506	07/21/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	86	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	4	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1				X				
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4			X				X	
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4				X				
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X		X	
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla	2					X			
Riffle	Mill Creek: Lower	OK310800-01-0190G	45447	01/19/10	1	ARTHROPODA	Insecta	Plecoptera	Taeniopterygidae	Strophopteryx	2							X	
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	12	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	6	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4				X				
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Hexacylloepus	4			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6			X					
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4				X				
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila	5							X	
Riffle	Mill Creek: Lower	OK310800-01-0190G	46498	07/06/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea	4	X							
Riffle	North Elm Creek	OK311800-00-0170G	46106	03/02/10	109	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6			X					

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae		2		X						
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	15	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	14	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	8	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	5	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	4	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4				X			X	
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	2	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus					X				
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8		X						
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7				X		X		
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezia	6		X			X			
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Otter Creek	OK311500-01-0080F	44041	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Cynnellus	6	X							
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	36	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	11	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	7	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	6	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	6	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	3	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia	4			X					
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Crustacea	Cladocera				X							
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4				X			X	
Riffle	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	68	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	14	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	4	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X		X	
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	4	ARTHROPODA	Insecta	Megaloptera	Sialidae	Sialis	4					X			
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	2	ARTHROPODA	Insecta	Coleoptera	Halplidae	Peltodytes	2								X
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Crustacea	Cladocera				X							
Riffle	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X			
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	72	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	56	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	51	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	1	ARTHROPODA	Crustacea	Copepoda					X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Quartermaster Creek	OK310840-01-0060L	46105	03/01/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	82	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	9	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	5	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	4	ARTHROPODA	Insecta	Coleoptera	Halipilidae	Peltodytes	2								X
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Quartermaster Creek	OK310840-01-0060L	46483	06/24/10	1	ARTHROPODA	Insecta	Megaloptera	Sialidae	Sialis	4					X			
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	34	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	28	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	3	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Riffle	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	101	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
Riffle	Rush Creek	OK310810-05-0010D	45452	01/20/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	46	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	25	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	11	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallecon	4		X						
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	4	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia	4	X							
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Rush Creek	OK310810-05-0010D	46502	07/07/10	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia	4			X					
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	10	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	8	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	3	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila	5							X	
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia	4					X			
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Salt Creek	OK310810-03-0080G	43992	07/01/09	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	98	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Salt Creek	OK310810-03-0080G	45443	01/19/10	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	46	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	43	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Camelobaetidius	4		X						
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4	X							
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	4	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Acar	Arcarina	Sperchonidae	Sperchon									
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	33	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	22	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	13	NEMATODA									X				
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	5	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	ARTHROPODA	Crustacea	Ostracoda					X						
Riffle	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Sandy Creek	OK311600-01-0040G	45440	01/12/10	108	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Sandy Creek	OK311600-01-0040G	45440	01/12/10	5	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Sandy Creek	OK311600-01-0040G	45440	01/12/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Spring Creek	OK310840-02-0240D	45459	01/13/10	63	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Spring Creek	OK310840-02-0240D	45459	01/13/10	24	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Spring Creek	OK310840-02-0240D	45459	01/13/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Spring Creek	OK310840-02-0240D	45459	01/13/10	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Spring Creek	OK310840-02-0240D	45459	01/13/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Spring Creek	OK310840-02-0240D	45459	01/13/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero	10		X						
Riffle	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	ARTHROPODA	Insecta	Diptera	Chaoboridae	Chaoborus	8					X			
Riffle	Spring Creek	OK310840-02-0240D	46481	06/24/10	98	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ARTHROPODA	Insecta	Coleoptera	Haliplidae	Peltodytes	2								X
Riffle	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	51	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	39	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	31	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Falliceon	4		X						
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	8	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubirapha	4		X					X	
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	1	ARTHROPODA	Insecta	Coleoptera	Haliplidae	Peltodytes	2								X
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X		X	
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Paracymus	7			X			X		
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	1	ARTHROPODA	Insecta	Megaloptera	Sialidae	Sialis	4					X			
Riffle	Station Creek	OK311800-00-0060G	43872	06/25/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Suttle Creek	OK311310-01-0070H	46508	07/21/10	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Suttle Creek	OK311310-01-0070H	46508	07/21/10	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Suttle Creek	OK311310-01-0070H	46508	07/21/10	24	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Suttle Creek	OK311310-01-0070H	46508	07/21/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Suttle Creek	OK311310-01-0070H	46508	07/21/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Suttle Creek	OK311310-01-0070H	46508	07/21/10	2	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops	6		X			X			
Riffle	Suttle Creek	OK311310-01-0070H	46508	07/21/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Suttle Creek	OK311310-01-0070H	46508	07/21/10	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	50	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	42	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	21	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	12	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia	4					X			
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	7							X	
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	4		X						
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
Riffle	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	34	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	28	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	14	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	14	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	12	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	7	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3				X				
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	6	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	4	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X	
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5								
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Crustacea	Ostracoda					X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Insecta	Diptera	Ephydriidae	Hydrella	6		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Insecta	Diptera	Psychodidae	Pericoma	10		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Insecta	Odonata	Libellulidae	Brechmorhoga	9					X			
Riffle	Tepee Creek	OK311500-01-0110D	44046	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Tepee Creek	OK311500-01-0110D	45442	01/12/10	123	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Tepee Creek	OK311500-01-0110D	45442	01/12/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	21	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	17	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	6	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	6	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Pisidium	6	X							
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erbobdellidae	Mooreobdella	8					X			
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubirapha	4		X					X	
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1			X					
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	53	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	21	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	9	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia	6					X		X	
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloedes	4							X	
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	PLATYHELMINTHES	Turbellaria		Planariidae	Dugesia	4			X					
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	76	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	31	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	116	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8			X					
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	15	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	2	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	173	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	32	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	3	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	59	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	23	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	11	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4					X			
Riffle	Turkey Creek	OK311600-02-0060J	45439	01/12/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4							X	
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	21	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	18	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	15	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	13	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	8	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X							
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	4	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X					
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	1	ARTHROPODA	Insecta	Diptera	Dolichopodidae	Hydrophorus	4					X			
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta	4		X					X	
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	19	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X							
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	16	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	7	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta	4		X					X	
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	7	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	2	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	4					X			
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia	4	X							
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	57	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	6	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	2	ARTHROPODA	Insecta	Diptera	Tipulidae	Pseudolimnophila	3					X			
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X					
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomyus	8		X						
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Washington Creek	OK310810-01-0190G	44010	07/09/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	63	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X					
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	8	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	3	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5		X						
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Washington Creek	OK310810-01-0190G	46501	07/07/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	2	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Riffle	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Riffle	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	4		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	25	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	13	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	5	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Camelobaetidium	4		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4			X				X	
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia	4	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	45444	01/19/10	112	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	45444	01/19/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	45444	01/19/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	45444	01/19/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	33	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	17	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Camelobaetidium	4		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	9	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila	5							X	
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia	4	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	5	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyllopus	4		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Wildhorse Creek: near Tatum	OK310810-03-0010R	46515	07/26/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	1					X			
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	56	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6		X						
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	8	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	5	ARTHROPODA	Insecta	Hemiptera	Corixidae	Chaetocorixa	8					X			
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Halipidae	Peltoodytes	2								X
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	Beaver Creek	OK310830-03-0190C	46077	02/18/10	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	67	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyllopus	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	7	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6		X						
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4			X					
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	4	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	3	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	X					X			
SVeg	Buffalo Creek	OK311510-02-0090D	44066	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
SVeg	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	109	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6			X					
SVeg	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	10	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	6	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	5	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	5	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	4	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	3	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Cymbiodyta	7					X			
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Paracymus	7			X		X			
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomyus	8		X						
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Hemiptera	Cicadellidae										
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Microvelia	8					X			
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagovelia	8					X			
SVeg	Buffalo Creek	OK311510-02-0090D	46479	06/24/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	46	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	39	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	4	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X	
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	2	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	2	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	ARTHROPODA	Crustacea	Copepoda					X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Fossaria	6							X	
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
SVeg	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	NEMATODA									X				
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	33	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	3	ARTHROPODA	Insecta	Hemiptera	Cicadellidae										
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	2	ARTHROPODA	Insecta	Lepidoptera	Pyralidae		5								X
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X					
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	54	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Halplidae	Peltodytes	2								X
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Hydraenidae	Octhebius	4					X			
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae		6					X			
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Psychodidae	Pericoma	10		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Proclleon	4		X	X					
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Hemiptera	Belostomatidae	Lethocerus	5					X			
SVeg	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	35	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	9	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	8	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	2	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	4					X			
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Diptera	Psychodidae	Pericoma	10		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
SVeg	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagoiella	8					X			
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	21	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	7	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Chaetogaster	6		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X					X	
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus	4					X			
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	4					X			
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
SVeg	Cobb Creek	OK310830-06-0050M	46085	02/18/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	24	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	19	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	6	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	East Cache Creek: Upper	OK311300-02-0010M	46505	07/21/10	6	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Ionine Creek	OK310820-01-0160L	43829	06/22/09	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Ionine Creek	OK310820-01-0160L	43829	06/22/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Ionine Creek	OK310820-01-0160L	43829	06/22/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Ionine Creek	OK310820-01-0160L	43829	06/22/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	70	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	8	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Ionine Creek	OK310820-01-0160L	46072	02/17/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	27	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	9	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	4	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X					
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Collembola	Isotomidae	Isotomurus	4		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	44012	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	23	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	7	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	6	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	5	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	4	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	4	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae		6					X			
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4			X					
SVeg	Kickapoo Sandy Creek	OK310810-01-0050G	46503	07/07/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	135	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	2	ARTHROPODA	Crustacea	Copepoda			3		X						
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	2	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero	10		X						
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
SVeg	Lake Creek: Hwy 6, Greer Co.	OK311510-01-0040D	45466	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X		X	
SVeg	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	6	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
SVeg	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
SVeg	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Proclleon	4		X	X					

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae	Petrophila	5							X	
SVeg	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	4		X						
SVeg	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	MOLLUSCA	Gastropoda	Neotaenioglossa	Hydrobiidae		8							X	
SVeg	Oil Creek	OK310800-01-0240P	46497	07/06/10	1	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Helisoma	6							X	
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	19	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	8	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	8	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	4	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	3	ANNELIDA	Oligochaeta	Haplotaenidae	Tubificidae	Limnodrilus	10		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	2	ARTHROPODA	Insecta	Coleoptera	Halplidae	Peltoodytes	2								X
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	2	ARTHROPODA	Insecta	Hemiptera	Cicadellidae		4								
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Hexacylloepus	4		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomys	4		X						
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Odonata	Macromiinae	Macromia	3					X			
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	55	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	48	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Insecta	Coleoptera	Halplidae	Peltoodytes	2								X
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X			
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Insecta	Hemiptera	Hebridae	Hebrus	1					X			
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Insecta	Odonata	Libellulidae		9					X			
SVeg	Quartermaster Creek	OK310840-01-0060L	43871	06/25/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	44	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	19	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	13	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloodes	4							X	
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Camelobaetis	4		X						
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Salt Creek	OK310810-03-0080G	46495	07/06/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	68	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	41	MOLLUSCA	Veneroida	Pelecypoda	Sphaeriidae	Sphaerium	8	X							
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	8	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	4	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X	
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus						X			
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
SVeg	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	78	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	3	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Oreodytes	7					X			
SVeg	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
SVeg	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	28	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	25	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	10	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	9	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	8	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	8	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	5	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	4	ARTHROPODA	Insecta	Coleoptera	Halplidae	Peltoodytes	2								X
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	28	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	17	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	13	NEMATODA									X				
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	9	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	7	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea	6		X						
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	ANNELEIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	ARTHROPODA	Insecta	Hemiptera	Cicadellidae										
SVeg	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Sandy Creek	OK311600-01-0040G	45440	01/12/10	95	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Sandy Creek	OK311600-01-0040G	45440	01/12/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	12	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	8	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	7	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	6	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	6	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	3	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Paracymus	7			X		X			
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Staphylinidae							X			
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	X					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	76	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	10	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	5	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	8		X						
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus	8					X			
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	ARTHROPODA	Insecta	Coleoptera	Halipilidae	Peltodytes	2								X
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Spring Creek	OK310830-04-0010G	46074	02/17/10	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	102	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	3	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia	4			X					
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	2	ARTHROPODA	Crustacea	Isopoda			8		X						
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae		5								X
SVeg	Spring Creek	OK310840-02-0240D	44065	07/14/09	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	81	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7				X				
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	ARTHROPODA	Insecta	Coleoptera	Halipilidae	Peltodytes	2								X
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	ARTHROPODA	Insecta	Diptera	Chaoboridae	Chaoborus	8					X			
SVeg	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	60	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	6	ANNELIDA	Hirudinea	Pharyngobdellida	Erbobdellidae	Mooreobdella	8					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	6	ARTHROPODA	Crustacea	Isopoda			8		X						
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	5	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	6		X						
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5		X						
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Hydraenidae	Hydraena	4					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae		6					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Hemiptera	Belostomatidae	Belostoma	5					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Hemiptera	Cicadellidae		8					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Microvelia	8					X			
SVeg	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Lepidoptera	Pyralidae		5								X
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	98	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	7	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	2	ARTHROPODA	Insecta	Diptera	Ephydriidae	Hydrellia	6		X						
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Ischnura	9					X			
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops	6		X			X			
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	7	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder	
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X							
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	1	ARTHROPODA	Insecta	Hemiptera	Belostomatidae	Belostoma	5					X				
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/22/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X				
SVeg	Stinking Creek	OK310830-04-0030K	43828	06/23/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
SVeg	Stinking Creek	OK310830-04-0030K	46073	02/17/10	52	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X							
SVeg	Stinking Creek	OK310830-04-0030K	46073	02/17/10	24	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X								
SVeg	Stinking Creek	OK310830-04-0030K	46073	02/17/10	2	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X				
SVeg	Stinking Creek	OK310830-04-0030K	46073	02/17/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
SVeg	Stinking Creek	OK310830-04-0030K	46073	02/17/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X			
SVeg	Stinking Creek	OK310830-04-0030K	46073	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
SVeg	Stinking Creek	OK310830-04-0030K	46073	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
SVeg	Stinking Creek	OK310830-04-0030K	46073	02/17/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X				
SVeg	Sweetwater Creek	OK311510-02-0120D	45399	01/25/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X							
SVeg	Sweetwater Creek	OK311510-02-0120D	45399	01/25/10	4	ARTHROPODA	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx	2		X						X	
SVeg	Sweetwater Creek	OK311510-02-0120D	45399	01/25/10	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X								
SVeg	Sweetwater Creek	OK311510-02-0120D	45399	01/25/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
SVeg	Sweetwater Creek	OK311510-02-0120D	45399	01/25/10	2	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla	2					X				
SVeg	Sweetwater Creek	OK311510-02-0120D	45399	01/25/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4				X					
SVeg	Sweetwater Creek	OK311510-02-0120D	45399	01/25/10	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X		
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	65	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X							
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	15	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X							
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	10	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X				
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	4	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X				
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	2	ARTHROPODA	Insecta	Diptera	Ephydriidae	Hydrellia	6		X							
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Crustacea	Copepoda					X							
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X				
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Oreodytes	7					X				
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X							
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4				X					
SVeg	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae		9					X				
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	53	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X							
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	12	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubirapha	4		X					X		
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X							
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	4	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X			
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Falceon	4		X							
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X							
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X						
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	2	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X	
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X	
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microclypeus	4		X							
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X				
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X				
SVeg	Timber Creek	OK311510-01-0090G	46478	06/23/10	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Psidium	6	X								
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	45	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	21	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X							
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	21	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X		
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X							
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X				
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X				
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	3	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X								
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X	
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubirapha	4		X					X		
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	2	ARTHROPODA	Insecta	Hemiptera	Gerridae	Rheumatobates						X				
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	2	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagovelia	8					X				
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ANNELIDA	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella	10				X					
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X			
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X				
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X							

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomyids	8		X						
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
SVeg	Trail Creek	OK311500-03-0070D	44062	07/14/09	1	MOLLUSCA	Gastropoda	Stylommatophora	Succineidae	Succinea									
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	51	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	28	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Coleoptera	Staphylinidae							X			
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Trail Creek	OK311500-03-0070D	46477	06/23/10	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	64	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	15	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	9	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	4	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Crustacea	Isopoda			8		X						
SVeg	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	54	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	25	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	4	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Triposternus	7					X			
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
SVeg	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	46	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	36	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	6	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	2	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Barnitz Creek	OK310830-03-0200C	44005	07/08/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	95	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	14	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8			X					
Woody	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6			X					
Woody	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Barnitz Creek	OK310830-03-0200C	46080	02/18/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8			X					
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	31	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	13	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6			X					
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6			X					
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4			X					
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4			X					

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	2	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia	3								X
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Beaver Creek	OK310830-03-0190C	44008	07/08/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	57	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	16	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Woody	Beaver Creek	OK310830-03-0190C	46077	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	13	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	12	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	2	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon	6		X			X			
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X							
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	6					X			
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea	6		X						
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Lepidoptera	Pyrilidae	Petrophila	5							X	
Woody	Beaver Creek	OK311200-00-0030L	46555	08/02/10	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Cynellus	6	X							
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	12	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	12	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	12	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	10	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	4	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	6					X			
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia	4					X			
Woody	Boggy Creek	OK310830-03-0100C	44002	07/02/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea	4	X							
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	75	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	1	ARTHROPODA	Insecta	Collembola	Isotomidae	Isotomurus	4		X						
Woody	Boggy Creek	OK310830-03-0100C	46081	02/18/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	96	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X							
Woody	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	3	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
Woody	Buffalo Creek	OK311510-02-0090D	45457	01/13/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Cavalry Creek	OK310830-03-0070D	44001	07/02/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	93	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	22	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Cavalry Creek	OK310830-03-0070D	46082	02/18/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	42	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	8	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Macronychus	4			X					
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Hemiptera	Mesoveliidae	Mesovella	4					X			
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Chigley Sandy Creek	OK310800-02-0190D	44013	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	57	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia	X								X
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	44	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	2	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Diptera	Chaoboridae	Chaoborus	8					X			
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Chigley Sandy Creek	OK310800-02-0190D	45454	01/20/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	41	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	25	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	4	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	3	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeoedes	4							X	
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Acari	Acarina	Hygrobatidae	Attractides	4					X			
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	4					X			
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Hexatoma	3					X			
Woody	Chigley Sandy Creek	OK310800-02-0190D	46504	07/07/10	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	25	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	17	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	16	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	4					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerochromia	6					X			
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia	4					X			
Woody	Cobb Creek	OK310830-06-0050M	44000	07/02/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	4		X						
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	53	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	21	ANNELIDA	Oligochaeta	Haplotaenidae	Nais		8		X						
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	7	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Cobb Creek	OK310830-06-0050M	46085	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylolepus	4		X						
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	48	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	24	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	17	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4					X			
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Cyphon	8							X	
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Staphylinidae							X			
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Hemiptera	Belostomatidae	Belostoma	5						X		
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Hemiptera	Mesoveliidae	Mesovella						X			
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma						X			
Woody	Cow Creek	OK311200-00-0060L	44052	07/13/09	1	MOLLUSCA	Gastropoda	Stylommatophora	Succineidae	Succinea									
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	52	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	20	ANNELIDA	Oligochaeta	Haplotaenidae	Nais		8		X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	8	ARTHROPODA	Insecta	Collembola	Poduridae	Podura			X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	2	ARTHROPODA	Insecta	Collembola	Isotomidae	Isotomurus			X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	1	ANNELIDA	Oligochaeta	Haplotaenidae	Tubificidae	Limnodrilus	10		X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Cow Creek	OK311200-00-0060L	45674	03/05/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	51	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	13	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	10	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	5	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X			
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X			
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Cow Creek	OK311200-00-0060L	46556	08/02/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	16	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	8	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4			X					
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	3	ARTHROPODA	Insecta	Coleoptera	Staphylinidae							X			
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	3	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrochidae	Hydrochus	7								X
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	X					X			
Woody	Deep Red Creek	OK311310-03-0010D	44038	07/13/09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Deep Red Creek	OK311310-03-0010D	45434	01/11/10	103	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Deep Red Creek	OK311310-03-0010D	45434	01/11/10	7	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Deep Red Creek	OK311310-03-0010D	45434	01/11/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Deep Red Creek	OK311310-03-0010D	45434	01/11/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Deep Red Creek	OK311310-03-0010D	45434	01/11/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubirapha	4		X					X	
Woody	Deep Red Creek	OK311310-03-0010D	45434	01/11/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Deep Red Creek	OK311310-03-0010D	45434	01/11/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	130	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	10	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Delaware Creek	OK310830-01-0030G	44081	07/09/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	66	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	35	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	5	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	3	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubirapha	4		X					X	
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	1	ARTHROPODA	Crustacea	Ostracoda					X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Delaware Creek	OK310830-01-0030G	46076	02/17/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Arigomphus	X					X			
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	75	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	12	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	1	ARTHROPODA	Insecta	Coleoptera	Staphylinidae							X			
Woody	East Barnitz Creek	OK310830-03-0210C	44007	07/08/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	103	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	19	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	East Barnitz Creek	OK310830-03-0210C	46079	02/18/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	50	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Falliceon	4		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	11	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	3	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus						X			
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Proclaeon	4		X	X					
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Finn Creek	OK310810-02-0020D	44009	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Finn Creek	OK310810-02-0020D	46521	07/27/10	79	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Finn Creek	OK310810-02-0020D	46521	07/27/10	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Finn Creek	OK310810-02-0020D	46521	07/27/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Finn Creek	OK310810-02-0020D	46521	07/27/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Finn Creek	OK310810-02-0020D	46521	07/27/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Finn Creek	OK310810-02-0020D	46521	07/27/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Finn Creek	OK310810-02-0020D	46521	07/27/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	30	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	26	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	14	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	6	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Falliceon	4		X						
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	4	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	2	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops	6		X			X			
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Fivemile Creek	OK310830-06-0080D	43999	07/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4			X					
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	81	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	11	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	4	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4			X					
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4			X					
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
Woody	Fivemile Creek	OK310830-06-0080D	46086	02/18/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Fleetwood Creek	OK311100-01-0300D	45675	03/06/10	30	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Fleetwood Creek	OK311100-01-0300D	45675	03/06/10	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Fleetwood Creek	OK311100-01-0300D	45675	03/06/10	5	ARTHROPODA	Crustacea	Decapoda	Cambaridae		6		X						
Woody	Fleetwood Creek	OK311100-01-0300D	45675	03/06/10	5	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Woody	Fleetwood Creek	OK311100-01-0300D	45675	03/06/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Fleetwood Creek	OK311100-01-0300D	45675	03/06/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Fleetwood Creek	OK311100-01-0300D	45675	03/06/10	1	ARTHROPODA	Insecta	Collembola	Isotomidae	Isotomurus			X						
Woody	Fleetwood Creek	OK311100-01-0300D	45675	03/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	37	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	21	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	10	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	9	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	3	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero	10		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	2	ARTHROPODA	Insecta	Coleoptera	Halplidae	Peltodytes	2								X
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Acanthozoa	Acanthozoa	Lebertidae	Lebertia	4					X			
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Crustacea	Cladocera				X							
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Insecta	Coleoptera	Halplidae	Halplus	2								X
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Palpomyia	6		X			X			
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
Woody	Hickory Creek: HWY 775	OK311100-02-0010M	45679	03/06/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	53	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	41	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	5	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Ionine Creek	OK310820-01-0160L	46072	02/17/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	48	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	24	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	21	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	16	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	9	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	2	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	4		X						
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Alisotrichia (?)									
Woody	Little Beaver Creek	OK311210-00-0050D	44051	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Mayatrachia									
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	63	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	4	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	1	ARTHROPODA	Acanthozoa	Acanthozoa	Eremaeidae	Hydrozetes						X			
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	1	ARTHROPODA	Insecta	Collembola	Collembola	Isotomurus			X						
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Little Beaver Creek	OK311210-00-0050D	45671	03/05/10	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	56	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	19	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylopeus	4		X						
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon	6		X			X			
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	4					X			
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia	6					X		X	
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Little Beaver Creek	OK311210-00-0050D	46553	08/02/10	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	103	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Little Elk Creek	OK311500-03-0040D	45467	01/14/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	102	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanyptodinae	6		X						
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X			
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus						X			
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallcon	4		X						
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta	4		X					X	
Woody	Little Elk Creek	OK311500-03-0040D	46538	07/27/10	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	49	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	37	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero	10		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	33	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	3	ARTHROPODA	Crustacea	Decapoda	Palaemonidae	Palaemonetes	6		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea	6		X						
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Otter Creek	OK311500-01-0080F	45437	01/11/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	13	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Proclon	4		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanyptodinae	6		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	3	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagovelia	8					X			
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	2	ARTHROPODA	Insecta	Diptera	Ephydriidae	Hydrellia	6		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acantrella	4		X						
Woody	Pennington Creek	OK310800-01-0120G	43997	07/01/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Oxyethira	4		X					X	
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	43	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	29	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	5	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	3	ARTHROPODA	Insecta	Plecoptera	Taeniopterygidae	Strophopteryx	2							X	
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	3	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	2	ARTHROPODA	Crustacea	Isopoda	Asellidae	Lirceus	8		X						
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanyptodinae	6		X						
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Odonata	Libellulidae	Brechmorhoga	9					X			
Woody	Pennington Creek	OK310800-01-0120G	45448	01/19/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	39	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	3	ARTHROPODA	Insecta	Lepidoptera	Pylalidae	Petrophila	5							X	
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Hexacylloepus	4		X						
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Proclleon	4		X	X					
Woody	Pennington Creek	OK310800-01-0120G	46499	07/06/10	1	ARTHROPODA	Insecta	Trichoptera	Polycentropodidae	Polycentropus	6	X				X			
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	5	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyrinus	4					X			
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	1	MOLLUSCA	Gastropoda	Basommatophora	Lymnaeidae	Fossaria	6							X	
Woody	Red Creek	OK311100-01-0290D	45676	03/06/10	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	62	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Aulodrilus	8		X						
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Rush Creek	OK310810-05-0010D	44011	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	36	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	30	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	22	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	3	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	3	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	4		X						
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X			
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	2	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Hemiptera	Coridae	Trichocorixa	8					X			
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	X					X			
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
Woody	Sandstone Creek	OK310840-02-0020C	44063	07/14/09	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Woody	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	99	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	1	ARTHROPODA	Acar	Arcarina	Sperchionidae	Sperchon	6								
Woody	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
Woody	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Sandstone Creek	OK310840-02-0020C	45460	01/13/10	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	37	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4	X						X	
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5			X					X
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon	6		X			X			
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4				X			X	
Woody	Sandstone Creek	OK310840-02-0020C	46482	06/24/10	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	59	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	14	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7				X		X		
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	10	NEMATODA													
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	3	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
Woody	Sandy Creek	OK311600-01-0040G	44044	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X	
Woody	Sandy Creek	OK311600-01-0040G	45440	01/12/10	61	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Sandy Creek	OK311600-01-0040G	45440	01/12/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	30	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	16	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	3	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia	4					X			
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Spring Creek	OK310830-04-0010G	44079	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Spring Creek	OK310840-02-0240D	45459	01/13/10	121	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Spring Creek	OK310840-02-0240D	45459	01/13/10	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Spring Creek	OK310840-02-0240D	45459	01/13/10	2	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Woody	Spring Creek	OK310840-02-0240D	45459	01/13/10	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Spring Creek	OK310840-02-0240D	45459	01/13/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	38	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	21	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	6	ARTHROPODA	Crustacea	Isopoda			8		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	4	ANNELIDA	Hirudinea	Pharyngobdellida	Eropbdellidae	Mooreobdella	8					X			
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Paracymus	7			X			X		
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Diptera	Dolichopodidae	Hydrophorus	4					X			
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Spring Creek	OK310840-02-0240D	46481	06/24/10	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	59	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	11	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	4	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Agabus	7					X			
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Cymbiodietya	7					X			
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea	6		X						
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Ephydriidae		6		X						
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Ephydriidae	Hydrellia	6		X						
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Psychodidae	Psychoda	10		X						
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops	6		X			X			
Woody	Station Creek	OK311800-00-0060G	45464	01/14/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	30	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	26	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Stinking Creek	OK310830-02-0020D	44047	07/13/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Nigronia	4					X			
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	57	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	31	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Tropisternus	7					X			
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
Woody	Stinking Creek	OK310830-04-0030K	43828	06/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	60	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	37	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	2	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagovelia	8					X			
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Paracymus	7			X		X			
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Coleoptera	Staphylinidae		7					X			
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Diptera	Ephydriidae	Hydrellia	6		X						
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Hexatoma	3					X			
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Microvelia	8					X			
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Sugar Creek	OK310830-05-0010D	44080	07/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Potamyia	4	X							
Woody	Sugar Creek	OK310830-05-0010D	46075	02/17/10	116	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Sugar Creek	OK310830-05-0010D	46075	02/17/10	80	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Sugar Creek	OK310830-05-0010D	46075	02/17/10	8	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Sugar Creek	OK310830-05-0010D	46075	02/17/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Sugar Creek	OK310830-05-0010D	46075	02/17/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	23	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	20	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea	4	X							
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	17	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	7	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	7	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	5	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	3	ARTHROPODA	Crustacea	Isopoda			8		X						
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	3	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X	
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4			X					
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
Woody	Sweetwater Creek	OK311510-02-0120D	44064	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea	4	X							
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	14	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	12	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	9	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4			X					
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Sweetwater Creek	OK311510-02-0120D	46480	06/24/10	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	72	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	24	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Timber Creek	OK311510-01-0090G	45456	01/13/10	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	94	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	8		X						
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	6		X						
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Trail Creek	OK311500-03-0070D	45468	01/14/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	68	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	31	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	27	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	12	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	5	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Branchiobdellida				8		X						
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia	6					X		X	
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	Turkey Creek	OK311600-02-0060J	44043	07/14/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Walnut Bayou	OK311100-03-0010G	44004	07/07/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	51	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	12	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	11	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4			X					
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	2	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	1	ARTHROPODA	Insecta	Collembola	Isotomidae	Isotomurus			X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta	4		X					X	
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	1	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Hydroperla	2					X			
Woody	Walnut Bayou	OK311100-03-0010G	45678	03/06/10	1	NEMATODA									X				
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	38	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	10	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon	4		X	X					
Woody	Walnut Bayou	OK311100-03-0010G	46321	06/29/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4		X	X					
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	24	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	17	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	16	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	5	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X	
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	3	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Woody	West Barnitz Creek	OK310830-03-0230C	44006	07/08/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Neotrichia	4							X	
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	77	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	29	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5		X						
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	West Barnitz Creek	OK310830-03-0230C	46078	02/18/10	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X			
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	33	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X					X	
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	26	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	2	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	2	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9						X		
Woody	West Cache Creek	OK311310-02-0010M	46507	07/21/10	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder	
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	49	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	29	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	27	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X								
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	10	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X				
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagovelia	8					X				
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X		
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	44050	07/13/09	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X								
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	64	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	52	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	4	ARTHROPODA	Crustacea	Cladocera				X								
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X								
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	45670	03/05/10	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X				
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	62	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	2	ARTHROPODA	Insecta	Diptera	Tipulidae	Geranomyia	3								X	
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X							
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X		
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X		X					
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4									
Woody	Wildhorse Creek: near Duncan	OK310810-04-0140D	46552	08/02/10	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X							
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	26	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X							
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Centroptilum	4		X							
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X							
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X							
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X						
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X							
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X		
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes										
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Coleoptera	Staphylinidae							X				
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X								
Woody	Wildhorse Creek: near Tatum	OK310810-03-0010R	43993	07/01/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X				
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	77	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X							
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	31	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X								
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X							
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	4	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia	4			X						
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X						
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X							
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	2	ARTHROPODA	Acari	Arcarina			5					X				
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		4		X							
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8		X							
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X						
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X							
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	1	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae		2		X							
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X				
Riffle	Chandler Creek	OKR09730-085	43634	06/25/09	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1			X						
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	44	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X				
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	12	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicoon	4		X							
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X							
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X								

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	7	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Riffle	East Winter Creek	OKR09730-046	43786	06/02/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	39	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	22	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	9	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	8	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	X							
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	7	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	5	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	1	NEMERTEA	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma	4					X			
Riffle	Medicine Creek	OKR09730-026	43641	08/04/09	1	PLATYHELMINTHES	Turbellaria	Tricladida	Planariidae	Dugesia	4			X					
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	12	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	6	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Hexacylloepus	4		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	5	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Helisoma	6							X	
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea	4	X							
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	3	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Neoelmis	4		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Lutrochidae	Lutrochus	4			X					
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	3							X	
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	4		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	2	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Lumbricidae		5		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Acari	Arcarina	Torrenticolidae	Torrenticola	4					X			
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Crustacea	Ostracoda					X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Diptera	Athericidae	Atherix	2					X			
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Hemiptera	Velidae	Rhagovalia	8					X			
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Neotrichia	4							X	
Riffle	Pennington Creek	OKR09730-124	43639	07/14/09	1	NEMERTEA	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma	4					X			
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	31	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	25	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	12	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	5	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erbobdellidae	Mooreobdella	8					X			
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilyodrilus	8		X						
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	4					X			
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalis	4					X			
Riffle	Salt Creek	OKR09730-062	43785	06/02/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	43	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	16	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	3	ARTHROPODA	Insecta	Coleoptera	Halplidae	Peltodytes	2								X
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus	2					X			
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Riffle	Station Creek	OKR09730-123	44104	07/21/09	53	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Station Creek	OKR09730-123	44104	07/21/09	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	Station Creek	OKR09730-123	44104	07/21/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Station Creek	OKR09730-123	44104	07/21/09	2	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
Riffle	Station Creek	OKR09730-123	44104	07/21/09	2	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Riffle	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyaella	8		X						
Riffle	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Chrysops	6		X			X			
Riffle	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Riffle	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	82	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	1					X			
Riffle	Turkey Creek	OKR09730-109	44105	07/21/09	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	43	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	32	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	22	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	12	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	1					X			
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Riffle	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	1					X			
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	52	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyaella	8		X						
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	45	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	6	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Corixa	8					X			
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Bitter Creek	OKR09730-005	44106	07/22/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	40	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	34	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	7	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus	4					X			
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4				X				
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
SVeg	Buffalo Creek	OKR09730-012	43803	06/10/09	1	ARTHROPODA	Insecta	Megaloptera	Sialidae	Sialis	4					X			
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	38	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcyloepus	4		X						
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	6	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Palpomyia	6		X			X			
SVeg	East Winter Creek	OKR09730-046	43786	06/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	18	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	10	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Branchiura	10		X						
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	6	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	X					X			
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	4	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	4	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X				X		
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Euparyphus	8		X						
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Limnophila	3					X			
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	27	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallicon	4		X						
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	13	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	7	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	X					X			
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Lafin Creek	OKR09730-003	43787	06/02/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	47	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	5	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	5	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	1	ARTHROPODA	Insecta	Collembola	Isotomidae	Isotomurus	5		X						
SVeg	Lake Creek	OKR09730-080	43884	06/30/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	36	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	30	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	18	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	6	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	4	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4			X					
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	1	ARTHROPODA	Insecta	Hemiptera	Corixidae		8					X			
SVeg	North Fork Red River	OKR09730-096	43802	06/10/09	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	66	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	8	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	3	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	8		X						
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	3	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	4							X	
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	2	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Ischnura	9					X			
SVeg	Owens Creek	OKR09730-059	43630	06/23/09	1	ARTHROPODA	Insecta	Odonata	Aeshnidae	Anax	3					X			
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	15	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Falleon	4		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	4	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	3	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	3	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Helisoma	6							X	
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Diptera	Tipulidae	Hexatoma	3					X			
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	2	ARTHROPODA	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	3							X	
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	2	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	X							
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Hexacylloepus	4		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Cymbiodyta	7					X			
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Diptera	Tabanidae	Tabanus	6					X			
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagovelia	8					X			
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Smicridea	4	X							
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
SVeg	Pennington Creek	OKR09730-124	43639	07/14/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Oecetis	4					X			
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	29	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	15	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	12	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	10	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	9	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Proclonon	4		X	X					
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	4	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Crustacea	Cladocera				X							
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloodes	4							X	
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	30	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	22	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	7	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	X					X			
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Diptera	Psychodidae	Psychoda	10		X						
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Hemiptera	Gerridae	Rheumatobates						X			
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Odonata	Aeshnidae	Aeshna	3					X			
SVeg	Sandstone Creek	OKR09730-060	43647	05/29/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
SVeg	Station Creek	OKR09730-123	44104	07/21/09	29	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
SVeg	Station Creek	OKR09730-123	44104	07/21/09	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	Station Creek	OKR09730-123	44104	07/21/09	11	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
SVeg	Station Creek	OKR09730-123	44104	07/21/09	8	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	Station Creek	OKR09730-123	44104	07/21/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Station Creek	OKR09730-123	44104	07/21/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	Station Creek	OKR09730-123	44104	07/21/09	5	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
SVeg	Station Creek	OKR09730-123	44104	07/21/09	4	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
SVeg	Station Creek	OKR09730-123	44104	07/21/09	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
SVeg	Station Creek	OKR09730-123	44104	07/21/09	2	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			
SVeg	Station Creek	OKR09730-123	44104	07/21/09	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
SVeg	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
SVeg	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Diptera	Culicidae	Anopheles		X							
SVeg	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
SVeg	Station Creek	OKR09730-123	44104	07/21/09	1	ARTHROPODA	Insecta	Trichoptera	Hydrotrilidae	Ithytrichia	4							X	
SVeg	Station Creek	OKR09730-123	44104	07/21/09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
SVeg	Washita River	OKR09730-078	43797	06/09/09	65	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X							
SVeg	Washita River	OKR09730-078	43797	06/09/09	16	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
SVeg	Washita River	OKR09730-078	43797	06/09/09	13	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
SVeg	Washita River	OKR09730-078	43797	06/09/09	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	Washita River	OKR09730-078	43797	06/09/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
SVeg	Washita River	OKR09730-078	43797	06/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	Washita River	OKR09730-078	43797	06/09/09	3	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
SVeg	Washita River	OKR09730-078	43797	06/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4					X			
SVeg	Washita River	OKR09730-078	43797	06/09/09	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4				X				
SVeg	Washita River	OKR09730-078	43797	06/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Cercobranchys	4					X			
SVeg	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Hemiptera	Hebridae	Hebrus						X			
SVeg	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
SVeg	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	72	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	4	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Oreodytes	7					X			
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X	X					
SVeg	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	33	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	25	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	21	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	19	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Proclaoen	4		X		X				
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	10	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	8	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	3	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus						X			
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	3	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	2	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	X							
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	X					X			
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	2	NEMERTEA	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma						X			
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Armstrong Creek	OKR09730-095	43637	06/30/09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	61	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	19	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	7	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	5	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	1	ARTHROPODA	Acar	Arcarina	Eremaeidae	Hydrozetes						X			
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Barnitz Creek	OKR09730-106	43800	06/09/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	56	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	15	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	2	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	2	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X	
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomys	8		X						
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Cavalry Creek	OKR09730-058	43889	06/30/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Woody	Cow Creek	OKR09730-098	43638	06/30/09	53	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	28	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Cow Creek	OKR09730-098	43638	06/30/09	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	14	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	8	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Dasyhelea	6		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Cow Creek	OKR09730-098	43638	06/30/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Nais	8		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon	6		X			X			
Woody	Cow Creek	OKR09730-098	43638	06/30/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Cow Creek	OKR09730-098	43638	06/30/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Enochrus	7		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Bezzia	6		X			X			
Woody	Cow Creek	OKR09730-098	43638	06/30/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia	6					X		X	
Woody	Cow Creek	OKR09730-098	43638	06/30/09	1	ARTHROPODA	Insecta	Diptera	Stratiomyidae	Stratiomys	8		X						
Woody	Cow Creek	OKR09730-098	43638	06/30/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptilia	4					X		X	
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	13	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	9	ARTHROPODA	Insecta	Odonata	Gomphidae	Progomphus	X					X			
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Forcipomyia	6					X		X	
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Stilobezzia	6					X			
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Diptera	Naididae	Chrysops	6		X			X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Hemiptera	Cicadellidae										
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4					X			
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Odonata	Aeshnidae	Boyeria	3					X			
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	East Winter Creek	OKR09730-119	43632	06/24/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
Woody	Elk Creek	OKR09730-041	44108	07/22/09	87	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Elk Creek	OKR09730-041	44108	07/22/09	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Elk Creek	OKR09730-041	44108	07/22/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Elk Creek	OKR09730-041	44108	07/22/09	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Elk Creek	OKR09730-041	44108	07/22/09	6	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Elk Creek	OKR09730-041	44108	07/22/09	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Elk Creek	OKR09730-041	44108	07/22/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Elk Creek	OKR09730-041	44108	07/22/09	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5								X
Woody	Elk Creek	OKR09730-041	44108	07/22/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Elk Creek	OKR09730-041	44108	07/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Elk Creek	OKR09730-041	44108	07/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Elk Creek	OKR09730-041	44108	07/22/09	1	ARTHROPODA	Insecta	Hemiptera	Veliidae	Rhagovelia	8					X			
Woody	Elk Creek	OKR09730-041	44108	07/22/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Elk Creek	OKR09730-057	44107	07/22/09	108	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Elk Creek	OKR09730-057	44107	07/22/09	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Elk Creek	OKR09730-057	44107	07/22/09	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Elk Creek	OKR09730-057	44107	07/22/09	4	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Elk Creek	OKR09730-057	44107	07/22/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Elk Creek	OKR09730-057	44107	07/22/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Elk Creek	OKR09730-057	44107	07/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Elk Creek	OKR09730-057	44107	07/22/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Elk Creek	OKR09730-057	44107	07/22/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Mud Creek	OKR09730-031	43635	06/29/09	18	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Mud Creek	OKR09730-031	43635	06/29/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Mud Creek	OKR09730-031	43635	06/29/09	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Mud Creek	OKR09730-031	43635	06/29/09	10	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Mud Creek	OKR09730-031	43635	06/29/09	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Mud Creek	OKR09730-031	43635	06/29/09	8	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Mud Creek	OKR09730-031	43635	06/29/09	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Centroptilum	4		X						
Woody	Mud Creek	OKR09730-031	43635	06/29/09	6	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	X							
Woody	Mud Creek	OKR09730-031	43635	06/29/09	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Woody	Mud Creek	OKR09730-031	43635	06/29/09	3	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus						X			
Woody	Mud Creek	OKR09730-031	43635	06/29/09	3	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Mud Creek	OKR09730-031	43635	06/29/09	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Mud Creek	OKR09730-031	43635	06/29/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Mud Creek	OKR09730-031	43635	06/29/09	2	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Mud Creek	OKR09730-031	43635	06/29/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Mud Creek	OKR09730-031	43635	06/29/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon	4		X	X					
Woody	Mud Creek	OKR09730-031	43635	06/29/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Mud Creek	OKR09730-110	43636	06/29/09	19	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Mud Creek	OKR09730-110	43636	06/29/09	19	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	Mud Creek	OKR09730-110	43636	06/29/09	18	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Woody	Mud Creek	OKR09730-110	43636	06/29/09	12	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Woody	Mud Creek	OKR09730-110	43636	06/29/09	12	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Mud Creek	OKR09730-110	43636	06/29/09	11	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Mud Creek	OKR09730-110	43636	06/29/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Mud Creek	OKR09730-110	43636	06/29/09	4	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Mud Creek	OKR09730-110	43636	06/29/09	4	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Dineutus						X			
Woody	Mud Creek	OKR09730-110	43636	06/29/09	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Mud Creek	OKR09730-110	43636	06/29/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Mud Creek	OKR09730-110	43636	06/29/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes						X			
Woody	Mud Creek	OKR09730-110	43636	06/29/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Mud Creek	OKR09730-110	43636	06/29/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon	4		X	X					
Woody	Mud Creek	OKR09730-110	43636	06/29/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Mud Creek	OKR09730-110	43636	06/29/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6					X			
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	2	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthoclaadiinae	6		X						
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLEID	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	1	ARTHROPODA	Insecta	Hemiptera	Hebridae	Hebrus						X			
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
Woody	Negro Sandy Creek	OKR09730-130	43625	06/18/09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	53	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	10	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	9	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	6	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	2	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	1	ARTHROPODA	Insecta	Ephemeroptera	Oligoneuridae	Homoeoneuria	2	X							
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	North Fork Red River	OKR09730-025	44049	07/13/09	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
Woody	Rush Creek	OKR09730-019	43626	06/18/09	30	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	28	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	17	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Rush Creek	OKR09730-019	43626	06/18/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	3	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4		X					X	
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Coleoptera	Scirtidae	Scirtes	8								X
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Odonata	Aeshnidae	Basiaeschna	3					X			
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Odonata	Macromiinae	Macromia	3					X			
Woody	Rush Creek	OKR09730-019	43626	06/18/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Rush Creek	OKR09730-084	43628	06/22/09	59	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	25	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procladius	4		X		X				
Woody	Rush Creek	OKR09730-084	43628	06/22/09	4	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ANNELIDA	Oligochaeta	Haplotaenia	Naididae	Pristina	8		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Atrichopogon	6		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Pseudochironomini	6		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Centroptilum	4		X						
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Paracloeodes	4							X	
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X						X
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Rush Creek	OKR09730-084	43628	06/22/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Mayatrichia	4								
Woody	Salt Creek	OKR09730-062	43785	06/02/09	66	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Salt Creek	OKR09730-062	43785	06/02/09	23	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Salt Creek	OKR09730-062	43785	06/02/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Salt Creek	OKR09730-062	43785	06/02/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Salt Creek	OKR09730-062	43785	06/02/09	1	ANNELIDA	Oligochaeta	Haplotaenia	Naididae	Nais	8		X						
Woody	Salt Creek	OKR09730-062	43785	06/02/09	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4					X			
Woody	Timber Creek	OKR09730-136	43901	06/24/09	23	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	21	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	12	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	Timber Creek	OKR09730-136	43901	06/24/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	4	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	3	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	3	ARTHROPODA	Insecta	Coleoptera	Dytiscidae	Hydroporus	7					X			

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	Timber Creek	OKR09730-136	43901	06/24/09	3	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	Timber Creek	OKR09730-136	43901	06/24/09	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae		6					X			
Woody	Timber Creek	OKR09730-136	43901	06/24/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Ilyodrilus	8		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	1	ARTHROPODA	Insecta	Coleoptera	Halplidae	Peltodytes	2								X
Woody	Timber Creek	OKR09730-136	43901	06/24/09	1	ARTHROPODA	Insecta	Coleoptera	Hydrophilidae	Berosus	7					X	X		
Woody	Timber Creek	OKR09730-136	43901	06/24/09	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Timber Creek	OKR09730-136	43901	06/24/09	1	ARTHROPODA	Insecta	Hemiptera	Hebridae	Hebrus	4					X			
Woody	Timber Creek	OKR09730-136	43901	06/24/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4					X		X	
Woody	Timber Creek	OKR09730-136	43901	06/24/09	1	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Helisoma	6							X	
Woody	Washita River	OKR09730-020	43801	06/09/09	34	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Woody	Washita River	OKR09730-020	43801	06/09/09	22	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallecon	4		X						
Woody	Washita River	OKR09730-020	43801	06/09/09	12	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Washita River	OKR09730-020	43801	06/09/09	11	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X							
Woody	Washita River	OKR09730-020	43801	06/09/09	10	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Washita River	OKR09730-020	43801	06/09/09	10	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Washita River	OKR09730-020	43801	06/09/09	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4			X					
Woody	Washita River	OKR09730-020	43801	06/09/09	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Washita River	OKR09730-020	43801	06/09/09	6	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Washita River	OKR09730-020	43801	06/09/09	4	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Washita River	OKR09730-020	43801	06/09/09	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Washita River	OKR09730-020	43801	06/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Washita River	OKR09730-020	43801	06/09/09	1	ARTHROPODA	Insecta	Coleoptera	Gyrinidae	Gyretes	4					X			
Woody	Washita River	OKR09730-020	43801	06/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Ithytrichia	4							X	
Woody	Washita River	OKR09730-074	43885	06/30/09	44	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Washita River	OKR09730-074	43885	06/30/09	25	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallecon	4		X						
Woody	Washita River	OKR09730-074	43885	06/30/09	10	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Washita River	OKR09730-074	43885	06/30/09	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Washita River	OKR09730-074	43885	06/30/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Washita River	OKR09730-074	43885	06/30/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Washita River	OKR09730-074	43885	06/30/09	6	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Washita River	OKR09730-074	43885	06/30/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Washita River	OKR09730-074	43885	06/30/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4				X				
Woody	Washita River	OKR09730-074	43885	06/30/09	1	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X							
Woody	Washita River	OKR09730-074	43885	06/30/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Washita River	OKR09730-078	43797	06/09/09	39	ARTHROPODA	Insecta	Ephemeroptera	Isonychidae	Isonychia	7	X							
Woody	Washita River	OKR09730-078	43797	06/09/09	19	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
Woody	Washita River	OKR09730-078	43797	06/09/09	16	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	7	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	3	ARTHROPODA	Insecta	Coleoptera	Elmidae	Heterelmis	4		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	2	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	Washita River	OKR09730-078	43797	06/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	Washita River	OKR09730-078	43797	06/09/09	2	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Nectopsyche	4			X					
Woody	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Microcylloepus	4		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Odonata	Gomphidae	Erpetogomphus	X					X			
Woody	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	X							
Woody	Washita River	OKR09730-078	43797	06/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Cercobranchys	6								
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	35	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	24	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallecon	4		X						
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	14	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	5	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4			X					
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	3	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	2	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenonema	4			X					
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4		X						
Woody	White Shield Creek	OKR09730-052	43798	06/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocota	4		X					X	
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	60	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	12	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	11	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallecon	4		X						

Appendix C. Macroinvertebrate collection data.

Type	Site Name	WBID	SAMPLED	Date	Number	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	10	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	4	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	4	ARTHROPODA	Insecta	Ephemeroptera	Isonychiidae	Isonychia	7	X							
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	2	ARTHROPODA	Insecta	Diptera	Empididae	Hemerodromia	6					X			
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	2	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9					X			
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Dero	10		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6		X						
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	4			X					
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	1	ARTHROPODA	Insecta	Hemiptera	Corixidae	Trichocorixa	8					X			
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	1	ARTHROPODA	Insecta	Megaloptera	Sialidae	Sialis	4					X			
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	X			X					
Woody	White Shield Creek	OKR09730-094	43799	06/09/09	1	MOLLUSCA	Gastropoda	Basommatophora	Physidae	Physella	8							X	
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	44	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	9	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	4	X							
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	8	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytopodinae	6		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladinae	6		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	2	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Callibaetis	4		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	2	ARTHROPODA	Insecta	Hemiptera	Cicadellidae										
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	2	ARTHROPODA	Insecta	Odonata	Calopterygidae	Hetaerina	5					X			
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	2	ARTHROPODA	Insecta	Odonata	Gomphidae	Gomphus	X					X			
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Pristina	8		X						
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	1	ARTHROPODA	Insecta	Diptera	Tipulidae	Tipula	3			X					
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9					X			
Woody	Wild Horse Creek	OKR09730-008	43784	06/01/09	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Ischnura	9					X			