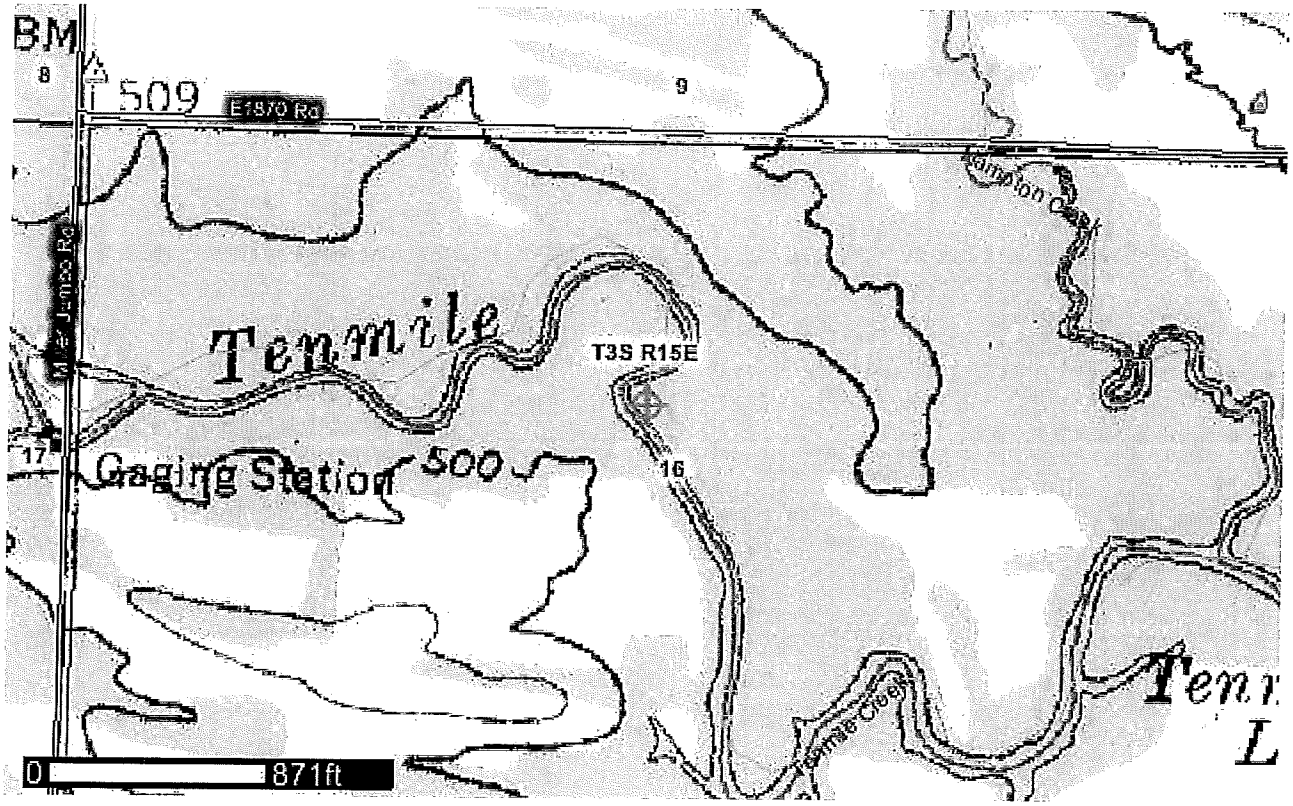
Tenmile Creek: Davis

SE NE NW Section 16-3S-15E
Pushmataha County, Oklahoma
N 34.298889°
W 95.737222°
WBID#: OK410300-03-0270L



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Blue Thumb Volunteer Monitoring Data Review – July 2, 2018
Written by: Cynthia Johnson

Description of Watershed and Monitoring Site

Tenmile Creek: Davis is located in Midwestern Pushmataha County in the Southeast corner of Oklahoma. The headwaters of Tenmile Creek (TMC) are located between the Redden and Daisy areas in Atoka County approximately 18 miles NW of the sampling site. There are approximately 60 square miles of land, including other creeks and tributaries, that wash down to the monitoring site. Some of the primary tributaries are Clear Creek, Pine Creek, Davenport Creek, Elm Creek, Hampton Creek, Cole Creek & Rock Creek. The stream meanders from North to South and empties into the Kiamichi River approximately 6 miles North of Antlers, OK. Agriculture is the main land use in this watershed. There is a mixture of pastureland, used for cattle grazing, and wooded areas that surround the stream. Eastern Red Cedar, Oak & Hickory are prevalent. TMC is in the Ouachita Mountains Ecoregion of Oklahoma. The Blue Thumb monitoring site on TMC is also one of 8 creek/river sites & 3 lake sites presently being monitored through the Choctaw Nation 106 Water Quality Program.

Stream Condition & Habitat Overview

The site on TMC is located just a few yards downstream of a bend. There are step runs, riffles and pools at the sampling site. This stream segment has cobble, boulder and bedrock substrates. There is quite a lot of woody debris up and down stream near the site. This stream has a very healthy riparian edge. The edges are covered with grasses, shrubs, vines saplings and many species of trees. There is a mixture of pastureland, used for cattle grazing, and wooded areas that surround the stream. The heavily wooded areas and vegetation along this stream provide a great habitat for wildlife. Vegetation in and along the stream also provide food and shade to the aquatic community.

The most recent fish and habitat assessment was done on 8/22/2016. The total score for this habitat assessment is 88.5 which dropped from 118.2 obtained on TMC on 6/27/2012 and compares less than favorably with 118.8 from the Ouachita Mountains Ecoregion Reference (OMER). There were some anomalies between these two fish and habitat assessments on TMC. During the 2012 assessment the water was elevated and had fallen 3 to 4 inches through the duration of the assessment. During the 2016 assessment the water was at base flow but the riffles had been dry for two weeks prior. There had

been a very recent rain event that raised the creek level within a week of the assessment. This could account for the inconsistency in scores as the creek conditions were very different.

High ratings were given for Pool Variability, Canopy Cover Shading & Stream Side Cover. These parameters are defined below to help understand the conditions and ratings of the sampling site on TMC.

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.

Canopy Cover refers to 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. Moderate cover is preferable because too much light could heat the water to an undesirable temperature for aquatic organisms and cause lower oxygen levels.

Streamside Cover is the ground vegetation along the banks. A diversity of grasses, shrubs, vines, saplings and large trees is essential to high quality habitat.

Medium ratings were given for Instream Cover, Pool Bottom Substrate, Chanel Alteration, Bank Stability & Bank Vegetation Stability. These parameters are defined below to help understand the conditions and ratings of the sampling site on TMC.

Instream Cover is important to stream health because it is the habitat that organisms hide behind, within or under. This consists of things like submerged logs, cobbles and boulders, root wads, and 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.

Pool Bottom Substrate describes the type of stream bed found in pools. Pool areas of the stream can be damaged by harmful materials that might settle in them. 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.

Channel Alteration is not optimal. The presence of newly formed point bars and islands is very significant. Unstable streambeds support fewer types of animals than those that are stable. Unstable streambeds tend to have unstable pool bottom substrate and little cover because it is continually being buried.

Stable Banks do not contribute sediment to the stream channel. Stable banks tend to be deeper and narrower than channels with unstable banks. This causes the stream to be cooler and it tends to grow less algae for a given amount of nutrients than a shallow, wide channel.

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. Vegetation offers extra advantages other than bank stability. A few of those advantages are food and shade to the aquatic community and stabilization of point bars.

Low ratings were given for Presence of Rocky Runs or Riffles, Flow & Channel Sinuosity.

Rocky Runs or Riffles offer a combination of highly oxygenated, turbulent water, flowing over high quality cover and substrate. Turbulence prevents the formation of nutrient concentration allowing algae and other plants to grow at a much higher rate than they would at the same concentration in pools. More algae means more invertebrates for the fish to feed on. Turbulence helps to oxygenate the water. Oxygen is needed for all aquatic life.

Flow 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.

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. The more sinuous the channel, the higher it scores. The segment of the stream that was assessed happened to be a straight segment causing it to score low. This small segment is not, however, a good representation of the majority of TMC.

Biological Conditions

Fish

The most recent fish collection was also conducted on 8/22/2016 and from the same 400-meter reach as the physical habitat assessment, by using a sein. A grade of "B" was given (better than the "C" grade from the 6/27/2012 fish collection) when compared to the OMER which scored an "A". TMC scored higher (better) in the sensitive benthic species and intolerant species in 2016 than it did in 2012. Due to very deep pools, boulders and woody debris during the 2012 assessment, where the sein could not be held to the stream bottom, some specimens could easily have evaded capture. This could account for fewer species gathered in the earlier assessment.

	TNM 2016 RESULTS	OMER RESULTS
Total # of species	18	15
Total Sensitive benthic species	5	4
Sunfish species	6	4
No. of Intolerant species	3	5
Proportion tolerant individuals	0.49	0.49
No. of Species comprising 75%	6	5
Proportion insectivorous cyprinid	0.01	0.17

Proportion lithophylic spawners	0.32	0.35
Shannon's diversity	2.32	2.17

Fish collected in 2016 were: 48 Central Stoneroller, 33 Unidentified shiner, 29 Longear sunfish, 20 Brook silverside, 11 Largemouth bass, 10 Tadpole madtom, 9 Mosquitofish, 8 Green sunfish, 7 Bluntnose minnow, 6 Blackspotted topminnow, 4 Bluegill sunfish, 4 Orangebelly darter, 2 Spotted bass, 2 Dusky darter, 1 Steelcolor shiner, 1 Yellow bullhead, 1 Warmouth sunfish, 1 Logperch

Benthic Macroinvertebrates (Creek Bugs)

Collection of macroinvertebrates is attempted at all fixed sites for both the winter and summer index periods. 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. This is why there were no collections made in Winter 2012, Summer 2012, Winter 2013. Oklahoma has been in a state wide drought from about 2011 to 2014. No collections were made in 2015 nor 2016 due to either no flow or high flow conditions.

TMC macroinvertebrates were done by riffle sampling which consists of three, one meter squared kicknet samples in areas of rocky substrate reflecting the various water flow speeds at a site. Riffles with substrates of bedrock or tight clay are not sampled. The sample is preserved in a quart mason jar with ethanol, labeled and kept till it picked through by the Blue Thumb volunteer and then the bugs are sent to a professional taxonomist for identification.

The two winter samples scored a "C" grade with a 38% in 2014 and down to a 19% in 2017. The number of species was 12 in 2014 and fell to 8 in 2017 while OMER averaged 21.34 species. The species of sensitive bugs was half as good in 2017, but both samples were well below the OMER. Overall population diversity was half as good as OMER for both samples.

There were also two summer samples: 2013 sample scored a "B" grade (53%) which decreased in 2014 to a "C" grade (41%). The number of species was better in the summer samples then in the winter samples, but still below OMER. The amount of sensitive species in the summer was very similar to the winter samples and still well below OMER. Overall population diversity was quite better in the summer samples.

Bacteria

Ecoli & Coliform bacteria samples were taken & tested from May through September with no significant findings.

Chemical

Chemical data were collected monthly between 2/21/2012 and 12/22/2017.

Dissolved Oxygen (DO)

Dissolved oxygen saturation shows when there are problems with the amount of oxygen available in the water for aquatic life. Too little or too much are indicators of problems. Chemical data show the DO for this segment of TMC to be just below normal (80-130%) and the median for TMC is in the high 60%. I believe this can be related back to the drought conditions that have persisted in SE Oklahoma over the last several summers.

pH

pH is a term used to indicate the alkalinity or acidity of a substance as ranked on a scale from 1.0 to 14.0 with 7.0 being neutral. Acidity increases as the pH gets lower.

The normal pH range for Oklahoma is 6.5 to 9. The median for TMC is 6.5 which is just within the normal range.

Nitrogen

Nitrates are a form of nitrogen, which is found in several different forms in aquatic ecosystems. These forms of nitrogen include ammonia (NH3), nitrates (NO3), and nitrites (NO2). Nitrates are essential plant nutrients, but in excess amounts they can cause significant water quality problems. The natural level of ammonia or nitrate in surface water is typically low (less than 1 mg/L). An estimate of soluble nitrogen is made by adding the amounts of ammonia-nitrogen and nitrate/nitrite-nitrogen found in the water.

Normal levels of nitrogen for this area are 0.45 mg/L. Levels of soluble nitrogen at TMC were a bit higher with a level of 0.63 mg/L, but still within the normal range.

Phosphorus

Phosphorus cycles through the environment, changing form as it does so. Aquatic plants take in dissolved inorganic phosphorus and convert it to organic phosphorus as it becomes part of their tissues. Animals get the organic phosphorus they need by eating either aquatic plants, other animals, or decomposing plant and animal material. As plants and animals excrete wastes or die, the organic phosphorus they contain sinks to the bottom, where bacterial decomposition converts it back to inorganic phosphorus, both dissolved and attached to particles. This inorganic phosphorus gets back into the water column when the bottom is stirred up by animals, human activity, chemical interactions, or water currents. Then it is taken up by plants and the cycle begins again.

Measurements below 0.05 mg/L are considered "normal". TMC data showed the majority of the results to be just within the normal range with an average of 0.05 mg/L. There were a couple results in the "caution" range (0.5-0.1 mg/L) and also a couple results in the "poor" range (>0.1 mg/L) with the highest reading of 0.47 mg/L on 7/19/2013

Chloride

Chloride in surface water can be caused by a number of things. A few causes are; pasture fertilization, road salting, animal waste & leaking septic systems.

The Chloride levels for TMC were within a range of 10-20 mg/L. There was one low reading of 5 mg/L on 10/16/2013 and the highest reading of 30 mg/L on 2/28/2014.

Conclusion

Overall, this segment of Tenmile Creek appears healthy. The low fish and bug scores could be attributed to the periods of drought that have affected the surface waters in the area. Having personal knowledge of Ten Mile Creek prior to Blue Thumb sampling, I know that pooling and no flow has been fairly common over the last few years due to drought conditions. This creek maintained a fairly even and consistent flow prior to the drought years but recently, within the last year or so, the base flow has returned to somewhat normal. Terrestrial and aquatic habitat provides a high quality environment for fish and macroinvertebrates at the sampling site. The chemical testing shows low oxygen levels but at least some of this has to due to drought. The nutrient levels are well within normal levels except for a couple spiked phosphorous readings. Compared with the Ouachita Mountains Ecoregion Reference, Tenmile Creek does not compare as well as the last assessment but still reflects good overall condition of the stream.

Tenmile Creek: Davis

Habitat Assessment

6/18/2012 118.2	8/22/2016 88.5	6/22/2022 96.1
High Instream Cover Canopy Cover Shading Flow Bank Stability Streamside Cover	**High** Pool Variability Canopy Cover Shading Streamside Cover	**High** Pool Variability Canopy Cover Shading Bank Stability Streamside Cover
Medium Pool Bottom Substrate Pool Variability Presence of Rocky Runs or Riffles Channel Alteration Bank Vegetation Stability	**Medium** Instream Cover Pool Bottom Substrate Channel Alteration Bank Stability Bank Vegetation Stability	**Medium** Instream Cover Bank Vegetation Stability
Low Channel Sinuosity	**Low** Presence of Rocky Runs or Riffles Flow Channel Sinuosity	**Low** Pool Bottom Substrate Presence of Rocky Runs or Riffles Flow Channel Alteration Channel Sinuosity

WQ SampleID	49692	56752	66655
WBID	OK410300-03-0270L	OK410300-03-0270L	OK410300-03-0270L
Site Name	Tenmile Creek: Davis	Tenmile Creek: Davis	Tenmile Creek: Davis
Date	18-Jun-12	22-Aug-16	22-Jun-22
Direction	Downstream	Downstream	Downstream
Instream Cover	17.7	15	14
Pool Bottom Substrate	12.3	10.7	6.9
Pool Variability	14	18.8	20
Canopy Cover Shading	15.3	18.3	17
Presence of Rocky Runs or Riffles	9	0	5.9
Flow	20	0	6.3
Channel Alteration	8.7	5.8	1.4
Channel Sinuosity	0	-0.1	0.8
Bank Stability	7.3	7.4	7.7
Bank Vegetation Stability	4.4	2.6	6.4
Streamside Cover	9.6	10	9.1
Total Points	118.2	88.5	96.1
Comments			

Blue Thumb Fish Collections
Ouachita Mountains

	Tenmile Creek: Davis 6/27/2012	Tenmile Creek: Davis 8/22/2016	Ouachita Mountains Reference Fish
Site Name			
Stream Order			
Habitat Score	118.2	88.5	118.8
	Raw Results		
Total # of species	22	18	15
No. of sensitive benthic species	1	5	4
No. of sunfish species	6	6	4
No. of intolerant species	1	3	5
Proportion tolerant individuals	0.35	0.49	0.49
No. of species comprising 75%	6	6	5
Proportion insectivorous cyprinid	0.45	0.01	0.17
Proportion lithophylic spawners	0.02	0.32	0.35
Shannon's diversity	2.27	2.32	2.17
Total # of fish	252	197	209
	Metric Results		
Total # of species	1.47	1.20	1.00
No. of sensitive benthic species	0.25	1.25	1.00
No. of sunfish species	1.50	1.50	1.00
No. of intolerant species	0.20	0.60	1.00
Proportion tolerant individuals	0.35	0.49	0.49
Proportion insectivorous cyprinid individuals	0.45	0.01	0.17
Proportion lithophylic spawners	0.02	0.32	0.35
	Metric Scores		
Total # of species	5	5	5
No. of sensitive benthic species	1	5	5
No. of sunfish species	5	5	5
No. of intolerant species	1	3	5
Proportion tolerant individuals	1	1	1
Proportion insectivorous cyprinid individuals	3	1	1
Proportion lithophylic spawners	1	3	3
Total Score	17	23	25
Comparison to Reference	0.68	0.92	1.00
Condition	C	B	A

Blue Thumb Fish Collections
Ouachita Mountains

	Tenmile Creek: Davis 6/22/2022	Ouachita Mountains Reference Fish
Site Name		
Stream Order		
Habitat Score	96.1	118.8
	Raw Results	
Total # of species	24	14.67
No. of sensitive benthic species	7	4.33
No. of sunfish species	7	4.33
No. of intolerant species	5	5.33
Proportion tolerant individuals	0.48	0.49
No. of species comprising 75%	7	5.00
Proportion insectivorous cyprinid	0.25	0.17
Proportion lithophylic spawners	0.19	0.35
Shannon's diversity	2.52	2.17
	Metric Results	
Total # of species	1.64	1.00
No. of sensitive benthic species	1.62	1.00
No. of sunfish species	1.62	1.00
No. of intolerant species	0.94	1.00
Proportion tolerant individuals	0.48	0.49
Proportion insectivorous cyprinid individuals	0.25	0.17
Proportion lithophylic spawners	0.19	0.35
	Metric Scores	
Total # of species	5	5
No. of sensitive benthic species	5	5
No. of sunfish species	5	5
No. of intolerant species	5	5
Proportion tolerant individuals	1	1
Proportion insectivorous cyprinid individuals	3	1
Proportion lithophylic spawners	3	3
Total Score	27	25
Comparison to Reference	1.08	1.00
Condition	A	A

Site Name	Date	Field Seine	Lab Seine	Lab Comments	Total Specimen	VernName	Tolerance	Insectivor	Planktivor	Omnivore	Piscivore	Herbivore	Generalist	lithophillic Spawners	Sensitive Benthic
Tenmile Creek: Davis	6/18/2012		77		77	Redfin shiner	interm	X	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012		35		35	Blacktail shiner	interm	X	***	***	***	X	***	***	***
Tenmile Creek: Davis	6/18/2012	26	2		28	Mosquitofish	tol	X	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012	24			24	Red shiner	tol	***	***	X	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012	14	3		17	Brook silverside	interm	X	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012		17	17 YOY	17	Unidentified redhorse spp.									
Tenmile Creek: Davis	6/18/2012	15	1		16	Longear sunfish	tol	X	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012	11	2		13	Bluegill sunfish	tol	X	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012		4		4	Blackspotted topminnow	interm	X	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012	2	1		3	Yellow bullhead	tol	X	***	***	***	***	X	***	***
Tenmile Creek: Davis	6/18/2012		3	3 YOY	3	Unidentified minnow spp.	unk	***	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012		2		2	Central stoneroller	interm	***	***	***	***	X	***	X	X
Tenmile Creek: Davis	6/18/2012		2		2	Bluntnose minnow	interm	***	***	X	***	***	***	X	***
Tenmile Creek: Davis	6/18/2012		2	2 YOY	2	Unidentified shiner spp.	unk	***	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012		2	2 YOY	2	Unidentified sunfish spp.	interm	X	***	***	***	***	***	***	***
Tenmile Creek: Davis	6/18/2012		1		1	Grass pickerel	interm	***	***	***	X	***	***	***	***
Tenmile Creek: Davis	6/18/2012		1		1	Bigeye shiner	intol	X	***	***	***	***	***	X	***
Tenmile Creek: Davis	6/18/2012		1		1	Green sunfish	tol	X	***	***	***	***	X	***	***
Tenmile Creek: Davis	6/18/2012		1	1 YOY	1	Spotted bass	interm	***	***	***	X	***	***	X	***
Tenmile Creek: Davis	6/18/2012		1		1	White crappie	tol	***	***	***	X	***	***	***	***
Tenmile Creek: Davis	6/18/2012		1	1 YOY	1	Unidentified darter spp.									
Tenmile Creek: Davis	6/18/2012		1	1 YOY	1	Unidentified gar spp.	tol	***	***	***	X	***	***	***	***

Site Name	Date	FieldComments	FieldSeine	LabSeine	LabComments	Total	VernName	Tolerance	Insectivor	Planktivor	Omnivore	Piscivore	Herbivore	Generalist	lithophillic Spawners	Sensitive Benthic
Tenmile Creek: Davis	8/22/2016		47	1		48	Central stoneroller	interm	***	***	***	***	1	***	1	1
Tenmile Creek: Davis	8/22/2016		33			33	Unidentified shiner spp.	tol	***	***	1	***	***	***	***	***
Tenmile Creek: Davis	8/22/2016		28	1		29	Longear sunfish	tol	1	***	***	***	***	***	***	***
Tenmile Creek: Davis	8/22/2016		18	2		20	Brook silverside	interm	1	***	***	***	***	***	***	***
Tenmile Creek: Davis	8/22/2016		7	4		11	Largemouth bass	tol	***	***	***	1	***	***	***	***
Tenmile Creek: Davis	8/22/2016			10		10	Tadpole madtom	intol	1	***	***	***	***	***	***	1
Tenmile Creek: Davis	8/22/2016		8	1		9	Mosquitofish	tol	1	***	***	***	***	***	***	***
Tenmile Creek: Davis	8/22/2016		7	1		8	Green sunfish	tol	1	***	***	***	***	1	***	***
Tenmile Creek: Davis	8/22/2016		3	4		7	Bluntnose minnow	interm	***	***	1	***	***	***	1	***
Tenmile Creek: Davis	8/22/2016			6		6	Blackspotted topminnow	interm	1	***	***	***	***	***	***	***
Tenmile Creek: Davis	8/22/2016		3	1		4	Bluegill sunfish	tol	1	***	***	***	***	***	***	***
Tenmile Creek: Davis	8/22/2016			4		4	Orangebelly darter	intol	1	***	***	***	***	***	1	1
Tenmile Creek: Davis	8/22/2016			2		2	Spotted bass	interm	***	***	***	1	***	***	1	***
Tenmile Creek: Davis	8/22/2016			2		2	Dusky darter	interm	1	***	***	***	***	***	1	1
Tenmile Creek: Davis	8/22/2016			1		1	Steelcolor shiner	intol	1	***	***	***	***	***	1	***
Tenmile Creek: Davis	8/22/2016			1		1	Yellow bullhead	tol	1	***	***	***	***	1	***	***
Tenmile Creek: Davis	8/22/2016			1		1	Warmouth sunfish	tol	***	***	***	1	***	***	***	***
Tenmile Creek: Davis	8/22/2016			1		1	Logperch	interm	1	***	***	***	***	***	***	1

SiteName	WBID	SAMPLEID	Date	Total	RefNum	Family	Species	VernName	Insectivor	Planktivor	Omnivore	Piscivore	Herbivore	Generalist	CombinedTol	lithophillic Spawners	Darter	Sensitive Benthic
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	49	135	Centrarchidae	Lepomis megalotis	Longear sunfish	1						tol			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	30	42	Cyprinidae	Lythrurus umbratilis	Redfin shiner	1						interm			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	13	133	Centrarchidae	Lepomis macrochirus	Bluegill sunfish	1						tol			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	12	118	Poeciliidae	Gambusia affinis	Mosquitofish	1						tol			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	9	31	Cyprinidae	Cyprinella whipplei	Steelcolor shiner	1						intol	1		
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	8	19	Esocidae	Esox americanus	Redfin pickerel				1			interm			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	6	114	Fundulidae	Fundulus notatus	Blackstripe topminnow	1						interm			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	6	115	Fundulidae	Fundulus olivaceus	Blackspotted topminnow	1						interm			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	5	53	Cyprinidae	Notropis boops	Bigeye shiner	1						intol	1		
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	4	72	Cyprinidae	Pimephales notatus	Bluntnose minnow			1				interm	1		
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	4	119	Atherinidae	Labidesthes sicculus	Brook silverside	1						interm			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	4	130	Centrarchidae	Lepomis cyanellus	Green sunfish	1					1	tol			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	4	161	Percidae	Etheostoma radiosum	Orangebelly darter	1						intol	1	1	1
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	4	174	Percidae	Percina sciera	Dusky darter	1						interm	1	1	1
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	3	23	Cyprinidae	Campostoma anomalum	Central stoneroller					1		interm	1		1
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	2	75	Cyprinidae	Pimephales vigilax	Bullhead minnow			1				tol			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	2	136	Centrarchidae	Lepomis microlophus	Redear sunfish	1						interm			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	2	141	Centrarchidae	Micropterus salmoides	Largemouth bass				1			tol			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	2	93	Catostomidae	Moxostoma erythrurum	Golden redhorse	1						interm	1		1
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	1	90	Catostomidae	Minytrema melanops	Spotted sucker	1						intol	1		1
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	1	103	Ictaluridae	Noturus gyrinus	Tadpole madtom	1						intol			1
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	1	140	Centrarchidae	Micropterus punctulatus	Spotted bass				1			interm	1		
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	1	142	Centrarchidae	Pomoxis annularis	White crappie				1			tol			
Tenmile Creek: Davis	OK410300-03-0270L	66655	6/22/2022	1	167	Percidae	Percina caprodes	Logperch	1						interm		1	1

Ouachita Mountains
Macroinvertebrates

Description	Tennile Creek: Davis Winter 2014 Riffle	Tennile Creek: Davis Winter 2017 Riffle	Tennile Creek: Davis Winter 2018 Riffle	Tennile Creek: Davis Winter 2020 Riffle	Tennile Creek: Davis Winter 2021 Riffle	Ouachita Mountains Reference Winter Riffle Average	Tennile Creek: Davis Summer 2013 Riffle	Tennile Creek: Davis Summer 2014 Riffle	Tennile Creek: Davis Summer 2019 Riffle	Tennile Creek: Davis Summer 2020 Riffle	Ouachita Mountains Reference Summer Riffle Average
	Riffle	Riffle	Riffle	Riffle	Riffle		Riffle	Riffle	Riffle	Riffle	
Raw Results											
Taxa Richness	12	8	17	15	19	21.34	18	12	18	17	21.96
EPT Taxa Richness	4	2	4	7	6	11.2	5	2	5	7	9.9
EPT Abundance	0.13	0.06	0.25	0.44	0.19	0.45	0.07	0.02	0.09	0.16	0.61
HBI Score	5.52	5.80	5.70	4.57	5.39	5.03	5.75	5.50	5.70	5.10	4.68
% Contribution Dominants	0.79	0.85	0.52	0.56	0.49	0.40	0.48	0.67	0.38	0.49	0.37
Shannon-Weaver Diversity	1.18	1.03	2.20	2.04	2.33	2.49	2.24	1.66	2.23	2.19	2.51
Raw Scores											
Taxa Richness	0.56	0.37	0.80	0.70	0.89	1.00	0.82	0.55	0.82	0.77	1.00
EPT Taxa Richness	0.36	0.18	0.36	0.63	0.54	1.00	0.51	0.20	0.51	0.71	1.00
EPT Abundance	0.13	0.06	0.25	0.44	0.19	0.45	0.07	0.02	0.09	0.16	0.61
HBI Score	0.91	0.87	0.88	1.10	0.93	1.00	0.81	0.85	0.82	0.92	1.00
% Contribution Dominants	0.79	0.85	0.52	0.56	0.49	0.40	0.48	0.67	0.38	0.49	0.37
Shannon-Weaver Diversity	1.18	1.03	2.20	2.04	2.33	2.49	2.24	1.66	2.23	2.19	2.51
Metric Scores											
Taxa Richness	2	0	4	4	6	6	6	2	6	4	6
EPT Taxa Richness	0	0	0	0	0	6	0	0	0	2	6
EPT Abundance	2	0	4	6	2	6	0	0	0	2	6
HBI Score	6	6	6	6	6	6	4	6	4	6	6
% Contribution Dominants	2	0	6	6	6	6	6	4	6	6	6
Shannon-Weaver Diversity	0	0	2	2	2	2	2	2	2	2	4
Total Score	12	6	22	24	22	32	18	14	18	22	34
Comparison to Reference	0.38	0.19	0.69	0.75	1.20	1.00	0.53	0.41	0.53	0.65	1.00
Condition	C	C	B	B	A	A	B	C	B	B	A

Ouachita Mountains
Macroinvertebrates

Habitat Type		Tenmile Creek: Davis Winter 2022 Riffle	Ouachita Mountains Reference Winter Riffle Average	Tenmile Creek: Davis Summer 2021 Riffle	Tenmile Creek: Davis Summer 2022 Riffle	Ouachita Mountains Reference Summer Riffle Average
		Riffle		Riffle	Riffle	
Raw Results						
Taxa Richness		16	21.35	18	20	21.22
EPT Taxa Richness		7	10.9	6	8	9.23
EPT Abundance		0.20	0.45	0.23	0.31	0.58
HBI Score		5.61	4.92	4.92	5.06	4.71
% Contribution Dominants		0.64	0.41	0.45	0.29	0.40
Shannon-Weaver Diversity		1.75	2.46	2.25	2.68	2.46
Raw Scores						
Taxa Richness		0.75	1.00	0.85	0.94	1.00
EPT Taxa Richness		0.64	1.00	0.65	0.87	1.00
EPT Abundance		0.20	0.45	0.23	0.31	0.58
HBI Score		0.88	1.00	0.96	0.93	1.00
% Contribution Dominants		0.64	0.41	0.45	0.29	0.40
Shannon-Weaver Diversity		1.75	2.46	2.25	2.68	2.46
Metric Scores						
Taxa Richness		4	6	6	6	6
EPT Taxa Richness		0	6	0	4	6
EPT Abundance		2	6	4	6	6
HBI Score		6	6	6	6	6
% Contribution Dominants		0	0	0	4	2
Shannon-Weaver Diversity		2	2	2	4	2
	Total Score	14	26	18	30	28
Comparison to Reference		0.54	1.00	0.64	1.07	1.00
	Condition	B	A	B	A	A

WBID	Site Name	Legal Description
OK410300-03-0270L	Tenmile Creek: Davis	SE¼ NE¼ NW¼ 16-3S-15E, Pushmataha County, OK
53641	1/30/2014 @ 10:00:00 AM	Routine Sample

Percent Sample Collected			Percent Sample Picked			Number of Squares Picked			Total Number of Squares		
Riffle	S.Veg	Wood	Riffle	S.Veg	Wood	Riffle	S.Veg	Wood	Riffle	S.Veg	Wood
50			50			14			28		

Number of Organisms:	Riffle	S.Veg	Woody	Ref No.	Macroinvertebrate Name
	1			3.70	ANNELIDA Hirudinea Pharyngobdellida Erpobdellidae Mooreobdella leech
	4			19.00	ANNELIDA Oligochaeta Haplotaxida Tubificidae Limnodrilus worm
	1			28.00	ARTHROPODA Crustacea Amphipoda Talitridae Hyalella Sand Flea
	2			60.00	ARTHROPODA Insecta Coleoptera Elmidae Stenelmis Riffle beetle
	2			90.00	ARTHROPODA Insecta Diptera Chironomidae Chironomini
	86			92.00	ARTHROPODA Insecta Diptera Chironomidae Orthocladiinae > non-biting midge fly
	5			103.00	ARTHROPODA Insecta Diptera Simuliidae Prosimulium black fly
	1			198.00	ARTHROPODA Insecta Plecoptera Capniidae Allocapnia stone fly
	6			214.00	ARTHROPODA Insecta Plecoptera Perlidae Perlesta stone fly
	8			218.00	ARTHROPODA Insecta Plecoptera Perlodidae Isoperla stone fly
	1			223.00	ARTHROPODA Insecta Trichoptera Glossosomatidae Agapetus caddisfly
	2			228.00	ARTHROPODA Insecta Trichoptera Hydropsychidae Cheumatopsyche caddisfly
	119				Total Number of Organisms

Site Name	Date	Number IDd	RefNum	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus	HBI score	Filtering collector	Gathering collector	omnivore	parasite	predator	piercer	scraper	shredder
Tenmile Creek: Davis	3/7/2017	88	92	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/7/2017	17	60	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	3/7/2017	6	131	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/7/2017	5	104	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	3/7/2017	3	19	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/7/2017	2	54	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4	0	0.5	0	0	0	0	0.5	0
Tenmile Creek: Davis	3/7/2017	1	95	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/7/2017	1	214	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1	0	0	1	0	0	0	0	0

Site Name	Date	Number ID'd	Phylum	Class	Order	Family	Genus	HBI_score	filtering_collector	gathering_collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Tenmile Creek: Davis	2/15/2018	37	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	24	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	12	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	8	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Maccaffertium	3.1	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	6	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	5	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	4	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	4	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	1	ANNELIDA	Hirudinea	Pharyngobdellida	Erpobdellidae	Mooreobdella	8	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	2/15/2018	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/15/2018	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	2/15/2018	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	9	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	2/15/2018	1	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Gyraulus	8	0	0	0	0	0	0	1	0
Tenmile Creek: Davis	2/15/2018	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	1	0	0	0	0	0	0	0

SiteName	Date	Number ID'd	Phylum	Class	Order	Family	Genus	HBI_score	filtering_collector	gathering_collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Tenmile Creek: Davis	3/2/2020	42	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	18	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	8	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acentrella	4	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	8	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	7	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	7	ARTHROPODA	Insecta	Plecoptera	Perlodidae	Isoperla	2	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	2	ARTHROPODA	Insecta	Ephemeroptera	Leptophlebiidae		2	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	2	ARTHROPODA	Insecta	Plecoptera	Nemouridae	Amphinemura	2	0	0	0	0	0	0	0	1
Tenmile Creek: Davis	3/2/2020	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	3/2/2020	1	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4	0	1	0	0	0	0	1	0
Tenmile Creek: Davis	3/2/2020	1	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0

Site Name	Date	Number I'd	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shreder
Tenmile Creek: Davis	2/25/2021	32	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	21	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	9	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Maccaffertium	3.1	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	3	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	3	ARTHROPODA	Insecta	Trichopt	Hydropsychidae	Cheumatopsyche	4	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	3	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4	0	0.5	0	0	0	0	0.5	0
Tenmile Creek: Davis	2/25/2021	1	ANNELIDA	Oligochaeta	Haplotaxida	Naididae	Slavina	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	1	ARTHROPODA	Insecta	Plecoptera	Capniidae	Allocapnia	1	0	0	0	0	0	0	0	1
Tenmile Creek: Davis	2/25/2021	1	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/25/2021	1	ARTHROPODA	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	3	0	0	0	0	0	0	1	0
Tenmile Creek: Davis	2/25/2021	1	MOLLUSCA	Gastropoda	Basommatophora	Planorbidae	Gyraulus	8	0	0	0	0	0	0	1	0
Tenmile Creek: Davis	2/25/2021	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	1	0	0	0	0	0	0	0

SiteName	Date	Number ID'd	Phylum	Class	Order	Family	Genus	HBI_score	filtering_collector	gathering_collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Tenmile Creek: Davis	2/7/2022	78	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	9	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	7	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Maccaffertium	3	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	6	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	6	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	6	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	5	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	2	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	2	ARTHROPODA	Insecta	Plecoptera	Perlidae	Perlesta	1	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta	4	0	1	0	0	0	0	1	0
Tenmile Creek: Davis	2/7/2022	1	ARTHROPODA	Insecta	Trichopt	Hydropsychidae	Cheumatopsyche	4	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	2/7/2022	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	1	0	0	0	0	0	0	0

Oklahoma Conservation Commission -- Water Quality Division

Data Request: Macroinvertebrate Collection

WBID	Site Name	Legal Description
OK410300-03-0270L	Tenmile Creek: Davis	SE¼ NE¼ NW¼ 16-3S-15E, Pushmataha County, OK

51545 7/22/2013 **Routine Sample**

Percent Sample Collected

Riffle	S.Veg	Wood

Number of Organisms:	Riffle	S.Veg	Woody	Ref No.	Macroinvertebrate Name
	1			3.70	ANNELIDA Hirudinea Pharyngobdellida Erpobdellidae Mooreobdella leech
	6			19.00	ANNELIDA Oligochaeta Haplotaxida Tubificidae Limnodrilus worm
	2			28.00	ARTHROPODA Crustacea Amphipoda Talitridae Hyalella sandflea
	1			45.00	ARTHROPODA Insecta Coleoptera Dryopidae Helichus waterbeetle
	2			54.00	ARTHROPODA Insecta Coleoptera Elmidae Dubiraphia riffle beetle
	7			57.00	ARTHROPODA Insecta Coleoptera Elmidae Macronychus riffle beetle
	7			87.75	ARTHROPODA Insecta Diptera Ceratopogonidae Dasyhelea biting midge fly
	15			90.00	ARTHROPODA Insecta Diptera Chironomidae Chironomini midge fly
	7			94.00	ARTHROPODA Insecta Diptera Chironomidae Tanypodinae midge fly (non-biting)
	27			95.00	ARTHROPODA Insecta Diptera Chironomidae Tanytarsini midge fly (non-biting)
	1			117.50	ARTHROPODA Insecta Diptera Tipulidae Limnophila Crane fly
	2			131.00	ARTHROPODA Insecta Ephemeroptera Caenidae Caenis mayfly Squaregill
	2			141.00	ARTHROPODA Insecta Ephemeroptera Heptageniidae Stenacron mayfly Flatheaded
	1			142.00	ARTHROPODA Insecta Ephemeroptera Heptageniidae Stenonema mayfly Flatheaded
	1			143.00	ARTHROPODA Insecta Ephemeroptera Leptophlebiidae mayFly Prong-gilled
	27			228.00	ARTHROPODA Insecta Trichoptera Hydropsychidae Cheumatopsyche caddisFly
	2			247.00	ARTHROPODA Insecta Trichoptera Philopotamidae Chimarra caddisfly Finger-net
	1			279.00	MOLLUSCA Pelecypoda Veneroida Sphaeriidae Sphaerium Fingernail clam
	1				
	108				Total Number of Organisms

NOTE: This data has passed all QA procedures regarding collection and taxonomic techniques, however not all samples may be suitable for bio-assessment purposes because of too many or too few animals per sample.

Sample type	Site Name	Date	Number IDd	BugPhylum	BugClass	BugOrder	BugFamily	BugGenus	hbi	filt coll	gath coll	omniv	parasite	predator	piercer	scraper	shredder
Riffle	Tenmile Creek: Davis	7/8/2014	50	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	37	ARTHROPODA	Insecta	Trichopt	Hydropsychidae	Cheumatopsyche	4	1	0	0	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	16	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8	0	1	0	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	12	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	3	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6	0	1	0	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	2	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6	0	1	0	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	2	ARTHROPODA	Insecta	Diptera	Simuliidae	Simulium	6	1	0	0	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	2	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4	0	1	0	0	0	0	1	0
Riffle	Tenmile Creek: Davis	7/8/2014	2	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	1	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Maccaffertium	3	0	0	1	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	1	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8	0	1	0	0	0	0	0	0
Riffle	Tenmile Creek: Davis	7/8/2014	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Fallceon	4	0	1	0	0	0	0	0	0

Site Name	Date	Number ID'd	Phylum	Class	Order	Family	Genus	HBI score	Filtering collector	Gathering collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Tenmile Creek: Davis	8/1/2019	21	ARTHROPODA	Insecta	Trichopt	Hydropsychidae	Cheumatopsyche	4	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	20	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	18	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	7	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	3	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	2	ARTHROPODA	Insecta	Diptera	Ceratopogonidae	Probezzia	6	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	8/1/2019	2	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	8/1/2019	2	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	1	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	5	0	0	0	0	0	0	0	1
Tenmile Creek: Davis	8/1/2019	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	4	0	0	0	0	1	0	1	0
Tenmile Creek: Davis	8/1/2019	1	ARTHROPODA	Insecta	Trichoptera	Leptoceridae	Oecetis	4	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	8/1/2019	1	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Eupera	8	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	8/1/2019	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Sphaerium	8	1	0	0	0	0	0	0	0

SiteName	Date	Number ID'd	Phylum	Class	Order	Family	Genus	filtering_collector	gathering_collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Tenmile Creek: Davis	7/28/2020	33	ARTHROPODA	Insecta	Trichopt	Hydropsychidae	Cheumatopsyche	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	19	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	15	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	5	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	0	0.5	0	0	0	0	0.5	0
Tenmile Creek: Davis	7/28/2020	5	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	5	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	4	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Maccaffertium	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	2	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	1	ARTHROPODA	Insecta	Coleoptera	Dryopidae	Helichus	0	0	0	0	0	0	0	1
Tenmile Creek: Davis	7/28/2020	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	1	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Enallagma	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	7/28/2020	1	ARTHROPODA	Insecta	Trichoptera	Hydroptilidae	Hydroptila	0	0	0	0	0.5	0	0.5	0
Tenmile Creek: Davis	7/28/2020	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	1	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Dolophilodes	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/28/2020	1	MOLLUSCA	Gastropoda	Basommatophora	Ancylidae	Ferrissia	0	0	0	0	0	0	1	0

SiteName	Date	Num	RefNum	Phylum	Class	Order	Family	Genus	HBI_score	filtering_collector	gathering_collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Tenmile Creek: Davis	7/13/2021	40	228	ARTHROPODA	Insecta	Trichopt	Hydropsychidae	Cheumatopsyche	4	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	13	95	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	11	90	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	11	123	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	9	60	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	8	141	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	6	275	MOLLUSCA	Pelecypoda	Veneroida	Corbiculidae	Corbicula	5	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	4	247	ARTHROPODA	Insecta	Trichoptera	Philopotamidae	Chimarra	3	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	3	94	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	2	28	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	2	92	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	2	123	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	1	19	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	1	131	ARTHROPODA	Insecta	Ephemeroptera	Caenidae	Caenis	7	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	1	167	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	7/13/2021	1	179	ARTHROPODA	Insecta	Odonata	Coenagrionidae	Argia	9	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	7/13/2021	1	229	ARTHROPODA	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	4	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	7/13/2021	1	277	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Eupera	8	1	0	0	0	0	0	0	0

SiteName	Date	NumIDd	Phylum	Class	Order	Family	Genus	HBI_score	filtering_collector	gathering_collector	Omnivore	Parasite	Predator	Piercer	Scraper	Shredder
Tenmile Creek: Davis	6/22/2022	25	ARTHROPODA	Insecta	Coleoptera	Elmidae	Stenelmis	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	15	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Acerpenna	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	13	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanytarsini	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	11	ARTHROPODA	Insecta	Diptera	Chironomidae	Chironomini	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	10	ARTHROPODA	Insecta	Trichopt	Hydropsychidae	Cheumatopsyche	4	1	0	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	9	ARTHROPODA	Insecta	Coleoptera	Elmidae	Dubiraphia	4	0	0.5	0	0	0	0	0.5	0
Tenmile Creek: Davis	6/22/2022	8	ARTHROPODA	Insecta	Diptera	Chironomidae	Tanypodinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	7	ARTHROPODA	Insecta	Diptera	Chironomidae	Orthocladiinae	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	7	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Maccaffertium	3.1	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Baetis	4	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	6	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Labiobaetis	4	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	5	ANNELIDA	Oligochaeta	Haplotaxida	Tubificidae	Limnodrilus	10	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	5	ARTHROPODA	Crustacea	Amphipoda	Talitridae	Hyalella	8	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	4	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Leucrocuta	4	0	0.5	0	0	0	0	0.5	0
Tenmile Creek: Davis	6/22/2022	3	ARTHROPODA	Insecta	Ephemeroptera	Heptageniidae	Stenacron	4	0	0	1	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	1	ARTHROPODA	Crustacea	Decapoda	Cambaridae	Cambarus	6	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	1	ARTHROPODA	Insecta	Ephemeroptera	Baetidae	Procloeon	4	0	0.5	0.5	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	1	ARTHROPODA	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	4	0	1	0	0	0	0	0	0
Tenmile Creek: Davis	6/22/2022	1	ARTHROPODA	Insecta	Megaloptera	Corydalidae	Corydalus	4	0	0	0	0	1	0	0	0
Tenmile Creek: Davis	6/22/2022	1	MOLLUSCA	Pelecypoda	Veneroida	Sphaeriidae	Pisidium	6	1	0	0	0	0	0	0	0

Tenmile Creek: Davis

SE NE NW
Section 16-3S-15E
Pushmataha County
OK410300-03-0270L