

PROPOSED  
BENEFICIAL USE UPGRADES BASED ON NEW  
INFORMATION INDICATING ATTAINMENT OF  
WARMWATER AQUATIC COMMUNITY OR PRIMARY BODY  
CONTACT RECREATION



October 11, 2012

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**INTRODUCTION**

Water Quality Standards (WQS) are the foundation of the water quality-based pollution control program mandated by the Clean Water Act. These WQS define the goals for a waterbody (reservoirs, lakes, streams or rivers) by designating its uses, setting criteria to protect those uses, and establishing provisions such as antidegradation policies to protect waterbodies from pollutants.

Regulations governing WQS require that states and authorized Indian tribes specify appropriate water uses to be achieved and protected. Appropriate uses are identified by taking into consideration the use and value of the waterbody for public water supply, for protection of fish, shellfish, and wildlife, and for recreational, agricultural, industrial, and navigational purposes. In designating uses for a waterbody, states and tribes examine the suitability of a waterbody for the uses based on the physical, chemical, and biological characteristics of the waterbody, its geographical setting and scenic qualities, and economic considerations. Each waterbody does not necessarily require a unique set of uses. Instead, the characteristics necessary to support a use can be identified so that waterbodies having those characteristics can be grouped together as supporting particular uses.

Where water quality standards specify designated uses less than those which are presently being attained, the state or tribe is required to revise its standards to reflect the uses actually being attained.

A Use Attainability Analysis (UAA) must be conducted for any waterbody with designated uses that do not include the "fishable/swimmable" goal uses identified in Section 101(a)(2) of the Act. Such waterbodies must be reexamined every three years to determine if new information has become available that would warrant a revision of the standard. If new information indicates that "fishable/swimmable" uses can be attained, such uses must be designated.

Designated uses are an important component of Oklahoma's Water Quality Standards (OWQS). Designated uses are specified in the OWQS for each waterbody or waterbody segment, whether or not that use is being attained. There are various categories of uses, such as public water supplies, agricultural uses, and navigation uses. So called "fishable/swimmable" uses must be designated for each waterbody unless the state can adequately demonstrate, via a UAA, that these uses cannot be attained.

The designated use may be removed, or subcategories of a use established, only under the conditions given in 40 CFR, Section 131.10(g). The state must be able to demonstrate that attaining the designated use is not feasible because:

1. Naturally occurring pollutant concentrations prevent the attainment of the use;
2. Natural, ephemeral, intermittent, or low-flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met;
3. Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place;
4. Hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use;
5. Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to [chemical] water quality, preclude attainment of aquatic life protection uses; or
6. Controls more stringent than those required by Sections 301(b)(1)(A) and (B) and 306 of the Act would result in substantial and widespread economic and social impact.

Habitat Limited Aquatic Community (HLAC) is a subcategory of the beneficial use “Fish and Wildlife Propagation” (FWP), established in the OWQS, where the water chemistry and habitat are not adequate to support a “Warm Water Aquatic Community” (WWAC) because of one of the six reasons to remove a beneficial use. Secondary Body Contact Recreation (SBCR) is a subcategory of the beneficial use “Recreation” where the ingestion of water is not anticipated. Associated activities may include boating, fishing or wading.

Currently, there are 112 waterbodies listed in Appendix A of the OWQS with HLAC (formerly called Habitat Limited Fisheries) or SBCR beneficial use designations. These streams were added to Appendix A following completion of a UAA to determine appropriate stream uses for a municipal or industrial discharge permit due to limited flow or habitat. Some streams were so designated as a result of unsuitable natural or irreversible water quality. Each of these waterbodies should be re-examined for new information indicating attainment of WWAC or Primary Body Contact Recreation (PBCR) beneficial uses to comply with the federal requirement.

The objective of a recent 604(B) project was to review the original basis for designating the 112 waterbodies with the less than fishable or swimmable uses of HLAC and/or SBCR and to evaluate intervening conditions that may mitigate the reason for the less than fishable or swimmable designation as required by CFR 132.20.

*“Any waterbody segment with water quality standards that do not include the uses specified in section 101(a)(2) of the Act shall be re-examined every three years to determine if any new information has become available. If such new information indicates that the uses specified in section 101(a)(2) of the Act are attainable, the State shall revise its standards accordingly. CFR 131.20”*

Guidance provided by the U.S. EPA and 40 CFR 131.20 (a) require the re-evaluation of all waterbody segments once every three years which are designated with other than primary fish and recreation uses. In an effort to comply with these requirements, the staff of the Oklahoma Water Resources Board (OWRB) has undertaken an extensive literature review, as well as selected site inspection, to verify existing and designated uses.

After thorough review of available data was conducted, it was determined that there were 14 streams that had available data to consider. New data or information were not available for the remainder of the 112 waterbodies.

**Table 1: Streams in which new data or information were available**

<b>Station ID</b>	<b>Stream</b>
OK520800-01-0050G	Bird Creek
OK311600-02-0110G	Bitter Creek
OK520610-02-0010	Canadian River
OK520710-01-0090C	Coffee Creek
OK520620-06-0040C	Little Deep Creek
OK310810-01-0090G	Rush Creek
OK620910-02-0100D	Salt Creek
OK311600-01-0040G	Sandy Creek
OK310840-02-0140	Sergeant Major
OK620910-03-0240E	Skeleton Creek
OK620900-04-0070M	Stillwater Creek
OK121600-04-0060D	Tar Creek
OK520620-02-0090G	Trail Creek
OK520500-02-0010A	Wewoka Creek

**Table 2: Streams in which data were reviewed and the associated recommendations:**

Station ID	Stream	Recommendation	
		WWAC / HLAC	PBCR / SBCR
OK520800-01-0050G	Bird Creek	Remain HLAC	Remain SBCR
OK311600-02-0110G	Bitter Creek	Remain HLAC	Remain SBCR
OK520610-02-0010	Canadian River	Remain WWAC	Upgrade to PBCR
OK520710-01-0090C	Coffee Creek	Remain HLAC	Remain PBCR
OK520620-06-0040C	Little Deep Creek: Weatherford, Upstream of Treatment Plant	Remain HLAC	Remain PBCR
OK310810-01-0090G	Rush Creek	Upgrade to WWAC	Remain SBCR
OK620910-02-0100D	Salt Creek	Remain HLAC	Remain SBCR
OK311600-01-0040G	Sandy Creek	Remain HLAC	Remain SBCR
OK310840-02-0140	Sergeant Major	Remain HLAC	Remain SBCR
OK620910-03-0240E	Skeleton Creek	Remain HLAC	Remain SBCR
OK620900-04-0070M	Stillwater Creek	Remain HLAC	Remain SBCR
OK121600-04-0060D	Tar Creek	Remain HLAC	Remain SBCR
OK520620-02-0090G	Trail Creek	Remain HLAC	Remain SBCR
OK520500-02-0010A	Wewoka Creek	Upgrade to WWAC	Remain PBCR

## Canadian River (520610010010, 520610020010, 520610020150\_00)

**Description:** This segment of the Canadian River is located on the borders of Grady, Canadian, McClain, and Cleveland counties. This stream segment has been identified as a Warm Water Aquatic Community (WWAC) and as Secondary Body Contact Recreation (SBCR). The original reason for listing as SBCR was that natural, ephemeral, or low-flow conditions or water levels prevent the attainment of the use. This stream drains a very large watershed. The local watershed has become more urbanized in the last 20 years. This portion of the Canadian River is in the Central Great Plains ecoregion.

Canadian River - WBID Segments

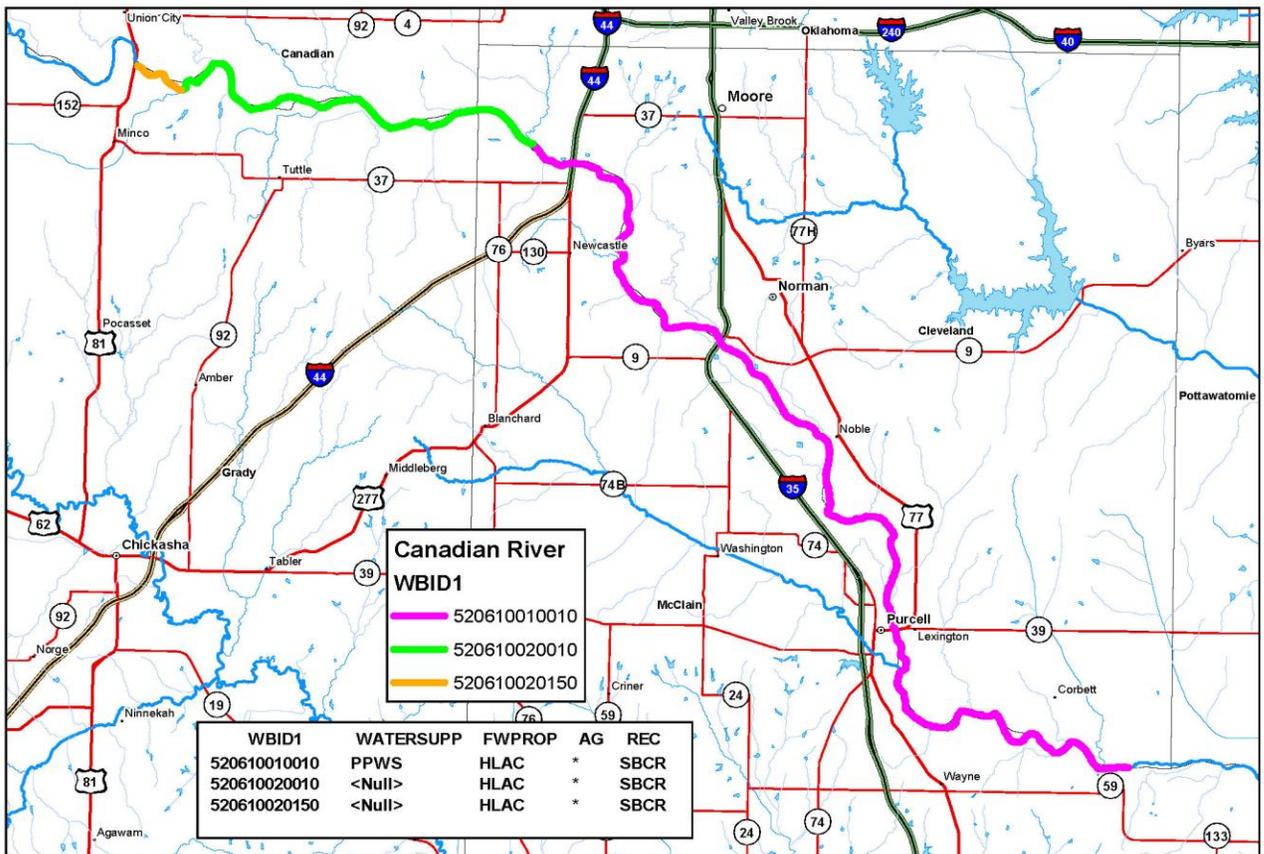


Figure 1. Location map of Canadian River highlighting the assigned waterbody identification (WBID).

**Physical Conditions in Stream:**

Habitat Assessments													
	Date	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
Canadian River OKPB01-021	07/20/2005	3.1	18.6	3.1	2.7	0.0	20.0	2.3	0.5	9.3	10.0	8.6	<b>78.2</b>
Canadian River OKPB01-369	05/02/2006	2.8	18.8	0.6	1.9	0.0	20.0	2.3	0.4	2.1	10.0	10.0	<b>68.9</b>
Canadian River OKPB01-369	08/09/2006	2.6	19.6	0.6	2.0	0.0	20.0	2.3	0.4	4.6	10.0	8.6	<b>70.7</b>

Stream Name	Date	Max Depth (m)	Average Depth (m)
Canadian River	7/20/2005	1.1	0.24
Canadian River	5/2/2006	0.8	0.18
Canadian River	8/9/2006	0.3	0.08
Canadian River	8/27/2012	1.0	0.43

All measurements of in-stream cover fall within the ‘Poor’ category, indicating that there is less than 10% stable habitat. Assessments of pool bottom substrate all fall within the ‘Optimal’ category. Sampling indicated that the Canadian River’s pool variability was ‘Poor’ represented by a majority of pools being shallow or absent. Canopy cover shading measurements scored in the ‘Poor’ range indicating that there is a lack of canopy. However, this is to be expected on a large prairie river. There was also a lack of rocky runs or riffles with all scored measurements falling in the ‘Poor’ category. The representative low flows at the times of measurements were categorized as ‘Optimal’ with values  $\geq 20$  cfs. Channel alteration on the Canadian River is categorized as ‘Poor’ due to heavy deposition of fine material and most pools being filled with silt. The channel sinuosity can be categorized as ‘Poor’ indicating that the channel is almost straight. However, this is to be expected on a large river where the meander lengths are much greater than those of most wadeable streams. Measurements indicate that the Canadian River has bank stability categorized as ‘Optimal’ in the upstream sampled segment and ‘Fair’ in the downstream sampled segment. The streamside cover measurements indicate that the Canadian River has ‘Adequate’ to ‘Optimal’ levels of vegetation within 10ft of the water’s edge.

## Thalweg Profile (m)

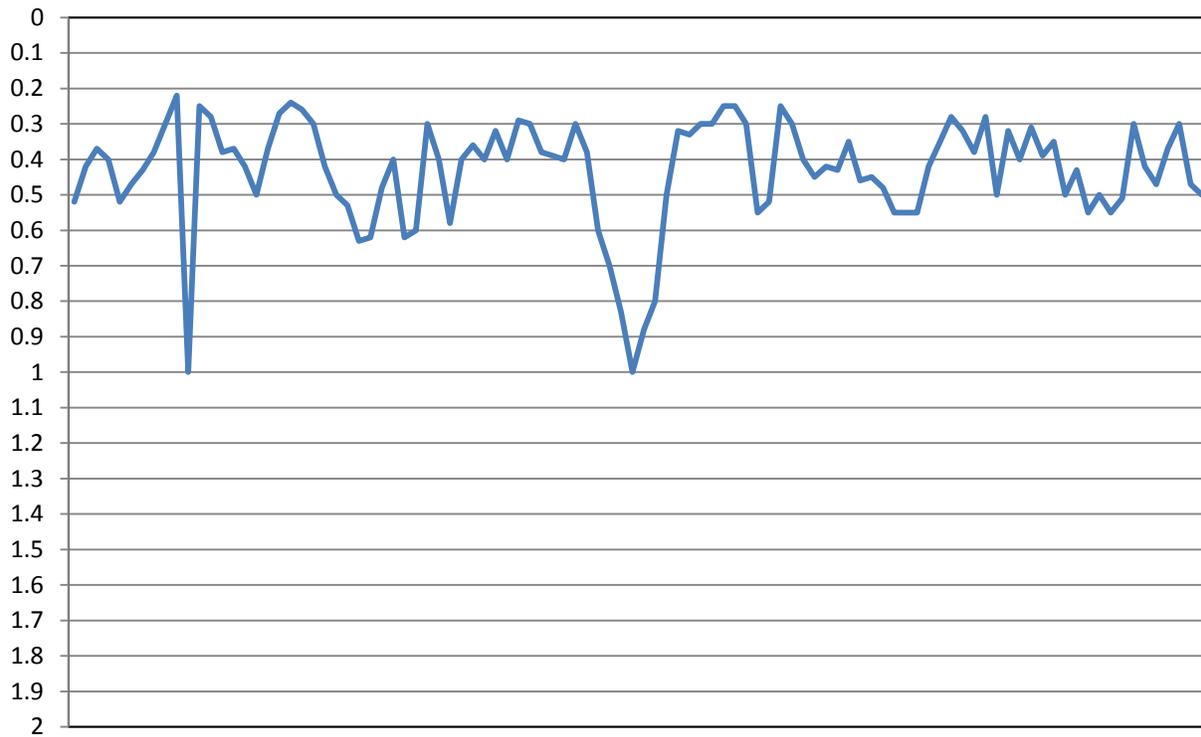


Figure 2. Thalweg profile of the Canadian River at Purcell on 8/27/2012. This data indicates that 28% of this 1000 meter stream reach had pools over 0.5 meters deep with a maximum depth of 1.0 meter.

## Population Information:

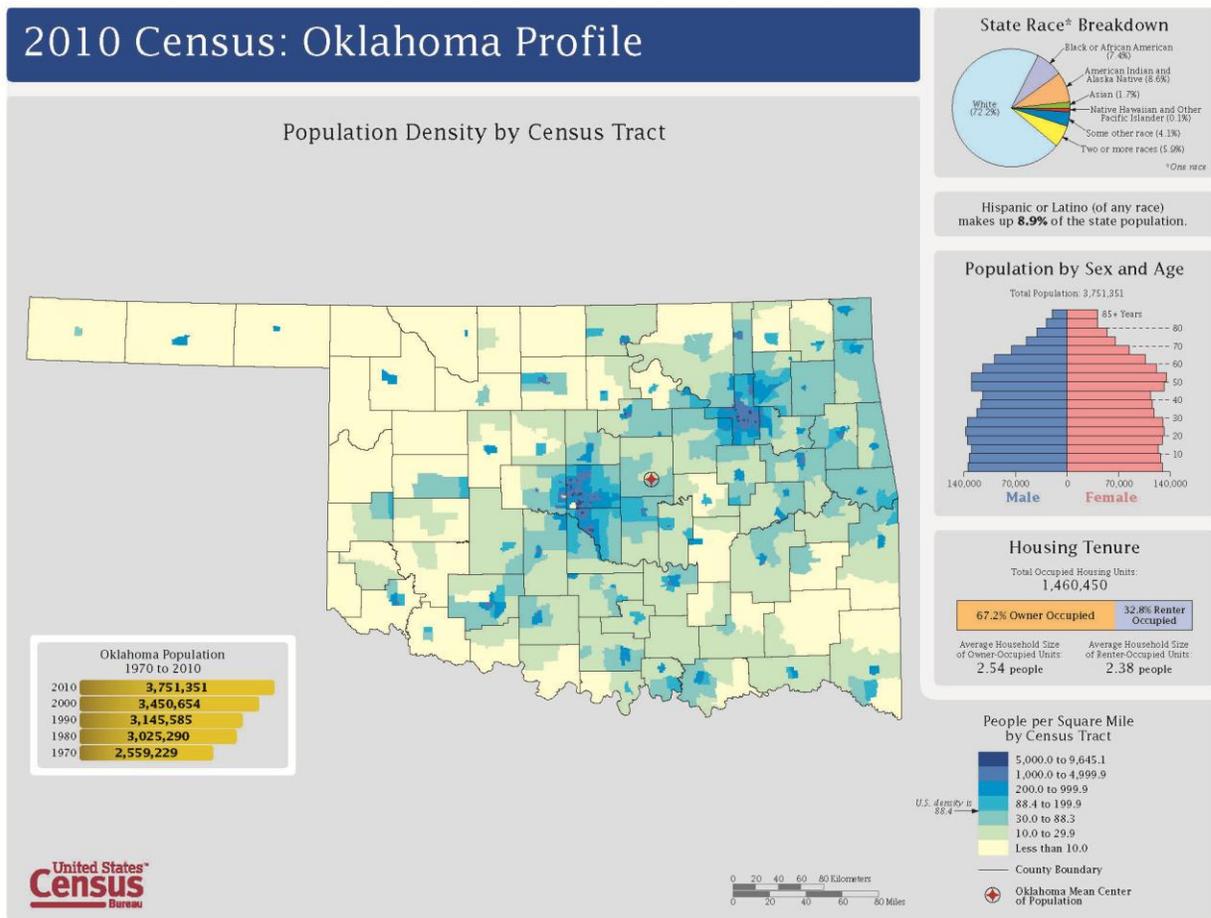


Figure 3. Census data for the state of Oklahoma indicate that a relatively large population per square mile resides near this segment of the Canadian River.

## Summary and Recommendation for Canadian River:

Due to its location near highly populated areas, ease of access, and broad sandy banks, the Canadian River attracts many recreational users. Some of the common activities observed are wading, sunbathing, and ATV and off-road use. Anecdotal evidence also indicates that skimboarding is a popular activity in this area. Data has indicated that depths are adequate, in places, for unobstructed total body immersion. These ongoing recreational activities, as well as sufficient depths, create a high likelihood for ingestion of water.

## **Rush Creek (310810010090\_00)**

**Description:** This segment of Rush Creek is located in Garvin County near the city of Pauls Valley. This stream segment has been identified as a Habitat Limited Aquatic Community (HLAC) and as Secondary Body Contact Recreation (SBCR). The original reason for categorizing this stream segment as a Habitat Limited Fishery (HLF) or HLAC (downstream from U.S. 77), is that the physical conditions related to natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection. The original reason for categorizing this stream segment as Secondary Body Contact Recreation (SBCR) (downstream from U.S. 77) is that natural, ephemeral, intermittent, or low-flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservations requirements to enable uses to be met. This portion of Rush Creek is in the Central Oklahoma / Texas Plains ecoregion.

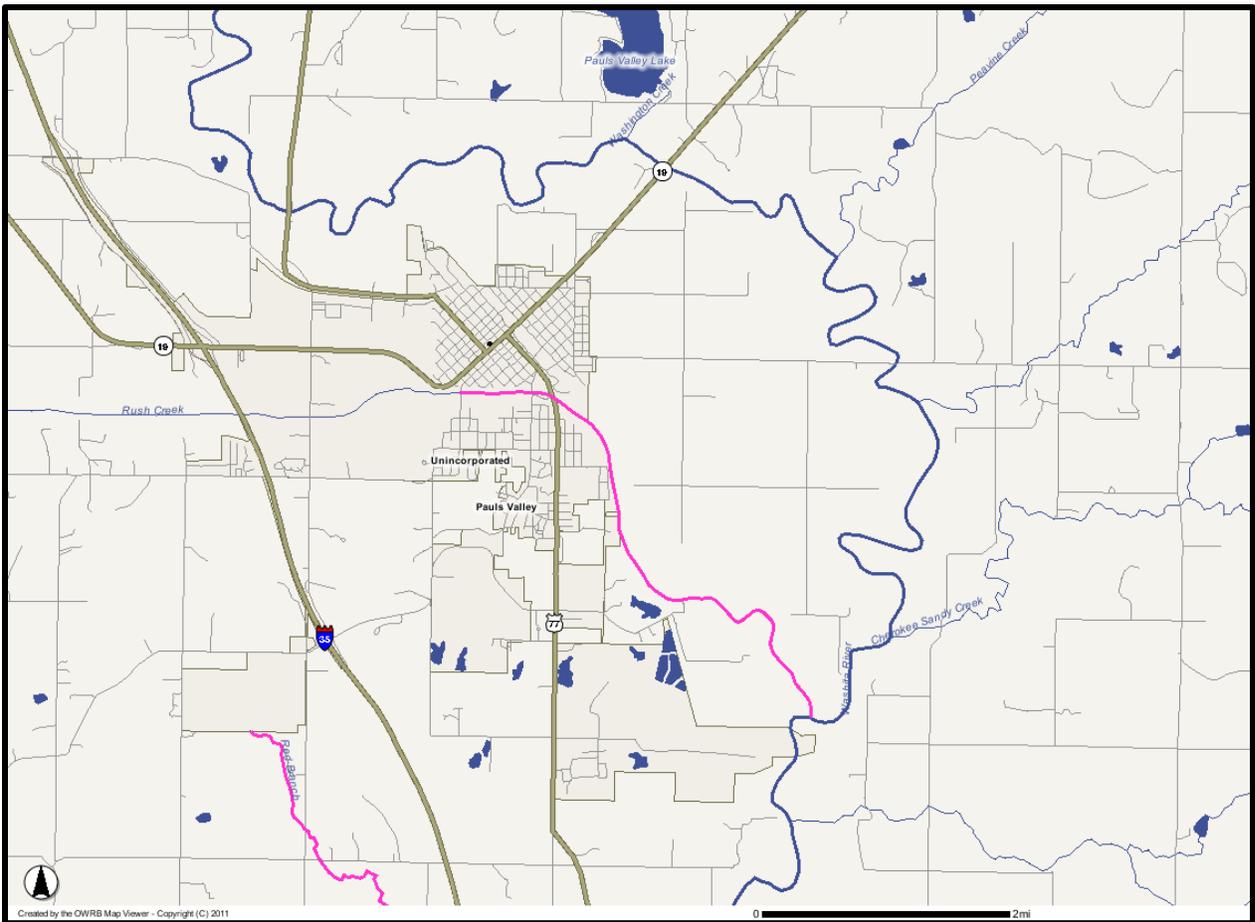


Figure 4. Location map of Rush Creek waterbody segment 310810010090\_00.

**Historical Descriptions:** A Use Attainability Analysis (UAA) was conducted in 1982. During this analysis, the upstream fish collection yielded 8 species, most of which were species that are tolerant of water quality degradation. The downstream fish collection yielded 9 species. The discharge "Impact Zone" was described as minimal (<1/2 mile). The benthic macroinvertebrate assemblage contained several intolerant taxa. The habitat was considered good. Access to the site was difficult, but there were signs of recreation use (fishing). The maximum depth observed was 0.4 m, with an average depth 0.1-0.2 m.

**Biological Data:**

Fish Assessments

Based on the State-adopted biological assessment for fish, this site is Fully Supporting. As an additional measure, an alternative Index of Biological Integrity (IBI) that compares to reference streams was analyzed and this site scored out at 100% of reference, giving it an integrity classification of 'Excellent'

Fish Species Present:

- Gizzard Shad (*Dorosoma cepedianum*)
- Central Stoneroller (*Campostoma anomalum*)
- Red Shiner (*Cyprinella lutrensis*)
- Golden Shiner (*Notemigonus crysoleucas*)
- River Carpsucker (*Carpoides carpio*)
- Sand Shiner (*Notropis stramineus*)
- Suckermouth Minnow (*Phenacobius mirabilis*)
- Bullhead Minnow (*Pimephales vigilax*)
- Channel Catfish (*Ictalurus punctatus*)
- Mosquitofish (*Gambusia affinis*)
- Bluegill Sunfish (*Lepomis macrochirus*)
- Longear Sunfish (*Lepomis megalotis*)
- Green Sunfish (*Lepomis cyanellus*)
- Smallmouth Buffalo (*Ictiobus bubalus*)
- Spotted Bass (*Micropterus punctulatus*)
- Largemouth Bass (*Micropterus salmoides*)
- Freshwater Drum (*Aplodinotus grunniens*)

**Recommendation:**

Habitat seems to be of poor to fair quality, however, the fish population is diverse. The data indicate that there is an existing use of WWAC in this stream segment. The fish IBI scores were very good, with the alternate IBI scoring at this site as 100% of reference.

The upstream segments of Rush Creek are designated as WWAC. There seems to be an incongruity in the designation of Rush Creek by this furthest downstream segment being designated as HLAC with the upper reaches being WWAC.

The OWRB recommends that this segment of Rush Creek be upgraded to WWAC. By upgrading this small segment of Rush Creek to WWAC, the incongruity will be resolved.

**Wewoka Creek (520500020010)**

**Description:** Wewoka Creek is located in Pottawatomie, Seminole and Hughes Counties. In Appendix A of the Oklahoma Water Quality Standards, this stream is divided into two segments having slightly different designated uses. The Upstream segment begins upstream of Sections 27 & 28 of T 9 N, R 6 E IM. This stream has been identified as a Public Private Water Supply (PPWS), as a Habitat Limited Aquatic Community (HLAC) and as Secondary Body Contact Recreation (SBCR). The downstream segment begins downstream of the boundary of Sections 27 & 28 of T 9 N, R 6 E IM. This stream has been identified as an Emergency Water Supply (EWS), as a Habitat Limited Aquatic Community (HLAC) and as Primary Body Contact Recreation (PBCR). The original reason for categorizing Wewoka Creek as a Habitat Limited Fishery (HLF) or HLAC is physical conditions related to natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to [chemical] water quality, preclude attainment of aquatic life protection uses. Wewoka Creek is in the Central Oklahoma / Texas Plains ecoregion.

Wewoka Creek - WBID Segments

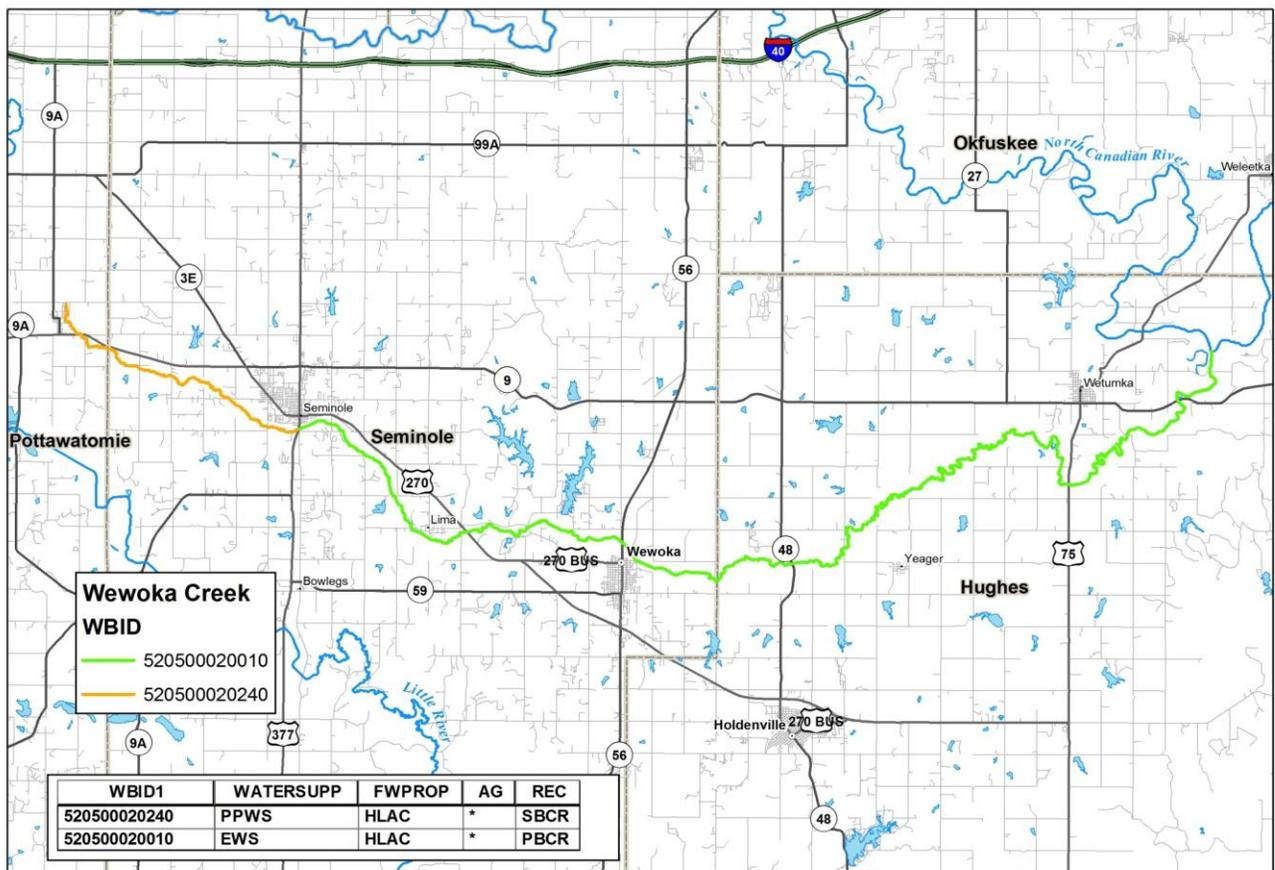


Figure 5. Location map of Wewoka Creek highlighting the assigned waterbody identification (WBID).

**Historical Descriptions:** A Use Attainability Analysis (UAA) conducted in 1982, near Seminole, reported no fish were collected other than gambusia. This analysis also indicated that the stream was heavily impacted from oil and gas activities. The water was described as gray and odorous and oil sheens were present. It was also noted that oil and salt deposits were on the bank. Another UAA conducted in 1985, near Earlsboro, reported that the stream segment was heavily impacted by oilfield activities. Oil spills were noted in the area.

**Biological Data:**

Fish Species Present:

Gizzard Shad (*Dorosoma cepedianum*)  
Threadfin Shad (*Dorosoma petenense*)  
Central Stoneroller (*Campostoma anomalum*)  
Red Shiner (*Cyprinella lutrensis*)  
Common Carp (*Cyprinus carpio*)  
River Carpsucker (*Carpionodes carpio*)  
Emerald Shiner (*Notropis atherinoides*)  
Sand Shiner (*Notropis stramineus*)  
Suckermouth Minnow (*Phenacobius mirabilis*)  
Bullhead Minnow (*Pimephales vigilax*)  
Black Bullhead (*Ameiurus melas*)  
Yellow Bullhead (*Ameiurus natalis*)  
Channel Catfish (*Ictalurus punctatus*)  
Flathead catfish (*Pylodictis olivaris*)  
Mosquitofish (*Gambusia affinis*)  
Green Sunfish (*Lepomis cyanellus*)  
Orangespotted Sunfish (*Lepomis humilis*)  
Bluegill Sunfish (*Lepomis macrochirus*)  
Longear Sunfish (*Lepomis megalotis*)  
Redear Sunfish (*Lepomis microlophus*)  
Largemouth Bass (*Micropterus salmoides*)  
Spotted Bass (*Micropterus punctulatus*)  
White Crappie (*Pomoxis annularis*)  
White Bass (*Morone chrysops*)  
Freshwater Drum (*Aplodinotus grunniens*)  
Smallmouth Buffalo (*Ictiobus bubalus*)  
Logperch (*Percina caprodes*)  
Brook Silverside (*Labidesthes sicculus*)  
Spotted Gar (*Lepisosteus oculatus*)  
Longnose Gar (*Lepisosteus oculatus*)  
Shortnose Gar (*Lepisosteus platostomus*)

### Fish Assessments

There have been 11 fish community assessments conducted on Wewoka Creek since 1996. The following are a summary listing of each assessment score:

- 26 Fully Supporting - 84% of reference [Good]
- 26 Fully Supporting - 91 % of reference [Excellent]
- 29 Fully Supporting - 100% of reference [Excellent]
- 22 Undetermined - 83% of reference [Good]
- 24 Undetermined - 74% of reference [Fair]
- 22 Undetermined - 65% of reference [Fair]
- 30 Fully Supporting - 91% of reference [Excellent]
- 32 Fully Supporting - 91% of reference [Excellent]
- 22 Undetermined - 83% of reference [Good]
- 24 Undetermined - 83% of reference [Good]
- 24 Undetermined - 83% of reference [Good]

### **Recommendation:**

The data indicate that the fish populations are healthy and very diverse. The Fish IBIs assessments indicated both Undetermined and Fully Supporting status regarding the WWAC beneficial use. The data indicate that there is an existing use of WWAC in this stream segment.

Based on the data that was reviewed, it is the OWRB staff recommendation that the lower segment (520500020010) of Wewoka Creek (downstream from the boundaries of Sec. 27 & 28, T 9 N, R 6 E IM) be upgraded to Warm Water Aquatic Community (WWAC).

**DRAFT PROPOSED LANGUAGE CHANGES**

Appendix A.5  
Designated Beneficial Uses of Surface Waters  
Water Quality Management Basin 5, Canadian River

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Wewoka Creek downstream from the boundaries of Secs. 27 & 28, T9N, R6E, IM	520500020010, 520500020240_00	EWS	HLAC WWAC	•	PBCR		•		
Canadian River upstream from its confluence with Buckhead Creek to the US Hwy. 81 bridge	520610010010, 520610020010, 520610020150_00		WWAC	•	SBCR PBCR		•		

Appendix A.3  
Designated Beneficial Uses of Surface Waters  
Water Quality Management Basin 3, Upper Red River

Waterbody Name and Sequence	Waterbody ID Numbers	Water Supply	F&W Prop	Ag	Rec	Nav	Aes	Limitations	Remarks
Rush Creek downstream from U.S. Hwy. 77 near Pauls Valley	310810010090_00		HLAC WWAC	•	SBCR		•		

## **CONSIDERATIONS**

It was determined that the stakeholders affected by any recommendations to upgrade a beneficial use to either Warm Water Aquatic Community or Primary Body Contact Recreation would be other Oklahoma environmental agencies and communities or companies that hold a National Pollutant Discharge Elimination System (NPDES) permit in which they discharge into one of the affected streams.

The Oklahoma Conservation Commission (OCC) and the Oklahoma Department of Environmental Quality (ODEQ) have been involved in this process through informal updates, as well as data request.

For the purpose of this report, OWRB requested from the ODEQ a determination of possible effects that proposed recommendations may have on NPDES permit holders. That review is as follows:

### **Canadian River (OK520610-02-0010)**

(\*MAL – Monthly Average Permit Limitation)

(\*\*DML – Daily Maximum Permit Limitation)

#### Lexington Public Works Authority Wastewater Treatment (WWT)

- Upgrade to Primary Body Contact Recreation (PBCR) would result in coliform restrictions during the May 1 – Sept. 30 period to MAL - 200CFU/100mL and DML 400CFU/100mL

#### Mustang Improvement Authority WWT

- Upgrade to PBCR would result in coliform restrictions during the May 1 – Sept. 30 period to MAL\* - 200CFU/100mL and DML\*\* 400CFU/100mL

#### Purcell WWT

- Upgrade to PBCR would result in coliform restrictions during the May 1 – Sept. 30 period to MAL - 200CFU/100mL and DML 400CFU/100mL

#### Tuttle WWT

- Does not have a fecal limit because it satisfies construction standards in OAC 252:656

#### Noble North WWT

- The permit issued in May 2009 protects Secondary Body Contact Recreation (SBCR) (1000/2000 fecal limits) year round. The facility has put in UV to comply with SBCR. Complying with PBCR may not be possible.

**Rush Creek (OK310810-01-0090G)**

- Upgrade to WWAC will not have an effect on any permit.

**Wewoka Creek (OK520500-02-0010A) (lower Segment)**

Wewoka WWT

- Upgrade to Warm Water Aquatic Community (WWAC) would result in dissolved oxygen (DO) limit changes to 6 mg/L for the early life stage season, 5 mg/L for the summer season (already implemented at this facility), and 6 mg/L for the winter season

Seminole WWT

- Upgrade to WWAC would result in DO limit changes to 6 mg/L for the early life stage season, 5 mg/L for the summer season (already implemented at this facility), and 6 mg/L for the winter season

Wetumka (all facilities)

- Upgrade to WWAC would result in DO limit changes to 6 mg/L for the early life stage season, 5 mg/L for the summer season, and 6 mg/L for the winter season