Recreational Use Attainability Analysis for Lower Keechi Creek (0804K) in the Trinity River Basin

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Chapter 1. Introduction

Problem Statement

Lower Keechi Creek (0804K) is an unclassified water body identified for assessment purposes by the Texas Commission on Environmental Quality (TCEQ). Lower Keechi Creek is approximately 44 river miles long and is comprised of one assessment unit (AU). The 2020 Texas Integrated Report of Surface Water Quality (TCEQ, 2020a) defines Lower Keechi Creek (0804K) as a perennial stream from the confluence with the Trinity River in Leon County upstream to the headwaters in Jewett in Leon County (Figure 1.1). Lower Keechi Creek is listed as impaired for bacteria on the 2020 Texas 303(d) list. Lower Keechi Creek (0804K) AU01 was first listed in 2018 and has continued to be listed as impaired for bacteria on the 2020 Texas 303(d) list. There are no additional impairments or concerns for Lower Keechi Creek. The Texas Integrated Report of Surface Water Quality (TCEQ, 2020a) includes the Texas 303(d) list of impaired water bodies and is available online dating back to 1992.

Lower Keechi Creek (0804K) has a presumed use of primary contact recreation based on the Texas Surface Water Quality Standards (TSWQS) (TCEQ, 2010). Prior to June 2010 only two categories of recreation use, contact and noncontact, existed in Texas. In June 2010, the TCEQ adopted revisions to the TSWQS that expanded the designation of contact recreation into three categories (primary contact recreation, secondary contact recreation 1, and secondary contact recreation 2) based on varying degrees of interaction with the water, while maintaining a fourth category of noncontact recreation. These revisions were codified in the Texas Administrative Code (TAC), Title 30 Chapter 307 and became effective as a state rule on July 22, 2010 (TCEQ, 2010). On February 12, 2014, TCEQ adopted a fourth designation of contact recreation, primary contact recreation 2. As a result of these revisions to the TSWQS, all water bodies listed as impaired based on bacteria for contact recreation are scheduled to undergo a standards review to determine if primary contact recreation is appropriate or if a revision to the use category for recreation should be considered.

Use attainability analyses (UAAs) are studies to evaluate the designated or presumed uses of a water body. In order to identify and assign attainable uses and criteria to individual water bodies, UAAs evaluate physical, chemical, biological, and economic factors affecting use attainment of a water body (40 Code of Federal Regulations §131.10(g)). A recreational use attainability analysis (RUAA) is a specific type of UAA focused on determining the appropriate recreational use category of a water body, the findings of which are presented within this report for Lower Keechi Creek (0804K).

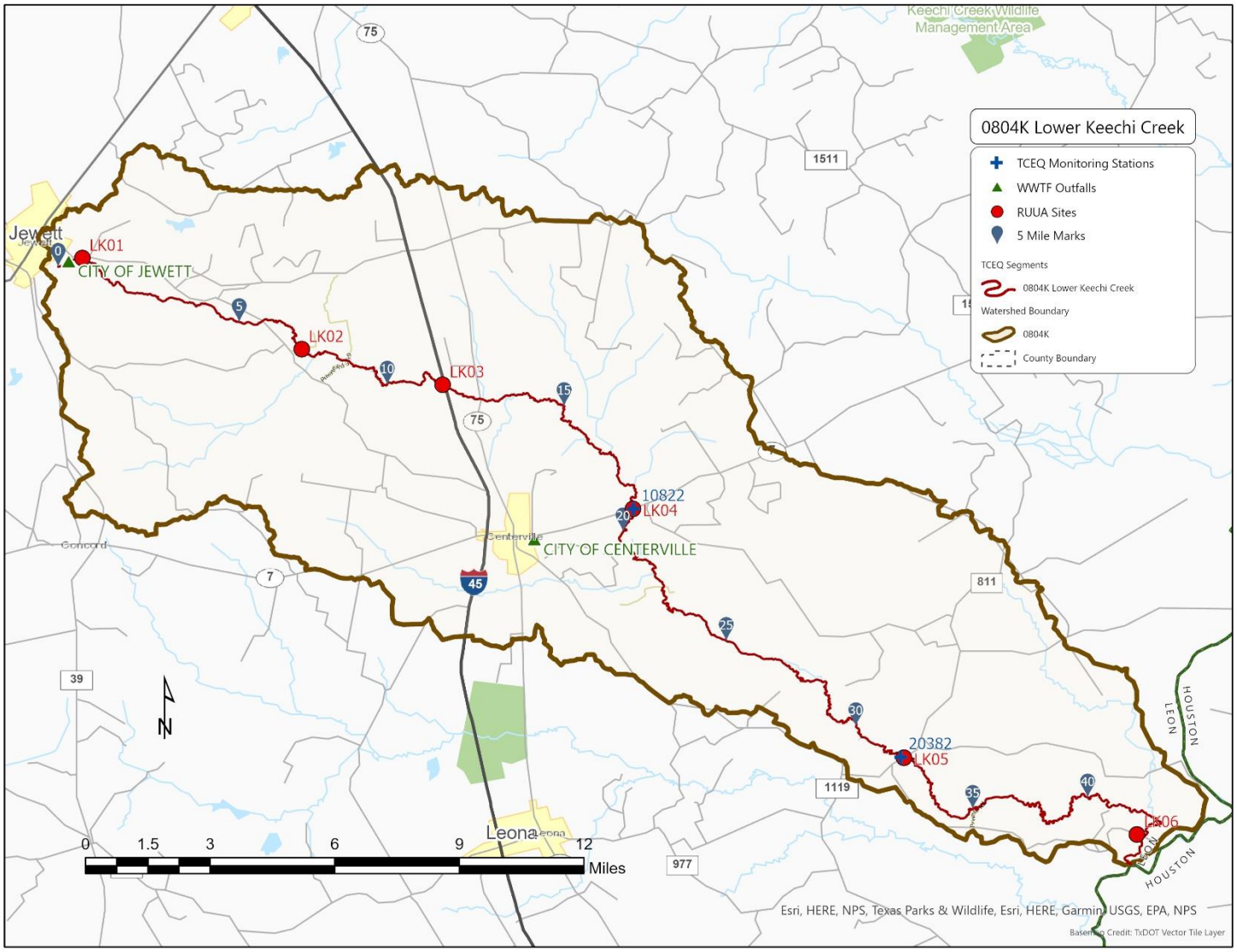

Figure 1.1 Watershed of Lower Keechi Creek (0804K)

Objectives

The objective of this report is to present the findings of a Comprehensive RUAA for Lower Keechi Creek following TCEQ March 2014 Procedures for a Comprehensive RUAA and a Basic RUAA Survey (TCEQ, 2014b). An RUAA consists of three parts: field surveys to document water body characteristics and signs of recreation, interviews with stakeholders regarding past and current use of the water body, and a historical review regarding recreational use of the water body. All components of this RUAA were performed by TIAER, which is located on the campus of Tarleton State University in Stephenville, Texas. Field surveys and interviews for the RUAA were conducted under a TCEQ approved Quality Assurance Plan (QAP; TIAER, 2022).

Stakeholder and Agency Involvement

TCEQ and its collaborating entities maintain an inclusive public participation process. From the inception of this project, the project team sought to ensure that stakeholders were informed and involved. TIAER provided coordination for public participation for this project.

Input from TCEQ regional staff, United States Geological Survey regional staff, Texas Parks and Wildlife Department (TPWD) regional staff, and other local agencies was solicited as well as input from watershed stakeholders on the need for the RUAA (see Contact Information Form available on the project website noted below).

Meetings with state agencies, river authority representatives, local officials, and stakeholders were held to give an overview of water quality issues within Lower Keechi Creek watershed and to obtain comments on proposed survey sites prior to field data collection. Meetings targeted local and state agencies as well as stakeholders in an effort to inform them of the assessment of water quality within Lower Keechi Creek and the need for an RUAA.

A public meeting focusing specifically on the RUAA was held in the Community Room in the Jewett Civic Center located in Jewett, Texas on May 10, 2022. At this meeting input was sought on the proposed sampling sites for the Lower Keechi Creek RUAA. Attendees provided information regarding activities that typically occur within the watershed and offered assistance in accessing the stream via privately owned property.

A final public meeting occurred on June 21, 2023 in Jewett, Texas to inform stakeholders of the findings of both field surveys. The next steps of the RUAA were discussed at this meeting and feedback from stakeholders was solicited. At the meeting, stakeholders were informed that the draft RUAA report was open for public review and comment. The draft report is available via the project website at: https://www.tceq.texas.gov/waterquality/standards/ruaas/trinity-river-basin-recreational-use-attainability-analysis-part-2. Additionally, TIAER can provide hard copies if desired by individuals.

Watershed stakeholders were invited to attend public meetings through mailed invitations, public announcements (TCEQ website), and individual phone calls. Information on past meetings for this RUAA, presentations, and other information, can be found on the project's website: https://www.tceq.texas.gov/waterquality/standards/ruaas/trinity-river-basin-recreational-use-attainability-analysis-part-2

Chapter 2. Study Methodology

The process of developing a list of sites to be surveyed for the RUAA began with a reconnaissance of potential locations along each water body. A combination of Geographic Information System (GIS) data, review of historical information, and meetings, phone conversations with local entities and stakeholders were used to determine sites included in the RUAA field surveys.

Watershed Reconnaissance and Site Selection Strategy

Reconnaissance of each watershed was conducted to collect background information before selecting appropriate sites for each RUAA. To the degree possible, site reconnaissance was coordinated with watershed stakeholders in an effort to increase local landowner interest in water quality issues. The March 2014 RUAA procedures (TCEQ, 2014) recommend selecting three sites per every five miles of stream. Based on this recommendation, the preferred number of sites for Lower Keechi Creek was 26.

The following information was compiled using GIS based tools prior to, during, and immediately following the watershed reconnaissance:

- Location of areas along the water body that were accessible to the public and had the highest potential for recreational use, such as road crossings and parks.
- Location of permitted wastewater outfalls and other potential point sources.
- Hydrologic characteristics, such as stream type, streamflow, and hydrologic alterations.
- Location of city boundaries or other designated population areas.

The site selection process considered locations that were accessible to the public, had the highest potential for recreational use, and that were established TCEQ monitoring stations where historical data may have been collected. The site selection process also considered parks and bridge crossings along the river, as well as access through private lands adjacent to the river.

Survey Methods

Field Survey Data Collection Activities

As specified in the procedures for a Comprehensive RUAA (TCEQ, 2014), two separate field surveys occurred at each selected survey site during the warm season (air temperature greater than or equal to 70 degrees Fahrenheit or 21 degrees Celsius) when human recreational activities were most likely to occur (May - September). Ideally, field surveys were to be conducted when stream flow conditions were normal. Rainfall data 30 days prior to each survey were also documented to provide antecedent conditions.

Data collection activities at each RUAA site for both field surveys included the following:

- Measurement of average depth at thalweg (deepest depth).
- Measurement of depths, lengths, and widths of substantial pools.
- Documentation of observational/anecdotal data required on the RUAA field data sheets.
- Photographs of any signs of recreation.
- Photographs of site conditions including upstream, downstream, left bank, and right bank photos at the 0-m, 150-m, and 300-m transects.

Average Depth at Thalweg and Substantial Pool Depths

Determination of thalweg and substantial pool depths is applicable to contact recreation use determination for intermittent and perennial freshwaters according to TCEQ (2014). The thalweg is defined as the deepest depth of a transect perpendicular to the stream channel. A substantial pool was defined as a pool greater than 1-m (3.28-ft) deep and 10-m (32.8-ft) long for the purposes of the RUAA survey (TCEQ, 2014).

As instructed in the RUAA procedures manual (TCEQ, 2014), a 300-m reach at each site was evaluated to determine average thalweg depth. Eleven transects at 30-m intervals were established along the reach. Transects were labeled upstream to downstream with the 300-m transect at the most upstream point of the survey and the 0-m transect being the most downstream. Thalweg was measured at each of the eleven transects. Where significant pools were encountered along the 300-m reach, depths, widths and lengths were measured and recorded. Depths, lengths and widths are presented in meters as per the RUAA procedures (TCEQ, 2014).

Observational /Anecdotal Data

Anecdotal information was recorded on field data sheets during all surveys using the field data sheets from TCEQ-approved QAP (TIAER, 2022).

Types of observational and anecdotal records included, but were not limited to, the following:

- Channel flow status as indicated by flow severity.
- Stream type (e.g., ephemeral, intermittent, etc.).
- Riparian zone characteristics (forest, pasture, eroded banks, etc.).
- Stream accessibility.
- Substrate type.
- Anecdotal information related to observed human contact activities.

Photographs

TIAER staff created photographic records of each site during the site surveys. Photographs were intended to clearly depict the characteristics of the channel and any evidence of observed uses or indications of human use, hydrologic modifications, etc. Photographs were taken specifically at the 0-m, 150-m, and 300-m transects (as described in the Field Data Sheets). Any items of interest, e.g., obstructions, were also photographed. Photographs were used to document evidence of recreational use (e.g.,

fishing tackle) and actual recreation. Photographs were also used to document a lack of use (e.g., dry creek beds) or impediments to recreational use. In addition, as part of the overall project, photographs were taken to indicate potential bacteria sources to the water body. All photographs were labeled in a manner that indicated the date, site location, orientation to the stream, and photo's subject. Selected photos representative of each RUAA field site are included with the survey results for each water body in this report.

Chapter 3. Study Area

Description of Lower Keechi Creek

Lower Keechi Creek is located in Leon County in the southeastern portion of Texas. Lower Keechi Creek 0804K is within the Trinity River Basin. The large sized watershed is approximately 119,811 acres (roughly 187.20 square miles) with a population of 3,155 (USCB, 2020). The watershed does not include parks but encompasses the city of Centerville (population 921) and portions of the city is Jewett (population 797) (USCB, 2021).

Climatic Conditions

Annual precipitation for the Lower Keechi Creek watershed was based on data obtained from the National Oceanic and Atmospheric Administration's website (NOAA, 2015) for Marquez, Texas (Station KTXMARQU19). It is important to note that this station is not within the Lower Keechi Creek watershed boundaries. However, it is the nearest station with climate data available for both precipitation and temperature. Normal precipitation (1981-2010) for Station KTXMARQU19 averages 39.16 inches per year with a peak rainfall typically occurring in the months of May, September, and October (Figure 3.1).

Average maximum temperatures for Station KTXMARQU19 rise above 70˚F beginning in March and ending in November (Figure 3.1). March through October are the months known as generally suitable for assessing recreational use, but only if temperatures reach above 70˚F (TCEQ, 2014b).

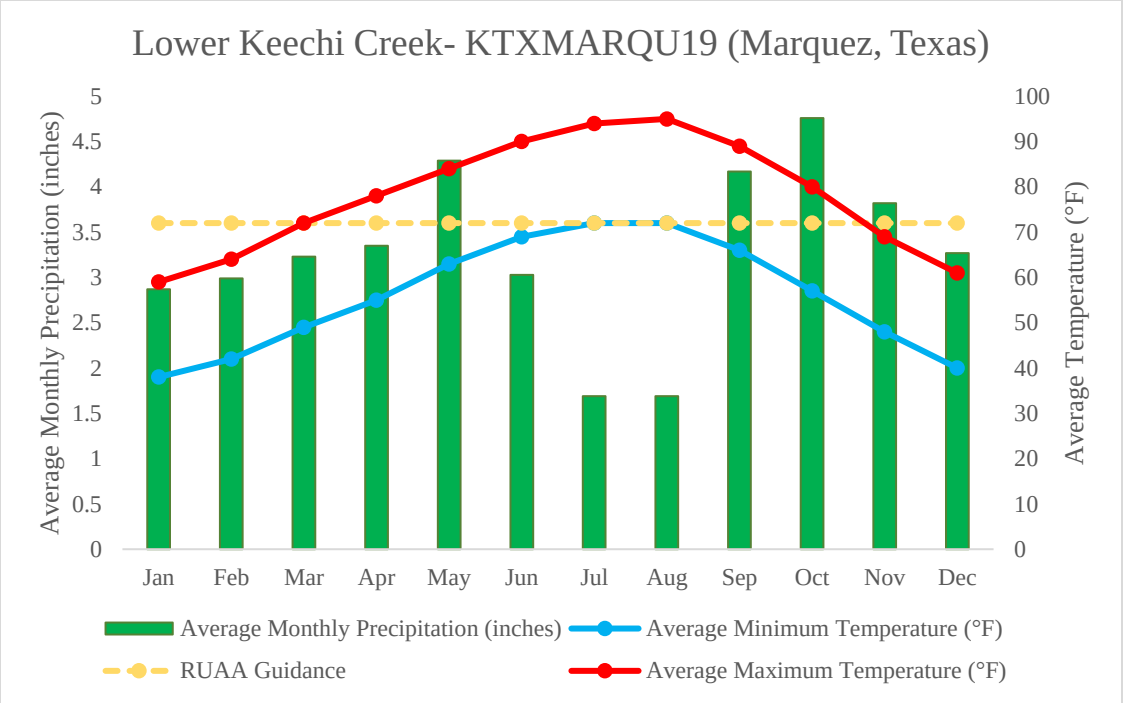

Figure 3.1 Monthly average precipitation for Marquez, Texas

Source: NOAA (2015) based on data for 1974-2015.

Land Use and Land Cover

The Lower Keechi watershed lies within the Southern Post Oak Savannah ecoregion as defined in the publication Ecoregions of Texas (Griffith et al., 2007). The dominant land cover within the Lower Keechi Creek watershed is Pasture/Hay at 41.20% and is present throughout the watershed (Table 3.1 and Figure 3.2). Mixed Forest is the secondary land cover encompassing 36.27% of the Lower Keechi Creek watershed.

Table 3.1 Land use/land cover classes within the Lower Keechi Creek watershed

Source: 2011 National Land Cover Database (USGS, 2016).

Class	Area (acres)	Percent (%)
Pasture/Hay	49,393	41.20%
Mixed Forest	43,484	36.27%
Woody Wetlands	8,058	6.72%
Evergreen Forest	4,424	3.69%
Grassland/Herbaceous	3,945	3.29%
Developed, Low Intensity	2,885	2.41%
Developed, Open Space	2,518	2.10%

Class	Area (acres)	Percent (%)
Shrub/Scrub	2,242	1.87%
Emergent Herbaceous Wetlands	772	0.64%
Developed, Medium Intensity	728	0.61%
Open Water	647	0.54%
Deciduous Forest	467	0.39%
Developed, High Intensity	193	0.16%
Barren Land (Rock/Sand/Clay)	96	0.08%
Cultivated Crops	36	0.03%
TOTAL	77,341	100%

The land use/land cover for the watershed area was obtained from the National Land Cover Database (NLCD) maintained by the U.S. Geological Survey (USGS, 2019). The land use/land cover categories within the watershed are described as follows from the NLCD legend:

- Pasture/Hay – Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.

- Mixed Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.

- Woody Wetlands – Areas of forest of shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

- Evergreen Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.

- Grassland/Herbaceous – Areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.

- Developed, Low Intensity – Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover. These areas most commonly include single-family housing units.

- Developed, Open Space – Areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot, single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

- Shrub/Scrub – Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.

- Emergent Herbaceous Wetlands – Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

- Developed, Medium Intensity – Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover. These areas most commonly include single-family housing units.

- Open Water – Areas of open water, generally with less than 25% cover of vegetation or soil.

- Deciduous Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.

- Developed, High Intensity – Highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.

- Barren Land (Rock/Sand/Clay) – areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.

- Cultivated Crops – Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.

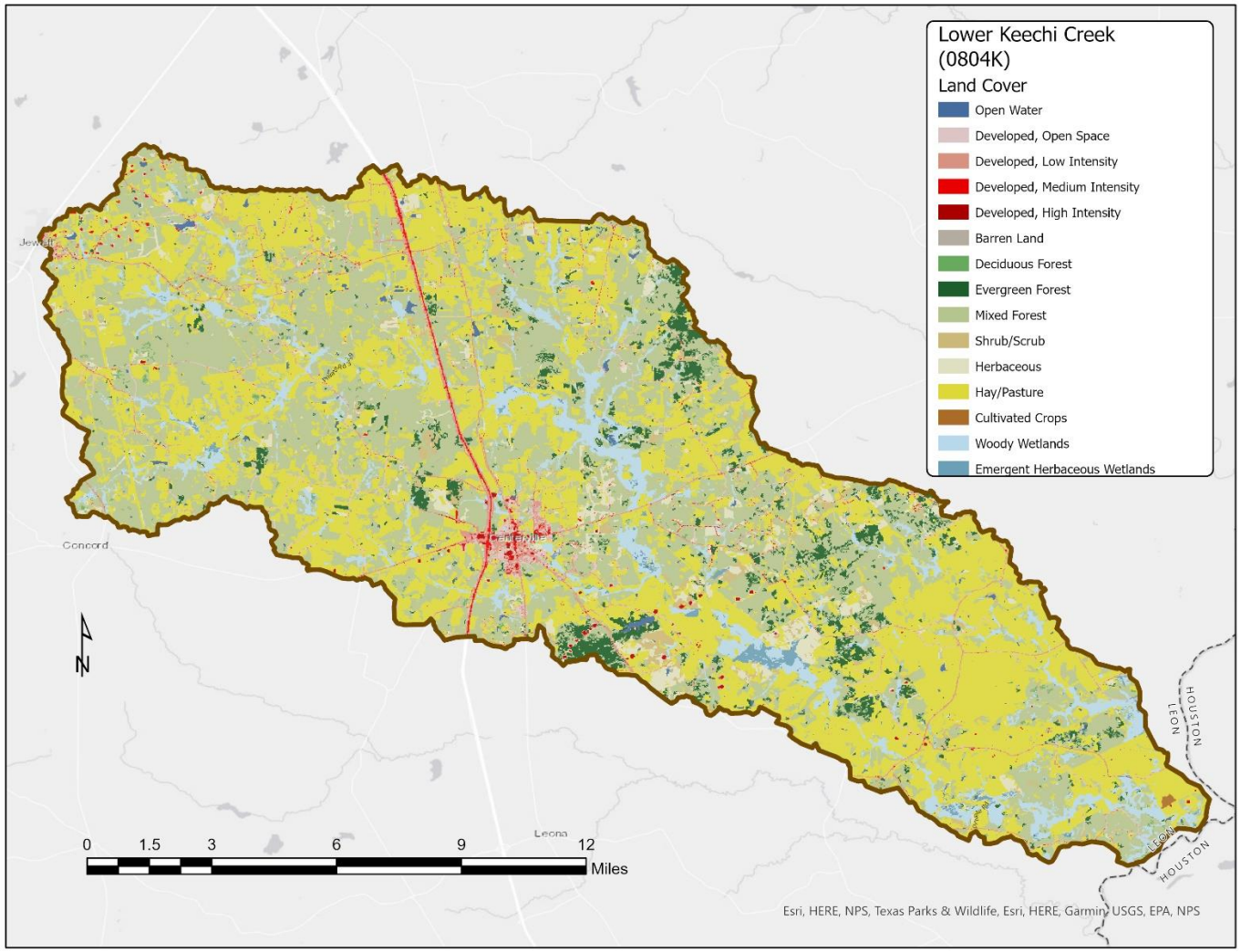

Figure 3.2 Land use and land cover of the Lower Keechi Creek watershed

Source: 2016 National Land Cover Database (USGS, 2016).

Regulated Sources

Potential sources of fecal pollution, as measured by indicator bacteria *Escherichia coli* (*E. coli*), can be divided into two primary categories: regulated and unregulated. Pollution sources that are regulated have permits issued by TCEQ under the Texas Pollutant Discharge Elimination System (TPDES) and/or by the United States Environmental Protection Agency (USEPA) under the National Pollutant Discharge Elimination System (NPDES) and are generally point sources. Examples of regulated sources include domestic and industrial wastewater treatment facilities (WWTFs); stormwater from industries, construction, and municipal separate storm sewer systems (MS4s) of cities; and concentrated animal feeding operations (CAFOs). These various regulated sources are required to have either an individual permit that is specific for each facility or a general permit for operation.

Wastewater Discharge Facilities

There are two municipal wastewater treatment facilities (WWTF) within the Lower Keechi Creek watershed. The City of Jewett WWTF (WQ0011392001) discharges to Lower Keechi Creek; thence to Trinity River Above Lake Livingston in Segment 0804 of the Trinity River Basin. The City of Centerville WWTF (WQ0010147001) discharges to Little Beaver Creek, thence to Beaver Creek, thence to Lower Keechi Creek, thence to Trinity River Above Lake Livingston in Segment 0804 of the Trinity River Basin.

Regulated Stormwater

The TPDES and the NPDES Municipal Separate Storm Sewer (MS4) Phase I and II rules require municipalities and certain other entities in urban areas to obtain permits for their stormwater systems. Phase I permits are individual permits for large and medium sized communities with populations exceeding 100,000, whereas Phase II permits are for smaller communities that are located within an “Urbanized Area”. An “Urbanized Area” is defined by the U.S. Census Bureau as an area with populations greater than 50,000 and with an overall population density of at least 1,000 people per square mile. Because neither cities of Jewett nor Centerville do not meet this requirement, there are no entities required to obtain a stormwater permit.

Concentrated Animal Feeding Operations

There are no concentrated animal feeding operations (CAFOs) within the watershed.

Potential Unregulated Sources

Unregulated sources are typically nonpoint source in nature, meaning the pollution originates from multiple diffuse locations and is usually carried to surface waters by rainfall runoff, and the sources are not regulated by permit under the TPDES and NPDES. Potential unregulated sources include wildlife (mammals and birds), large exotics, unmanaged feral animals (e.g., feral hogs), on-site sewage facilities (OSSFs), pets, and livestock.

Non-Permitted Agricultural Activities and Domesticated Animals

Activities such as livestock grazing close to water bodies and agricultural use of manure as fertilizer can contribute *E. coli* to nearby water bodies. Livestock statistics were obtained from United States Department of Agriculture (USDA) National Agricultural Statistics Service website (USDA, 2017). While these are county level statistics and thus only a very rough estimate of livestock in the watershed (Table 3.2), these statistics indicate that chickens, cattle and calves, and goats the most common livestock found within the watershed.

Table 3.2 Estimated livestock numbers within the Lower Keechi Creek watershed based on statistics for Leon County and adjusted for the percent of the county represented by the watershed

Source: USDA, 2017

100% of the Lower Keechi Creek watershed resides in Leon County

County	Area (acres)	Chickens	Cattle & Calves (all beef)	All Goats	All Sheep	Horses & Donkeys	Hogs & Pigs
Leon	691,471	7,039,203	49,046	1,295	851	2,659	286
Proportional Average for the Lower Keechi Creek Watershed	119,811	1,219,679	8,498	224	147	461	50

Domestic pets are another unregulated source of *E. coli* bacteria, particularly dogs, because storm runoff often carries these wastes into streams (USEPA, 2009). A rough estimate of the dog and cat population can be computed assuming there are 0.614 dogs and 0.457 cats per household (AVMA, 2018). According to the 2020 census there are 1,372 households within the Lower Keechi Creek watershed which indicates that there are potentially 842 dogs and 627 cats residing within the watershed.

Wildlife

E. coli bacteria are common inhabitants of the intestines of all warm-blooded animals, including wildlife such as mammals and birds. Wildlife are naturally attracted to riparian corridors of streams and rivers. With direct access to the stream channel, the deposition of wildlife waste can be a concentrated source of bacteria loading to a water body. Fecal bacteria from wildlife are also deposited onto land surfaces, where it may be washed into nearby streams by rainfall runoff.

Failing On-Site Sewage Facilities

Septic systems or on-site sewage facilities (OSSFs) are often used in rural areas that do not have the ability to connect to a central wastewater collection system. To estimate the number of potential OSSFs in the watershed, 911 address points outside of city boundaries and outside of any area municipal utility districts were used. Results were

unclear as to how many households in the watershed are outside municipal areas and on septic systems.

Historical Information on Recreational Use

A review of historical information was performed regarding recreational water uses for Lower Keechi Creek. The review considered the time period of November 28, 1975 to the present in accordance with 40 CFR Part 131 (EPA standards regulation). Government offices, libraries, and newspapers were searched and contacted in addition to generic internet searches. The following is a summary of the review and searches.

Government Sources

City of Jewett
City of Jewett Homepage[1]
Search retrieved no results.

City of Centerville
City of Centerville Homepage[2]
Search retrieved no results.

Leon County
Leon County Homepage[3]
Search retrieved no results.

Library Sources

City of Jewett Public Library
City of Jewett Public Library Homepage[4]
Phone: (903) 626-4416
Searched online catalog. Search retrieved no results.

Internet Searches

Google
Google.com – Search for Lower Keechi Creek[5]
Searched Google by creek name. Search retrieved no results of recreational contact.

[1] https://www.cityofjewett.com/

[2] https://www.cityofjewett.com/

[3] https://www.co.leon.tx.us/

[4] https://cityofjewett.com/home

[5] https://www.google.com/search?q=lower+keechi+creek&rlz=1C1RXQR_enUS954US954&oq=lower+keechi+creek&aqs=chrome..69i57j69i60.2775j0j4&sourceid=chrome&ie=UTF-8

Chapter 4. Lower Keechi Creek (0804K)

Survey Site Descriptions

Lower Keechi Creek is 44 river miles long indicating a goal of 26 sites (3 sites per 5 miles of river) for the RUAA survey. Because the majority of Lower Keechi Creek flows through private property, TIAER was able to establish a total of 6 survey sites along Lower Keechi Creek (Figure 4.1 and Table 4.1). All six sites were at public road crossings. Landowner permission was not needed to access the stream at any site.

Access to the stream between road crossings was moderately difficult due to steep banks and dense vegetation. The average distance between survey sites was 7.06 river miles with the largest gap being 12.57 river miles between Sites LK04 and LK05. Sites LK04 and LK05 are co-located with TCEQ sampling stations. RUAA surveys were performed June 28, 2022 and September 8, 2022 at all locations. Landowner permission was not required to access sites at any location. A brief description of each site follows.

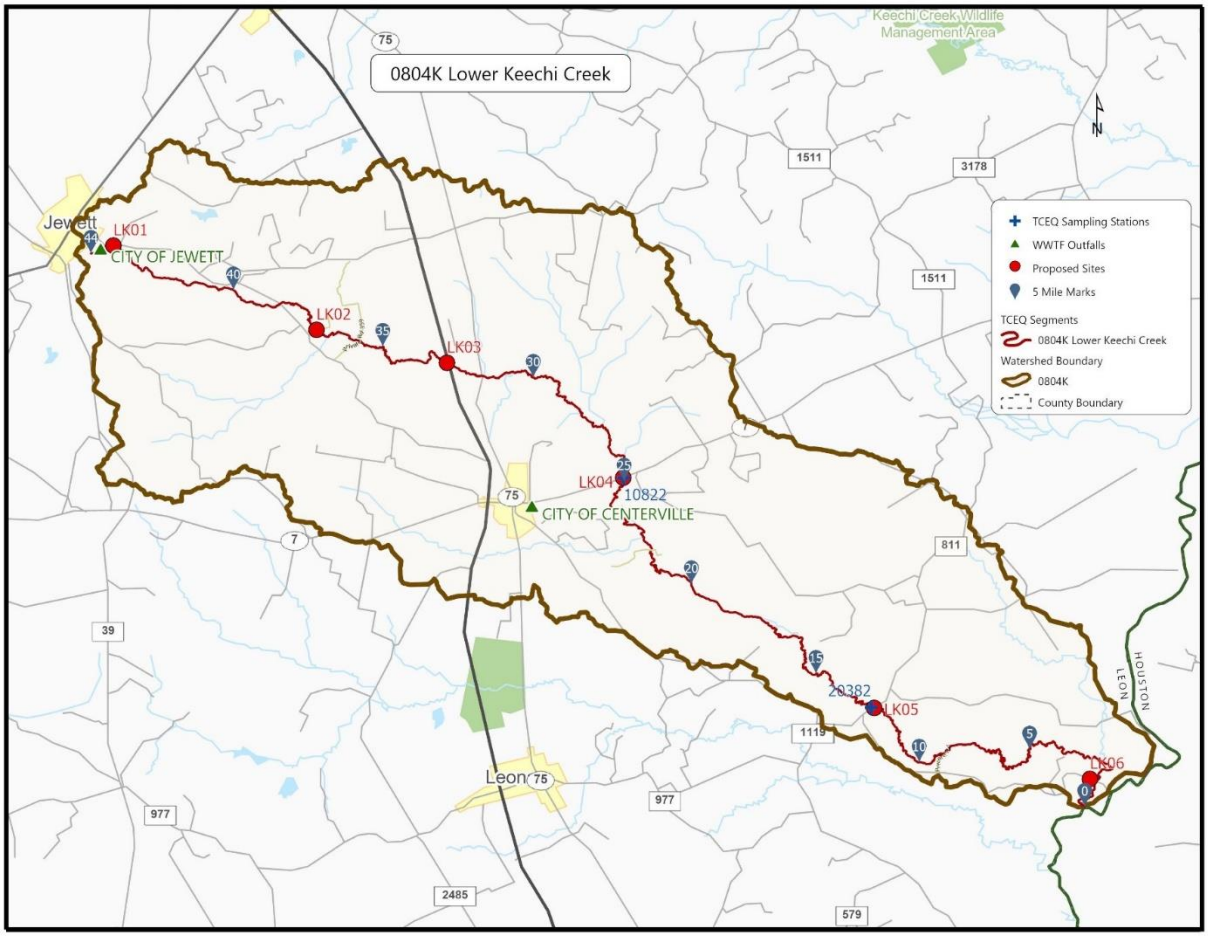

Figure 4.1 Watershed of Lower Keechi Creek (0804K)

Table 4.1 Description and location of RUAA field survey sites for Lower Keechi Creek, Water Body 0804K

Site ID	TCEQ ID	Site Description	Latitude	Longitude	Access
LK01		Lower Keechi Creek at CR 317 in Leon County	31.35477	-96.12866	Public
LK02		Lower Keechi Creek at PR 3440 in Leon County	31.32309	-96.0523	Private
LK03		Lower Keechi Creek at I 45 in Leon County	31.31071	-96.00327	Public
LK04	10822	Lower Keechi Creek at HWY 7 in Leon County	31.26754	-95.93702	Public
LK05	20382	Lower Keechi Creek at FM 811 in Leon County	31.18099	-95.84269	Public
LK06		Lower Keechi Creek at FM 112 in Leon County	31.15431	-95.7616	Public

Site LK01 is publicly accessible via the road crossing on CR 317 in Leon County. Access into the stream was moderately easy. Landowner permission to access the stream from the road crossing was not required to complete the surveys, however, private property went beyond the banks of the stream.

Site LK02 is located on Lower Keechi Creek about 6.59 miles from site LK01. This site was publicly accessible via the road crossing on PR 3440 in Leon County. Due to steep banks, rip rap along the riparian, and fenced private property beyond the stream banks, access to the stream was difficult. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Site LK03 is located on Lower Keechi Creek about 4.53 miles from site LK02. This site was publicly accessible via the road crossing on Interstate 45 north of Centerville in Leon County. TIAER personnel was able to access the stream from under the interstate bridge, making stream access moderately easy. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Site LK04 is located on Lower Keechi Creek about 7.39 miles from site LK03. This site was publicly accessible via the road crossing on Hwy 7 east of Centerville in Leon County. Site LK04 is co-located with TCEQ sampling station 10822. Access to the stream was moderately easy due to under the bridge access. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Site LK05 is located on Lower Keechi Creek about 12.57 miles from site LK04. This site was co-located with TCEQ sampling station 20382 and was publicly accessible via the road crossing at FM 811 in Leon County. Access to the stream was ranged from

moderately easy but did have steep banks. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Site LK06 is located on Lower Keechi Creek about 11.3 miles from site LK05. This site was publicly accessible via the road crossing on FM 112 in Leon County. Due to steep banks, dense vegetation, and private property beyond the stream banks, access to the stream was moderately difficult. Landowner permission to access the stream from the road crossing was not required to complete the surveys.

Field Survey Results and Discussions

General Description of RUAA Survey Sites and Conditions for Lower Keechi Creek 0804K

The Lower Keechi Creek RUAA surveys were conducted on June 28 and September 8, 2022 at all six sites. The surveys were performed on weekdays, weekends, or holidays at opportune times to observe recreational activities. Air temperatures prior to and during both the first and second surveys were above 21˚C (70˚F), indicated by the RUAA guidelines as warm enough to promote recreational activities (Tables 4.2 and 4.3). In the 30 days prior to the first survey, 0.94 inches of precipitation fell, while 6.21 inches fell 30 days prior to the second survey. These rainfall events did not cause a hindrance to accessing the stream. The Palmer Drought Severity Index (PDSI) indicated moderately drought (index value: -2.00 to -2.99) conditions for Southeast Texas during June and severe drought conditions (-3.00 to -3.99) for September (TWDB, 2022).

A summary of the RUAA field survey results is presented in the following tables:

- Table 4.4 describes the stream channel and corridor characteristics at each site.
- Table 4.5 notes the average thalweg depth by site during each survey and the access to the stream, whether public or private, and the ease of bank access.
- Tables 4.6 and 4.7 document the maximum, minimum, and average stream widths at each site for each survey and observed flow conditions.
- Tables 4.8 and 4.9 note stream aesthetics, wildlife observations and tracks, and the presence of garbage by site observed during each survey.

Physical descriptions of each site follow these tables along with selected photos showing notable characteristics of each site. All six sites were at public road crossings. Overall thalweg depth averaged 0.41 m for the first survey and 0.44 m for the second survey. Access to the stream was moderately easy or moderately difficult at all six sites due to gentle, but densely vegetated banks and some sites with heavy traffic. The dominant substrate was mud and clay. The majority of the stream corridor was forest and shrub several areas lined with pasture. The maximum stream width encountered was 10.5 m at Site LK04 during the second survey. Typical stream widths were widest at Sites LK03 and LK05 (4.5 m) with a narrow width of 1.5 m at LK01. Flow conditions appeared normal at all sites during both the first and second survey. The water was brown in color at all Sites LK04 and LK06 during the first survey and LK06 during the

second survey. The water was clear in color at all other sites during both surveys. The water surface was clear at all sites during the first survey, but had scum apparent at Site LK06 during the first survey. Evidence of wildlife was rarely observed at sites, most commonly in the form of raccoon and hog tracks. Trash was rarely observed at most survey sites and when observed was typically plastics, aluminum cans, and bottles. No evidence of recreation was observed at any of the six survey sites.

Table 4.2 Rainfall records with maximum and minimum temperature for Centerville, Texas 30 days prior to the first RUAA survey initiated on June 28, 2022

Survey dates are bolded and highlighted in gray. Weather Data from Weather Underground; Station KTXCENTE8 in Centerville, Texas. (Weather Underground, 2022)

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
May 27	0	91	60
May 28	0	91	60
May 29	0	90	72
May 30	0	91	73
May 31	0	92	75
June 1	0.08	90	71
June 2	0.14	83	70
June 3	0.53	85	67
June 4	0.19	85	67
June 5	0	90	68
June 6	0	92	75
June 7	0	93	76
June 8	0	90	76
June 9	0	93	74
June 10	0	96	76
June 11	0	95	75
June 12	0	97	78
June 13	0	97	76
June 14	0	94	74
June 15	0	95	76
June 16	0	95	75
June 17	0	94	74
June 18	0	94	72
June 19	0	97	72
June 20	0	97	72
June 21	0	97	74
June 22	0	97	72
June 23	0	99	73
June 24	0	99	74

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
June 25	0	99	73
June 26	0	99	73
June 27	0	97	74
June 28	0	93	73

Table 4.3 Rainfall records with maximum and minimum temperature for Centerville, Texas 30 days prior to the first RUAA survey initiated on September 8, 2022

Survey dates are bolded and highlighted in gray. Weather Data from Weather Underground; Station KTXCENTE8 in Centerville, Texas. (Weather Underground, 2022)

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
August 8	0	99	73
August 9	0.35	99	74
August 10	1.43	99	71
August 11	0.01	96	71
August 12	0.06	95	74
August 13	0	97	74
August 14	0	95	74
August 15	0	97	72
August 16	0	98	72
August 17	0	101	75
August 18	0.03	93	72
August 19	0.13	87	72
August 20	0.04	91	72
August 21	0.05	93	75
August 22	1.99	86	74
August 23	0.17	89	73
August 24	0.03	86	73
August 25	0	87	71
August 26	0	93	73
August 27	0	93	73
August 28	0	94	74
August 29	0	90	75
August 30	1.61	77	73
August 31	0.01	89	72
September 1	0.26	91	73
September 2	0	86	72
September 3	0	87	73

Date	Daily Precipitation (in)	High Temperature (°F)	Low Temperature (°F)
September 4	0	90	70
September 5	0	91	67
September 6	0	91	71
September 7	0.04	90	70
September 8	0	89	69

Table 4.4 Stream channel and corridor appearance for each site sampled along Lower Keechi Creek (0804K)

Site Number	Stream Channel Appearance	Dominant Substrate	Corridor Appearance	Riparian Size	Park	Landscape Surroundings
LK01	Natural	Fine Sediment	Forest/Shrub	Normal	No	Forest
LK02	Natural	Fine Sediment	Forest/Shrub	Normal	No	Forest
LK03	Natural	Fine Sediment	Forest/Shrub	Normal	No	Forest
LK04	Natural	Fine Sediment	Forest/Shrub/Pasture	Normal	No	Forest
LK05	Natural	Fine Sediment	Forest/Shrub/Pasture	Normal	No	Forest
LK06	Natural	Fine Sediment	Forest/Shrub	Normal	No	Forest

Table 4.5 Thalweg depth, stream flow type, and site accessibility during the two surveys of Lower Keechi Creek (0804K)

Stream flow type represents observed stream characteristics on the date of the survey. Under general access, * indicates that the site was publicly accessible at a road crossing but that further access was limited by fencing of private property. For Bank Access, E = Easy, ME = Moderately Easy, MD = Moderately Difficult, D = Difficult.

Site	Reach length (m)	# of Transects	# of Recreational Areas at Site	Avg. Site Thalweg Depth (m) for Trip 1	Avg. Site Thalweg Depth (m) for Trip 2	Stream Flow Type Survey 1	Stream Flow Type Survey 2	General Access	Bank Access
LK01	300	11	0	0.20	0.37	Perennial	Perennial	Public*	ME
LK02	300	11	0	0.54	0.49	Perennial	Perennial	Public*	D
LK03	300	11	0	0.31	0.26	Perennial	Perennial	Public*	ME
LK04	300	11	0	0.55	0.54	Perennial	Perennial	Public*	ME
LK05	300	11	0	0.36	0.37	Perennial	Perennial	Public*	ME
LK06	300	11	0	0.49	0.61	Perennial	Perennial	Public*	MD

Table 4.6 Description of surveyed stream sites along Lower Keechi Creek during the first survey performed on June 28, 2022.

Site Number	Maximum Width (m)	Minimum Width (m)	Typical Average Width (m)	Observed Flow
LK01	1.7	0.6	1.5	Normal
LK02	6.0	1.7	4.0	Normal
LK03	7.2	3.5	4.5	Normal
LK04	10.3	2.2	4.0	Normal
LK05	10.0	2.7	4.5	Normal
LK06	5.5	2.2	4.0	Normal

Table 4.7 Description of surveyed stream sites along Lower Keechi Creek during the second survey performed on September 8, 2022

Site Number	Maximum Width (m)	Minimum Width (m)	Typical Average Width (m)	Observed Flow
LK01	2.1	0.50	1.5	Normal
LK02	6.0	1.5	4.0	Normal
LK03	7.0	3.5	4.5	Normal
LK04	10.5	2.0	4.0	Normal
LK05	9.5	2.5	4.0	Normal
LK06	6.5	2.5	4.5	Normal

Table 4.8 Stream aesthetics along Lower Keechi Creek during the first survey performed June 28, 2022

From Field Data Sheet – Section F: A = absent, R = rare, C = common, Ab = abundant, N = none, NW = no water, SP = slight presence, MP = moderate presence, LP = large presence.

Site	Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependent Birds	Mammals	Evidence of wildlife	Large garbage in Channel	Small garbage in Channel	Bank garbage
LK01	A	R	N	Clear	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	R	R	N
LK02	A	A	N	Clear	Fine Sediment	Clear	SP	N	N	Tracks/Fecal Droppings	R	N	N
LK03	A	R	N	Clear	Fine Sediment	Clear	SP	N	N	Tracks/Fecal Droppings	N	N	N
LK04	C	A	N	Brown	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	N	N	N
LK05	A	A	N	Clear	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	R	N	N
LK06	A	A	N	Brown	Fine Sediment	Clear/Scum	N	N	N	Tracks/Fecal Droppings	N	N	N

Table 4.9 Stream aesthetics along Lower Keechi Creek during the second survey performed September 8, 2022

From Field Data Sheet – Section F: A = absent, R = rare, C = common, Ab = abundant, N = none, NW = no water, SP = slight presence, MP = moderate presence, LP = large presence. NA indicates not applicable because conditions were dry.

Site	Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependent Birds	Mammals	Evidence of wildlife	Large garbage in Channel	Small garbage in Channel	Bank garbage
LK01	R	R	N	Clear	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	R	C	R
LK02	A	A	N	Clear	Fine Sediment	Clear	N	N	MP	Tracks/Fecal Droppings	R	R	N
LK03	R	A	N	Clear	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	N	N	N
LK04	C	A	N	Clear	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	N	R	N
LK05	A	A	N	Clear	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	R	N	N
LK06	A	A	N	Brown	Fine Sediment	Clear	N	N	N	Tracks/Fecal Droppings	N	N	N

Physical Description of LK01

Lower Keechi Creek LK01 was visited on June 28 and September 8, 2022. This site was located at the CR 317 bridge crossing in Leon County. Landowner permission was not required to access the stream at this site.

The creek at this site passes through a forest riparian zone that led directly up to the creek. Banks were steep and slippery and had fenced private property on both sides of the stream making access moderately easy. The general appearance of the creek at this location is shown in Figures 4.2 and 4.3.

Figure 4.2 Photograph of Lower Keechi Creek Site LK01 taken on June 28, 2022. TIAER personnel in photograph.

The upstream view of the 0-m transect

Site LK01 was wadeable with average thalweg of 0.20 m during the first survey and 0.37 m during the second survey. Figure 4.2 illustrates the typical observed width of the creek at this site, approximately 1.5 m. Widths ranged from 0.5 m to 2.1 m during the two surveys (Tables 4.6 and 4.7).

The stream flow type was observed as perennial at the time of both surveys (Table 4.5). Aquatic vegetation was absent during the first survey and rare during the second while algae cover was rare during both surveys. The deepest thalweg depth measured during the second survey at the 60-m transect was 0.71 m and the shallowest was 0.09 m at the 300-m transect during the first survey. No pools were observed during either survey at this site.

Figure 4.3 Photograph of Lower Keechi Creek Site LK01 taken on September 8, 2022

The upstream view of the 300-m transect

No water dependent birds or reptiles were observed during either survey (Tables 4.8 and 4.9). Bird droppings along with raccoon, deer, and hog tracks were noted during both surveys. Large garbage was rare and included a washing machine and chicken feeder. Small garbage was rare and bank garbage was absent during both surveys.

Physical Description of LK02

Lower Keechi Creek at Site LK02 was visited on June 28 and September 8, 2022. This site was located at the PR 3440 bridge crossing in Leon County. Access to this site was difficult because the banks were steep with thick vegetation leading down to the water. The stream was only publicly accessible at the bridge crossing due to fencing past the stream banks.

The riparian zone at Site LK02 was forest with thick vegetation and shrub dominated corridor on both the right and left banks (Table 4.4). Banks were vegetated with larger trees and a larger shaded understory (Figures 4.4 and 4.5) throughout this site. The stream was wadeable during both surveys with average thalweg depths ranging from 0.54 m to 0.49 m. The stream was designated as perennial and had normal flow during both surveys (Table 4.5). Channel widths ranged from 1.5 m to 6.0 m throughout the reach during both surveys with a typical observed width of 4.0 m (Tables 4.6 and 4.7).

Figure 4.4 Photograph of Lower Keechi Creek Site LK02 taken on June 28, 2022

Photograph shows the upstream view of the 150-m transect.

Figure 4.5 Photograph of Lower Keechi Creek at Site LK02 taken on September 8, 2022

Photograph at the 300-m transect facing downstream.

No water dependent birds were observed at this site during either survey (Tables 4.8 and 4.9). Bird droppings were observed in addition to raccoon, hog, and deer tracks. A snake was observed during the first survey and a herd of cattle (greater than 15 head) was present during the second survey. Aquatic vegetation and algae were absent during both surveys. No odor was detected, water color was clear, and the surface clear during each survey. One tire was present in the channel during the first survey, but no other garbage was observed during either survey.

Physical Description of LK03

Lower Keechi Creek at Site LK03 was visited on June 28 and September 8, 2022. This site was accessed via a bridge crossing at Interstate 45 in Leon County. The riparian area was forest with thick vegetation on both the right and left banks (Table 4.4). Access to the stream was moderately easy due to banks not being too steep. Public access obstacles include fenced private property past the road crossing and the heavy traffic on Interstate 45.

Site LK03 was wadeable during both surveys with average thalweg depths ranging from 0.26 m to 0.31 m (Table 4.5). The stream flow type was characterized as perennial for this reach. Average stream width was 4.5 m during both surveys, with maximum and minimum stream widths of 7.2 m and 3.5 m, respectively by survey (Tables 4.6 and 4.7).

The stream banks were densely vegetated (as seen in Figure 4.6) at LK03. Channel obstructions at this site included submerged log jams, tree branches, and a culvert at the 0-m transect. Aquatic vegetation was absent, algae cover was rare, and the water color was clear during both surveys.

Figure 4.6 Photograph of Lower Keechi Creek Site LK03 taken on September 8, 2022, the downstream view of the 0-m transect

The only evidence of wildlife observed were cow tracks and fecal droppings (from both cow and bird) along with raccoon tracks during both surveys. No garbage was encountered in the channel or along the banks (Tables 4.8 and 4.9). No evidence of human recreation was observed at this site.

Physical Description of LK04

Lower Keechi Creek site LK04 was visited on June 28 and September 8, 2022. This site was located at the Hwy 7 and stream crossing in Leon County. This site is co-located with TCEQ sampling station 18022 and was publicly accessible via the bridge crossing only due to private property fencing along stream banks.

Access to the stream at this site was moderately easy at the road crossing due to the under-bridge access. The riparian area was forest with thick shrub vegetation and slippery slopes on both the right and left banks (Table 4.4). Banks were steep, slippery, and overgrown with vegetation (Figures 4.7 and 4.8).

Figure 4.7 Photograph of Lower Keechi Creek Site LK04 taken on June 28, 2022

The upstream view of the 300-m transect.

Site LK04 was wadeable with average thalweg ranging from 0.54 m to 0.55 m between surveys. The typical observed width of the creek at this site was approximately 4.0 m. Widths ranged from 2.0 m to 10.5 m during each survey (Tables 4.6 and 4.7).

The stream flow type was observed as perennial at the time of both surveys (Table 4.5). Aquatic vegetation was common, while algae cover was absent during both surveys. No pools were observed during either survey at this site.

Figure 4.8 Photograph of Lower Keechi Creek Site LK04 taken on September 8, 2022

The upstream view of the 150-m transect.

No water dependent birds or reptiles were observed during either survey (Tables 4.8 and 4.9). Tracks and fecal droppings from cows, bird, dog, and raccoons were noted throughout the survey reach. ATV and human tracks were present under the bridge during both surveys. Small channel and bank garbage was absent during both surveys. However, large garbage such as tires, were present in the stream at this site.

Physical Description of LK05

Lower Keechi Creek at Site LK05 was visited on June 28 and September 8, 2022. This site was located at the FM 811 bridge crossing in Leon County. This site is shared with TCEQ sampling station 20382. Access to this site was moderately easy due to the site being at a road crossing. However, banks were steep with thick vegetation. Banks were mowed during the first survey, but were overgrown during the second. The stream was only publicly accessible at the bridge crossing due to fenced private property up to the stream banks.

The riparian zone at Site LC05 was forest with thick vegetation along both banks (Table 4.4). The riparian zone on the upper half of the stream was pasture. The stream was wadeable during both surveys with an average thalweg depths of 0.36 m to 0.37 m between the first and second surveys respectively. The stream is observed as perennial (Table 4.5). Channel widths ranged from 2.5 m to 10.0 m throughout the reach during both surveys with a typical observed width of 4.5 m during the first

survey and 4.0 m during the second survey (Tables 4.6 and 4.7). Figure 4.9 depicts the typical channel width during each survey.

Figure 4.9 Photograph of typical channel width at Lower Keechi Creek Site LK05 taken on June 28, 2022

Photograph shows the upstream view of the 0-m transect.

Figure 4.10 Photograph of fallen tree in Lower Keechi Creek on September 8, 2022.

Deer, dog, cattle, and hog tracks and bird droppings were observed during both surveys (Tables 4.8 and 4.9). Aquatic vegetation and algae cover was absent during both surveys. No odor was detected, water color and surface were clear during each survey.

Physical Description of LK06

Lower Keechi Creek at Site LK06 was visited on June 28 and September 8, 2022. This site was accessed via a bridge crossing at FM 112 in Leon County. Access to the stream from the bridge crossing was moderately easy. However, access to this site past the road crossing was restricted by fenced private property along the stream banks. The riparian area at this site was crowded with thick vegetation and slippery slopes along both the right and left banks (Table 4.4).

Site LK06 was wadeable with thalwegs ranging from 0.26 m to 0.77 m during the first survey (Table 4.5) and 0.31 m to 0.91 m during the second. The average thalweg was 0.49 m and 0.61 m during the first and second surveys, respectively. The stream flow type was characterized as perennial for this reach. The average stream widths for each survey was 4 m during the first survey and 4.5 m during the second survey (Tables 4.6 and 4.7).

The stream banks were densely vegetated (as seen in Figure 4.11) at LK06. The stream channel was populated with downed logs and twig debris during both surveys (Figure

4.12). Aquatic vegetation and algae cover was absent during both surveys. The water was brown in color with a clear surface during both surveys.

Figure 4.11 Photograph of Lower Keechi Creek at Site LK06 taken on June 28, 2022, the upstream view of the 150-m transect

Figure 4.12 Photograph of vegetation in Lower Keechi Creek at Site LK06 taken on September 8, 2022

The only evidence of wildlife observed were deer, hog, and raccoon tracks and bird droppings during both surveys. Large and small garbage were rarely encountered

during the first survey and no bank garbage was encountered observed during either surveys (Tables 4.8 and 4.9).

Observations and Interviews

Activities Observed

During each RUAA survey, field personnel visited sites during times of day and on days when recreational activities were most likely to be observed. All six sites were at public road crossings; however, private property boundaries limited public access to a small area around and underneath all bridge crossings. No form of recreation was directly observed by TIAER staff during either of the two surveys.

Activities Interviewed

A total of 6 interviews were collected from landowners along Lower Keechi Creek.

Four interviewees stated they had seen others use and have heard of others using the stream for fishing. Two interviewees stated the location on the stream they were familiar with was downstream of LK06 at the confluence of Lower Keechi and the Trinity River and also at site LK02. Two interviewees stated they have observed people hunting as well as adults wading around site LK06 (Table 4.10).

Activities listed in Table 4.10 indicate the number of times personal use, observed use, and/or heard of use was documented from interviews for a given location or in general along the assessment unit. Blank cells in Table 4.10 indicate no interviewed feedback for that location.

Table 4.10 Summary of recreational activities noted in interviews for Lower Keechi Creek

Site Name	Number of Interviews	Swimming	Adult Wading	Children Wading	Hunt	Fish	Boat, Canoe, Kayak
LK01							
LK02	2					0,2,0	
LK03							
LK04							
LK05							
LK06	2		0,2,2		0,2,2	0,2,2	
General AU	2					0,0,2	
Totals	6		0,2,2		0,2,2	0,4,4	

Summary

RUAA surveys were conducted at six sites along Lower Keechi Creek on June 28, 2022 and September 8, 2022. Temperatures were above 21ºC (70ºF) during the 30 days prior to each survey (Tables 4.2 and 4.3). Water existed and flowed all six sites on Lower Keechi Creek during the first survey, but lacked flow in two of the six sites during the second survey. Stream flow was considered normal during the first survey but was either low or lacking flow during the second survey based on information provided by local residents. The Palmer Drought Severity Index (PDSI) indicated

moderately drought conditions in June 2022 and severe drought conditions in September 2022 (TWDB, 2020).

No recreational activities were observed by TIAER field staff during either survey. Roughly 77% of the watershed through which Lower Keechi Creek falls into two types of land use. Pasture/hay land accounts for the majority at roughly 41%, while mixed forest represents 36%. Steep and slippery banks and overgrown banks with thick vegetation were present at all six sites indicating hazardous locations for recreation.

Six interviews indicated occurrences of recreational activity, hunting, fishing and wading, within the stream. Due to fenced private property along the stream banks, public access to the stream is limited at all six sites primarily to the right-of-ways immediately surrounding bridge crossings or areas immediately up and down stream of culvert crossings.

Primary contact recreational activities observed and reported in interviews are summarized in Figure 4.13. Overall RUAA findings are summarized in the form below.

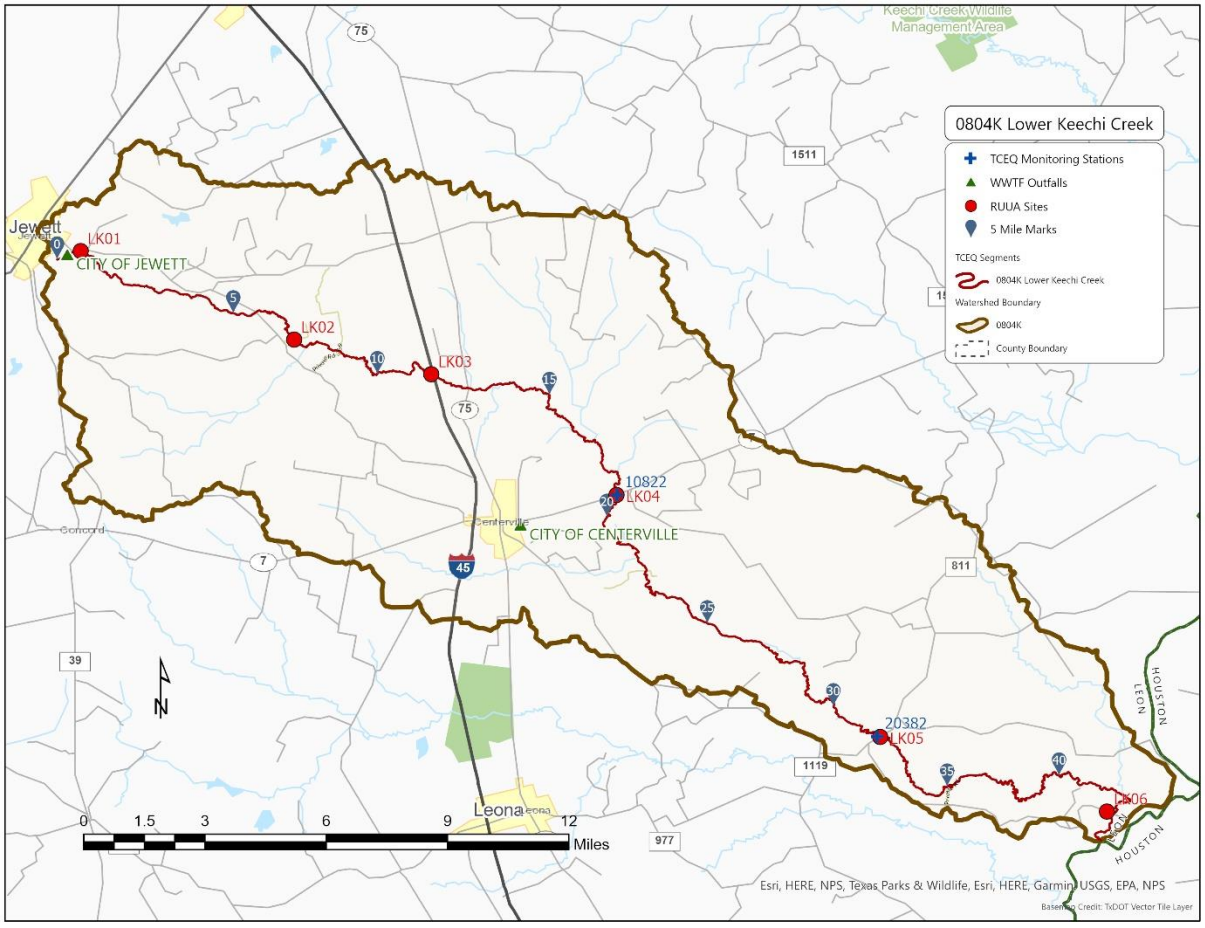

Figure 4.13 Summary of observed and interviewed primary contact recreation on Lower Keechi Creek

RUAA Summary

(Not part of the Field Data Sheet)

This form should be filled out after RUAA data collection is completed. Use the Contact Information Form, Field Data Sheets from all sites, Historical Information Review, and other relevant information to answer the following questions on the water body.

Name of water body: Lower Keechi Creek
Segment No. of Nearest Downstream Segment No.: 0804K
Classified?: No
County: Leon County

1. Observations on Use
   a. Do primary contact recreation activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   b. Do primary contact recreation 2 activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   c. Do secondary contact recreation 1 activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   d. Do secondary contact recreation 2 activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown
   e. Do noncontact recreation activities occur on the water body?
   ☐frequently ☐seldom ☒not observed or reported ☐unknown

2. Physical Characteristics of Water Body
   a. What is the average thalweg depth? 0.42 meters
   b. Are there substantial pools deeper than 1 meter? ☐Yes ☒No
   c. What is the general level of public access?
   ☐easy ☒moderate ☐very limited

3. Hydrological Conditions of site visits (Based on Palmer Drought Severity Index)
   ☒Mild-Extreme Drought
   ☐Incipient dry spell
   ☐Near Normal
   ☐Incipient wet spell
   ☐Mild-Extreme Wet

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Appendix A Trinity River Authority Letter of Support – Lower Keechi Creek

Trinity River Authority of Texas

Clean Rivers Program

July 18, 2023

To:

Leah Taylor, *Texas Institute for Applied Environmental Research* &
The Water Quality Standards Group, *Texas Commission on Environmental Quality*

The Trinity River Authority of Texas (TRA) appreciates the opportunity to review and provide comments on the Draft Final Report of the *"Recreational Use Attainability Analysis for Lower Keechi Creek (0804K) in the Trinity River Basin"*, provided for 30-day public comment on June 21st, 2023. TRA agrees with the description of Lower Keechi Creek (0804K) and its watershed, the justification for and the methods in which the Recreational Use Attainability Analysis (RUAA) was conducted, and the summary of findings of the RUAA study. TRA believes the report provides appropriate justification for the Texas Commission on Environmental Quality (TCEQ) to reconsider and revise the Contact Recreation Classification for Lower Keechi Creek during the next scheduled revision of Texas Surface Water Quality Standards (30 TAC Chapter 307). Highlights from the Draft report which lead TRA to this statement of support include:

- Survey site locations chosen by TIAER adequately captured representative conditions of the entire extent of Lower Keechi Creek, while also being in areas of greatest potential access for public access.
- Climatic conditions during which the field surveys were conducted, though taken during moderate to severe drought, are conditions that can be considered normal to the region.
- Riparian conditions of thick vegetation and steep banks, situated primarily on private land creates a situation where recreational activities would be potentially hazardous and rare.
- No observed recreation during field surveys and few documented cases of recreational activities from stakeholders suggest this stream might lack primary contact with the general public.

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Thank you,
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