

# Atascosa River Recreational Use-Attainability Analyses

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## CHAPTER 1

### INTRODUCTION

#### Problem Statement

The TCEQ is leading an effort to examine water quality impairments in the Atascosa River (Segment 2107). This classified segment is listed on the 2004 State of Texas Clean Water Act 303(d) list and every subsequent 303(d) list as impaired due to elevated levels of bacteria and low levels of dissolved oxygen, which may impact recreational and aquatic life. This project addresses only the issue of elevated bacteria levels in Segment 2107 - Atascosa River. The study segment is located south of the San Antonio area in Atascosa and Live Oak Counties in the Nueces River Basin.

The Atascosa River has a designated primary contact recreation use based on the recently adopted *Texas Surface Water Quality Standards* (TSWQS; TCEQ, 2010a). Questions have, however, been raised by stakeholders in the Atascosa River watershed as to the appropriateness of the current contact recreation use designation to this water body. The recently adopted TSWQS revisions include an expansion of the present contact recreation use into three categories: Primary Contact Recreation (PCR), Secondary Contact Recreation 1 (SCR1), and Secondary Contact Recreation 2 (SCR2).

The TSWQS also specifies a process to evaluate the uses of a water body through a process referred to as a use-attainability analysis (UAAs). UAAs are assessments of the physical, chemical, biological, and economic factors affecting attainment of water body use (40 Code of Federal Regulations § 131.10(g)), which are conducted to identify and assign attainable uses and criteria to individual water bodies. Recreational use-attainability analysis (RUAA) is a specific type of UAA focused on determining the appropriate recreational use of a water body.

The 303(d) listing of each of the Atascosa River for bacteria concentrations exceeding that criterion used to evaluate attainment of the primary contact recreation use and the recent TSWQS revisions that provide additional categories of recreational use support conducting RUAA's on the Atascosa River (Segment 2107).

#### Objectives

Comprehensive RUAA surveys were performed on the Atascosa River following the Texas Commission on Environmental Quality (TCEQ) May 2009 *Procedures for a Comprehensive RUAA and a Basic RUAA Survey* (TCEQ, 2009). The river was divided into study segments coinciding with the four assessment units (AUs) defined in TCEQ (2010b). A total of 36 sites were accessed for the study. All surveys were performed by Texas Institute for Applied Environmental Research (TIAER) staff located on the Tarleton State University Stephenville, Texas campus.

The objectives of the Comprehensive surveys and ancillary public information activities were to:

- Have approved a special study quality assurance plan (SS QAP) providing quality assurance and quality control (QA/QC) for the surveys

- Perform a reconnaissance trip and determine appropriate sites on each study stream for performing the RUAA surveys
- Perform up to three RUAA surveys at each site under appropriate hydrological and meteorological conditions
- Develop a report for TCEQ of the findings of the RUAA surveys
- Perform public information meetings

In total these objectives are designed to provide TCEQ the information to allow their evaluation of the recreational use category for each stream.

### **Summary Status of Objectives**

The project SS QAP was approved by TCEQ on 28 July 2009. The SS QAP in conjunction with the TCEQ TMDL Program QAPP provide the guidance for conducting RUAA surveys to ensure all information are collected under appropriate procedures and with all necessary QA/QC. Included within the SS QAP was a monitoring plan detailing specific locations where RUAA surveys would be conducted on each of the sites identified as appropriate for performing a RUAA survey. An initial list of publicly accessible site locations was determined from information obtained on a June 8 – 9, 2009 reconnaissance trip of road crossings and areas of public access in each assessment unit of the Atascosa River.

The initial road crossing sites were presented June 22, 2009 at an informational meeting of relevant cities and state and regional agencies. The following entities were represented at this meeting: City of Pleasanton, Nueces River Authority, Texas Commission on Environmental Quality, Texas Parks & Wildlife Department, and Texas State Soil & Water Conservation Board.

Since most road crossings required landowner permission to access the 300- meter (m) reach required by the RUAA and it would take appreciable time to coordinate landowner permission, it was decided to limit efforts in 2009 to a single survey at three sites located in the Pleasanton City Park. Immediately following the meeting, permission for access to the impounded water in the park was granted by a representative of the City of Pleasanton.

Also as part of the public interaction process on June 22, 2009, agencies and cities were asked if a recreational use-attainability analysis was appropriate for the Atascosa River. The following responses were obtained, where a response of “Yes” indicates that it was appropriate to conduct these studies and “No” would be a contrary response that the studies should not be conducted:

Texas State Soil & Water Conservation Board: Response of Yes from Aaron Wendt on November 5, 2009.

Texas Parks & Wildlife Department (TPWD): Response of Yes from Steve Twidwell on September 9, 2009 (Note that the TPWD Game Wardens for Atascosa and Live Oak Counties provided interview forms on observed recreation uses of the Atascosa River, which are provided later in this report.)

Nueces River Authority (NRA): Response of Yes from Rocky Freund on June 9, 2009. (Note that NRA field staff provided an interview form on their observations of recreation uses of the Atascosa River, which are provided later in this report.)

City of Pleasanton, Ms. Kathy Coronado, Response of Yes, August 30, 2010. (Note that

Ms. Coronado, as City Manager, and Mr. Joe Bosquez, as superintendent of city parks, provided separate interview forms on their observations of recreation uses of the Atascosa River, which are provided later in this report.)

Farm Bureau, Live Oak County and Atascosa County Boards: General endorsement of support (Yes) without specific names, August 2010.

Note that even though such entities as the City of Pleasanton and local Farm Bureau Boards actively provided support in selecting and establishing RUAA survey sites, due to oversight neither entity was formally asked if they supported the study until the summer of 2010. In both instances the response was supportive of the studies.

To perform the RUAA field activities scheduled for fiscal year (FY) 2010, the RUAA field activities had to be carefully coordinated with activities to encourage and expand the participation of agricultural interests and landowners in public processes associated with both the elevated bacteria and depressed dissolved oxygen levels. Additionally, permission from these agricultural interests and landowners were necessary to conduct surveys at many sites desired for the RUAA. During the fall and early winter of 2009, the goal was to establish additional participation and expand the RUAA survey sites to road crossing and hopefully some private land access. The effort to solicit support of agriculture and landowners occurred during the fall of 2009 as a result of efforts of the TCEQ, Texas AgriLife Research, Texas Farm Bureau, local Soil and Water Conservation Districts, and the Texas State Soil and Water Conservation Board (TSSWCB). Following the June 22, 2009 meeting of governmental entities, a presentation of the RUAA process was made to a group of local Farm Bureau members on July 23, 2009. On November 5, 2009 a public meeting was held to introduce the concept of RUAA studies and to request assistance from private landowners for access to their lands. This meeting resulted in a number of local landowners opting to allow TIAER access to their properties for the purpose of conducting RUAA's.

An intensive scouting effort, during which several local landowners were contacted for the purpose of gaining access to the Atascosa River, was conducted from 31 November through 3 December 2010. A final scouting to confirm the site selection for the RUAA effort occurred on 14 - 15 December 2009. During this scouting event, landowner permission to access 33 additional sites was granted in the 4 assessment units. A total of 36 sites, including the original 3 sites located in the Pleasanton Atascosa River City Park, were designated for performing the 2010 RUAA surveys. Sites included not only the City Park and many of the road crossings of the Atascosa River, but also sites that were exclusively accessible from private entry. Because of the highly rural nature of much of the watershed and limited road crossings in portions of the watershed, sites on private entry were selected to provide characterization of the river between road crossings.

Three RUAA surveys were performed for the three sites located in the Pleasanton, Texas Atascosa River City Park. Two RUAA surveys were performed at the remaining 33 sites. The types of information and data collected during each survey are discussed in the next chapter, which contains a section on methodologies. Each survey began during the workweek, but also included visitation of sites during the weekend to maximize opportunity to observe recreational activities in and around each site. Interviews of the public in the vicinity of each site were also

part of the surveys. Weather conditions for each survey were selected to occur during warm weather (air temperatures > 70°F) and under streamflow conditions conducive to safe recreation use if such use does occur. For these survey conditions appropriate streamflow conditions were defined as those not strongly influenced by rainfall induced stormwater runoff for several days prior to the surveys.

The first survey (at only three sites within the City of Pleasanton) occurred on 31 July and 1 August 2009, as soon as logistically feasible after the 28 July 2009 approval of the SS QAP. The remaining two surveys were conducted at all 36 sites in early May and late June 2010. The three RUAA surveys were conducted on the following dates:

First Survey: Friday, July 31 and Saturday, August 1, 2009 (three sites in City of Pleasanton)

Second Survey: Wednesday, May 5 through Saturday, May 8, 2010 (all sites)

Third Survey: Tuesday, June 15 and Wednesday, 16, 2010; (surveys limited to physical measurements at sites on Atascosa River above Poteet, TX.); and June 22 through Saturday, June 26, 2010 (physical measurements at all remaining sites on Atascosa River and visit all publicly accessible sites on weekend to determine presence of recreational use)

Presentation of the information and data collected in performing the Comprehensive RUAA constitute the remainder of this report.

## CHAPTER 2

### STUDY AREA AND METHODOLOGY

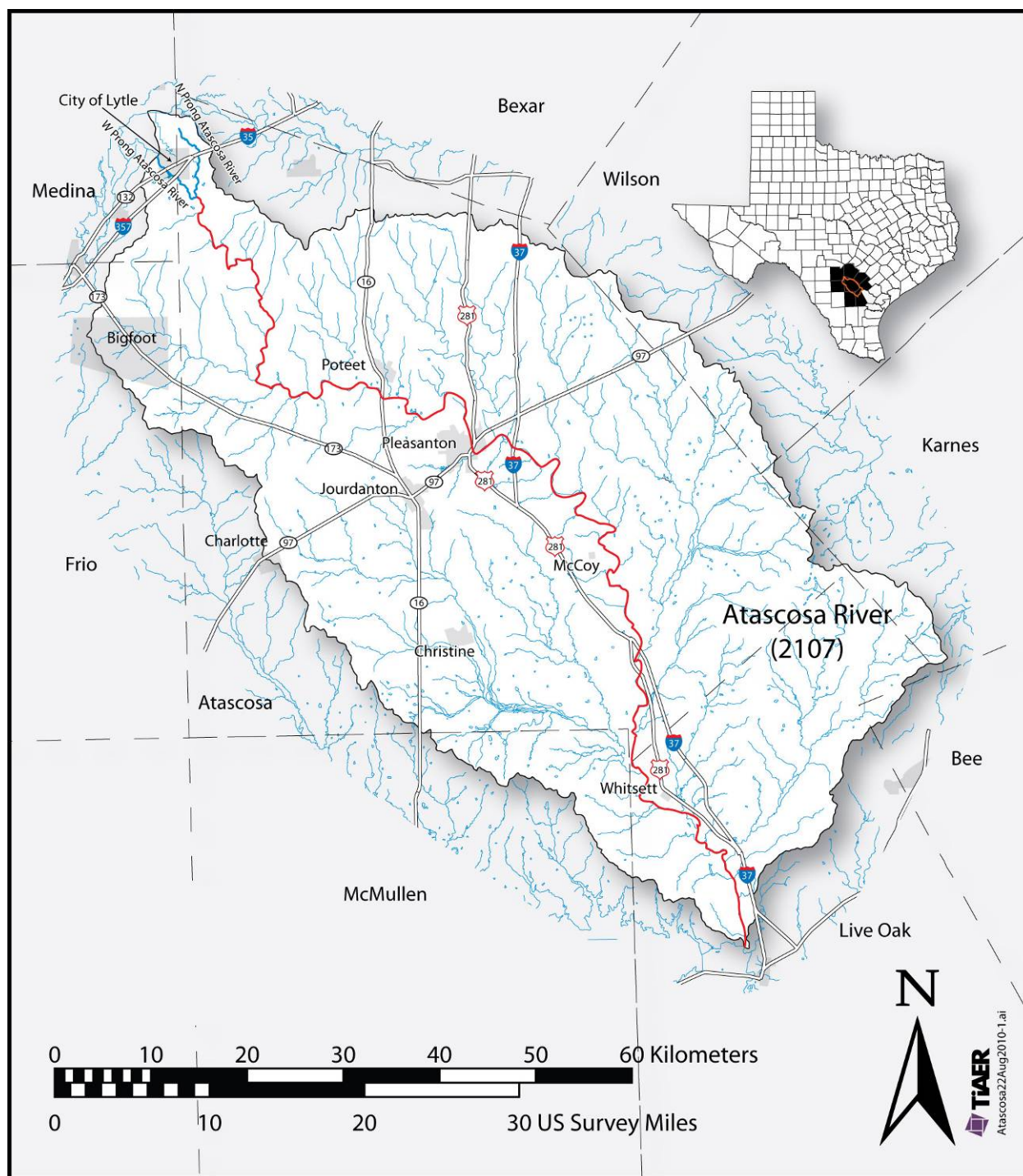
#### Description of Atascosa River

The main portion of the Atascosa River (Segment 2107) is formed by the union of the North Prong and West Prong of the river in extreme northwestern Atascosa County, southeast of Lytle, Texas (Figure 2-1). From its origin in Atascosa County, the river flows approximately 103 miles into Live Oak County between Choke Canyon Reservoir and Three Rivers, where it joins the Frio River. The Atascosa River watershed is part of the Nueces River Basin and includes the incorporated towns of Bigfoot, Charlotte, Christine, Jourdanton, Lytle, Poteet and Pleasanton. The watershed is characterized by level to rolling land dominated by open grasslands, as well as cacti, thorny shrubs, and trees such as mesquite, live oak, and post oak. The watershed is recreationally important for deer and quail hunting. (Source: TCEQ, TMDL fact sheet August 2010).

*The History of Atascosa County Through 1919* (Porter, 2007) states the Atascosa River was named by the Spaniards. The original name was *Atascoso*, which in Spanish means “boggy” and in Porter’s history of the region was referred to as quicksand. During the Somerville Expedition of 1842, encounters with the terrain around the Atascosa River under rain conditions led the area to be called the “bogs of the Atascosa” or “the devils eight leagues.” The river was originally called Atascosa Creek; however, as settlers drilled numerous artesian wells that were allowed to flow into the creek, the water way was later called “river” (Porter, 2007).

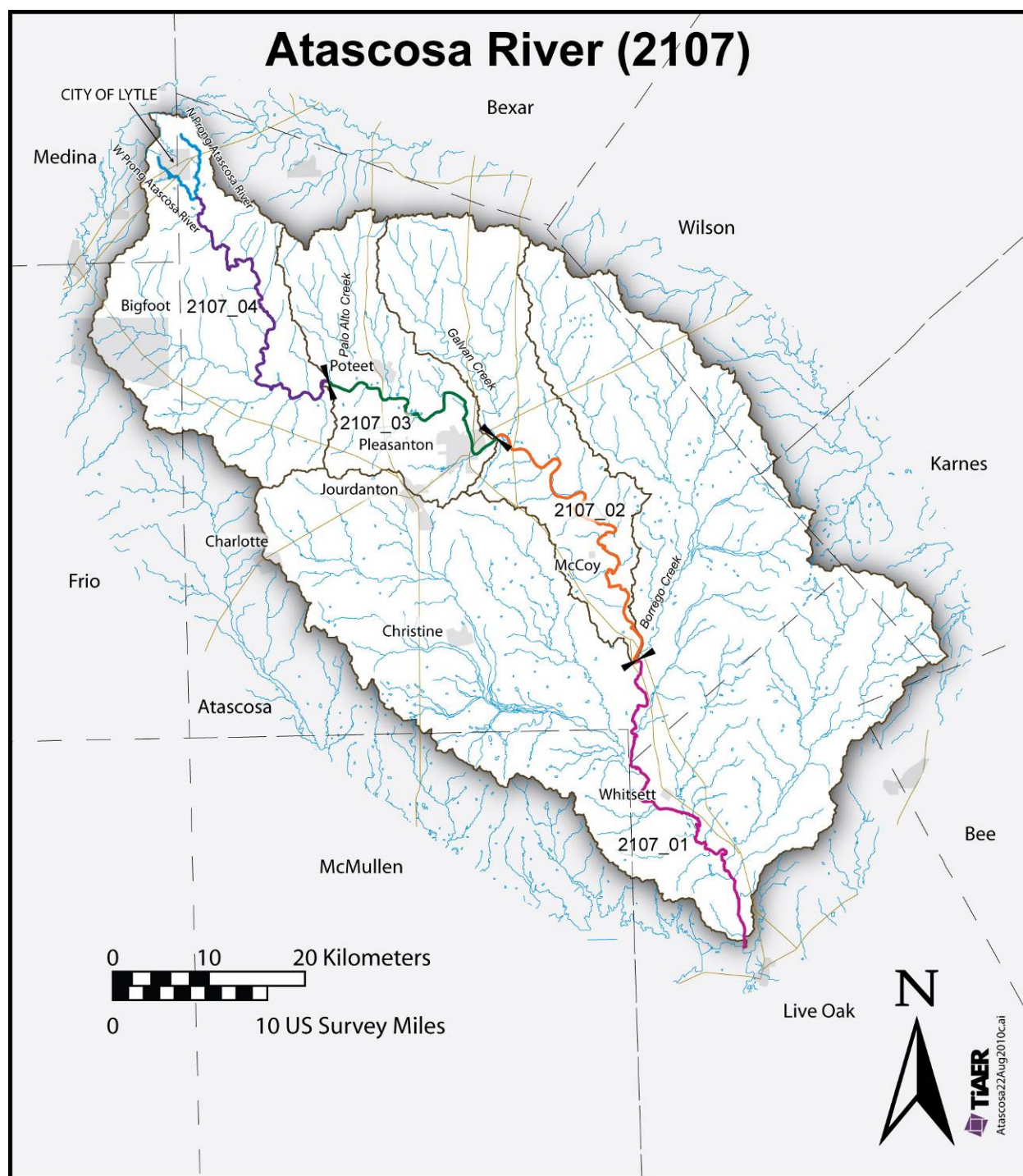
The flow type for the Atascosa River is described as a perennial freshwater stream (TCEQ, 2010b). Designated uses of Segment 2107 (Atascosa River) are high aquatic life use, primary contact recreation, general use, fish consumption, and public water supply. The criteria to protect the designated uses are provided in the Texas Surface Water Quality Standards (TCEQ, 2010a). The draft 2010 303(d) List (TCEQ, 2010c) included the Atascosa River as non-supporting for aquatic life use due to depressed dissolved oxygen and non-supporting for contact recreation use due to elevated levels of bacteria within the river. Impairment verification monitoring performed by the Texas A&M University Shoreline Environmental Research Facility (SERF) confirmed that Segment 2107 is presently non-supporting for aquatic life use due to depressed oxygen and for contract recreation due to elevated bacteria levels (Bonner et al., 2005).

A brief description of each assessment unit (AU) follows immediately below with more detailed information provided within the individual report chapters for each AU (see Figure 2-2 for a map of the watershed with AUs). The description provided for each AU is the segment description provided in the 2008 303(d) List. It is the lower two AUs, AU2107\_01 and AU 2107\_02, for which bacteria data indicate nonsupport of the assigned primary contact recreation use.



**Figure 2-1** Atascosa River watershed showing major townships





**Figure 2-2** Atascosa River watershed showing major townships, assessment units, and drainage areas of assessment units. (Impaired AUs are 2107\_01 and 2107\_02)

**Assessment Unit 2107\_01**

AU 2107\_01 is described as running from the downstream end of the segment at the confluence with the Frio River to the confluence with Borrego Creek (Figure 2-2). AU 2107\_01 is located in Atascosa and Live Oak Counties.

**Assessment Unit 2107\_2**

AU 2107\_02 is defined as running from the confluence with Borrego Creek to the confluence with Galvan Creek (Figure 2-2). This AU is located entirely in Atascosa County.

**Assessment Unit 2107\_3**

AU 2107\_03 is described as running from the confluence with Galvan Creek to the confluence with Palo Alto Creek, and includes the City Park in Pleasanton, Texas (Figure 2-2). This AU is located entirely in Atascosa County.

**Assessment Unit 2107\_4**

AU 2107\_4 is described as running from the confluence with Palo Alto Creek to the upper end of this segment (Figure 2-2). This AU is located entirely in Atascosa County.

**Historical Information**

A review of historical information was performed regarding recreational water uses for the Atascosa River. 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, historical societies, and newspapers were searched and contacted in addition to generic internet searches. The following is a summary of the review and searches.

**The Handbook of Texas Online**

<http://www.tshaonline.org>

Searched the handbook by stream name and by community. Nothing significant was found on recreation use of the Atascosa River.

**Government Sources****Texas Parks & Wildlife Department Game Wardens**

TIAER staff contacted game wardens in both Atascosa and Live Oak Counties. The warden from Atascosa County indicated that he had never seen anyone swimming the river and only saw fishing occur in the Atascosa River Park in Pleasanton. He continued to add that the river is not navigable (you can walk across it in most spots) and there is limited public access due to the large amount of private lands that border the Atascosa. Though he had not personally witnessed it, he speculated that some fishing may occur on private lands, a fact that was verified through interviews by TIAER field staff.

The assessment of recreation along the Atascosa by the Live Oak County game warden was similar to that of the Atascosa County warden. He had never seen any type of recreation in the river, including fishing, and did not know of any. He, too, speculated fishing on private lands

but had no first hand knowledge of the activity. As indicated above, the river is not navigable, there is not a launch site along the river, and even if there was, the TPWD boat is too large to get into the stream. He added they do not have a kayak on hand for use in such a small stream.

#### **Evergreen Underground Water Conservation District**

A conversation with Mr. Larry Akers of the Evergreen Underground Water Conservation District occurred on June 25, 2008 with confirmation discussion on August 30, 2010. The subject matter regarded groundwater resources and their influences on base flow in the Atascosa River watershed. Though this conservation was not directly related to the RUAA study, it provides useful background information. Mr. Akers provided the following general information regarding the Atascosa River and its streamflow for recent decades.

Until roughly the 1960s springs existed above the Pleasanton/Poteet area and water wells were artesian throughout much of the Atascosa River watershed. The springs were largely located on tributaries to the Atascosa River north of Pleasanton and Poteet, TX. Over pumping due to farming resulted in lowering of groundwater levels in the area between the 1950s through the 1990s with the hard drought of the 1950s exacerbating the over pumping. All springs ceased to flow and wells were no longer artesian in much of the watershed by the 1990s affecting base flow along much of the river. Below Pleasanton there are still a few artesian wells. Depending upon the manner of operation of these wells, they can provide some base flow at times to the Atascosa River and its tributaries. In general the Atascosa River is more stagnant than it was a few decades ago prior to the drop in groundwater levels.

#### **City of Pleasanton**

The City of Pleasanton has an ordinance prohibiting swimming and directly recreating in the waters of the Atascosa River. Per the city code “[s]wimming, as used herein, shall include bathing, wading and any other water contract recreational activity.”

#### **Local Landowner Historical Information from Interviews**

During the interview process attempted at each site, some of the information obtained from landowners was of a historical nature (i.e., comments seeming to predate November 28, 1975) and that information is provided here. One landowner in AU 2107\_01 recounted that some 50+ years ago he and friends would camp and fish but did not admit to swimming in the Atascosa River during that time. Two landowners in AU 2107\_02 related that in their youth, 40 to 60 years ago, they had swum in the river when it was clear and flowing. A landowner in AU 2107\_03 indicated he, friends and family waded in the river in the 1960s, but not since. Finally a landowner in AU 2107\_04 shared that her mother and family swam in the Atascosa River on their property 100 years ago, but added that in her 76 years she had never used the river recreationally.

#### **Local Landowner Hydrologic Survey**

As a part of the reconnaissance for finding access points to the Atascosa River through private lands, a questionnaire pertaining to streamflow conditions was handed out to landowners at the time of the initial meetings. Though not all of the questionnaires were returned, some were received from each assessment unit. The following summarizes the result of this survey.

### AU 2107\_01 Survey Results

The responders to the survey from AU 2107\_01 indicated familiarity with the Atascosa River ranging from 25 to 60 years. Observations of the river reported in the questionnaires ranged from monthly to less frequently (off and on). All reported seeing the streambed of the Atascosa dry within the last five years, generally in the time frame of June and July 2009 and for distances ranging from 500 to 1500 feet. In addition to the last five years, all reported seeing the river dry for periods other than the recent droughts, with two-thirds reporting seeing the river dry for one to eight weeks during average rainfall years. Persistent pools were reported during the dry periods with sizes ranging from 10 – 15 feet long, 3 – 15 feet wide and 1-foot deep.

### AU 2107\_02 Survey Results

Only one response was received from AU 2107\_02. The responder has been familiar with the Atascosa River for 40 years, and observes the river weekly. He reported seeing the river dry within the last five years during June – August 2009, for the entire length of his ranch property (miles). Additionally, he has observed the river dry for at least one week during normal rainfall periods for most years. Although summer pools have been observed, no dimensions were given.

### AU 2107\_03 Survey Results

Responders to the survey from AU 2107\_03 indicated familiarity with the Atascosa River for period of time ranging from 10 to 40 years. Observations of the river ranged from daily to monthly. All reported seeing the Atascosa River dry during the last five years and more. One reported the river on their property dried up every year for the past 20+ years. A second related that the river was typically dry during summers and if water was present it only occurred in small amounts. A third indicated the river on his land was dry in April 2007 and from June – October in 2009. In normal rainfall years, responders indicated the river was dry about 1 – 2 months of the year. Each response indicated persistent pools, but size information ranged from unknown, to varies greatly, to 15 feet long by 10 feet wide by 1-foot deep.

### AU 2107\_04 Survey Results

Responders to the survey from AU 2107\_04 indicated familiarity with the Atascosa River 45 to 50 years. Observations ranged from daily to monthly. All interviews indicated the river as dry during the last five years. In a downstream to upstream direction, the responses indicated the following recent periods of dry river bed: March through August 2009; summer of 2008 through September 2009; and 2003 to April 2007 and October 2007 to present. Again from downstream to upstream by response, the length of stream observed to be dry was reported as five miles; entire length of property (miles); and 30 miles. All reported seeing the river dry prior to the recent drought with time frames ranging from 1 to 11 months. Two responders observed pools during dry periods with sizes of 2 – 3 feet deep, 2 – 12 feet wide, and 20 – 200 feet long. The third landowner did not observe any pools when the stream was dry.

### On-Line Internet Search

As part of the Recreation Use Attainability Analysis (RUAA), a web search was conducted in August 2009 to identify and document any actual recreational activities that occur on, or in, the Atascosa River. Contact recreational activities that were investigated included canoeing and kayaking, tubing and rafting, and swimming. Web searches relevant to these contact recreation activities focused on the keywords “Atascosa”, “Atascosa River”, and “Pleasanton” in

combination with search terms appropriate to the particular activities being investigated. Initially generalized “Google” searches were undertaken focusing on the keywords of interests in combination with terms like “canoe,” “kayak,” “tube,” “float,” and “swimming.” These searches generated no significant results for any contact recreation activities in or on the Atascosa River.

Additionally for canoeing, kayaking, and tubing activities web sites were identified that detailed good river locations for the activity in question, as well as describing river trips in various locations. More particular details are broken down by activity below. The City of Pleasanton’s newspaper, the Pleasanton Express, website was also searched to investigate these recreational activities. Fishing activities in the Atascosa River were also investigated.

The City of Pleasanton Atascosa River Park has playgrounds, basketball and tennis courts, and athletic fields, and seems to hold numerous city events and concerts. Numerous websites had links to the park as a city attraction, and a location for concert and city events, but no reference was found to any contact recreation in the park, in terms of swimming, canoeing and kayaking, and tubing.

In 1974 the Texas Parks and Wildlife department published *A Report on the Physical Characteristics of Rivers, Streams and Bayous in Texas* (TPWD, 1974), which documents the rivers of Texas that support what they call normal recreational activities such as canoeing, kayaking, and rafting, in order determine the feasibility of establishing a statewide system of “waterways” for these activities. The report also included information concerning secondary waterways; which were waterways identified as having more restricted usage due to variations of flow, lack of access, and shortness of length. In neither the reports documentation of major Texas waterways nor its documentation of secondary waterways is the Atascosa River mentioned. At the same time this report was generated TPWD produced, a list of water levels necessary to float various river segments under five different flow conditions, ranging from the minimal amount of water to float, to very high water flows.. This list was accessed at the canoeTX website (canoeTX, 2009), and contains information on 71 Texas river segments, none of them involving the Atascosa River.

In terms of kayaking and canoeing activities on the Atascosa River a website for the Alamo City Rivermen (Alamo City Rivermen, 2009), a canoe and kayak club in San Antonio, was identified. The website helps organize club activities and also details member’s canoe, kayak and float trips and potential locations for these activities regionally and elsewhere in Texas. The website was searched for the relevant keywords and no reference to these activities on the Atascosa River was found. Another website was identified with extensive coverage of potential Texan canoe and kayak location “Paddling.net” (Paddling.net, 2009). Paddling.net is self proclaimed as “Your #1 source for canoeing and kayaking.” The site describes numerous lake, river and ocean locations in Texas to canoe and kayak, and when searched for the relevant keywords returned no relevant results. Another website with extensive kayak links was identified, “Playak.com,” and searched for the keywords of interest, with no relevant results found (Playak.com, 2009). The website also includes an interactive “Google Maps” based application, where site users can put markers on the map with kayak relevant information (such as put-ins and take-outs, river pictures, and rapids classifications), numerous contact recreation relevant information markers were observed all across Texas, but none were found for the Atascosa River.

With respect to tubing and swimming activities in the Atascosa River the Pleasanton Express website (Pleasanton Express, 2009), was searched for references to these activities in the river, with no relevant results being found. Additionally a site devoted to tubing and rafting in Texas rivers, “Tube Texas,” was investigated for details of any contact recreation in the Atascosa River, with no results being returned (Tube Texas, 2009).

The Texas Parks and Wildlife Department (TPWD) website was searched for any reference to the Atascosa River and fishing, with no significant results being found (TPWD, 2009A). Additionally the Texas Parks and Wildlife Department website has a webpage with weekly updated fishing conditions for Texas water bodies (TPWD, 2009B), which does not have any information for the Atascosa River. The TPWD website was also found to contain a document entitled “Take me fishing, San Antonio: 12 easy places to go fishing” (TPWD, 2009C). This document details twelve easy access fishing spots in the San Antonio metro area, with no mention of the Atascosa River (one of the fishing sites is in Northern Medina County, and has a phone contact at the Bexar-Medina-Atascosa Counties Water Control and Improvement District).

The website “Fishingworks.com” was identified as a website documenting fishing locations, and has identified a total of 45 lakes in Atascosa County that might potentially be suitable for fishing, but was searched and found to contain no reference to fishing activities actually in the Atascosa River (Fishingworks.com, 2009).

The internet searches detailed above universally yielded no documentation for recreational activities in or on the Atascosa River.

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Tube Texas. <http://www.tubetexas.com/>. [Accessed August 19, 2009]

### **Climatic Conditions**

The Atascosa River watershed is in a subtropical-subhumid region of Texas characterized by hot and humid summers and mild and dry winters. Based on National Oceanic and Atmospheric Administration (NOAA) records for the City of Poteet, located within the northwest portion of the watershed, the mean annual high and low temperatures are approximately 81° F (27° C) and approximately 57° F (14° C), respectively. Summer high temperatures are consistently above 90° F (32° C). Annual average precipitation is 29 inches (737 mm) and 8 inches (203 mm) of that total falls in May – June when high-intensity rainfall events and flash floods are common.

Table 2-1 shows the rainfall data for 30-days antecedent to the RUAA surveys performed in 2009 and 2010.

### **Land Use and Land Cover**

The land use/land cover data for Segment 2107 was obtained from the 2001 National Land Cover Database of the U.S. Geological Survey (Homer et al., 2004). The land use/land cover is represented by the following categories and definitions:

**Scrub/Grassland** – *Scrub*: Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. *Grassland*: 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.

**Pasture** - *Pasture*: 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 percent of total vegetation.

**Cultivated Crops** - *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 percent of total vegetation. This class also includes all land being actively tilled.

**Developed** - Includes areas of constructed materials (residential/commercial), impervious surfaces, parks and golf courses.

**Forest** - Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover. Includes deciduous and evergreen species.

**Wetlands** - Areas where forest, shrubland vegetation and/or perennial herbaceous vegetation accounts for greater than 20 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

**Table 2-1** Rainfall records for Pleasanton Municipal Airport for July 2009 and April, May and June 2010. (Dates of surveys are highlighted in gray shades)

July 2009		April 2010		May 2010		June 2010	
Date	Rainfall (in)	Date	Date	Date	Rainfall (in)	Date	Rainfall (in)
1	0	1	0	1	0	1	0
2	0	2	0	2	0	2	0
3	0	3	0	3	0	3	0
4	0	4	0.01	4	0	4	0
5	0	5	0	5	0	5	0
6	0	6	0	6	0	6	0
7	0.62	7	0	7	0	7	0
8	0	8	0	8	0	8	0.54
9	0	9	0	9	0	9	0
10	0	10	0	10	0	10	0
11	0	11	0	11	0	11	0
12	0	12	0.67	12	0	12	0
13	0	13	1.12	13	0	13	0
14	0	14	0.17	14	0.38	14	0
15	0	15	0.47	15	0.7	15	0
16	0	16	0	16	MD	16	0
17	0	17	0	17	0	17	0.01
18	0	18	0	18	0.05	18	0
19	0	19	0	19	0	19	0
20	0	20	0	20	0	20	0
21	0	21	0	21	0	21	0
22	0	22	0	22	0	22	0
23	0	23	0	23	0	23	0
24	0	24	0	24	0	24	0
25	0	25	0	25	0.09	25	0
26	0	26	0	26	0	26	0
27	0	27	0	27	MD	27	0
28	0	28	0	28	MD	28	0
29	0	29	0	29	MD	29	0.17
30	0.56	30	0	30	MD	30	0.12
31	0			31	MD		
Aug 1	0						

MD – missing data from rainfall record

**Barren Land (Rock/Sand/Clay)** - Barren 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.

**Open Water** - All areas of open water, generally with less than 25% cover of vegetation or soil.

The watershed area encompassing Segment 2107 is 361,347 ha (1,395 square miles). Dominant land uses in the Atascosa River watershed include Scrub/Grassland (54.2%), Pasture (24.2%), and Cultivated Crops (10.2%). The remaining five land use categories comprise the last 11.4% of land. Each AU is predominately rural with pasture and scrub/pastureland representing between



60% and 85% of the land area of the individual AU watersheds. With the exception of AU 2107\_03 with proximity of the City of Pleasanton to the Atascosa River, most of the developed land category is not near the river. The land use of the watershed is depicted in Figure 2-3 and provided by AU in Table 2-2

### **Regulated Sources**

Potential sources of indicator bacteria pollution can be divided into two primary categories: *regulated* and *unregulated*. Pollution sources that are regulated have permits under the Texas Pollutant Discharge Elimination System (TPDES) and the National Pollutant Discharge Elimination System (NPDES). Examples of regulated sources are domestic wastewater treatment facility (WWTF) discharges; storm water discharges from industries, construction, and municipal separate storm sewer systems (MS4s) of cities; and concentrated animal feeding operations (CAFOs). In addition these various regulated sources are required to have either an individual permit that is specific for their facility or a general permit. The cities and communities within Segment 2107 are not required to have MS4 storm water permits because they are all of insufficient population and are not located in immediate proximity to a large urban area. Unregulated sources are typically nonpoint source in nature, meaning the pollution originates from multiple locations and is usually carried to surface waters by rainfall runoff, and the sources generally are not regulated by permit under the TPDES and NPDES.

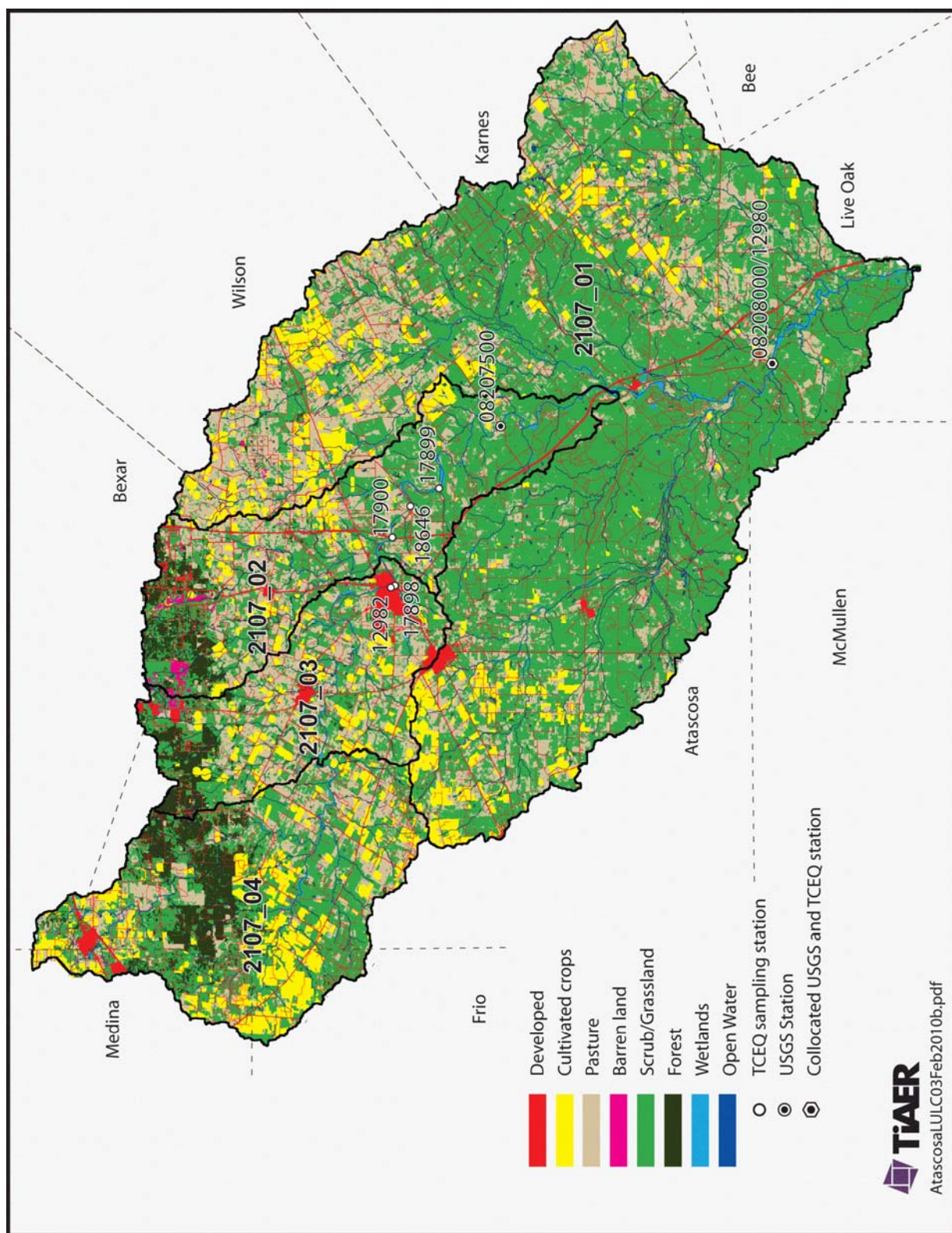
The specifics of unregulated sources will not be discussed within this report, but they include a variety of sources such as wildlife (mammals and birds), unmanaged feral animals (e.g., feral hogs), on-site sewage facilities (OSSFs), and livestock.

### **Individually Permitted Discharge Facilities**

Permitted sources are regulated by permit under the TPDES and the NPDES. WWTF outfalls, water treatment facility (WTF) outfalls and large industrial facilities operations represent the individually permitted sources in the impaired and non-impaired assessment units of the Atascosa River. A variety of general permitted facilities occur in both the impaired and non-impaired assessment units. General permit coverage occurs under various types of TPDES wastewater permits and storm water permits, which will be briefly discussed within this report section.

In Segment 2107 there are individual permits for 2 industrial facilities, 7 WWTFs, and 1 WTF; a total of 10 individual permits (Figure 2-4 and Table 2-3). Several facilities operate under the various types of general permits that include multi-sector industrial, concrete, and construction. Excluding the construction storm water permits, which are often of short duration and therefore come and go, a total of 10 facilities hold general permits in the segment.

Within AU 2107\_01 two Texas Department of Transportation (TxDOT) WWTFs operate along northbound and southbound IH 37 near Whitsett: Live Oak County Safety Rest Area (North) and Live Oak County Safety Rest Area (South). Both are each permitted to discharge 0.010 million gallons per day (MGD) of wastewater into man-made ditches leading to unnamed tributaries of the Atascosa River. The City of Jourdanton WWTF has a full-permitted discharge of 0.330 MGD. It discharges into a tributary of Goose Creek and thence to the Atascosa River, approximately 40 stream kilometers south in AU 2701\_01.

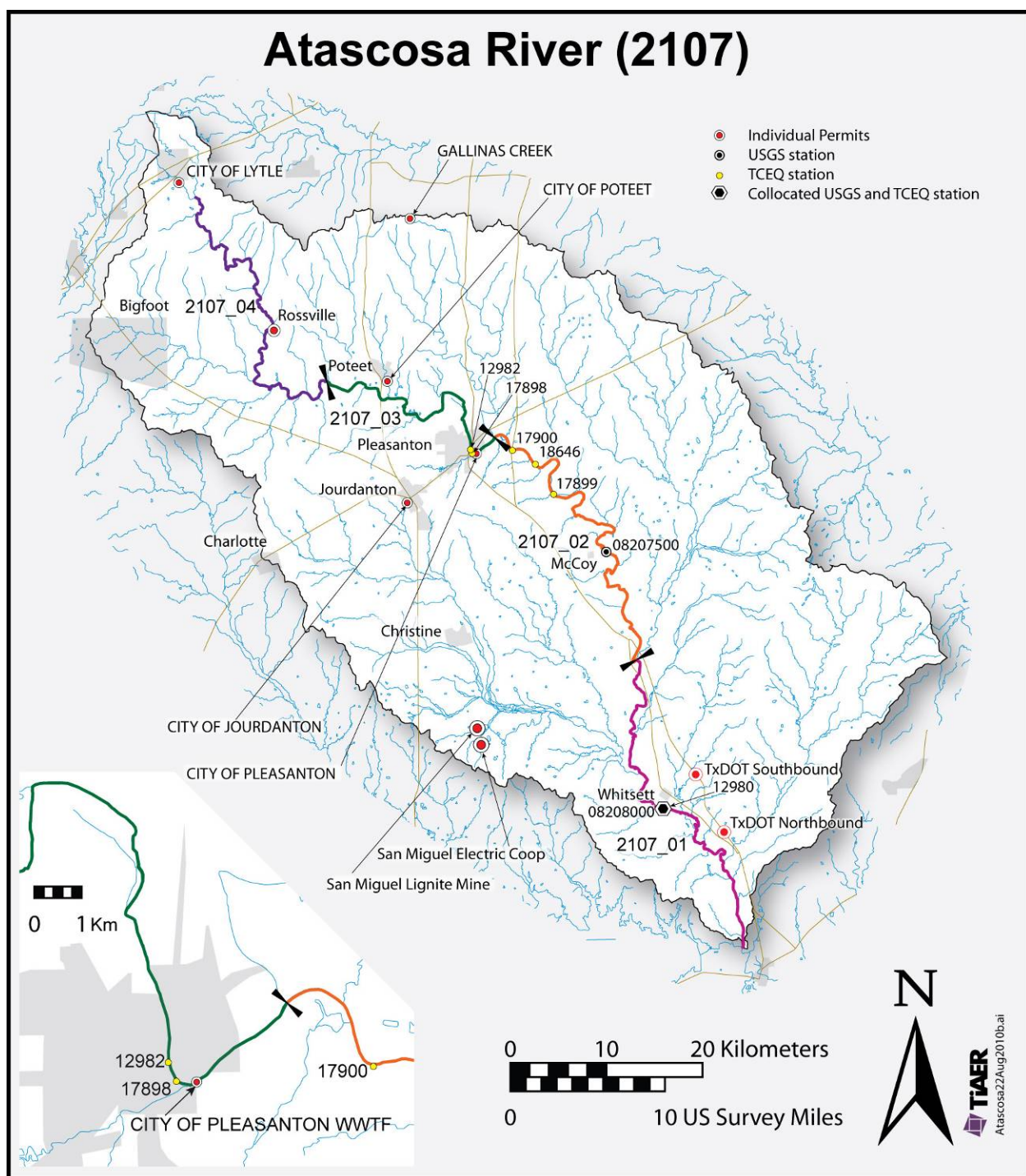


**Figure 2-3** Land use/cover for the Atascosa River watershed

**Table 2-2** Land use/cover for the Atascosa River watershed (Segment 2107) and the impaired assessment units. Source: Homer et al. (2004).

AU 2107_01	Area (ha)	% of Total	AU 2107_02	Area (ha)	% of Total
Developed	10,320	4.64%	Developed	3,403	7.04%
Cultivated crops	18,260	8.21%	Cultivated crops	3,403	7.04%
Pasture	53,042	23.84%	Pasture	12,584	26.04%
Barren land	84	0.04%	Barren land	595	1.23%
Scrub/Grassland	136,465	61.34%	Scrub/Grassland	24,179	50.03%
Forest	525	0.24%	Forest	3,073	6.36%
Wetlands	3,456	1.55%	Wetlands	1,043	2.16%
Open Water	322	0.14%	Open Water	50	0.10%
Total	222,474		Total	48,331	
AU 2107_03	Area (ha)	% of Total	AU 2107_04	Area (ha)	% of Total
Developed	3,647	10.47%	Developed	3,601	6.46%
Cultivated crops	4,079	11.71%	Cultivated crops	11,150	20.01%
Pasture	11,227	32.24%	Pasture	10,665	19.14%
Barren land	196	0.56%	Barren land	29	0.05%
Scrub/Grassland	12,313	35.36%	Scrub/Grassland	22,962	41.21%
Forest	2,720	7.81%	Forest	6,413	11.51%
Wetlands	607	1.74%	Wetlands	859	1.54%
Open Water	32	0.09%	Open Water	43	0.08%
Total	34,820		Total	55,722	
Segment 2107	Area (ha)		% of Total		
Developed	20,971		5.80%		
Cultivated crops	36,892		10.21%		
Pasture	87,519		24.22%		
Barren land	904		0.25%		
Scrub/Grassland	195,918		54.22%		
Forest	12,730		3.52%		
Wetlands	5,964		1.65%		
Open Water	447		0.12%		
Total	361,347				

San Miguel Electric Cooperative Inc. holds two industrial permits that allow the discharge of storm water into the impaired AUs. The facilities include a lignite mine operation and a lignite-fired steam electric generating power plant. The lignite mine is authorized to discharge mine pit water and storm water runoff through multiple outlets located predominately in AU 2107\_01, but also in AU 2107\_02. The storm water effluents are routed to sedimentation ponds prior to discharge, and effluent monitoring required as part of the permit application process indicated that levels of fecal coliform bacteria are less than 2 MPN/100 mL. Therefore there is no reasonable potential for these effluents from the lignite mine operation to contribute to bacteria impairments within the impaired AUs of Segment 2107. The power plant is authorized to discharge storm water from the lignite storage area and the discharge point is located entirely within AU 2107\_01. Storm water runoff from the lignite storage area is discharged from a runoff pond during or following heavy rainfall events. This permit does not authorize the discharge of domestic wastewater, and, therefore, is not expected to contribute elevated bacteria levels.



**Figure 2-4** Atascosa River watershed showing major townships, USGS gage stations, historical TCEQ sampling stations, individual TPDES permits, and assessment units.



**Table 2-3** Individually permitted facilities in the Atascosa River Watershed (Segment 2107).

AU	NPDES Permit No.	TPDES Permit No.	Permittee	Facility	Final Permitted Discharge (MGD)
2107_01	TX0090611	WQ0002601-000	San Miguel Electric Cooperative Inc.	San Miguel Electric Cooperative	Report
2107_01	TX0083445	WQ0002043-000	San Miguel Electric Cooperative Inc.	San Miguel Lignite Mine	Report
2107_01	TX0082589	WQ0010418-001	City of Jourdanton	City of Jourdanton WWTF	0.330
2107_01	TX0129305	WQ0014767-001	Texas Dept of Transportation	Live Oak Co. Safety Rest Area WWTF (North)	0.01
2107_01	TX0129321	WQ0014768-001	Texas Dept of Transportation	Live Oak Co. Safety Rest Area WWTF (South)	0.01
2107_02	TX0127744	WQ0014600-001	Presto Utilities, Inc.	Gallinas Creek WWTF	0.375
2107_03	TX0022594	WQ0010598-001	City of Pleasanton	City of Pleasanton WWTF	1.420
2107_03	TX0032387	WQ0013630-006	City of Poteet	City of Poteet WWTF	0.640
2107_04	TX0057509	WQ0010096-001	City of Lytle	City of Lytle WWTF	0.450
2107_04	TX0124036	WQ0014265-001	Benton City Water Supply Corporation	Rossville WTF	0.015

The Gallinas Creek WWTF facility has a full permitted discharge of 0.375 MGD and its effluent would enter into the extreme northwest portion of the watershed of AU 2107\_02. The facility would discharge into Gallinas Creek approximately 25 km upstream of the confluence with Galvan Creek and thence to the Atascosa River. Review of TCEQ and EPA records provided no indication that the Gallinas Creek facility was operational at the time this report was developed and based on information from TCEQ staff it is unlikely that the facility has been built.

The City of Pleasanton WWTF discharges approximately 2.2 km upstream from AU 2107\_02 and directly into the Atascosa River AU 2107\_03. It is the largest WWTF in the Atascosa River watershed with a full permitted discharge of 1.420 MGD. The City of Poteet discharges at a permit limit of 0.640 MGD into AU 2107\_03 via an unnamed ditch, thence to Rutledge Hollow, and thence to the Atascosa River.

City of Lytle WWTF discharges at a permit limit of 0.450 MGD near the most upstream terminus of AU 2107\_04. The discharge enters West Prong Atascosa River, thence to the Atascosa River. Finally, the Rossville water treatment facility with a permitted discharge permit limit of 0.015 MGD for filter backwash water. The discharge is into an unnamed tributary of the Atascosa River and thence into AU 2107\_04.

### TPDES General Wastewater Permits

In addition to the individual wastewater discharge permits listed in Tables 2-3, discharges of process wastewater from certain types of facilities are required to be covered by one of several TPDES general permits:

- TXG110000 – concrete production facilities (1 active)
- TXG130000 – aquaculture production facilities (0 active)
- TXG340000 – petroleum bulk stations and terminals (0 active)
- TXG670000 – hydrostatic test water discharges (0 active)
- TXG830000 – water contaminated by petroleum fuel or petroleum substances (0 active)
- TXG920000 – concentrated animal feeding operations (3 active)
- WQG20000 – livestock manure compost operations (irrigation only) (0 active)

A review of active general permit coverage in the Atascosa River watershed as of 31 July 2010 found three facilities covered by the general permit for concentrated animal feeding operations (CAFOs). Of these, two of the facilities are located in the impaired AU watersheds. There is one active concrete production permit and it is not located in the impaired AU watershed. There were no facilities covered under the general permits for aquaculture production and livestock manure compost operations. There is also no permit coverage for petroleum-contaminated waters and hydrostatic test discharges whose activities are infrequent and often of short-term duration. There are no facilities covered under the permit for petroleum bulk stations and terminals. The CAFOs located in the Atascosa River watershed operate under an effectively no-discharge general permit. As such they are not permitted to discharge to waters of the state except during rainfall exceeding a 25-year, 24-hour event.

### Other Storm Water General Permits

Discharges of storm water from a Phase II urbanized area, industrial facility, construction site, or other facility involved in certain activities are required to be covered under other TPDES general permits:

- TXR040000 – storm water Phase II Municipal Separate Storm Sewer System (MS4) general permit for cities (0 active)
- TXR050000 – storm water multi-sector general permit (MSGP) for industrial facilities (7 active))
- TXR150000 – storm water from construction activities disturbing more than one acre (12 currently active)
- TXG110000 – concrete production facilities (1 active)
- TXG340000 – petroleum bulk stations and terminals (0 active)

Three of these permits (MS4, MSGP, and construction) pertain solely to storm water discharges. The other two – concrete production facilities and petroleum bulk stations and terminals – also authorize the discharge of process wastewater as discussed above under TPDES General Wastewater Permits.

A review of active general permit coverage in the Atascosa River watershed as of 31 July 2010 found 7 active industrial (MSGP) facilities, 12 construction sites, and 1 concrete production

facility. There are currently no Phase II MS4s or petroleum bulk stations and terminals facilities. Of the active MSGPs for industrial facilities, two are located in the impaired AU watersheds. There are four active storm water construction site permits in the impaired AU watersheds

### **Methodology**

The following text provides details of the data collection activities designed to obtain the necessary field-related information for a RUAA. A Comprehensive RUAA was conducted for the Atascosa River classified segment 2107. The major components of a Comprehensive RUAA are summarized as the following:

Site reconnaissance (completed December 2009)

Site selection (completed December 2009)

Field surveys (Survey 1: July 31 – August 1, 2009; Survey 2: May 5 – 8; Survey 3: June 15 – 16, and June 22 – 26, 2010)

The first two components, site reconnaissance and site selection, did not constitute formal data collection activities requiring an approved SSQAP. These two components, however, were critical to the success of data collection activities under the last bullet; the field survey, which did include various field activities (e.g., streamflow measurement) covered by an approved SS QAP.

### **Site Reconnaissance and Site Selection Strategy**

The site reconnaissance was conducted prior to performing field survey activities. The reconnaissance had the purpose of collecting background information and selecting appropriate sites for the field survey. To the degree possible, the site reconnaissance was coordinated with the process to invigorate the watershed stakeholder process and increase local landowner interest in water quality issues in the Atascosa River.

The site selection process took into account locations where the identified river was accessible to the public and had the highest potential for recreational use. The site selection process considered parks and bridge crossings along the river, as well as access through private lands adjacent to the river.

In order for the number of sites selected to adhere to the guidelines in the May, 2009 procedures for performing a RUAA (TCEQ, 2009) wherein it states “In general, choose three (3) sites per every five (5) miles of stream,” approximately 60 sites would have been needed. The rural nature of much of the watershed and the limited number road crossings made accessibility of the stream challenging, requiring landowner cooperation to gain access to an appropriate number of sites.

The strategy used in station selection for the RUAA surveys incorporated the following:

Existing TCEQ stations were used whenever these stations were located in areas that afforded at least some access to the Atascosa River, opportunity for various forms of recreational use, and when landowner permission could be obtained allowing access to the 300-m reach required for a site.

Attention within the summer of 2009 was focused on the Atascosa River Park area along the river within Pleasanton (see inset of Figure 2-4 in vicinity of historical TCEQ Stations 12982 and 17898).

Within 2010 the desired survey locations were increased due to the success efforts to expand participation by agricultural interests and landowners. In addition to the three Atascosa River Park stations from 2009, emphasis was given to any private access to areas where cooperating landowners indicate recreational uses occurred. Additionally, cooperating landowners were pursued upstream and downstream of public road bridge crossing of the river where potential public access was afforded. As a result of landowner cooperation, survey locations were garnered in each of the four assessment units that comprise the Atascosa River (Segment 2107), at bridge crossings that provided conditions favorable to accessing the river, and on private lands.

The following information was compiled using Geographic Information System (GIS) based tools prior to, during, and immediately following the site reconnaissance:

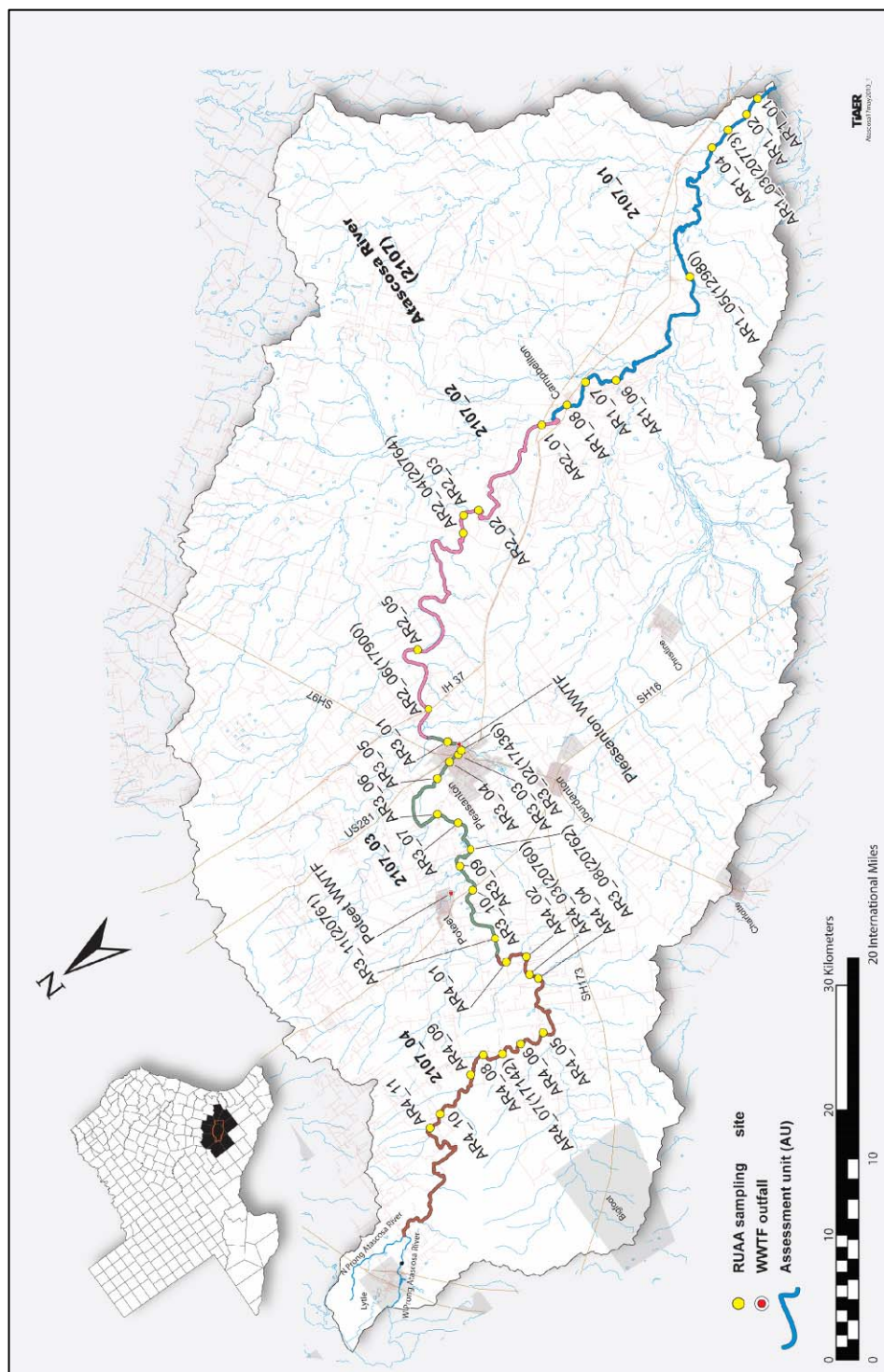
- locate areas in which each segment was accessible to the public and had the highest potential for recreational use;
- locate wastewater treatment plant outfall locations and potential point sources;
- characterize the watershed, including land use;
- determine hydrologic characteristics, such as stream type, streamflow, hydrologic alterations, etc.; and
- locate proposed sites for data collection (TCEQ, 2009).

On June 22, 2009, TIAER presented a list of proposed sites to an aggregate of state and local agencies, i.e., the TCEQ, TSSWCB, Nueces River Authority, Texas Parks and Wildlife, City of Pleasanton. The final RUAA sites in Figure 2-5 reflect the results of input received following the meeting. Site selection was also greatly aided by efforts of Live Oak County board members of the Texas Farm Bureau and the solicitation for cooperating landowners at the public meeting held on November 5, 2009 in the City of Pleasanton.

#### Field Survey Data Collection Activities

As specified in the procedures for a Comprehensive RUAA (TCEQ, 2009), three different field surveys at sites AR3\_02, AR3\_03, and AR3\_04 and two different surveys at the remaining 33 sites occurred on different weekends or the summer holiday during the warm season (air temperature greater than or equal to 70°) and when human recreational activities were most likely to occur (March - October). Further, field surveys were conducted when stream flow conditions were normal, avoiding unusual antecedent conditions of extreme drought and wet weather.





**Figure 2-5** Atascosa River watershed showing major townships and survey sites

The data collection activities for each of the three field surveys included the following activities at each selected Site:

- instantaneous streamflow
- average depth at thalweg and substantial pool depths
- observational/anecdotal data required by the recreational UAA
- air and water temperature measurements
- photographic record

#### Instantaneous Streamflow Measurements

An instantaneous water velocity measurement was made at each station using the most applicable current meter. The collection of velocity measurements under wadeable stream conditions was performed using either a SonTek Flow Tracker Acoustic Doppler Velocimeter or a Teledyne RDI StreamPro™ Acoustic Doppler Current Profiler (ADCP). Velocity measurements followed protocols outlined in the TCEQ Surface Water Quality Monitoring Procedures Manual, Volume 1 (2008a). TIAER personnel used the stream flow measurement form developed by TIAER, which follows guidance and contains the information in TCEQ manuals (TCEQ, 2008 and 2009).

Streamflow determination used existing USGS gage stations if the station was located within a quarter mile of a site (TCEQ, 2009). For sampling sites not located near a USGA station, TIAER field staff used the Stream Flow (Discharge) Measurement Form and followed the procedures outlined in the most recent TCEQ Surface Water Quality Monitoring Procedures, Volume 1, RG-415 (TCEQ, 2008). If USGS gage data were used for a water body, that information was clearly identified.

#### Average Depth at Thalweg and Substantial Pool Depths

Determination of thalweg and substantial pool depths is applicable to contact recreation use determination for unclassified intermittent and perennial freshwaters according to TCEQ (2008a). The thalweg is defined as the deepest depth of a transect perpendicular to the stream channel.

As instructed in the RUAA procedures manual (TCEQ, 2009), a 300-m reach at each station was evaluated to determine average depth at the thalweg. Eleven transects at 30-m intervals were established in the 300-m stream reach of each station. Each reach surveyed was oriented downstream to up, the 0-m transect was always set as the most downstream and the 300-m transect as the most upstream.

Determination of the thalweg in both wadeable and non-wadeable streams was determined as described in the Procedures for a Comprehensive RUAA and a Basic RUAA Survey (TCEQ, 2009), Section E – Item 1 Wadeable Streams and Item 2 Non-wadeable Streams.

Measuring each transect was accomplished, where wadeable, using a surveyor's rod to measure depth. At some locations, where water depth did not allow wading, or submerged obstructions created unsafe situations, a depth of  $> 1.0$  was recorded.

### Observational /Anecdotal Data

Anecdotal information was recorded on field data sheets during all surveys and studies using the field data sheets for Basic and Comprehensive UAA Surveys from the draft guidance (TCEQ, 2009).

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

- channel flow status,
- stream type (e.g., ephemeral, intermittent, etc.),
- streamflow,
- general weather conditions (cloud cover/rain), including 30-day conditions and antecedent rainfall record,
- substrate type,
- accessibility, and
- anecdotal information related to observed human contact activities.

### Air and Water Temperature Measurements

Water temperature was measured using a 600 XLM YSI multiprobe and a 650 MDS data logger. Water temperature, in degrees C, was logged into the 650 MDS and transferred to the TIAER data base on return from the field. Air temperature was measured by a handheld thermometer in degrees C. Both instruments were checked against a NTIS certified thermometer on an annual basis.

### Photographs

TIAER staff created photographic records of each site during the site survey. Photographs included an upstream view, left and right bank views, downstream view (as described in the Field Data Sheets), any evidence of observed uses or indications of human use, hydrologic modifications, etc. Photographs were intended to clearly depict the entire channel and were taken at the 0-m, 150-m and 300-m transects per the RUAA protocols. Any items of interest, e.g. obstructions, observed 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). Photographs were cataloged in a manner that indicates the site location, date, view orientation and what is being shown. No photographs were taken of minor children without the permission of an accompanying adult. Efforts were made not to show the faces of any child (person considered a minor) photographed.



## **CHAPTER 3**

### **ASSESSMENT UNIT 2107\_01**

#### **Watershed Characterization**

The Atascosa River AU 2107\_01 is described as running from the downstream end of the segment at the confluence with the Frio River to the confluence with Borrego Creek (Figure 2-2). AU 2107\_01 is located in Atascosa and Live Oak Counties. Reconnaissance of this section of the river yielded only three public road crossings, one of which lacked sufficient distance (300 m) of public right-of-way to perform a RUAA survey without the cooperation of the adjacent landowner. With the assistance of Texas AgriLife Research and Live Oak County chapter members of the Texas Farm Bureau, TIAER was able to gain landowner cooperation at the one road crossing and five additional private access only sites. The two remaining sites located at public crossings did not require permission for access.

The landscape of AU 2107\_01 is dominated by brush land characterized by dense stands of mesquite, huisache, cactus and other thorny brush, as well as scattered stands of live oak and post oak. Large, multi-acre ranches comprise most of the lands adjacent to the Atascosa along the entire length of this AU. The stream in AU 2107\_01 is natural in appearance with steep sides and densely vegetated, banks often dominated by poison ivy. The dominant substrate at each site visited was sand with some portions of reaches that were unstable, “quicksand-like.” Wading at locations with these substrates was challenging.

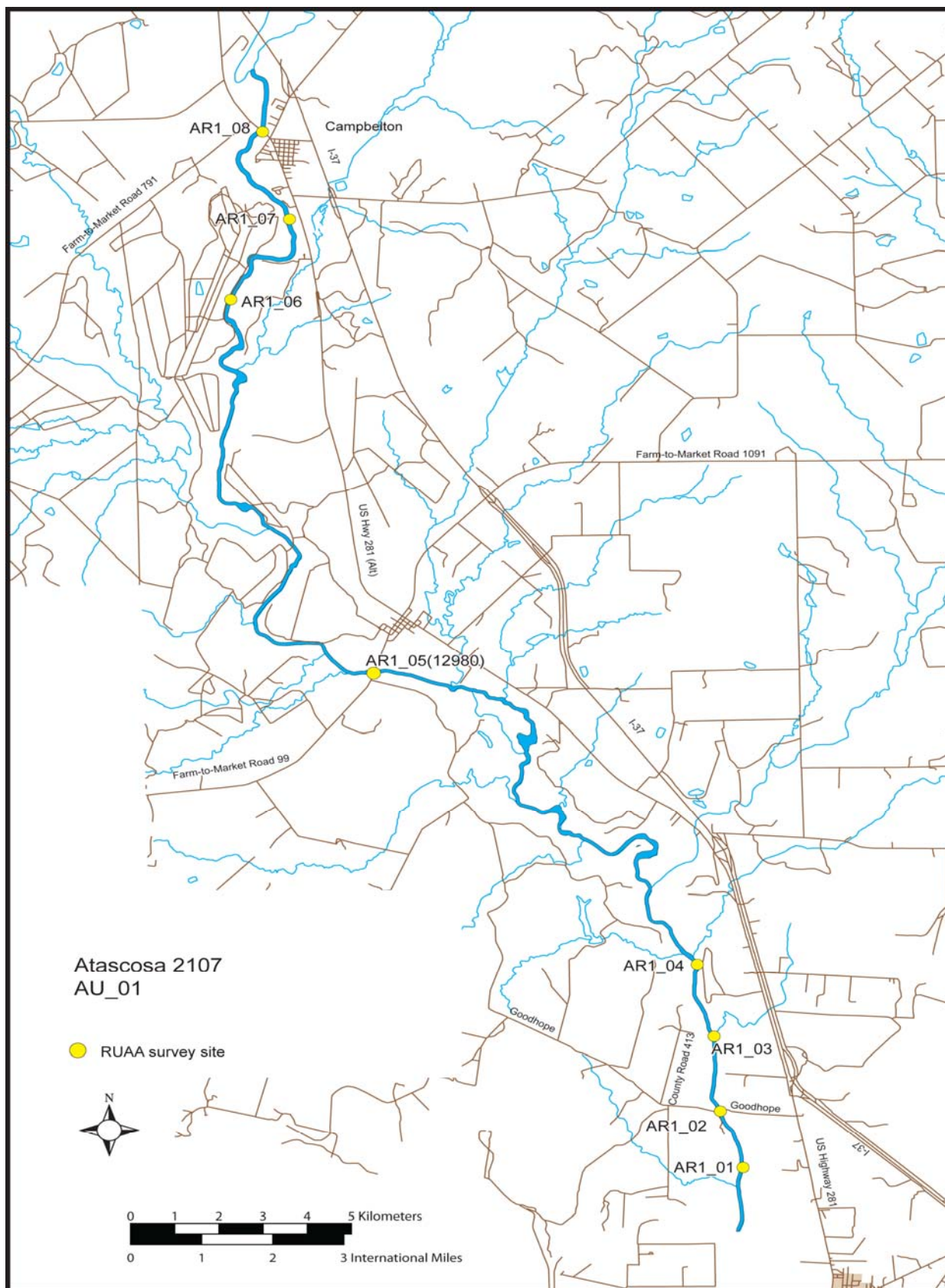
As discussed in more detail in Chapter 2, the Jourdanton WWTF, a permitted NPDES outfall, discharges eventually into AU 2107\_01 as do two small TxDOT rest area WWTFs. Further, the land use of the AU 2107\_01 watershed is provided in more detail in Chapter 2.

#### **Additional Information**

The review of historical information and climatic conditions are found in Chapter 2.

#### **Site Selection Strategy**

Eight sampling sites were located in AU 2107\_01 (Figure 3-1). Although ten sampling sites were sought, only six landowners (one of which owned land bordering FM 99) were willing to offer access through their properties. Two sites were chosen at public road crossings that did not require permission for access to the river. Two large ranches that border the Atascosa River in this AU were approached about the RUAA survey but opted not to participate. These six privately controlled sites were selected to provide physical characterization of the Atascosa River in areas between public access points. Entrances to sites on private lands are limited by fences and locked gates and are often several meters to kilometers from the stream. Even at the sites located near public crossings access is moderately difficult at best. RUAA surveys were performed twice in 2010 at these locations. A brief description of each site follows.



**Figure 3-1** Assessment Unit 2107\_01 showing RUA sites



**Survey Site Descriptions**

**TIAER Site AR1\_01** is located west of US Hwy 281 north of Three Rivers Texas in Live Oak County. This property was only accessible via a locked gate and entry required landowner permission. This site was selected because of local landowner cooperation and information from the site would aid in characterization of AU 2107\_01.

**TIAER Site AR1\_02** is located at the crossing of Goodhope Road and the Atascosa River upstream of Site AR1\_01. The stream is publically accessible from the bridge crossing and although the land bordering the river is privately owned, it was not necessary to enter this property to survey the reach. This site was selected because of public accessibility.

**TIAER Site AR1\_03** is located west of US Hwy 281 north of Three Rivers Texas in Live Oak County. This property was only accessible through private lands via a locked gate and entry required landowner permission. This site was selected because of landowner cooperation and the site provided opportunity for characterization of AU 2107\_01.

**TIAER Site AR1\_04** is located west of US Hwy 281 north of Three Rivers and upstream of Site AR1\_03. This property was only accessible through private lands via a locked gate and entry required landowner permission. This site was selected because of landowner cooperation and the site provided opportunity for characterization AU 2107\_01 between public access points.

**TIAER Site AR1\_05 (TCEQ Station 12980)** is located at the crossing of FM 99 and the Atascosa River west of Whitsett, Texas and upstream of Site AR1\_04. The stream is publically accessible at this location but required entering private land beyond the highway right-of-way to be able to perform the required surveys. This site was selected because of the public accessibility, landowner cooperation, and the site provided opportunity for characterization of AU 2107\_01.

**TIAER Site AR1\_06** is located west of US Hwy 281, south of Campbellton, and upstream of Site AR1\_05. This property was only accessible through private lands via a locked gate and entry required landowner permission. This site was selected because of landowner cooperation and the site provided opportunity for characterization of AU 2107\_01.

**TIAER Site AR1\_07** is located west of US Hwy 281 and south of Campbellton. This property was only accessible through private lands via a locked gate and entry required landowner permission. This site was selected because of landowner cooperation and the site provided opportunity for characterization of AU 2107\_01.

**TIAER Site AR1\_08** is located at US Hwy 281 South and the Atascosa River at the northern edge of Campbellton and upstream of Site AR1\_07. This site is accessible from a bridge in Campbellton and was selected because of the accessibility from the bridge. It was the uppermost site surveyed in AU 2107\_01.

## Results and Discussions

### General Description of Stream and Survey Sites AU2107\_01

The RUAA surveys were conducted in AU 2107\_01 on May 5 - 6, and June 23 - 24, 2010. The surveys and associated interviews were performed on weekdays, weekends or holidays at opportune times to observe recreational activities in and around AU 2107\_01 of the Atascosa River. At each site when possible, eleven transects were measured along a 300-m reach at 30-m increments. All measurements are reported from downstream (0-m) to upstream (300-m). Exceptions to the eleven measurements are reported for the specific sites below.

Surveys conducted in AU 2107\_01 were conducted during varying air and water temperatures as show in Table 3-1. Water temperatures were warm enough for recreational activities to occur.

Table 3-2 displays the appearance of the stream channel and corridor at each site.

Table 3-3 shows the average thalweg depth for each reach and site during each of the RUAA surveys. If it was not possible to wade a transect completely, the thalweg depth was recorded as greater than (>) the deepest measured value. If the actual thalweg was not found due excessive depth, the deepest measurement recorded was used to calculate the average thalweg depth for the site. Access (public or private) to each site and level of effort to access the stream from the bank at each site is also provided in Table 3-3.

Table 3-4 shows the maximum, minimum and average widths at each site for each survey. The observed flow and total discharge is also listed in this table for each site per survey. Stream aesthetics and wildlife observations are reported in Table 3-5 for each site and survey. In general, the majority of observed tracks and fecal droppings reported in Table 3-5 were wildlife in origin. Avian feces were the dominant dropping observed at all sites. Tracks included birds, raccoon, deer, and rarely feral hogs. Observed trash was predominantly plastics and was most common at bridge crossings. No evidence of major dumping was observed. Trash on private lands, which was rarely observed, appeared to have washed in during high flow periods.

### Physical Description of Site AR1\_01

The Atascosa River at Site AR1\_01 was visited on May 5 and June 24 2010. This site was accessible only through private lands that were fenced and locked at US Hwy 281 north of Three Rivers, Texas in Live Oak County. From the property, the river can only be accessed by crossing a barbed wire fence that runs the entire length of the property and is not gated. Once on the river side of the fence, access was achieved through dense vegetation and a very steep, high bank. At the river, there is a low, level area of the bank that forms the narrowest portion of the stream (5.6-m average width for May to June). It was at this point that flow was measured. Other than the access path created by TIAER field staff, no other access point was observed along the 300-m reach. Table 3-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 3-1](#) depicts access and the general appearance of the stream at this site.



**Table 3-1** Temperatures measured at each site along AU 2701\_1

Assessment Unit	Site Number	May 5 - 6, 2010		June 23 - 24, 2010	
		Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)
AU 2107_01	AR1_01	25	21.3	29	27.8
	AR1_02	22	22.1	35	27.9
	AR1_03	26	22.9	36	28.0
	AR1_04	22	23.4	34	28.1
	AR1_05	27	23.8	34	28.8
	AR1_06	20 <sup>1</sup>	20.0	26	26.6
	AR1_07	21 <sup>1</sup>	27.6	32	27.7
	AR1_08	22	22.0	33	27.7

<sup>1</sup>Site AR1\_06 was visited at 0800 (DST) at the request of the landowner, the air temperature was taken near the stream under a dense canopy. Site AR1\_07 was visited at 0958 and again the air temperature was taken near the stream under a dense canopy. The high for the day near the area was reported as 92F (33 C) by Weather Underground:  
<http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KTXTHREE2&day=5&year=2010&month=5&graphspan=month>

**Table 3-2** Stream Channel and corridor assessment per site sampled in the Atascosa River

Assessment Unit	Site Number	Streambank	Stream Channel Appearance	Dominant Substrate	Corridor Appearance	Riparian Size	Park	Landscape Surroundings
AU 2107_01	AR1_01	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR1_02	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR1_03	Right	Natural	Sand Gravel	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR1_04	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR1_05	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR1_06	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR1_07	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR1_08	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native

**Table 3-3** Thalweg depth, stream flow type, and site accessibility for each assessment unit and site for the two surveys conducted. Stream flow type represents TCEQ descriptions (TCEQ, 2010b).

Assessment Unit (AU)	Length (miles)	# of Sites	# of Recreational Areas in AU	Avg. Thalweg Depth (m) for Assessment Unit		Stream Flow Type	General Access	Bank Access
				5 – 8 May 2010	22 – 26 June 2010			
AU 2107_01	25	8	0	0.91	0.80	perennial	—	—
Site	Segment length (m)	# of Transects	# of Recreational Areas at Site	Avg. Thalweg Depth (m) by Site		Stream Flow Type	General Access	Bank Access
				5 – 8 May 2010	22 – 26 June 2010			
AR1_01	300	11	0	0.93	0.72	perennial	Private	D
AR1_02	300	11	0	>1.26	1.04		Public	D
AR1_03	300	11	0	0.74	0.75		Private	MD
AR1_04	300	11	0	1.06	0.94		Private	ME
AR1_05	300	11	0	1.09	0.73		Public	D
AR1_06	300	11	0	0.56	0.52		Private	MD
AR1_07	300	11	0	0.68	0.67		Private	MD
AR1_08	300	11	0	0.99	1.04		Public	MD

E = Easy, ME = Moderately Easy, MD = Moderately Difficult, D = Difficult

**Table 3-4** Description of surveyed streams in the Atascosa River Watershed, AU 2107\_01

Assessment Unit	Date	Site Number	Maximum width (m)	Minimum width (m)	Average Width (m)	Total Discharge (cfs)	Observed Flow
2107 AU_01	May 5 - 6, 2010	AR1_01	14.5	5.8	10.0	44.8	high flow
		AR1_02	10.8	5.8	10.0	42.7	high flow
		AR1_03	11.5	5.2	8.5	47.8	high flow
		AR1_04	12.5	4.3	11.0	47.8	high flow
		AR1_05	18.4	5.0	8.2	49.1	high flow
		AR1_06	8.0	4.8	7.5	18.8	normal flow
		AR1_07	10.4	3.7	6.5	15.3	normal flow
		AR1_08	11.4	6.5	8.5	14.1	normal flow
	June 23 – 24, 2010	AR1_01	13.9	5.4	8.8	23.5	normal flow
		AR1_02	11.6	6.1	8.1	22.7	normal flow
		AR1_03	14.9	6.1	10.2	27.1	normal flow
		AR1_04	11.5	4.3	9.5	24.2	normal flow
		AR1_05	12.1	3.4	7.0	22.5	normal flow
		AR1_06	8.8	4.7	6.5	17.9	normal flow
		AR1_07	9.4	3.7	5.9	15.2	normal flow
		AR1_08	12.0	7.6	9.6	14.0	normal flow

**Table 3-5.** Stream aesthetics and wildlife observations in the Atascosa River Watershed, AU 2107\_01.  
(From Field Data Sheet – Sect. F)

Station	Survey Date	Water Aesthetics						Wildlife Observations				Stream Garbage		
		Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependant Birds	Mammals	Evidence	Large in Channel	Small in Channel	Bank
AR1_01	5 May 2010	A	A	N	brown	fine seds.	clear	N	N	N	tracks	N	N	N
	24 June 2010	A	A	N	brown	fine seds.	clear	N	N	SP deer	tracks/fecal	N	N	N
AR1_02	5 May 2010	A	A	N	brown	fine seds.	clear	N	N	N	N	N	R	R
	24 June 2010	A	A	N	brown	N	clear	N	N	N	tracks/fecal	N	N	N
AR1_03	5 May 2010	A	A	N	brown	fine seds.	clear	N	N	N	tracks/fecal	N	N	N
	24 June 2010	A	A	N	brown	fine seds.	clear	N	N	N	tracks/fecal	N	N	N
AR1_04	5 May 2010	A	A	N	brown	fine seds.	clear	N	N	N	tracks	N	N	N
	24 June 2010	A	A	N	brown	N	clear	N	N	SP deer	tracks	N	N	N
AR1_05	5 May 2010	A	A	N	brown	fine seds.	foam	SP snake	N	N	tracks	N	R	C
	24 June 2010	A	A	N	brown	N	clear	N	N	N	tracks/fecal	N	R	N
AR1_06	5 May 2010	A	A	N	brown	fine seds.	clear	N	N	N	N	N	N	N
	23 June 2010	R	A	N	brown	fine seds.	clear	N	N	N	tracks/fecal	N	N	N
AR1_07	6 May 2010	A	A	N	brown	fine seds.	clear	N	N	N	tracks	N	N	N
	24 June 2010	A	A	N	brown	N	clear	N	N	N	tracks	N	N	N
AR1_08	6 May 2010	A	A	N	brown	fine seds.	scum	N	N	N	tracks	N	C	C
	24 June 2010	R	A	N	brown	N	clear	SP snake	N	N	tracks/fecal	N	R	R

A = absent, R = rare, C = common, Ab = abundant, N = none, SP = slight presence, MP = moderate presence, LP = large presence

Site AR1\_01 was wadeable for the entire 300-m reach length. During the May 5 survey, depths exceeded a meter at three transects. Wading was also made difficult by the presence of fine, shifting sand into which one would sink if one stood too long at one spot. [Photogroup 3-2](#) depicts wading in the stream and streambank access.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 3-3, 3-4, and 3-5, respectively. [Photogroup 3-3](#) illustrates the water color, general appearance and clarity of the water surface at Site AR1\_01.

### Physical Description of Site AR1\_02

The Atascosa River at Site AR1\_02 was visited on May 5 and June 24, 2010. This site was accessible from a public bridge crossing on Goodhope Road north of Three Rivers, Texas in Live Oak County. This access point was difficult to negotiate due to dense vegetation and a steep, eroded high bank. At the river, access to the water was moderately difficult due to depth of water, steepness of the bank, and unsure footing. The location under the bridge (300-m transect) was the narrowest point (5.8 m) encountered and was the point at which flow data were collected. No other access point was observed along the remainder of the 300-m reach. Table 3-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 3-4](#) depicts the access and typical setting of Site AR1\_02.

During the May 5 survey, Site AR1\_02 was wadeable only at limited transects, as depths exceeded 1.5 m at six transects and 1.2 m at two. On the June 24 survey, water levels had fallen and sediments had shifted making the stream more wadeable, with only two transects exceeding 1.5 m in depth. These two transects were measured from the bank or over-hanging trees. Unlike Site AR1\_01, the fine, shifting sand was not encountered and wading was facilitated during the June 24 survey by a submerged bedrock shelf that skirted the right bank. [Photogroup 3-5](#) depicts wading and bank access at AR1\_02.

Because of depth, only five thalweg depth measurements were collected on May 5, the remaining six were recorded as >1.5 m. The width of the river at this site was relatively uniform, measuring approximately 10 m. Widths at all non-wadeable points, collected on May 5 were recorded as 10.0-m (the average estimated width of the stream on that date, based on wadeable transects). On June 24, 2010, depths were measured at all eleven transects. Other than non-wadeable depths, no obstructions were encountered that hindered gathering data or impeded passage through the stream. Table 3-3 displays the average thalweg depth at the site for both surveys. Table 3-6 lists the non wadeable cross sections and the width of each.

**Table 3-6** Non-wadeable transect width measurements at Site AR1\_02

Date	Site	Transect Location (m)	Width (m)
May 5, 2010	AR1_02	60	10
		90	10
		120	10
		180	10
		240	10

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 3-3, 3-4, and 3-5, respectively. [Photogroup 3-6](#) depicts water color and clarity of surface.

### **Physical Description of Site AR1\_03**

The Atascosa River at Site AR1\_03 was monitored on May 5 and June 24 2010. This station was accessible only through private lands that were fenced, gated and locked north of Three Rivers, Texas in Live Oak County. The river is fenced from the rangeland on this property and this fence must be crossed before access to the river can be attained. Once beyond the fence, one encounters dense vegetation and a steep, high banks, which, when wet, become treacherously slippery. At the river, access to the water is easy due to a shallow rock riffle area and low bank. The entry point became the 150-m transect and measurements were conducted 150-m upstream and 150-m downstream of this location. There was no other sign of any access point to the stream along the remainder of the 300-m reach. Table 3-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 3-7](#) depicts the access and general appearance of stream.

The surveyed reach at Site AR1\_03 was wadeable for the entire 300-m reach. Downstream of the entry point (150-m transect) walking was fairly easy with a firm sand bottom for most of the reach, though pockets of loose sand were encountered. Upstream of the 150-m transect, there was a small waterfall with a spill pool that was fairly deep. To access upstream of the 150-m transect, the stream had to be forded and the rocks making up the falls traversed. Once upstream, a bedrock bottom gave way to a packed sand substrate. Other than the small falls, no obstructions were encountered. [Photogroup 3-8](#) depict the area of the falls and riffle as well as the steep banks and dense vegetation.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 3-3, 3-4, and 3-5, respectively. [Photogroup 3-9](#) illustrates the water color and surface clarity of the water at AR1\_03.

### **Physical Description of Site AR1\_04**

The Atascosa River at Site AR1\_04 was surveyed on May 5 and June 24 2010. This site was accessible only through private lands that were fenced, gated and locked north of Three Rivers, Texas in Live Oak County. The river is high-game fenced along the boundary of the river, but a locked gate provided access to the river at a sandy “beach” area. Because the fence was new and clearing had recently occurred, access to the water from this one point was moderately easy due to a manageable slope and lack of vegetation, although on either side of this area, both upstream and downstream, the bank exhibited steep slopes, dense vegetation, sandy soil and poor footing. At the river, access to the water was easy due to a low bank at a shallow sand-bottom run. As at Site AR1\_03, the entry point became the 150-m transect and measurements were conducted 150 m upstream and 150 m downstream of this location. There was no other sign of any access point to the river along the remainder of the 300-m reach. Table 3-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 3-10](#) depicts the access and general appearance of the stream at Site AR1\_04.

Site AR1\_04 was waded, but not easily wadeable, for the entire 300-m reach during the May 5 survey. During the June 24 survey water levels had receded sufficiently to comfortably allow measurements and wading. Where water levels were not too deep, walking was fairly easy with a firm sand bottom for most of the reach, though pockets of loose sand were encountered. On May 5 no obstructions were encountered that impeded passage in the stream; however, on June 24 a large log jam was encountered immediately downstream of the 150-m transect, presumably a result of heavy rains that occurred upstream in late May and early June. [Photogroup 3-11](#) depicts the June obstruction, steep banks and dense vegetation at Site AR1\_04.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 3-3, 3-4, and 3-5, respectively. [Photogroup 3-12](#) depicts water color and clarity of the surface.

### **Physical Description of Site AR1\_05**

The Atascosa River at Site AR1\_05 was monitored on May 5 and June 24, 2010. This site was accessible from the FM 99 bridge crossing west of Whitsett, Texas in Live Oak County. Although the river is accessible, landowner permission was required to access the 300-m reach required for the RUAA surveys. It is possible, under dry conditions, to drive under the bridge and park on the northeast side of the river. There is a remnant of a barbed wire fence across this area but it is easily crossed and in some locations is down completely. The main hindrance to stream access is waist high and very dense vegetation, including abundant poison ivy. The bank is steep and the sandy soil makes footing uncertain to hazardous. Access to the water is limited and can be tricky due to the depth of the water at the bank. A log jam and dense vegetation immediately downstream of the bridge made it necessary to perform the survey upstream of the bridge with the 0-m transect beginning at the bridge. There was no sign of stream usage at this location either from paths or evidence of fishing tackle. To field staff it appeared that the accessible “drive” area under the bridge was used more for parking and alcohol consumption than accessing the river. Table 3-2 describes the stream channel and riparian zone of this site. [Photogroup 3-13](#) depicts road crossing, lane under bridge, and general appearance of stream.

The surveyed reach at Site AR1\_05 was waded on both the May 5 and June 24 surveys. The substrate was composed mostly of firm sand that allowed easy wading when not too deep. On May 5 a large obstruction was encountered just below the bridge that impeded surveying downstream. On June 24, the obstruction was somewhat cleared but the channel was still overgrown and narrow. [Photogroup 3-14](#) depicts obstructions and back accesses at Site AR1\_05.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 3-3, 3-4, and 3-5, respectively. [Photogroup 3-15](#) depicts water color and clarity of the surface of the water at AR1\_05.

### **Physical Description of Site AR1\_06**

The Atascosa River at Site AR1\_06 was monitored on May 5 and June 23, 2010. This site is located between Whitsett and Campbellton, Texas in Atascosa County, was accessible only through private lands that were fenced, gated and locked. Access from US 281 is gated and locked and one must drive almost two miles to get to the bank above the river. The property is

high-game fenced from the river and is primarily used for hunting leases. Once at the access point, the bank exhibited steep slopes and dense vegetation. At the river, access to the water was moderately difficult due to steep banks and vegetation. The entry point became the 300-m transect and all measurements were conducted downstream of this location. There were no signs of any utilization of the stream, i.e. footpaths or remnants of fishing. Table 3-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 3-16](#) depicts a pasture lane to the stream and the general appearance of the stream.

Site AR1\_06 was wadeable for its entire 300-m length during both surveys. Water levels were manageable and the sand bottom was sufficiently firm as to not impede walking. On May 5 no obstructions were encountered that impeded the survey effort; on June 24 a small log jam was encountered at the 75-m mark. [Photogroup 3-17](#) depicts obstructions, wading and bank access at Site AR1\_06.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 3-3, 3-4, and 3-5, respectively. [Photogroup 3-18](#) depicts water color and clarity of the water surface at Site AR1\_06.

### **Physical Description of Site AR1\_07**

The Atascosa River at Site AR1\_07 was surveyed on May 6 and June 24. AR1\_07 is accessible only through private lands that were fenced, gated and locked. This property was located just south of Campbellton, Texas in Atascosa County. Access from US 281 is gated and locked and landowner permission was obtained to enter this property. The banks were moderately steep and dense vegetation hampered access to the bank, though at the bank the approach was less vegetated and entry was not difficult. The point chosen to enter the stream became the 300-m transect and all measurements were conducted downstream of this location. There were no signs of any utilization of the stream, i.e. footpaths or remnants of fishing, in this reach. Table 3-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 3-19](#) depicts bank access and general appearance of stream at AR1\_07.

The surveyed reach at Site AR1\_07 was wadeable for the entire 300-m reach during both surveys. Water levels were manageable and the sand bottom was sufficiently firm as to not impede walking. During both surveys, numerous obstructions were encountered that, in some cases, challenged passage. [Photogroup 3-20](#) depicts obstructions encountered at Site AR1\_07.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 3-3, 3-4, and 3-5, respectively. [Photogroup 3-21](#) depicts the water color and clarity of the surface at AR1\_07.

### **Physical Description of Site AR1\_08**

The Atascosa River at Site AR1\_08 was visited on May 6 and June 24, 2010. Access is possible from the US Hwy. 281 bridge crossing in Campbellton, Texas in Atascosa County. Although barbed wire was strung between the bridge and an adjacent fence, the river could be reached by stepping over the southeast corner of the bridge rail. Once across the rail, access to the river



required traversing a steep concrete apron and a 1 – 2 foot step off of a slick bank. The left bank at this point is greater than ten meters vertically from the entry point at the road to the stream. A very large log jam located immediately downstream of the bridge necessitated the establishment of the 300-m reach entirely upstream from the bridge. There were no signs of footpaths or any other human activities for the entire length of the 300-m reach. Table 3-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 3-22](#) depicts a view from the U.S. Hwy. 281 bridge and the general appearance of the river at Site AR1\_08.

The surveyed reach at Site AR1\_08 was waded, but unwadeable depths were encountered within the 300-m reach during both the May 6 and June 24 surveys. Between the 120-m and 240-m transects, thalweg depths equaled or exceeded 1.5 m at several points, with June depths being greater than May. At some of the deeper portions, depth measurements were collected using a narrow and slippery ledge that was about 1.0-m deep and about 0.3-m wide. When this ledge played out it was necessary to scale out of the river which was difficult due to the steep, slippery banks. Outside of the river, measurements were made from trees that hung over the stream. At the 240-m transect, staff re-entered the water and completed the measurements by wading. Where water levels were not too deep, walking was fairly easy with a firm sand bottom. During both surveys, obstructions were encountered across the width of the channel, especially the large log jam immediately downstream of the 0-m transect. In addition to the log jam, dense vegetation blocked the channel at some locations. [Photogroup 3-23](#) depicts obstructions encountered at Site AR1\_08.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 3-3, 3-4, and 3-5, respectively. [Photogroup 3-24](#) depicts water color and surface clarity at Site AR1\_08.

### **Activities: Observed and Interviewed**

During the RUAA surveys conducted on May 5-6 and June 23-24, 2010, field personnel visited the publically accessible sites during times and days when recreational activities were apt to be observed. Interviews and observations at privately owned sites were conducted with landowners when it was convenient for them.

All but three of the selected sites were on private properties with controlled, limited access. Even the publically accessible site at FM 99 near Whitsett required landowner permission to enter beyond the road right-of-way. No water-related activities, either primary or secondary, were observed on either survey. With the exception of the possible, but unconfirmed, jug lines observed at AR1\_02 and one bobbing cork seen in a tree at Site AR1\_03, no other evidence of secondary contact recreation was recorded.

The only interviews performed in AU 2701\_01 were with landowners from whom permission was obtained to gain river access. Not a single landowner interviewed indicated that, to their knowledge, any form of primary contact recreation currently occurred on their property. Two landowners related that years ago they got into the water as youths but would no longer consider doing this. There was no evidence provided in the interviews that secondary contact recreation, such as wading or canoeing, occurred within AU 2107\_01 of the Atascosa River. Property

owners at Sites AR1\_03, AR1\_04, AR1\_05 were the only interviewees that indicated they sometimes fished in the river, albeit rarely.

The property owner at Site AR1\_01 stated that he never used the river because of difficulty of access and there was usually insufficient water.

The Site AR1\_03 landowner indicated when he was younger, some 50 years ago, he and some other friends would camp down by the falls and fish but he is not aware of any swimming on his property for decades. He stated that occasionally, once to twice a year, he might take his grandson fishing but not to swim.

The landowner at Site AR1\_04 related that over the 10 years he has owned the property he might have fished for catfish once or twice a year when they seem to be on an annual spawning run, but there was only about one month per year when this occurred. He stated that the river did not appear to be much “recreated.”

The landowner at Site AR1\_05 shared that he occasionally fished and knew of others that fished. He and friends would swim in it years back (in the mid 1970s) when the water was up and flowing and looked clear. He also added that up until about 15 years ago a local church conducted baptisms in the river near his property. In more recent times the only folks he ever saw in or near the stream were individuals he considered “vagrants” and that was rare.

A Nueces River Authority employee, who has monitored the area around AR1\_05 for ten years, did not report using or seeing any recreational activities at this crossing at any time during a sampling visit.

The landowner at Site AR1\_06 did not use the stream for recreation. He stated that there was usually too little flow and it was difficult to get to. He would rather go to pretty streams like the Frio and Guadalupe Rivers.

The landowner at Site AR1\_07 did not use the stream at all. The only activity he did or knew about was hunting at the top of the bank, but river access was too difficult due to undergrowth and steep banks.

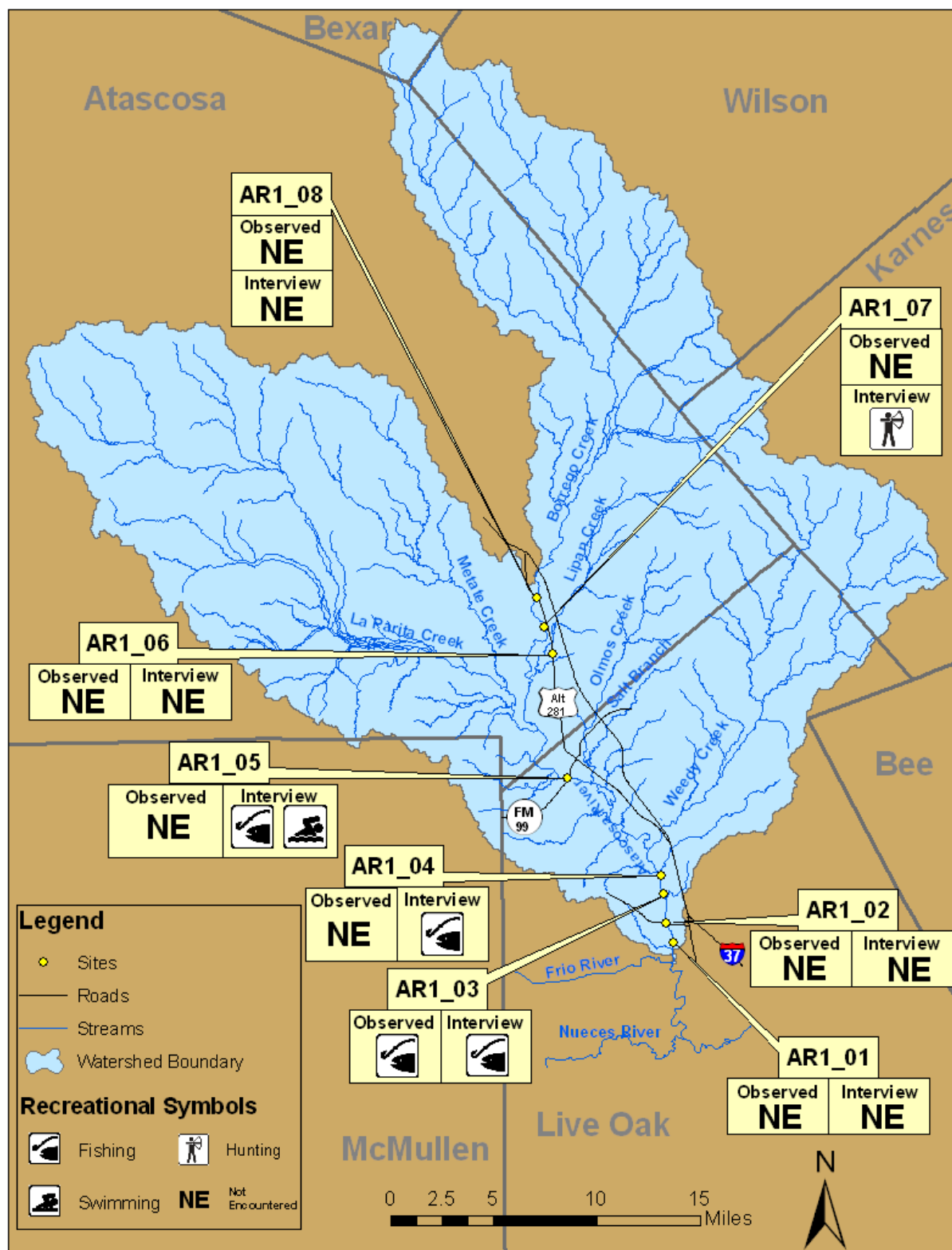
No one was interviewed at Sites AR1\_02 or AR1\_08, and while these sites were accessible from the road, no one was encountered with whom an interview could be conducted.

Copies of all of the interviews conducted along Atascosa River AU 2107\_01 are located in Appendix A-1.

### **Summary**

RUAA surveys were conducted at eight sites in Assessment Unit 2107\_01 on May 5 - 6, and June 23 - 24, 2010. Copies of all field data sheets, streamflow data sheets, and transect pictures from each survey are located in the Appendices A-2, A-3, and A-4, respectively.

The Atascosa River in AU2107\_01 flows primarily through privately owned properties of substantial acreages. Public access is limited to the right-of-way at three road crossings. Fences, locked gates, steep banks, and dense vegetation all combine to limit access to the river in this segment. No aquatic recreational activities were observed by TIAER field staff during the surveys, with the exception of a possible, but unconfirmed, set of jug fishing lines and a bobbing cork in a tree. The individuals interviewed in AU 2107\_01 were all property owners on whose property we had permission to conduct the surveys. Fishing was the only recreational activity reported as occurring recently, but in all cases it was described as rare (once or twice a year). Two individuals related swimming (or at least getting in the water) in the distant past, but perhaps as recent as the mid-1970s in one instance. One individual used to camp on his family's land near the river with friends in his youth. These activities are summarized in Figure 3-2.



**Figure 3-2** Summary of activities observed and reported in interviews at sites along the Atascosa River in (AU 2107\_01)

## **Atascosa River AU2701\_01 Photogroups**







**Photogroup 3-1** Atascosa River Site AR1\_01 depicting access and the general appearance of the stream. [\[Return to Text\]](#)





**Photogroup 3-2**

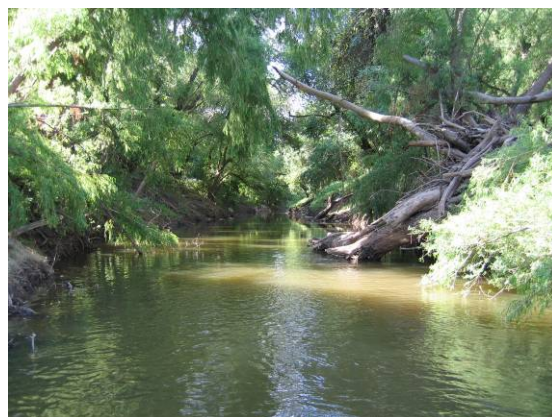
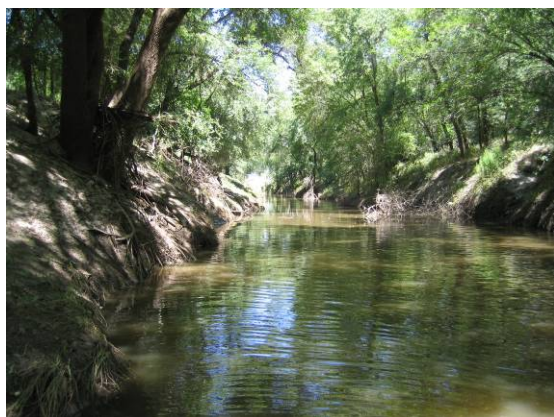
Atascosa River Site AR1\_01 depicting field staff wading in the stream and streambank access. [\[Return to Text\]](#)



**Photogroup 3-3**

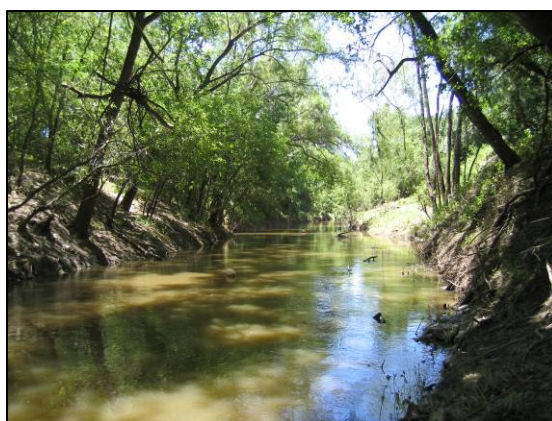
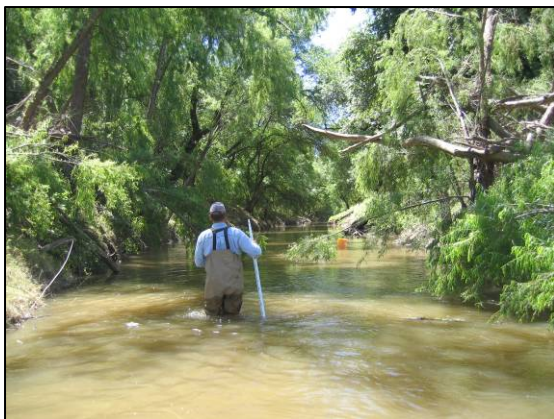
Atascosa River Site AR1\_01 illustrating the water color, general appearance and clarity of the water surface at AR1\_01. [\[Return to Text\]](#)



**Photogroup 3-4**

Atascosa River Site AR1\_02 depicting stream access and typical setting. [Return to Text](#)





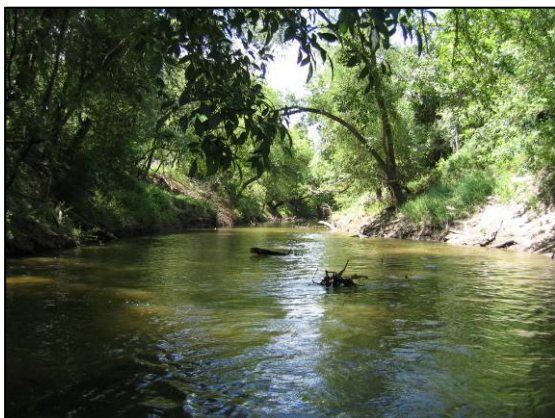
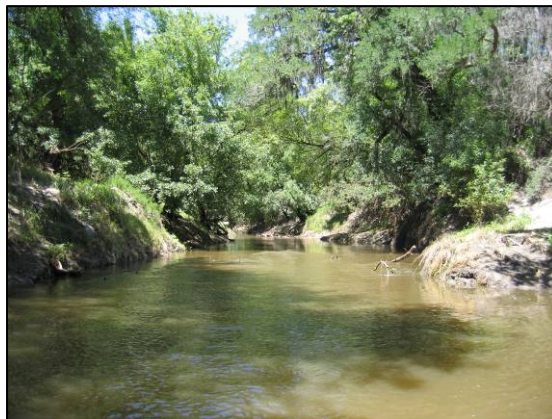
**Photogroup 3-5** Atascosa River Site AR1\_02 depicting field staff wading and bank access. [\[Return to Text\]](#)



**Photogroup 3-6**

Atascosa River Site AR1\_02 depicting water color and clarity of surface. (Field staff in lower left photograph.) [[Return to Text](#)]



**Photogroup 3-7**

Atascosa River Site AR1\_03 depicting stream access and general appearance of stream. [[Return to Text](#)]





**Photogroup 3-8** Atascosa River Site AR1\_03 depicting the area of the falls and riffle as well as the steep banks and dense vegetation. (All persons in photographs are field staff.) [\[Return to Text\]](#)



**Photogroup 3-9**

Atascosa River Site AR1\_03 illustrating the water color and surface clarity of the water. (All persons in photographs are field staff.) [\[Return to Text\]](#)





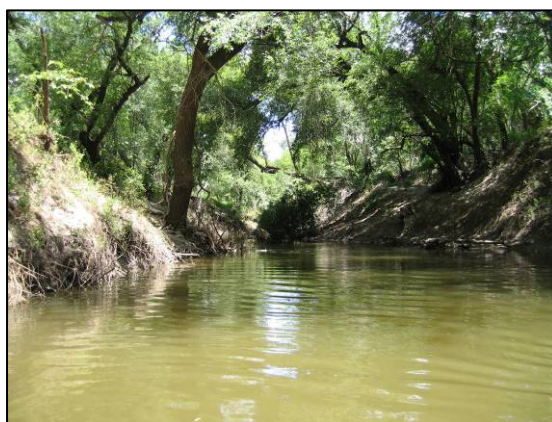
**Photogroup 3-10** Atascosa River Site AR1\_04 depicting stream access and general appearance of the stream at AR1\_04. (Field staff shown in upper left photograph.) [\[Return to Text\]](#)





**Photogroup 3-11** Atascosa River Site AR1\_04 depicting the June obstruction, steep banks and dense vegetation. (All persons in photographs are field staff.) [\[Return to Text\]](#)





**Photogroup 3-12** Atascosa River Site AR1\_04 depicting water color and clarity of the surface. [\[Return to Text\]](#)





**Photogroup 3-13** Atascosa River Site AR1\_05 depicting road crossing, lane under bridge, and general appearance of stream. (All persons in photographs are field staff.) [\[Return to Text\]](#)





**Photogroup 3-14** Atascosa River Site AR1\_05 depicting obstructions and bank accesses. (All persons in photographs are field staff.) [Return to Text](#)





**Photogroup 3-15** Atascosa River Site AR1\_05 depicting water color and clarity of the surface of the water. [\[Return to Text\]](#)





**Photogroup 3-16** Atascosa River Site AR1\_06 depicting a pasture lane to the stream and the general appearance of the stream. (Person in upper left photograph is field staff.) [\[Return to Text\]](#)





**Photogroup 3-17** Atascosa River Site AR1\_06 depicting obstructions, wading and bank access. (All persons in photographs are field staff.) [\[Return to Text\]](#)





**Photogroup 3-18** Atascosa River Site AR1\_06 depicting water color and clarity of the water surface. (Person in upper right photograph is field staff.)  
[Return to Text](#)



**Photogroup 3-19**

Atascosa River Site AR1\_07 depicting bank access and general appearance of stream. (Persons depicted in lower left photograph are field staff.) [\[Return to Text\]](#)





**Photogroup 3-20** Atascosa River Site AR1\_07 depicting obstructions. (All persons in photographs are field staff.) [\[Return to Text\]](#)



**Photogroup 3-21**

Atascosa River Site AR1\_07 depicting the water color and clarity of the surface. (Person in lower right photograph is field staff.)

[\[Return to Text\]](#)





**Photogroup 3-22** Atascosa River Site AR1\_08 depicting a view from the U.S. Hwy. 281 bridge and the general appearance of the river. (All persons in photographs are field staff.) [\[Return to Text\]](#)





**Photogroup 3-23** Atascosa River Site AR1\_08 depicting obstructions encountered.  
[\[Return to Text\]](#)





**Photogroup 3-24** Atascosa River Site AR1\_08 depicting water color and surface clarity. (All persons in photographs are field staff.) [\[Return to Text\]](#)

## CHAPTER 4

### ASSESSMENT UNIT 2107\_02

#### **Watershed Characterization**

AU 2107\_02 of the Atascosa River is defined as running from the confluence with Borrego Creek to the confluence with Galvan Creek (Figure 4-1). AU 2107\_02 is located entirely in Atascosa County. Reconnaissance of this section of the river yielded six public road crossings, none of which offered sufficient distance (300 m) of public right-of-way to perform a RUAA survey without the cooperation of a adjacent landowner. With the assistance of Texas AgriLife Research and the Atascosa County chapter of the Texas Farm Bureau as well as a property owner list gathered from the Atascosa County Appraisal District, TIAER was able to gain landowner cooperation at three road crossing sites and three additional private access only sites.

The area around the lower end of the AU is similar in land cover to the watershed of AU2107\_01; however, toward FM 541 the landscape becomes more ranch dominated consisting of native rangeland and improved pastures. As in AU 2107\_01, most of the property along the river is controlled by large ranch properties; many owned by absentee landlords. Similar to AU 2107\_01, access to the river through some of these properties was denied. The river within AU 2107\_02 is natural in appearance with generally lower and less steep banks than in AU 2107\_01. Sand is the dominant substrate though the substrate is not as unstable as encountered in AU 2107\_01. Once within the private lands, access to the river is moderately easy at most sites. There are no permitted discharge facilities in this AU. The communities of McCoy and Coughran are located within AU 2107\_2, but neither have TPDES/NPDES outfalls.

Additional information on land use and permitted facilities with AU 2107\_02 has been previously presented in Chapter 2.

#### **Additional Information**

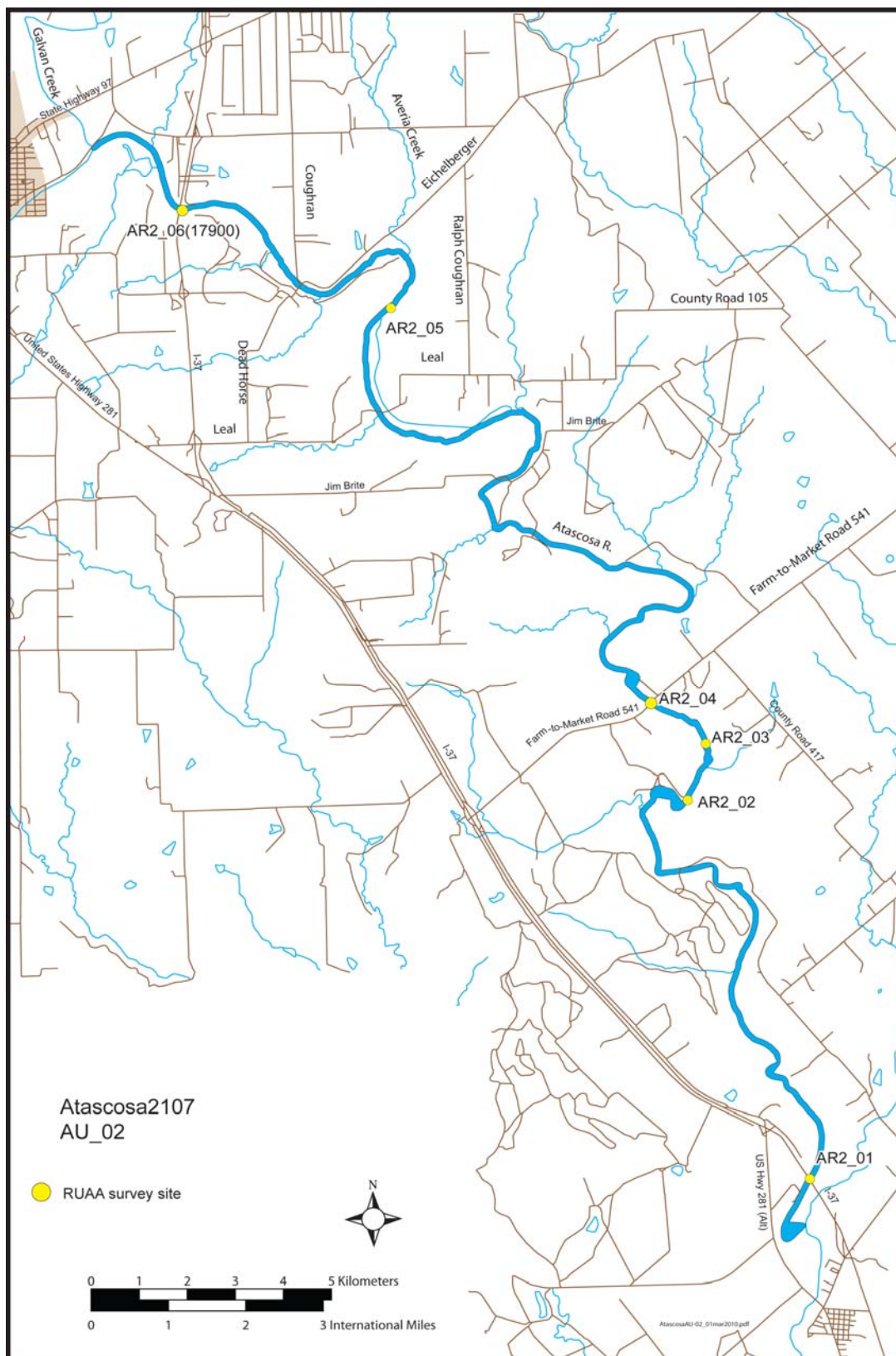
The review of historical information and climatic conditions are found in Chapter 2.

#### **Survey Site Descriptions**

Ten sites were sought but only five landowners granted permission for access, and a sixth site was accessed from the IH-37 right-of-way east of Pleasanton, which did not require landowner permission. No adjacent landowners could be located at the IH 37 site, but since no fences were encountered, either upstream or downstream that impeded wading, it was opted to use this location (Figure 4-1). RUAA surveys were performed twice in 2010 at each of the six sites selected in AU 2107\_02.

**TIAER Site AR2\_01** is located at the Atascosa River and IH-37 northeast of Campbellton, Texas. This site was only accessible through private lands and required landowner permission. Although this site is difficult to access and not likely to be publically used, it was selected because of potential public access, the local landowner opted to cooperate in the project, and information from the site would aid in characterization of the river.





**Figure 4-1** Atascosa River AU 2107\_02 showing RUAA sites

**TIAER Site AR2\_02** is located on the Atascosa River south of McCoy, Texas. This site was only accessible through private lands and required landowner permission. This site was selected because the local landowner opted to cooperate in the project and information from the site provided characterization of the river.

**TIAER Site AR2\_03** is located on the Atascosa River south of McCoy, Texas, and upstream of Site AR2\_02. This location was only accessible through private lands and required landowner permission. This site was selected because the local landowner opted to cooperate in the project and information from the site provided characterization of the river.

**TIAER Site AR2\_04** is located on the Atascosa River at the FM 541 bridge crossing east of McCoy, Texas and upstream of AR2\_03. Although this site is initially accessible off the bridge, access to sufficient stream reach to allow RUAA surveys required landowner cooperation. This site was selected because of the potential for public access to the stream, the local landowner opted to cooperate in the project, and information from the site provided characterization of the river.

**TIAER Site AR2\_05** is located on the Atascosa River north of Leal Road southeast of Pleasanton. This site was only accessible through private lands and required landowner permission. This site was selected because the local landowner opted to cooperate in the project and information from the site provided characterization of the river.

**TIAER Site AR2\_06 (TCEQ Station 17900)** is located at the Atascosa River and IH-37 east of Pleasanton, Texas. This site is accessible from the IH 37 right-of-way. This site is difficult to access and not likely to be publically used, but was identified because of the potential of public access. Information from the site provided characterization of the river.

## Results and Discussions

### General Description of Stream and Survey Sites in AU 2107\_02

The RUAA surveys were conducted in AU 2107\_02 on May 6, and June 23 - 25, 2010. The surveys and associated interviews were performed on weekdays, weekends or holidays, at opportune times to observe recreational activities in and around AU 2107\_02 of the Atascosa River. In addition to site visits, road crossings that possibly could afford public access but were not included in the survey due to inability to gain landowner cooperation were visited and photographed to catalogue recreational activity, or the lack of, during afternoon or weekend hours.

Surveys conducted in AU 2107\_02 were conducted during varying air and water temperatures as show in Table 4-1. Water temperatures were warm enough for recreational activities to occur.

Table 4-2 displays the appearance of the stream channel and corridor at each site.

Table 4-3 shows the average thalweg depth for each reach and site during each of the RUAA surveys. If it was not possible to wade a transect completely, the thalweg depth was recorded as greater than (>) the deepest measured value. If the actual thalweg was not found due excessive

depth, the deepest measurement recorded was used to calculate the average thalweg depth for the site. Access (public or private) to each site and level of effort to access the stream from the bank at each site is also provided in Table 4-3.

Table 4-4 shows the maximum, minimum and average widths at each site for each survey. The observed flow and total discharge and also listed for each site per survey. Stream aesthetics and wildlife observations are reported in Table 4-5. In general, the majority of observed tracks and fecal droppings reported in Table 4-5 are wildlife in origin. Avian feces were the dominant dropping observed at all sites. Tracks included birds, raccoon, deer, and rarely feral hogs. Observed trash was predominantly plastics and was most common at bridge crossings, though no evidence of major dumping was observed. Trash on private lands, which was rarely observed, appeared to have washed in during high flow periods.

**Table 4-1** Temperatures measured at each site along AU 2107\_02

Assessment Unit	Station Number	May 6, 2010		June 23 - 25, 2010	
		Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)
AU2107_02	AR2_01	25	22.4	32	28.9
	AR2_02	20	18.7	33	27.0
	AR2_03	26	22.2	36	26.4
	AR2_04	30	23.3	29	26.6
	AR2_05	31	23.0	29	26.4
	AR2_06	28	24.1	32	27.7

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**Table 4-2** Stream channel and corridor assessment per station sampled in the Atascosa River.

Assessment Unit	Station Number	Streambank	Stream Channel Appearance	Dominant Substrate	Corridor Appearance	Riparian Size	Park	Landscape Surroundings
AU 2107_02	AR2_01	Right	Natural	Sand	Pasture / Rangeland with Trees	Moderate	No	Native grasses and other woody vegetation
		Left			Pasture / Rangeland with Trees	Moderate		Native grasses and other woody vegetation
	AR2_02	Right	Natural	Sand	Shrubs with Trees	Large	No	Native w/ improved pasture beyond riparian
		Left			Shrubs with Trees	Large		Native w/ improved pasture beyond riparian
	AR2_03	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR2_04	Right	Natural	Sand	Pasture upstream Shrubs with Trees	Small upstream Large downstream	No	Improved pasture upstream Native downstream
		Left			Pasture upstream Shrubs with Trees	Small upstream Large downstream		Improved pasture upstream Native downstream
	AR2_05	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR2_06	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native

**Table 4-3** Thalweg depth, stream flow type, and site accessibility for each assessment unit and site for the two surveys conducted. Stream flow type represents TCEQ descriptions (TCEQ, 2010b).

Assessment Unit (AU)	Length (miles)	# of Stations	# of Recreational Areas in AU	Avg. Thalweg Depth (m) for Assessment Unit		Stream Flow Type	General Access	Bank Access
				6 May 2010	23 - 25 June 2010			
2107_02	25	6	0	0.67	0.63	perennial	—	—
Station Name	Segment length (m)	# of Transects	# of Recreational Areas at Site	Avg. Thalweg Depth (m) by Site		Stream Flow Type	General Access	Bank Access
				6 May 2010	23 - 25 June 2010			
AR2_01	300	11	0	0.47	0.45	perennial	Private	MD
AR2_02	300	11	0	0.68	0.61		Private	E
AR2_03	300	11	0	0.44	0.44		Private	ME
AR2_04	300	11	0	0.67	0.64		Public	ME
AR2_05	300	11	0	0.96	>1.3		Private	D
AR2_06	300	11	0	0.82	0.65		Public	ME

E = Easy, ME = Moderately Easy, MD = Moderately Difficult, D = Difficult



**Table 4-4** Description of surveyed streams in the Atascosa River Watershed, AU 2107\_02.

Assessment Unit	Date	Station Number	Maximum width (m)	Minimum Width (m)	Average Width (m)	Total Discharge (Q) (cfs)	Observed Flow
AU 2107_02	May 6, 2010	AR2_01	7.5	3.3	5.5	13.3	high flow
		AR2_02	8.5	4.3	6.0	8.7	high flow
		AR2_03	8.6	3.4	4.5	10.0	high flow
		AR2_04	10.3	3.0	4.9	9.7	high flow
		AR2_05	5.3	4.0	4.6	5.8	high flow
		AR2_06	7.9	3.7	5.9	4.7	high flow
	June 23 – 25, 2010	AR2_01	7.5	3.4	4.1	11.1	normal flow
		AR2_02	8.6	3.6	4.6	7.6	normal flow
		AR2_03	8.9	2.7	4.4	8.3	normal flow
		AR2_04	10.1	2.6	5.4	8.7	normal flow
		AR2_05	4.8 est.	3.7 est.	4.6	4.4	normal flow
		AR2_06	7.5	3.1	6.3	4.3	normal flow

**Table 4-5.** Stream aesthetics and wildlife observations in the Atascosa River Watershed, AU 2107\_02.  
(From Field Data Sheet – Sect. F)

Station	Date	Water Aesthetics						Wildlife Observations				Stream Garbage		
		Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependant Birds	Mammals	Evidence	Large in Channel	Small in Channel	Bank
AR2_01	6 May 2010	A	A	N	brown	fine seds	clear	N	N	N	tracks	N	N	N
	24 June 2010	R	A	N	clear	N	clear	N	S	N	tracks/fecal	N	N	N
AR2_02	6 May 2010	A	A	N	brown	fine seds	clear	N	N	N	tracks/fecal	N	N	N
	25 June 2010	R	A	N	brown	fine seds	debris	N	N	SP feral hogs	tracks/fecal	N	N	N
AR2_03	6 May 2010	A	A	R	brown	fine seds	scum	N	N	SP livestock	tracks/fecal	N	R	N
	25 June 2010	A	A	N	brown	fine seds	scum	N	N	N	tracks/fecal	N	N	N
AR2_04	6 May 2010	A	A	N	brown	fine seds	debris	SP snake	N	N	tracks	N	R	R
	25 June 2010	A	A	N	brown	fine seds	clear	N	N	N	tracks/fecal	N	N	N
AR2_05	6 May 2010	A	A	N	brown	fine seds	clear	N	N	MP feral hogs	tracks	N	R	N
	25 June 2010	A	A	N	brown	fine seds	scum	N	N	N	tracks	N	N	N
AR2_06	6 May 2010	A	A	R	brown	fine seds	scum/foam	N	N	N	tracks	C	C	C
	23 June 2010	A	A	R	brown	fine seds	scum/foam	N	N	N	tracks/fecal	R	R	R

A = absent, R = rare, C = common, Ab = abundant, N = none, SP = slight presence, MP = moderate presence, LP = large presence

### Physical Description of Site AR2\_01

The Atascosa River at Site AR2\_01 was monitored on May 6 and June 24, 2010. This site was accessible only from IH-37 near Campbellton, TX in Atascosa County. To get to the river, one must park on the shoulder of IH-37, step over a barbed wire fence and negotiate a steep concrete bridge apron that can be treacherous when wet. Permission from the individual that owns property on both sides of the highway was requested and granted, though the area directly under the bridge and some distance on either side is highway right-of-way. At the bottom of the apron, stream access requires walking several meters through native pasture and mesquite. At the bank, it is relatively easy to step into the shallow water. The 0-m transect was set up under the bridge upstream of a substantial log jam and the 300 m reach was measured upstream from that point. Flow was measured at the 0-m cross section. Other than the access described above, no other public access points were noted although a pasture lane ran beneath the bridge from one side to the other, presumably used by the ranch owner. Table 4-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 4-1](#) illustrates the general appearance of the stream including the log jam downstream of the reach and the access from the highway.

Site AR2\_01 was wadeable for the entire 300-m reach, and water levels were less than 0.5 m on average on both surveys. Although walking was easy, log jams and dense vegetation made it necessary to leave the stream and walk around these obstacles at times. [Photogroup 4-2](#) depicts obstructions mentioned above.

Average thalweg depth, hydrographic parameters and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 4-3, 4-4 and 4-5, respectively. [Photogroup 4-3](#) depicts stream characteristics such as color and surface clarity.

### Physical Description of Site AR2\_02

The Atascosa River at Site AR2\_02, near the community of McCoy, TX in Atascosa County, was visited on May 6 and June 25, 2010. This site was accessible only through privately owned lands that were fenced, gated and locked. From the primary entry gate it is at least a mile to the river on sandy pasture roads. The point at which TIAER staff entered the water was a low-water crossing that connected the property on each side of the river. The 300-m transect was set up immediately downstream of the low-water crossing, and the survey was conducted downstream from that point. The initial access was relatively easy and the footing was firm on the sand bottom. There were several locations where the stream could be entered and exited, but there were also areas of steep banks with dense vegetation. Flow was measured at the 300-m transect. There was no public access anywhere near AR2\_02. Table 4-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 4-4](#) illustrates the general appearance of the stream.

Site AR2\_02 was wadeable for the entire 300-m reach, and water depths were approximately 0.6-m on average for both surveys. Wading was relatively easy on the packed sand bottom, but dense vegetation and log jams across the stream impeded walking at times. [Photogroup 4-5](#) illustrates obstructions encountered at Site AR2\_02.



Average thalweg depth, hydrographic parameters and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 4-3, 4-4 and 4-5, respectively. [Photogroup 4-6](#) shows the water color and lack of surface film.

### **Physical Description of Site AR2\_03**

The Atascosa River at Site AR2\_03, near the community of McCoy, TX in Atascosa County, was monitored on May 6 and June 25, 2010. This site was accessible only through privately owned lands that were fenced, gated and locked. As with the previous site, from the main entry gate it is at least a mile on sandy pasture roads that often require four-wheel drive. The point at which TIAER staff entered the water was at low-water crossing that connected the properties on each side of the river. There were several locations where the stream could be entered and exited, but there were also areas of dense vegetation; however, the banks were less steep and not as high as downstream at Site AR2\_02. Flow was measured at the 0-m transect near the property line at the fence, and the 300-m reach was measured upstream from this point. There was no public access near this location. Table 4-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 4-7](#) depicts general appearance of the stream, the flow point and bank access.

Site AR2\_03 was wadeable for the entire 300-m length with water levels averaging 0.4 m on both surveys. The firm sand bottom made walking easy, but dense vegetation and log jams across the stream required circumvention on the bank at times. [Photogroup 4-8](#) illustrates obstructions encountered.

Average thalweg depth, hydrographic parameters and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 4-3, 4-4 and 4-5, respectively. [Photogroup 4-9](#) depicts water color and stream clarity.

### **Physical Description of Site AR2\_04**

The Atascosa River at Site AR2\_04 was visited on May 6 and June 25, 2010. This site was only accessible from a bridge on FM 541 near the community of McCoy, TX in Atascosa County. Although publicly accessible at the bridge, the property immediately upstream and downstream was privately owned. Permission was sought and granted to enter these properties. The bridge was set as the 150-m transect, and the survey was performed 150-m upstream and 150-m downstream of the bridge. Bank access was relatively easy and the footing was firm on the sand bottom. There were several locations where the stream could be entered and exited. Flow was measured at a narrow area about 30 m upstream of the bridge. Table 4-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 4-10](#) depicts the general appearance of Site AR2\_04.

Site AR2\_04 was wadeable for the entire 300-m length with water levels averaging 0.6 m for both surveys. Upstream the river was unobstructed for the 150-m reach; however, downstream dense vegetation at a log jam required negotiation on the May survey; the log jam was not present in June. [Photogroup 4-11](#) illustrates an obstruction and bank accesses. It should be noted that on August 25, 2010, while deploying equipment for an aquatic life use-attainability analysis (ALUAA) survey, TIAER staff observed a new barbed wire fence that spanned the river upstream of the bridge.

Average thalweg depth, hydrographic parameters and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 4-3, 4-4 and 4-5, respectively. [Photogroup 4-12](#) depicts water color and surface clarity.

### **Physical Description of Site AR2\_05**

The Atascosa River at Site AR2\_05 was surveyed on May 6 and June 25, 2010. This site is only accessible from privately owned lands. The property is fenced, gated, and locked. The access point to the river at AR2\_05 is approximately 2 miles from the gate off Leal Road in Atascosa County. This property is agriculturally productive, with cattle and hay as the main activity. The pastures and rangeland are fenced from the river and cattle do not have access to the stream. The point we chose at this site for access was not particularly accessible, but it was the clearest area that could be found along the bank. The entry point was set as the 150-m transect with measurements to occur 150 m upstream and 150 m downstream. This was the most difficult site for stream entry of any other site surveyed. The bank along this reach was 2 – 3 m tall, nearly vertical, and once at the water its depth exceeded 1.0 m. Log jams obstructed the channel during both surveys. Table 4-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 4-13](#) depicts general appearance of stream and bank access height.

The surveyed reach at Site AR2\_05 was waded, but water depths and soft substrate made surveying the reach difficult and hazardous. The bottom substrate was generally firm sand but pockets of soft sediments were encountered that combined with the depth of the water, made data collection difficult. There was no easy egress point throughout the entire reach. This area was dominated by a steep bank of loose sand and dense vegetation. During the May survey thick brush and vines choked passage along the rim of the river and chest high vegetation was encountered further from the bank. The vegetation along the bank by June was even worse, and water depths were greater preventing wading for safety reasons. During June efforts to gain access to most transects proved futile as the vegetation, including shoulder high poison ivy and head high ragweed, blocked any access to the bank away from the original access point. Only the 180-m and 210-m transects could be reached from the bank and depths were taken at these locations. [Photogroup 4-14](#) illustrates the obstructions encountered and [Photogroup 4-15](#) shows the dense vegetation that limited access from the bank.

Average thalweg depth, hydrographic parameters and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 4-3, 4-4 and 4-5, respectively.

### **Physical Description of Site AR2\_06**

The Atascosa River at Site AR2\_06 was visited on May 6 and June 23, 2010. This site was only accessible from the frontage road under the bridge on IH-37 east of Pleasanton, TX in Atascosa County. No landowners were found from which to seek permission, and no fences were encountered that inhibited the survey. The bridge was set as the 60-m transect and the survey was performed 240 m upstream and 60 m downstream of the bridge. A large log jam was encountered 60-m from the entry point that dictated performing the majority of the survey upstream of the bridge. At the bank access was moderately difficult due to the steepness. In the stream, footing was firm on the sand bottom except near the 120-m transect where a deep hole with a very soft and mucky bottom was encountered. There were several locations along the

bank where the stream could be entered and exited. Flow was measured at the bridge. The frontage road under the bridge was the only public access point at this site, and it was approximately 300 meters from the river. Table 4-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 4-16](#) depicts access to the site, general appearance of the stream and bank access.

Site AR2\_06 was wadeable for the entire 300-m length with thalweg depths averaging 0.7 m for both surveys. Upstream of the bridge were obstructions, such as dense vegetation and small log jams, while downstream a large log jam was encountered that impeded passage. The firm sand bottom made walking easy, with the exception of one deep hole mentioned above. [Photogroup 4-17](#) illustrates the obstructions encountered and bank access.

Average thalweg depth, hydrographic parameters and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 4-3, 4-4 and 4-5, respectively. [Photogroup 4-18](#) depicts water color and water surface clarity.

### **Additional Public Access Points**

In addition to the sites described above, three road crossings at which permission could not be obtained to access the required 300 m reach necessary for the RUAA were visited to observe whether or not contact recreation activities or evidence of activities could be observed. The road crossings visited during the RUAA surveys were the Atascosa River at Coughran Road, Leal Road and Jim Brite Road. At no time were individuals encountered at the crossings, and no evidence of any type of recreation, either primary or secondary, recorded. [Photogroup 4-19](#) depicts observations at each crossing.

### **Activities: Observed and Interviewed**

During the RUAA surveys conducted on May 6 and June 23 - 25, 2010, field personnel attempted to visit the publicly accessible sites during times and days when recreational activities were apt to be observed. Interviews and observations at privately owned sites were conducted with landowners when it was convenient for them. In most cases, informal conversations occurred during the scouting process in late 2009 and notes were made. Once the site was selected, there was very little contact with the landowners so phone interviews were conducted to confirm and supplement information gathered during the initial contact.

Five of the six sites selected were on private properties with controlled, limited access. The publicly accessible site at IH-37 near Pleasanton did not require landowner permission, but the distance from the access road to the stream was substantial. No activities, either primary or secondary, were observed on either visit during 2010. However, on another visit by TIAER staff to that site on July 27, a rod and reel was observed on the streambank.

The only interviews performed in AU 2107\_02 were with landowners from whom permission was obtained to gain river access. No landowners interviewed indicated that any form of primary contact recreation currently or even recently occurred on their property to their knowledge. Some of the interviewees admitted to infrequently fishing while others did not use



the river for any type of recreation. There was no evidence provided in the interviews that secondary contact recreation activities, other than fishing, occur within AU 2107\_02 of the Atascosa River. Although swimming may have occurred several years ago (prior to 1970), neither the interviewees nor anyone they knew would swim in the Atascosa River any longer.

Property owners at Sites AR2\_03 and AR2\_04 indicated they sometimes fished the river, albeit rarely.

The property owner at AR2\_01 was not formally interviewed as he was only contacted by phone. When contacted about accessing the river from the bridge on IH-37 to ascertain if recreation occurred on his property, he got concerned we were looking at the property to put in a roadside park. He said there wasn't any recreation on his property and he did not want a rest area located on or near his property that would contribute to recreation at this site.

The AR2\_02 landowner indicated the river on his property was never used for recreation but only for watering wildlife and livestock. He disclosed the river dries up too often and there are no (game) fish for fishing to make the activity enjoyable. He did add that years ago, an employee of his father would come out and fish but could not remember how long ago that was, just that the individual had died years ago.

The landowner at Site AR2\_03 related that prior to the 1970s he and family swam in the creek [Atascosa River] on his property, but no one has been in the water since then. He presently fishes occasionally with his grandchildren, but that is all that occurs now.

The landowner at Site AR2\_04 had considerable comments. He shared that when he was a teen, some 40+ years ago, he and some cousins would swim in some pools on his family's property when the water was flowing and clear. They became scared to use the water when fish began to disappear and the grass along the banks died. He added that the cows ceased to drink from the stream and even today the cows will not consume the water unless they are desperate. He said that he will still fish when the river is on the rise and catches fish that he speculates have been flushed out of stock tanks upstream. He will not eat any fish he catches immediately but will put them in a clean stock tank until he feels they are sufficiently "flushed." He will not allow his grandchildren access to the water. Finally, he added that his wife had shared with a friend that they used to swim in the Atascosa River, but now you are laughed at if you talk about it.

The landowner at Site AR2\_05 shared information that was similar to the others. He swam as a kid, 60 years ago, and fished but no longer uses the stream. He wouldn't eat the fish if he caught them. The stream is too difficult to get into and he added that "We (as kids) almost broke body parts just getting into the stream." (A comment experienced firsthand by field crew at this location.)

No one was interviewed at Site AR2\_06, as no one was encountered on any visit.

In addition to RUAA surveys performed at the six sites, road crossings where no landowner permission could be obtained for entry were visited at various times to look for signs of

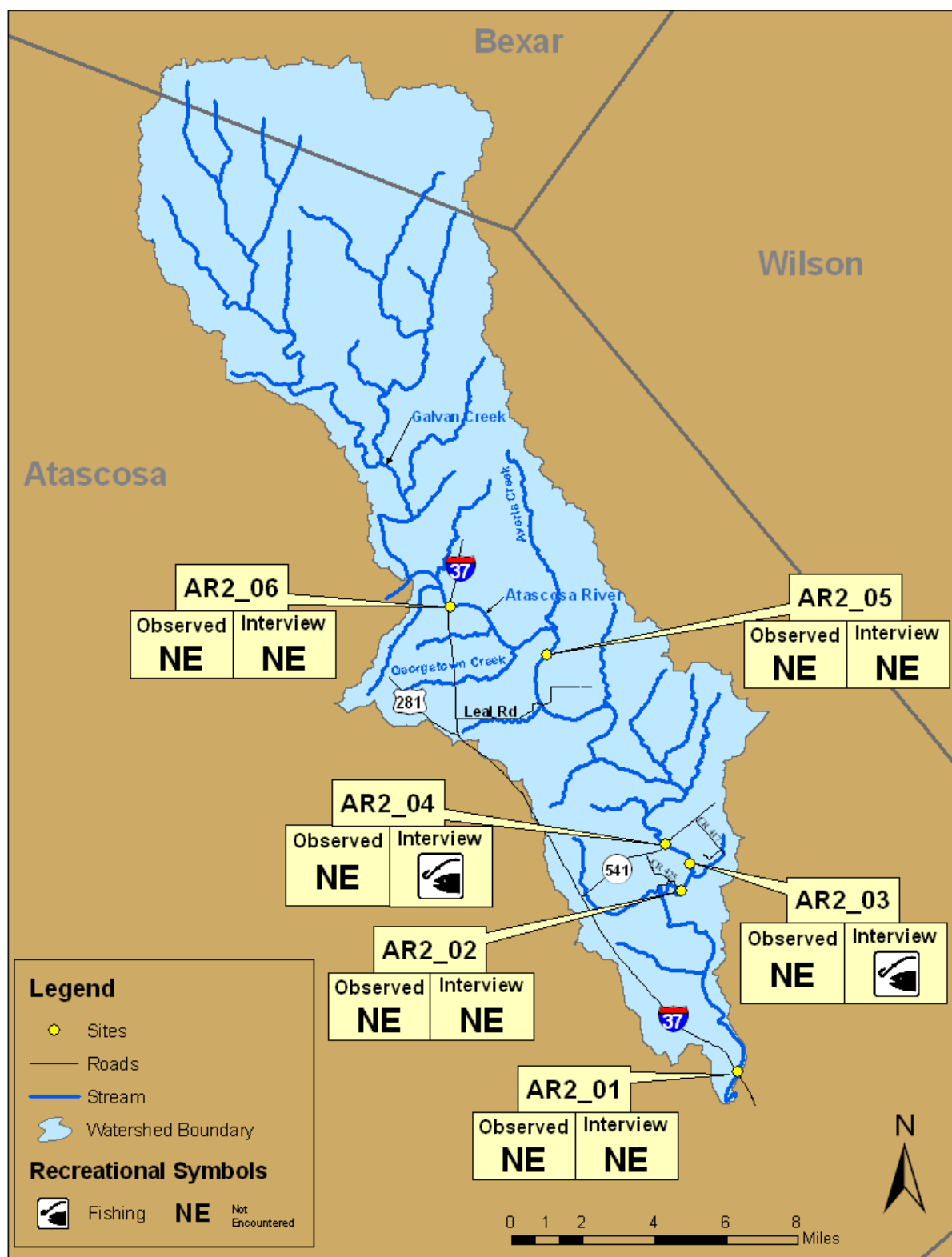
recreation at these locations. Previously presented Photogroup 4-19 catalogues the lack of activities at these locations.

Copies of all of the interviews conducted along Atascosa River AU 2107\_01 ordered by site are located in Appendix B-1.

### **Summary**

RUAA surveys were conducted at six sites in Assessment Unit 2107\_02 on May 6, and June 23 - 25, 2010. Copies of all comprehensive interview forms, field data sheets, streamflow data sheets, and transect pictures from each survey are located in the Appendices B-1, B-2, B-3, and B-4, respectively.

As observed in AU2107\_01, the Atascosa River in AU2107\_02 flows primarily through privately owned properties of substantial acreages. Public access is limited to the right-of-way at six road crossings, three of which were used for the survey. Fences, locked gates, steep banks, and dense vegetation all combine to limit access to the river in this approximately 25-mile long segment. No aquatic recreational activities were observed by TIAER field staff during the surveys, but a rod and reel was seen at one location in July 2010. The individuals interviewed in the AU were all property owners on whose property we had permission to conduct the surveys. Fishing was the primary recreational activity reported as occurring recently, but in all cases it was described as rare (once or twice a year). One individual admitted to swimming in his youth but shared that he and his cousins became scared of the water as fish started to disappear and vegetation died. The survey information is summarized in Figure 4-2



**Figure 4-2** Summary of recreational uses observed and obtained from interviews for the Atascosa River AU 2107\_02.





## **Atascosa River AU2107\_02 Photogroups**





**Photogroup 4-1**

Atascosa River Site AR2\_01 showing access from the highway bridge, the downstream log jam, and general appearance of stream and immediate riparian vegetation (Individual in lower right photo is field staff.) [\[Return to Text\]](#)



**Photogroup 4-2**

Atascosa River Site AR2\_01 showing obstructions encountered in the stream. (All individuals pictured are field staff.) [\[Return to Text\]](#)



**Photogroup 4-3**

Atascosa River Site AR2\_01 depicting color and clarity of water surface. (Individual in center right photo is field staff.) [[Return to Text](#)]



**Photogroup 4-4**

Atascosa River Site AR2\_02 illustrating the general appearance of the river and immediate riparian zone. (Individual in lower right picture is field staff.) [\[Return to Text\]](#)



**Photogroup 4-5**

Atascosa River Site AR2\_02 illustrating obstructions encountered.

[\[Return to Text\]](#)

**Photogroup 4-6**

Atascosa River Site AR2\_02 showing the water color and lack of surface film. (Individual in lower right picture is field staff.)

[\[Return to Text\]](#)



**Photogroup 4-7**

Atascosa River Site AR2\_03 depicting general appearance of the stream, the flow measurement point (upper left photograph) and bank access. (Individual in upper left picture is field staff.)

[\[Return to Text\]](#)



**Photogroup 4-8**

Atascosa River Site AR02\_03 showing obstructions encountered in reach. (Individual in lower left picture is field staff.) [[Return to Text](#)]



**Photogroup 4-9**

Atascosa River Site AR2\_03 depicting water color and stream clarity. (Individual in center left picture is field staff.) [\[Return to Text\]](#)





**Photogroup 4-10** Atascosa River Site AR3\_04 depicting the general appearance of the river, stream banks, and immediate riparian zone. (Individual in lower left picture is field staff.) [\[Return to Text\]](#)





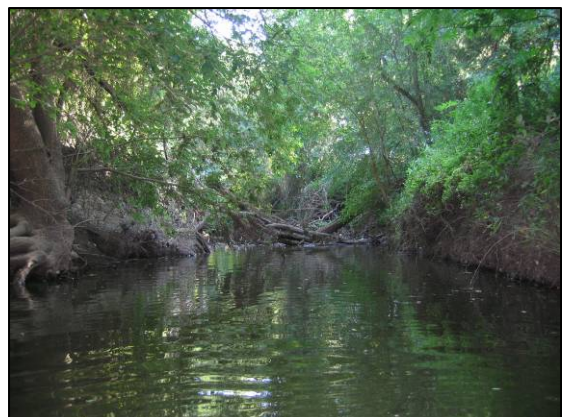
**Photogroup 4-11** Atascosa River Site AR2\_04 depicting an obstruction (upper left photograph) and bank accesses. (All individuals pictured are field staff.) [\[Return to Text\]](#)





**Photogroup 4-12** Atascosa River Site AR2\_04 depicting general stream characteristics, and water color and surface clarity. (Individual in lower right picture is field staff.) [\[Return to Text\]](#)





**Photogroup 4-13** Atascosa River Site AR2\_05 showing general appearance of stream and bank access. (Individual in lower left picture is field staff.) [\[Return to Text\]](#)





**Photogroup 4-14** Atascosa River Site AR2\_05 showing obstructions encountered in the reach. [\[Return to Text\]](#)





**Photogroup 4-15** Atascosa River Site AR2\_05 showing the dense vegetation that limited access from the bank. (Individual in upper right picture is field staff.) [\[Return to Text\]](#)





**Photogroup 4-16** Atascosa River Site AR2\_06 depicting access to the site, general appearance of the stream and bank access. (Individual in lower right picture is field staff.) [\[Return to Text\]](#)





**Photogroup 4-17** Atascosa River Site AR2\_06 illustrating the obstructions encountered and bank access along the reach. (Individual in upper left picture is field staff.) [[Return to Text](#)]





**Photogroup 4-18** Atascosa River Site AR2\_06 depicting general stream conditions, water color, and water surface clarity. (Individual in center left picture is field staff.) [\[Return to Text\]](#)





**Photogroup 4-19** Atascosa River AU 2107\_02 depicting observations at each crossing not formally surveyed. Top to bottom: Coughran Road, Leal Road, and Jim Brite Road. (TIAER vehicle in center left picture.) [\[Return to Text\]](#)

## **CHAPTER 5**

### **ASSESSMENT UNIT 2107\_03**

#### **Watershed Characterization**

The Atascosa River AU 2107\_03 is described as running from the confluence with Galvan Creek to the confluence with Palo Alto Creek (Figure 5-1). This AU includes the Atascosa River Park in the City of Pleasanton, Texas. AU 2107\_03 is located entirely in Atascosa County. Reconnaissance for this AU yielded seven public road crossings on the Atascosa River and one area of public land bordering the river near a road. Four of these locations offered sufficient distance (300 m) to perform a RUAA survey without the cooperation of an adjacent landowner, though permission from the City of Pleasanton was obtained to conduct the surveys. With the assistance of Texas AgriLife Research, the local chapter of the Texas Farm Bureau, and a property owner list gathered from the Atascosa County Appraisal District, TIAER was able to gain landowner permission to perform RUAA surveys at seven locations, four of which were located at or near road crossing. The remaining three sites could only be accessed through private lands.

Beef production, hay production and turf grass farming appear to be the dominant agricultural activities in this segment of the Atascosa River, though some row crop production was observed. Further, the land use information on the AU 2107\_03 watershed is provided in more detail in Chapter 2. In AU 2107\_03 banks are lower and less steep than either of the two lower AUs and riparian vegetation is less dense as well. Once at the streambank, access to the river is moderately easy to easy.

The incorporated cities of Pleasanton and Poteet are located in this assessment unit, and each has a NPDES/TPDES permitted outfall. The City of Pleasanton wastewater treatment facility (WWTF) discharges directly into the Atascosa River while the Poteet WWTF discharges into Rutledge Hollow, a tributary of the Atascosa River.

#### **Additional Information**

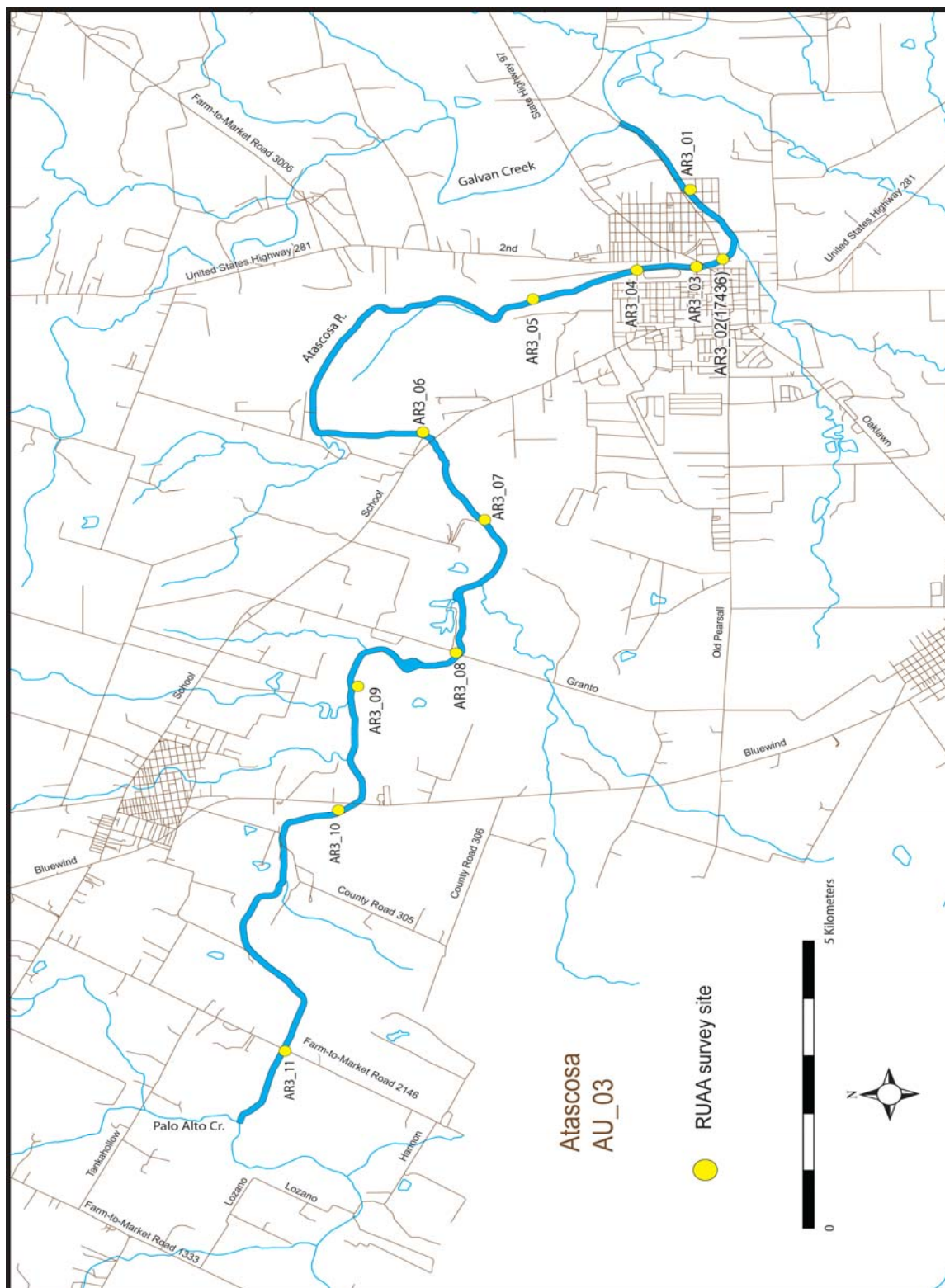
The review of historical information and climatic conditions are found in Chapter 2.

#### **Survey Site Descriptions**

The four lowest sites in AU 2107\_03 were located on city property comprising, or immediately adjacent to, the Pleasanton Atascosa River Park. The remaining eight sites were located on private lands (some adjacent to road crossing), with land cover appearing to be predominantly native or improved pasture lands. A description of each site follows.

**TIAER Site AR3\_01** is located on the Atascosa River downstream of the Pleasanton WWTF outfall. The stream is publically accessible and can be entered through city property off E. Hunt Street. This site was selected because of the public accessibility from a baseball practice area that runs along the river at this point. RUAA surveys were performed twice in 2010 at this location.





**Figure 5-1** Atascosa River AU 2107\_03 showing RUAA sites

**TIAER Site AR3\_02 (TCEQ Station 17436)** is located on the Atascosa River at E. Hunt Street in the City of Pleasanton Atascosa River Park. The stream is publically accessible and can be entered easily from the low water bridge on E. Hunt Street. This site was selected because of the public accessibility. RUAA surveys were performed once in the summer of 2009 and twice at this location in the spring/summer of 2010.

**TIAER Site AR3\_03** is located on the Atascosa River at E. Adams Street in the City of Pleasanton Atascosa River Park. The stream is publically accessible and can be entered easily from the low water bridge on Adams Street. This site was selected because of the public accessibility. RUAA surveys were performed once in the summer of 2009 and twice at this location in the spring/summer of 2010.

**TIAER Site AR3\_04** is located on the Atascosa River at Spur 242 in the City of Pleasanton Atascosa River Park. The stream is publically accessible and can be entered easily from under the Spur 242 bridge at the north end of the park. This site was selected because of the public accessibility. RUAA surveys were performed once in the summer of 2009 and twice at this location in the spring/summer of 2010.

**TIAER Site AR3\_05** is located on the Atascosa River north of Pleasanton, Texas. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the site provided further characterization of the river in AU 2107\_03. RUAA surveys were performed at this location twice in 2010.

**TIAER Site AR3\_06** is located on the Atascosa River between Pleasanton and Poteet east of FM 476. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the site provided opportunities for characterization of the river in AU 2107\_03. It is also immediately downstream of Station 18645 monitored by TIAER in 2005 and 2006. RUAA surveys were performed at this location twice in 2010.

**TIAER Site AR3\_07** is located on the Atascosa River between Pleasanton and Poteet west of FM 476. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the site provided for further characterization of the river in AU 2107\_03. RUAA surveys were performed at this location twice in 2010.

**TIAER Site AR3\_08** is located at Granato Road and the Atascosa River southeast of Poteet. Although the water at this site is initially accessible from the bridge, access to sufficient stream reach to allow RUAA surveys required landowner cooperation. This site was selected because of the potential for public access to the stream and the landowner opted to cooperate. It also provided an opportunity to characterize an additional portion of AU 2107\_03. RUAA surveys were performed at this location twice in 2010.

**TIAER Site AR3\_09** is located on the Atascosa River south of Poteet and east of SH16. This property was only accessible through private lands and required landowner permission for entry.

This site was selected because the landowner opted to cooperate and the site provided for further characterization of the river in AU 2107\_03. RUAA surveys were performed twice at this location in 2010.

**TIAER Site AR3\_10** is located on the Atascosa River south of Poteet and west of SH16. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the site provided an additional opportunity for characterization of the river in AU 2107\_03. RUAA surveys were performed twice at this location in 2010.

**TIAER Site AR3\_11** is located at FM 2146 and the Atascosa River west of Poteet. Although the water at this site is initially accessible from the bridge, access to sufficient stream reach to allow RUAA surveys required landowner cooperation. This site was selected because of the potential for public access to the stream, landowner cooperation, and it afforded yet on more opportunity to characterize the river in AU 2107\_03. RUAA surveys were performed twice at this location in 2010.

## Results and Discussions

### General Description of Stream and Survey Sites for AU 2107\_03

The RUAA surveys were conducted in AU 2107\_03 on July 31, 2009 at Sites AR3\_02, AR3\_03 and AR3\_04 and on May 7 - 8, and June 22 -23, 2010 at all 11 sites. The surveys and associated interviews were performed on weekdays, weekends or holidays at opportune times to observe recreational activities in and around AU 2107\_03 of the Atascosa River.

Surveys conducted in AU 2107\_03 were conducted during varying air and water temperatures as show in Table 5-1. Water temperatures were warm enough for recreational activities to occur.

Table 5-2 displays the appearance of the stream channel and corridor at each site.

**Table 5-1** Temperatures measured at each site along AU 2107\_03

Assessment Unit	Site Number	July 31, 2009		May 7 – 8, 2010		June 22 – 23, 2010	
		Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)
AU2107_03	AR3_01	n/a	n/a	28	25.8	33	30.8
	AR3_02	36.7	30.6	27	25.8	37	33.3
	AR3_03	34.5	32.0	28	25.4	37	34.1
	AR3_04	29.3	30.7	27	24.9	37	32.2
	AR3_05	n/a	n/a	22	23.5	35	28.6
	AR3_06	n/a	n/a	22	23.1	32	28.5
	AR3_07	n/a	n/a	26	22.9	38	28.9
	AR3_08	n/a	n/a	24	23.2	35	29.4
	AR3_09	n/a	n/a	30	25.1	27	26.8
	AR3_10	n/a	n/a	32	26.1	32	29.6
	AR3_11	n/a	n/a	31	30.8	32	26.8



**Table 5-2** Stream channel and corridor assessment per site sampled in the Atascosa River AU 2107\_03.

Assessment Unit	Site Number	Streambank	Stream Channel Appearance	Dominant Substrate	Corridor Appearance	Riparian Size	Park	Landscape Surroundings
AU 2107_03 July 31, 2009	AR3_02	Right	Low water dam channelized above	Sand	Shrub dominated	Small	Yes	Natural
		Left			Mowed	None		Park
	AR3_03	Right	Low water dam channelized above	Silt	Mowed	None	Yes	Park
		Left			Mowed	Moderate		Natural
	AR3_04	Right	Channelized	Silt	Natural right bank	Moderate	Yes left No right	Pecan orchard
		Left			Mowed	Small		Golf club entrance
AU 2107_03 May 7 – 8 and June 22 – 23, 2010	AR3_01	Right	Natural	Sand	Shrubs with Trees	Large	Yes	Natural
		Left			Shrubs with Trees	Large		Natural
	AR3_02	Right	Low water dam channelized above	Sand	Shrub dominated	Moderate	Yes	Natural
		Left			Mowed corridor	None		Park
	AR3_03	Right	Low water dam channelized above	Silt	Shrub dominated	Moderate	Yes	Park
		Left			Mowed corridor	None		Natural
	AR3_04	Right	Channelized	Silt	Mowed corridor	Small	Yes left No right	Pecan orchard
		Left			Shrub dominated	Moderate		Golf club entrance
	AR3_05	Right	Natural	Sand	Pasture	Small	No	Improved pasture
		Left			Pasture	Moderate		Improved pasture
	AR3_06	Right	Natural	Sand	Pasture	Moderate	No	Native rangeland
		Left			Pasture	Moderate		Native rangeland
	AR3_07	Right	Natural	Sand	Pasture	Small	No	Improved pasture
		Left			Pasture	Small		Improved pasture
	AR3_08	Right	Natural	Sand	Shrubs with Trees	Large	No	Natural
		Left			Pasture	Small to Moderate		Improved pasture
	AR3_09	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR3_10	Right	Natural	Sand	Pasture	None	No	Improved pasture
		Left			Shrubs with Trees	Large		Native
	AR3_11	Right	Channelized	Sand	Pasture	None	No	Improved pasture
		Left			Pasture	None		Improved pasture

Table 5-3 shows the average thalweg depth for each reach and site during each of the RUAA surveys. Access (public or private) to each site and level of effort to access the stream from the streambank at each site is also provided in Table 5-3.

Table 5-4 shows the maximum, minimum and average widths at each site for each survey. The observed flow and total discharge and also listed for each site per survey. Stream aesthetics and wildlife observations are reported in Table 5-5 for each site and survey. In general, the majority of observed tracks and fecal droppings reported in Table 5-5 are wildlife in origin. Avian feces were the dominant dropping observed at all sites. Tracks included birds, raccoon, deer, and rarely feral hogs. Observed trash was predominantly plastics and was most common at bridge crossings, though no evidence of major dumping was observed. Trash on private lands, which was rarely observed, appeared to have washed in during high flow periods.

### **Physical Description of Site AR3\_01**

The Atascosa River at Site AR3\_01 was surveyed on May 8 and June 22, 2010. This site was accessible through city property off E. Hunt Street downstream from the Pleasanton WWTF and TCEQ Station 12981. The area adjacent to the riparian zone of the river was mown acreage with two baseball backstops at either end. It appeared to be more of a practice area than an official ball field as was observed in the park near Site AR3\_02. It is possible to drive along the edge of the field and park near the bank of the river. Tall riparian grass and ragweed prevent visual scrutiny of the river from the field, but there were openings through the weeds that were presumed to be foot paths. At the river, the bank is relatively low and the slope is sufficiently gentle to allow easy entrance into the river. The entry point near the path used to access the stream was set as the 300-m transect. Measures at 30-m increments were made downstream to attain the 300-m reach required. Flow was measured at a narrow stream width near the 300-m transect. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-1](#) depicts the access and general appearance of the stream at Site AR3\_01.

The surveyed reach at Site AR3\_01 was wadeable for the entire 300-m reach during each visit with average thalweg depths being less than 0.5 m. Wading was easy due to the presence of a firm sand substrate and the low banks that facilitated exiting the stream when needing to avoid obstructions. [Photogroup 5-2](#) depicts obstructions encountered at Site AR3\_01.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-3](#) depicts water and surface clarity at Site AR3\_01.

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**Table 5-3** Thalweg depth, stream flow type, and site accessibility for each assessment unit and site for the two surveys conducted. Stream flow type represents TCEQ descriptions (TCEQ, 2010b).

Assessment Unit (AU)	Length (miles)	# of Sites	# of Recreational Areas in AU	Avg. Thalweg Depth (m) for Assessment Unit			Stream Flow Type	General Access	Bank Access
				31 July 2009	5 – 8 May 2010	22 – 26 June 2010			
AU 2107_03	25	11	0	1.04	0.76	0.70	perennial	—	—
Site Name	Segment length (m)	# of Transects	# of Recreational Areas at Site	Avg. Thalweg Depth (m) per Site			Stream Flow Type	General Access	Bank Access
				31 July 2009	5 – 8 May 2010	22 – 26 June 2010			
AR3_01	300	11	0	-	0.36	0.35	perennial	Public	ME
AR3_02	300	11	1	0.69	0.75	0.74		Public	ME
AR3_03	300	11	1	1.08	1.17	1.15		Public	ME
AR3_04	300	11	1	1.35	1.36	1.45		Public	ME
AR3_05	300	11	0	-	1.18	1.13		Private	ME
AR3_06	300	11	0	-	0.75	0.74		Private	ME
AR3_07	300	11	0	-	0.42	0.38		Private	ME
AR3_08	300	11	0	-	0.68	0.61		Private	ME
AR3_09	300	11	0	-	0.65	0.51		Private	MD
AR3_10	300	11	0	-	0.61	0.42		Private	E
AR3_11	300	11	0	-	0.39	0.27		Private	E

E = Easy, ME = Moderately Easy, MD = Moderately Difficult, D = Difficult



**Table 5-4** Description of surveyed streams in the Atascosa River Watershed, AU 2107\_03.

Assessment Unit	Date	Site Number	Maximum width (m)	Minimum Width (m)	Average Width (m)	Total Discharge (Q) (cfs)	Observed Flow <sup>1</sup>
AU 2107_03	July 31, 2009	AR3_02	29.0	0.68	8.0	<0.1 (est.)	low flow
		AR3_03	31.3	31.0	31.0	0.0	no flow
		AR3_04	20.6	10.4	18.0	0.0	no flow
	May 7 – 8, 2010	AR3_01	5.8	3.1	4.1	3.9	normal flow
		AR3_02	29.0	1.61	8.0/29.0 <sup>1</sup>	2.9	normal flow
		AR3_03	31.3	31.0	31.0	2.9	normal flow
		AR3_04	20.6	10.4	18.0	2.9	normal flow
		AR3_05	10.2	1.3	5.7	2.2	normal flow
		AR3_06	14.8	3.7	5.4	1.7	normal flow
		AR3_07	19.3	1.33	5.1	1.7	normal flow
		AR3_08	9.3	1.16	3.8	1.9	normal flow
		AR3_09	12.4	1.7	5.3	0.8	normal flow
		AR3_10	15.4	1.1	9.5	0.5	normal flow
		AR3_11	8.5	0.3	6.4	0.0	no flow
	June 22 – 23, 2010	AR3_01	5.8	2.5	3.5	3.5	normal flow
		AR3_02	29.0	1.5	8.0/29.0 <sup>1</sup>	2.6	normal flow
		AR3_03	31.3	31.0	31.0	2.6	normal flow
		AR3_04	20.6	10.4	18.0	2.6	normal flow
		AR3_05	10.3	1.1	5.5	1.0	normal flow
		AR3_06	15.3	3.2	5.9	1.7	normal flow
		AR3_07	19.3	0.7	3.4	0.7	normal flow
		AR3_08	9.9	1.6	2.8	0.5	normal flow
		AR3_09	9.6	0.9	3.7	0.3	normal flow
		AR3_10	10.1	0.0	10.1	0.0	no flow
		AR3_11	8.0	0.0	4.9	0.0	no flow

<sup>1</sup>Site divided by low water dam, avg. width below 8.0m, above 29.0m

**Table 5-5.** Stream aesthetics and wildlife observations in the Atascosa River Watershed, AU 2107\_03.  
(From Field Data Sheet – Sect. F)

Station	Date	Water Aesthetics						Wildlife Observations				Stream Garbage		
		Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependant Birds	Mammals	Evidence	Large in Channel	Small in Channel	Bank
AR3_01	8 May 2010	A	A	R	green	fine seds.	scum	N	N	N	tracks	C	C	A
	22 June 2010	A	A	N	clear	fine seds.	clear	N	N	N	tracks/fecal	R	C	A
AR3_02	31 July 2009	Ab	C	R	green	fine seds.	clear	N	SP	N	Fecal	N	C	R
	8 May 2010	C	C	N	green	fine seds.	clear	SP snake	SP	N	tracks/fecal	N	R	N
	22 June 2010	C	R	N	brown	fine seds.	scum	N	SP	SP pets/horses	tracks/fecal	N	R	N
AR3_03	31 July 2009	Ab	C	R	green	fine seds.	clear	SP snake	SP	N	fecal/bird nest	R	C	R
	8 May 2010	C	C	N	green	fine seds.	scum	N	SP	SP pets	tracks/fecal	R	C	R
	22 June 2010	C	R	N	brown	fine seds.	scum	N	SP	N	tracks/fecal	N	R	N
AR3_04	31 July 2009	C	C	N	green	fine seds.	clear	N	SP	SP pets	tracks/fecal	N	C	R
	8 May 2010	R	R	N	green	fine seds.	scum	N	SP	N	tracks/fecal	N	R	N
	22 June 2010	R	R	N	brown	fine seds.	scum	N	SP	N	tracks/fecal	N	R	N
AR3_05	8 May 2010	R	R	N	green	fine seds.	scum	N	SP	N	tracks/fecal	N	R	N
	23 June 2010	R	R	N	brown	fine seds.	scum	N	N	SP livestock	tracks/fecal	N	N	N
AR3_06	8 May 2010	R	A	R	brown	fine seds.	scum	N	SP	N	tracks/fecal	R	R	N
	23 June 2010	R	A	R	brown	fine seds.	scum	SP snake	N	SP livestock	tracks/fecal	R	R	N
AR3_07	8 May 2010	R	A	N	clear	fine seds.	scum	SP snake	N	SP livestock	tracks/fecal	R	R	N
	23 June 2010	R	A	N	brown	fine seds.	scum	N	N	SP livestock	tracks/fecal	R	R	N

Station	Date	Water Aesthetics						Wildlife Observations				Stream Garbage		
		Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependant Birds	Mammals	Evidence	Large in Channel	Small in Channel	Bank
AR3_08	8 May 2010	C	R	N	green	fine seds.	clear	N	N	N	tracks / fecal	N	R	N
	23 June 2010	R	R	N	brown	fine seds.	scum	N	N	SP livestock	tracks / fecal	N	R	N
AR3_09	7 May 2010	A	A	R	brown	fine seds.	scum	N	N	N	tracks	R	C	R
	23 June 2010	R	A	R	brown	fine seds.	scum	MP snakes	N	SP javelina	tracks / fecal	R	R	R
AR3_10	7 May 2010	R	A	N	brown	fine seds.	clear	N	N	SP livestock	tracks	N	R	N
	23 June 2010	C	R	N	brown	fine seds.	scum	N	N	SP livestock	tracks / fecal	N	N	N
AR3_11	7 May 2010	R	Ab	N	clear	fine seds.	clear	N	SP	SP livestock	tracks	N	N	N
	23 June 2010	C	C	N	brown	fine seds.	scum	N	N	SP livestock	tracks / fecal	N	N	N

A = absent, R = rare, C = common, Ab = abundant, N = none, SP = slight presence, MP = moderate presence, LP = large presence



### Physical Description of Site AR3\_02

The Atascosa River at Site AR3\_02 was surveyed on July 31, 2009 and on May 8 and June 22, 2010. This site is easily accessible from a low-water bridge that crosses the Atascosa River at E. Hunt Street. Access from the right bank is unobstructed the entire reach and beyond to the Adams Street crossing (the beginning of Site AR3\_03). The US Hwy 281 bridge crossing lies between Sites AR3\_02 and AR3\_03. Downstream from the E. Hunt St. bridge and upstream along the right bank, the river bank is natural and unaltered with dense vegetation (tall grasses and willows) that impedes access to the water. Upstream the left bank is park land and manicured routinely to the waters edge. It is possible to drive up to the left edge of the channel and sit or camp or fish. Immediately below the road crossing, high flows have eroded a large pool creating a point of attraction for fishing. The 90-m transect was set at the road crossing. The reach from the crossing and downstream was wadeable. Upstream of the crossing, from the 90-m transect to the 300-m transect, the channel was unwadeable, due to either depth or very soft sediments that impeded wading. A small two-person boat was used to measure depths and widths at the 90-m transect and upstream. The height of the bank and road crossing made access possible anywhere along the left bank. Flow was measured, or at least attempted, at a very narrow area downstream of the crossing where water exited the large pool. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-4](#) depicts some of the aforementioned features of the site. [Photogroup 5-5](#) depicts some views of the left and right banks, as well as the pool below E. Hunt Street.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-6](#) depicts water color and vegetation on the surface of Site AR3\_02.

Pool measurements were made during each visit; one set each in July 2009 and in May and June 2010. Generally, the site was pooled for the entire length of the reach from the 0-m to the 300-m transect and beyond, with the exception of a short, shallow channel between the 30- and 60-transects and the apron of the E. Hunt St. crossing. Table 5-6 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 5-6** Pool measurements for Site AR3\_02

Date		Length (m)	Width (m)	Depth (m)
July 31, 2009	Pool 1	>90	8.1	0.69
	Pool 2	21.8	15.5	1.8
	Pool 3	>210	29	0.95
May 8, 2010	Pool 1	>90	7.0	0.70
	Pool 2	30	18.0	>1.45
	Pool 3	>210	29	1.35
June 22, 2010	Pool 1	>90	7.0	0.58
	Pool 2	22	18.0	>1.45
	Pool 3	>210	29	1.32

### Physical Description of Site AR3\_03

The Atascosa River at Site AR3\_03 was visited on July 31, 2009 and May 8 and June 22, 2010. This site was accessible along the entire length of the reach from the right bank of the Atascosa River City Park above the Adams Street low-water bridge. The Adams Street bridge impounds the river which exits the pool through two grated culverts that run under the road. The right bank is manicured to the water and several recreational facilities are located in this section of the park. The left bank is more natural and is dominated by tall grasses and ragweed with willow trees dotting the bank. The park has controlled access with times of operation and park rules posted at the entrance; the most prominent rule is that no swimming is allowed in the river within the Atascosa River Park. The water was generally unwadeable therefore a two-person boat was used to depth measurements at each transect on the three visits to this location and to find the minimum, maximum and average widths. The banks are low, less than 0.6 m but almost vertical, which would make getting out of the stream difficult once it was entered. The 0-m transect was established immediately upstream of the Adams Street crossing. Public access for fishing, wildlife watching, and picnicking was available the entire 300-m reach and beyond. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-7](#) depicts park rules sign, access crossing and general appearance of Site AR3\_03. [Photogroup 5-8](#) depicts some of the banks along the right and left sides of the river.

As stated above the surveyed reach at Site AR3\_03 was not wadeable for the entire 300-m reach as well as the remainder up the park to Spur 242. The average thalweg depth measured over the three visits was greater than 1.0 meter. Wading was not attempted, but the bottom felt like soft mud under silt when the depth measurements were being made. The stream was relatively unobstructed, but in July 2009 an area of dense aquatic vegetation made navigation of the river at this site very difficult

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-9](#) depicts dense vegetation on water surface and water color at Site AR3\_03.

Pool measurements were made during each visit; one set each in July 2009 and in May and June 2010. The site was pooled for the entire 300-m length of its reach. Table 5-7 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 5-7** Pool measurements for AR3\_03

Date		Length (meters)	Width (meters)	Depth (meters)
July 31, 2009	Pool 1	> 300	31	1.24
May 7, 2010	Pool 1	> 300	31	1.34
June 15, 2010	Pool 1	> 300	31	1.31

### Physical Description of Site AR3\_04

The Atascosa River at Site AR3\_04 was surveyed on July 31, 2009 and May 8 and June 22, 2010. This site is publicly accessible but more limited than the sites downstream of this location. The primary access point for this site is from a concrete apron under the Spur 242 bridge that is at the upper boundary of the Atascosa River City Park. The banks upstream of this location are steep and relatively tall, especially on the right (>2.5 m). The left bank is steep but not as tall

(0.6 to 1.0-m average). This site is a pooled area that is a continuation of the impoundment at Site AR3\_03. The water is generally unwadeable so a two-person boat was used collect depth measurements at each transect on the three visits to this location as well as the minimum, maximum and average widths. The 0-m transect was established immediately upstream of the Spur 242 bridge. Public access for fishing and wildlife watching was available along the reach and beyond. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-10](#) depicts the access and general appearance of Site AR3\_04. [Photogroup 5-11](#) depicts some of the banks along the right and left sides of the river.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-12](#) depicts dense vegetation on water surface and water color at AR3\_04.

Pool measurements were made during each visit; one set each in July 2009 and in May and June 2010. The site was pooled for the entire length of its reach and beyond. Table 5-8 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 5-8** Pool measurements for Site AR3\_04

Date		Length (meters)	Width (meters)	Depth (meters)
July 31, 2009	Pool 1	> 300	20.6	2.0
May 8, 2010	Pool 1	> 300	20.6	1.6
June 22, 2010	Pool 1	> 300	20.6	1.9

### Physical Description of Site AR3\_05

The Atascosa River at Site AR3\_05 was monitored on May 8 and June 23, 2010. This site was accessible only through privately owned lands that were fenced, gated and locked. A county road off FM 476 ran less than a mile to the property boundary and a gate. It was only a short distance from the gate to the river. At this location the stream was spanned by a concrete low-water dam/bridge that joined the pastures on either side of the river. The dam was set as the 210-m transect. The upstream sites were all greater than 1.0-m in depth and downstream, staff encountered a couple of deep holes. Even though there were several locations at which the stream could be entered and exited, dense vegetation, including poison ivy, made accessing the stream a delicate task. There was no public access anywhere near this location. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-13](#) depicts access and general appearance of stream at Site AR3\_05.

The surveyed reach at Site AR3\_05 was partially wadeable. It was necessary to enter and exit the stream at several locations, and in some instances use overhanging trees, to obtain the thalweg measurements. In the stream, the bottom was firm sand and walking was easy, but deep sections, dense vegetation and log jams across the stream required circumvention on the bank at times. At the 0-m transect a cobble and concrete riprap substrate was encountered. [Photogroup 5-14](#) depicts obstructions encountered at Site AR3\_05.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-



3, 5-4, and 5-5, respectively. [Photogroup 5-15](#) depicts water color and clarity of the surface at Site AR3\_05.

### **Physical Description of Site AR3\_06**

The Atascosa River at Site AR3\_06 was monitored on May 8 and June 23, 2010. This site was accessible only through privately owned lands fronting FM 476 that were fenced, gated and locked. Within the property boundary was an abandoned, but serviceable, highway bridge that crossed the river connecting one side of the property to the other. This crossing was established as the 120-m transect. Downstream of the bridge, the depth became increasingly deeper until a thalweg depth of 1.35 meters was encountered at the 0-m transect, while upstream the river became shallower. The banks were densely vegetated along each side with a canopy that made the stream seem dark. The firm sand bottom and the lack of significant obstructions made it possible to wade in the stream the entire reach. There was no public access anywhere near this location. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-16](#) depicts the general appearance of Site AR3\_06. [Photogroup 5-17](#) depicts the obstruction and some of the riparian zone at Site AR3\_06.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-18](#) depicts water color and surface clarity at Site AR3\_06.

### **Physical Description of Site AR3\_07**

The Atascosa River at Site AR3\_07 was surveyed on May 8 and June 23, 2010. This site was accessible only through privately owned lands that were fenced, gated and locked. There was a rock dam just upstream of a rock, stream-level, low-water crossing. The dam impounded water to form a pooled area upstream. The 150-m transect was established 60 m downstream of the dam and the low-water crossing. The narrow riparian area both upstream and downstream of the midpoint was tree lined with undergrowth and bordered by rangeland on both sides. There were numerous points at which the stream could be entered and exited. There was no public access anywhere near this location. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-19](#) depicts the access and general appearance of Site AR3\_07.

The surveyed reach at Site AR3\_07 was wadeable for its entire length. In the stream, the bottom was firm sand and walking was easy. A few obstructions made it necessary to exit the stream and walk on the bank to access the next transect. [Photogroup 5-20](#) depicts obstructions encountered and bank access points at Site AR3\_07.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-21](#) depicts stream color and surface clarity at Site AR3\_07.

Pool measurements were made during each survey. Generally, the upper 150 m of the site was pooled. Table 5-9 below lists the pools and the lengths, the maximum width and maximum depth recorded for each pool.

**Table 5-9** Pool measurements for Site AR3\_07

Date		Length (meters)	Width (meters)	Depth (meters)
May 8, 2010	Pool 1	> 150	6.2	0.82
	Pool 2	21	5.1	0.5
June 23, 2010	Pool 1	> 150	6.0	0.79

### Physical Description of Site AR3\_08

The Atascosa River at Site AR3\_08 was visited on May 8 and June 23, 2010. This site was accessible at a low-water crossing on Granato Road south of Poteet, Texas in Atascosa County, but the road right-of-way is very narrow on either side of the stream. On either side of the road the property is privately owned and fenced with locked gates. The 150-m transect was established in a rocky riffle area immediately downstream of the road crossing. The downstream portion of the creek is shallow and narrow, while the upstream portion is dammed by the low-water crossing at Granato Road and forms a deep wide pool. The right bank is tall and steep and the riparian area both upstream and downstream of the road is densely vegetated. The riparian area of the left bank is primarily improved pasture dotted with large oaks and pecans. The left banks were relatively low and not too steep, thus allowing easy access to the water. Downstream of the road, the substrate was firm sand and provided easy walking with no significant obstructions impeding the channel except for the fences on either side of the road. Upstream, the water is deep but marginally wadeable. The road provides public access to the stream but is limited. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-22](#) depicts the access and general appearance of Site AR3\_08.

The surveyed reach at Site AR3\_08 was wadeable for the entire 300 meters. The road crossing divided the reach and fences restricted access from the road right-of-way into the stream on both sides of the road crossing. Other than these obstacles, the only other obstructions encountered were upstream of the 300-m transect, which did not impede the survey. [Photogroup 5-23](#) depicts some of the obstructions encountered at Site AR3\_08.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-24](#) depicts water color and surface clarity at Site AR3\_08

Pool measurements were made during each survey. Generally, the upper 150 meters of the site and beyond was pooled. Table 5-10 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 5-10** Pool measurements for Site AR3\_08

Date		Length (meters)	Width (meters)	Depth (meters)
May 8, 2010	Pool 1	>170	9.3	1.4
June 23, 2010	Pool 1	>170	9.9	>1.42

### Physical Description of Site AR3\_09

The Atascosa River at Site AR3\_09 was surveyed on May 7 and June 23, 2010. This site was only accessible through private land off SH16 south of Poteet, Texas in Atascosa County. The site was located at a concrete low-water dam/bridge similar to the one encountered at Site AR3\_05. The crossing was set as the 240-m transect. The upstream portion was easily accessed from the crossing and it was possible to wade the 60 meters to the 300-m transect with little effort, but downstream access was more challenging. Several obstructions were encountered along the reach but the firm sand bottom did not impede walking. There is no public access anywhere along the reach. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-25](#) depicts the general appearance of river at Site AR3\_09.

The surveyed reach at Site AR3\_09 was wadeable for its entire length. Obstructions occasionally blocked the stream and it was necessary to climb in and out of the channel at a number of locations. [Photogroup 5-26](#) depicts some of the wading and obstructions mentioned above at Site AR3\_09.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-27](#) depicts water color and surface clarity at Site AR3\_09.

Pool measurements were made during each survey. Generally, the upper 150-m of the site was pooled. Table 5-11 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 5-11** Pool measurements for Site AR3\_09

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	> 100	12.4	1.35
June 23, 2010	Pool 1	40.7	5.2	0.96
	Pool 2	30	4.7	0.92
	Pool 3	20.5	3.9	0.83
	Pool 4	22.2	5.7	0.99
	Pool 5	> 100	9.6	1.07

### Physical Description of Site AR3\_10

The Atascosa River at Site AR3\_10 was surveyed on May 7 and June 23, 2010. This site is adjacent to SH16 south of Poteet, Texas in Atascosa County, but was only legally accessible through private land. A large pool at SH 16 could be accessed from the bridge but it required crossing fences and trespassing. As at Site AR3\_06, no adequate parking was available along the shoulder of SH 16. At the stream, banks were low and gently sloped making access easy. The riparian area along the right bank was greater than 20-m wide with trees and a shrub understory mixed with grass and forbs. The left bank was improved pasture used for livestock. The 0-m transect was at the top of the large pool that passed under the highway to a neighboring property. A fence at the property line and dense vegetation at a log jam obstructed the channel but did not impede the survey. There is no public access except at the boundary of the property at SH 16. Table 5-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 5-28](#) depicts access and general appearance of Site AR3\_10.



The surveyed reach at Site AR3\_10 was wadeable for its entire length. Obstructions in the stream were passable and did not impede the survey. [Photogroup 5-29](#) depicts some of the wading and obstructions mentioned above in addition to portions of the dry streambed observed in June 2010.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-30](#) depicts the water color and surface clarity of the stream at Site AR3\_10.

Pool measurements were made during each visit in 2010. Generally, the upper 150 m of the site was pooled. Table 5-12 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 5-12** Pool measurements for Site AR3\_10

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	> 100	15.4	1.15
	Pool 2	58	4.8	0.95
	Pool 3	>150	9.5	0.88
June 23, 2010	Pool 1	>100	10.1	0.9
	Pool 2	50	4.6	0.73
	Pool 3	> 120	9.4	0.73

### Physical Description of Site AR3\_11

The Atascosa River at Site AR3\_11 was monitored on May 7, 2010 and June 23, 2010. This site lies north of FM 2146 west of Poteet, Texas in Atascosa County, but the 300 m reach required for the survey was only accessible through private land. The property was fenced and gated and required landowner permission for entry. A small pool can be accessed in the FM 2146 right-of-way but there is insufficient water for recreation. The Atascosa River at this property flows through improved pasture with sparse trees and few shrubs. The banks are low and gently sloping into the stream along the entire reach making access to the stream very easy from the bank. The 0-m transect was set immediately upstream of the fence at the property boundary along FM 2146. There is no public access to the river at this site except for the right-of-way along FM 2146. Downstream of FM 2146, the stream in the highway right-of-way has been observed to be a little more than a trickle. Table 5-2 lists the stream channel and riparian zone qualities observed at this site. [Photogroup 5-31](#) depicts the access and general appearance of Site AR3\_11.

The surveyed reach at Site AR3\_11 was wadeable for its entire length. No obstructions were encountered that impeded the survey within the boundaries of the property. In June 2010 a considerable amount of the stream was dry. [Photogroup 5-32](#) contrasts the May and June 2010 surveys.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 5-3, 5-4, and 5-5, respectively. [Photogroup 5-33](#) contrasts the water color and surface clarity from May to June at Site AR3\_11.

Pool measurements were made during each visit in 2010 (Table 5-13). The stream consisted of a series of small pooled areas and narrow channels. Two of the pooled areas observed in May, pool 2 and pool 4, had dried up or were less than 10-m in length at the June survey.

**Table 5-13** Pool measurements for Site AR3\_11

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	28	5.5	0.49
	Pool 2	12	4.2	0.75
	Pool 3	140	8.5	0.73
	Pool 4	74	5.5	0.30
June 23, 2010	Pool 1	17	5.1	0.81
	Pool 2	127	7.95	0.71

## Activities: Observed and Interviewed

### General Comments

Sites AR3\_02, AR3\_03 and AR3\_04 are dramatically different from all other sites surveyed. These sites are directly associated with the Atascosa River Park in Pleasanton, Texas and are routinely visited by local citizens as well as non-resident visitors. Site AR3\_01 is also adjacent to city property downstream of the park, but was not observed to be utilized on either visit, though foot paths and child's toy indicated possible use. Because of the dramatic difference in the nature of the park and the remainder of the sites in AU 2107\_03, observations and interviews will first be discussed related to the non-park sites, including AR3\_01. The three park sites AR3\_02 - 04 will be discussed independently from the other eight sites: one, because an additional visit was made to these sites in 2009; and two, much more information regarding observations of human activities could be gathered at these three sites as compared to the remaining eight sites.

During each RUAA survey field personnel visited the publicly accessible sites during times and days when recreational activities were likely to occur. Interviews and observations at privately owned sites were conducted with landowners when it was convenient for them. In most cases, informal conversations occurred during the scouting process in late 2009 and notes were made. Once the site was selected, there was very little contact with most landowners so phone interviews were conducted to confirm and supplement information gathered during the initial contact.

Seven of the eleven sites selected required entering private property that was fenced, gated and locked and required landowner permission for entrance. The publicly accessible Sites AR3\_01 through AR3\_04 did not require landowner permission; nonetheless, permission was sought and granted from the City of Pleasanton to use a small boat in the park area to collect required information. As stated above, even though Site AR3\_01 was a publicly accessible location, it was not included in the summer 2009 survey. It was visited twice in 2010 and will be included in the discussion of the privately owned sites.

### Discussion of Eight Non-Park Sites

No activities, either primary or secondary, were observed at any of the eight non-park associated sites in AU 2107\_03 on either visit during 2010. At Site AR3\_01, there was a foot path from the

baseball practice area but no activities were observed, although a child's toy (a troll doll) was found on the trail away from the water. Sites AR3\_05 – AR3\_11 were all located on private land and were not generally publicly accessible without landowner permission.

No interviews were performed at Site AR3\_01 as no one was ever encountered at the location. The only interviews performed at the non-park sites in AU 2107\_03 were with landowners from whom permission was obtained to gain river access. No one else was seen at any of the locations to interview. None of the landowners interviewed indicated that, to their knowledge, primary contact recreation occurred on their property in recent history.

One landowner commented that as a youth, he, his family and friends would wade in the river but that was back in the 1960s when the water flowed and was clear. Now he no longer goes in the water. Another landowner acknowledged wading in the water when it was “up” and flowing after a rain in the past but provided not specifics as to how long ago that was.

On private lands the only recreation reported along the stream on one's own property is fishing, but some hunting occurs along the banks. Comments were made that even when fish were caught, they were not eaten.

Contrary to other assessment units investigated, landowner cooperation was obtained at all sites adjacent to public crossings in AU2107\_03 that had been identified by TIAER in 2009. Neither recreation of any type nor remnants of activities were observed at these crossings. One landowner did share that sometimes folks fished in a big pool under the bridge on SH16 on the edge of her property, but added “illegally.”

### **Discussion of Three Park Sites**

In the Atascosa River Park, AR3\_02 – 04, TIAER staff observed numerous activities in Atascosa River Park in Pleasanton on each visit during the RUAA surveys as well as on reconnaissance trips and during past (non-RUAA related) monitoring efforts. This area appears to be widely used by both locals and non-residents; we often met folks from other cities that were there visiting family and came to the park to use the park's sports facilities (covered pavilion, basketball hoops, and baseball park) or the play structure.

Families and individuals were observed in the entire length of the park, which encompassed each of the three sites to some degree (see site descriptions), utilizing the open park areas as well as the facilities within the park. Individuals were observed along the riverbank as well as away from the bank, but at no time was anyone observed in or contacting the water directly. Activities observed included fishing, picnicking, cycling, jogging, walking, standing and sitting both on the grass and in cars. These activities were most prevalent at Site AR3\_03, but occurred at all three sites. [Photogroups 5-34](#), [5-35](#), and [5-36](#) illustrate some of activities recorded at Sites AR3\_02, AR3\_03, and AR3\_04, respectively. Additional activity photographs can be viewed in the Appendix C-4.

Table 5-14 shows the approximate number of people observed at the three parks sites and the primary contact recreational activities observed. As relayed in the table, no primary contact activities were observed.



Table 5-15 shows the estimated number of people observed at the three park locations and the secondary activities observed. Fishing is the primary activity observed, but one incidence of duck feeding was recorded.

Table 5-16 illustrates the general activities observed in the Atascosa River Park during the three surveys from July 2009 through June 2010.

**Table 5-14** Primary Contact Recreation activities observed in the Atascosa River, AU2107\_03.

Date	Site Number	Number Observed <sup>1</sup>	Wading Children	Wading Adults	Swimming	Water Skiing	Diving	Tubing	Surfing	Whitewater activities	Other
July 31, 2009	AR3_02	1-10	-	-	-	-	-	-	-	-	-
	AR3_03	1-10	-	-	-	-	-	-	-	-	-
	AR3_04	1-10	-	-	-	-	-	-	-	-	-
May 8, 2010	AR3_02	11-20	-	-	-	-	-	-	-	-	-
	AR3_03	11-20	-	-	-	-	-	-	-	-	-
	AR3_04	1-10	-	-	-	-	-	-	-	-	-
June 22, 2010	AR3_02	11-20	-	-	-	-	-	-	-	-	-
	AR3_03	1-10	-	-	-	-	-	-	-	-	-
	AR3_04	1-10	-	-	-	-	-	-	-	-	-

<sup>1</sup> None; 1-10; 11- 20; 20-50; >50

**Table 5-15** Secondary Contact Recreation activities observed in the Atascosa River, AU2107\_03.

Date	Site Number	Number Observed <sup>1</sup>	Fishing	Boating	Non-whitewater activities	< 8 m from shore	> 8 m from shore	Other
July 31, 2009	AR3_02	1-10	X	-	-	X	X	-
	AR3_03	1-10	X	-	-	X	-	-
	AR3_04	1-10	X	-	-	X	-	X
May 8, 2010	AR3_02	11-20	X	-	-	X	X	-
	AR3_03	11-20	X	-	-	X	X	-
	AR3_04	1-10	-	-	-	-	X	-
June 22, 2010	AR3_02	11-20	X	-	-	X	X	-
	AR3_03	1-10	X	-	-	X	X	X
	AR3_04	1-10	X	-	-	X	X	X

Table 5-17 lists the activities reported during interviews conducted in the park over the three survey periods. Though secondary contact recreation activities dominated the interviews, there were a few interviews that indicated primary contact recreation activities did occur. Three interviewees related that during the Cowboy Homecoming festivities in August, some of the “carnies” would get into the river near the park (perhaps to bathe), but one of the interviewees (a local policeman) added they were removed when discovered. A couple of other interviewees admitted in their youth, one over 10 years previous and the other not since the early 1990s, that they swam on occasion. Additionally, in one interview, the interviewee shared with TIAER staff

that about five years ago there had been a baptism in the pool immediately below the East Hunt Street crossing. Finally, one report of a child, of unspecified age, wading was recorded. From a different perspective, a resident of Pleasanton of some 50 years shared that as children they were told they would get lockjaw if they got into the Atascosa River.

Copies of all of the interviews conducted along Atascosa River AU4 by site are located in Appendix C-1.

**Table 5-16** General activities observed in the Atascosa River, AU2107\_03.

Date	Site Number	Number Observed <sup>1</sup>	Water in mouth	Bathing	Walking Jogging Running	Sitting Standing Lying down	Playing on shore	Picnicking	Bicycling Motorcycle / ATV	Hunting Trapping	Wildlife watching	< 8 m from shore	> 8 m from shore	Other
July 31, 2009	AR3_02	1-10	-	-	X	X	-	-	-	-	-	-	X	-
	AR3_03	1-10	-	-	X	X	-	-	-	-	-	X	X	X
	AR3_04	1-10	-	-	-	X	-	-	-	-	X	X	-	-
May 8, 2010	AR3_02	11-20	-	-	-	X	X	X	X	-	-	X	X	X
	AR3_03	11-20	-	-	-	X	X	X	X	-	-	X	X	X
	AR3_04	1-10	-	-	-	X	-	-	-	-	-	-	X	-
June 22, 2010	AR3_02	11-20	-	-	X	X	X	X	-	-	-	X	X	X
	AR3_03	1-10	-	-	X	X	-	-	X	-	-	X	X	-
	AR3_04	1-10	-	-	-	X	-	-	-	-	-	X	X	X

<sup>1</sup> None; 1-10; 11-20; 20-50; >50

**Table 5-17** Recreation activities reported in interviews conducted at sites in Atascosa River Park.

Watershed	Site Name	Swimming	Walking Jogging Running	Wading		Standing Sitting Sleeping	Wildlife Watching	Picnicking	Fishing	Boat Kayak Canoe
				Adults	Children					
AU2107_03	AR3_02	2 <sup>1</sup>	-	-	1	-	-	-	11	-
	AR3_03	4 <sup>2</sup>	-	-	-	-	1	-	22	4
	AR3_04	-	-	-	-	-	-	-	3	2

<sup>1</sup>one incidence was actually a baptism; <sup>2</sup>three interviews referred to “carnies bathing” from the carnival that sets up in the park.

## Summary

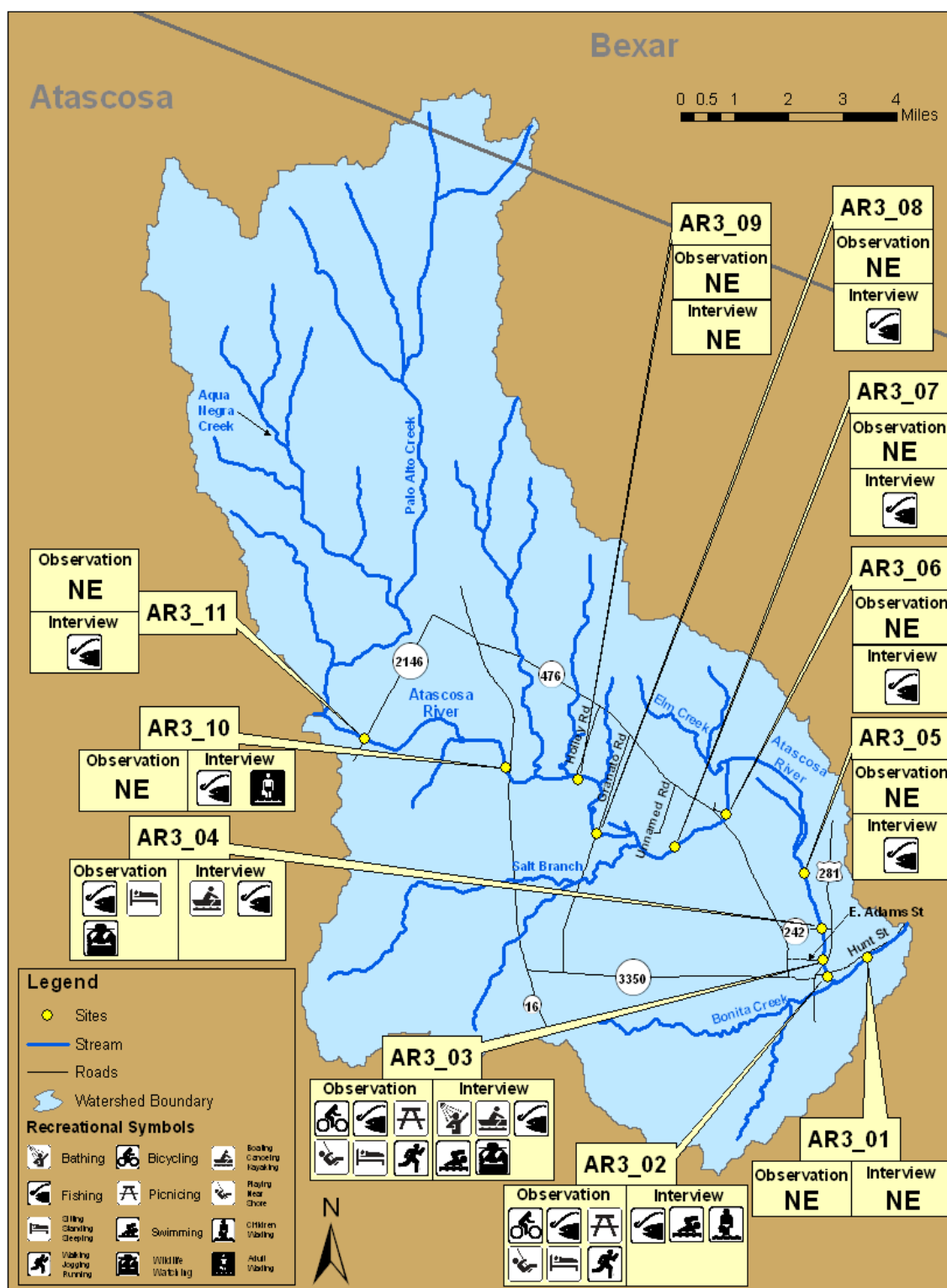
RUAAs were conducted at 3 sites in AU 2107\_03 on July 31, 2009 and at all 11 sites on May 7 - 8, and June 22 - 23, 2010. Copies of all comprehensive interview sheets, field data sheets, stream flow measurement data sheets and transect pictures from each survey are located in Appendices C-1, C-2, C-3, and C-4, respectively.

With the exception of the four sites located on City of Pleasanton property, Sites AR3\_01 – 04, the seven sites north and west of Pleasanton were located on privately owned properties of

substantial acreages. At these seven locations, public access is limited to the right-of-way at three road crossings, which were used for the survey. Fences, locked gates and distance from the road to the stream at four of the eleven sites surveyed limit access to the river in this segment. No aquatic recreational activities (either primary or secondary) were observed by TIAER field staff during the surveys at the upper seven sites and Site AR3\_01. Information shared by landowners included occasional fishing, some hunting and limited contact with the water. One landowner recalled swimming on the property in the 1960s, but not since. Another interviewee has waded during elevated flows but not frequently. A summary of observed and interviewed activities by site are provided in Figure 5-2.

Flows were low at sites above Site AR3\_09 in May, and in June Sites AR3\_10 and AR3\_11 were not flowing at all. The remaining nine sites from AR3\_01 through AR3\_09 were still flowing as all these sites are downstream of either the Poteet WWTF discharge or the Pleasanton WWTF discharge. TIAER did not have a prior history at most of the sites above FM 476 other than scouting efforts that occurred at various times prior to this study. As mentioned above, prior visits (bacteria monitoring during 2006 – 2007) to the Atascosa River at FM 476 revealed times at which the stream was dry or not flowing. The river at SH 16 was observed several times in travels from Poteet to Jourdanton under a variety of flow regimes ranging from flooding to dry, except for the large pool below the dam. At Granato Road some level of flow was generally observed as flow as water exits large pool on the upstream side of the road. [Photogroup 5-37](#) illustrates some flow conditions observed on August 6, 2009.





**Figure 5-2** Summary of observed and interviewed activities for the Atascosa River AU 2107\_03.



## **Atascosa River AU2107\_03 Photogroups**



**Photogroup 5-1**

Atascosa River Site AR3\_01 depicting the access and general appearance of the river and immediate riparian zone (All individuals pictured are field staff.) [[Return to Text](#)]



**Photogroup 5-2**

Atascosa River Site AR3\_01 depicting obstructions encountered.

[\[Return to Text\]](#)



**Photogroup 5-3**

Atascosa River Site AR3\_01 depicting water and surface clarity.  
(All individuals pictured are field staff.) [\[Return to Text\]](#)



**Photogroup 5-4**

Atascosa River Site AR3\_02 depicting access and general appearance of river. [[Return to Text](#)]

**Photogroup 5-5**

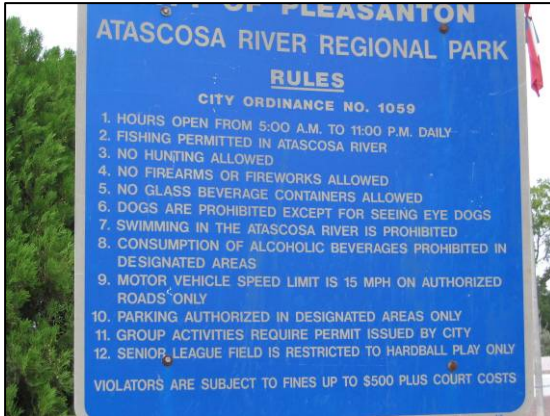
Atascosa River Site AR3\_02 depicting some views of the left and right banks, as well as the pool below E. Hunt Street. (All individuals pictured are field staff.) [[Return to Text](#)]



**Photogroup 5-6**

Atascosa River Site AR3\_02 depicting water color and vegetation on the surface. [\[Return to Text\]](#)



**Photogroup 5-7**

Atascosa River Site AR3\_03 depicting sign of park rules sign, access crossing and general appearance. [\[Return to Text\]](#)

**Photogroup 5-8**

Atascosa River Site AR3\_03 depicting typical banks along the right and left sides of the river. [\[Return to Text\]](#)



**Photogroup 5-9**

Atascosa River Site AR3\_03 depicting dense vegetation on water at some transects and surface and water color. [\[Return to Text\]](#)





**Photogroup 5-10** Atascosa River Site AR3\_04 depicting the access and general appearance. (Individual in upper right photo was local resident sitting near river.) [\[Return to Text\]](#)





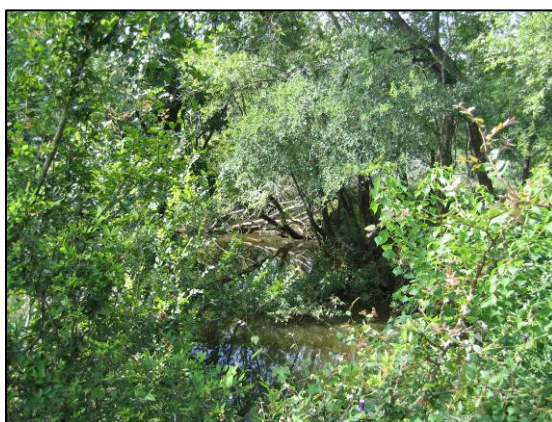
**Photogroup 5-11** Atascosa River Site AR3\_04 depicting typical banks along the right and left sides of the river. (Individual in upper right photo is field staff.) [\[Return to Text\]](#)





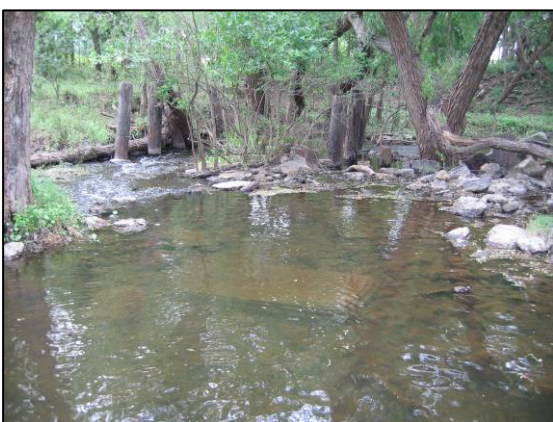
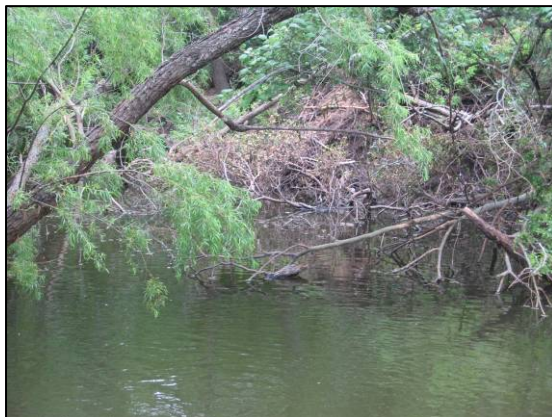
**Photogroup 5-12** Atascosa River Site AR3\_04 depicting dense vegetation on water surface and water color. (All individuals pictured are field staff.)  
[\[Return to Text\]](#)





**Photogroup 5-13** Atascosa River Site AR3\_05 depicting access and general appearance of river. [[Return to Text](#)]





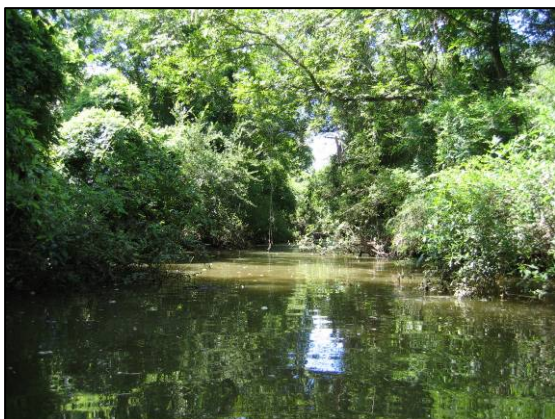
**Photogroup 5-14** Atascosa River Site AR3\_05 depicting obstructions encountered along river. [\[Return to Text\]](#)





**Photogroup 5-15** Atascosa River Site AR3\_05 depicting water color and clarity of the surface. [\[Return to Text\]](#)





**Photogroup 5-16** Atascosa River Site AR3\_06 depicting the general appearance of the river. [\[Return to Text\]](#)





**Photogroup 5-17** Atascosa River Site AR3\_06 depicting the obstruction and some of the immediate riparian zone in the reach. (Individual in upper left photo is field staff.) [[Return to Text](#)]





**Photogroup 5-18** Atascosa River Site AR3\_06 depicting water color and surface clarity. [[Return to Text](#)]





**Photogroup 5-19** Atascosa River Site AR3\_07 depicting the access point and general appearance of the river. [\[Return to Text\]](#)





**Photogroup 5-20** Atascosa River Site AR3\_07 depicting obstructions encountered and bank access points. (Individual in upper left photo is field staff.) [\[Return to Text\]](#)



**Photogroup 5-21**

Atascosa River Site AR3\_07 depicting stream color and surface clarity. (Arm in center right photo belongs to field staff.) [[Return to Text](#)]





**Photogroup 5-22** Atascosa River Site AR3\_08 depicting the access point and general appearance of river. (Individual in upper left photo is field staff) [\[Return to Text\]](#)





**Photogroup 5-23** Atascosa River Site AR3\_08 depicting some of the obstructions encountered. [\[Return to Text\]](#)





**Photogroup 5-24** Atascosa River Site AR3\_08 depicting water color and surface clarity. (All individuals pictured are field staff.) [\[Return to Text\]](#)





**Photogroup 5-25** Atascosa River Site AR3\_09 depicting the general appearance of river. [\[Return to Text\]](#)





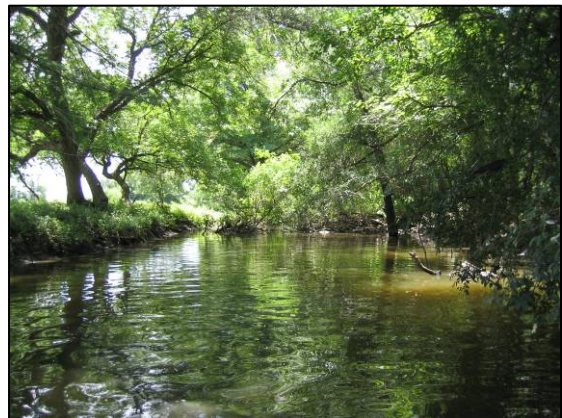
**Photogroup 5-26** Atascosa River Site AR3\_09 depicting some of the wading and obstructions above reach (upper row). (All individuals pictured are field staff.) [\[Return to Text\]](#)





**Photogroup 5-27** Atascosa River Site AR3\_09 depicting water color and surface clarity. (Individual in center right photo is field staff.) [\[Return to Text\]](#)





**Photogroup 5-28** Atascosa River Site AR3\_10 depicting access point and general appearance of river. (All individuals pictured are field staff.)  
[\[Return to Text\]](#)



**Photogroup 5-29**

Atascosa River Site AR3\_10 depicting some of the wading, obstructions encountered, and portions of the dry streambed observed in June 2010. (All individuals pictured are field staff.)

[\[Return to Text\]](#)





**Photogroup 5-30** Atascosa River Site AR3\_10 depicting the water color and surface clarity. [[Return to Text](#)]





**Photogroup 5-31** Atascosa River Site AR3\_11 depicting the access and general appearance of river. [[Return to Text](#)]





**Photogroup 5-32** Atascosa River Site AR3\_11 with photograph pairs contrasting stream conditions for the May and June 2010 surveys. (Individual in center right photo is field staff.) [\[Return to Text\]](#)



**Photogroup 5-33**

Atascosa River Site AR3\_11 with photograph pairs contrasting the water color and surface clarity from May to June surveys. [[Return to Text](#)]





**Photogroup 5-34** Atascosa River Site AR3\_03 illustrating some of the activities observed at the site. (Individuals pictured are local residents in park) (Lower left photo – field staff performing interview.) [[Return to Text](#)]



**Photogroup 5-35**

Atascosa River Site AR3\_03 illustrating some of the activities observed at the site. (Field staff performing interviews and local citizens utilizing park.) [\[Return to Text\]](#)





**Photogroup 5-36** Atascosa River Site AR3\_04 illustrating some of the activities and locals observed at the site. [[Return to Text](#)]



**Photogroup 5-37**

Atascosa River AU 2107\_03 depicting documented conditions observed on August 6, 2009. Upper: Site AR3\_08 - left upstream, right downstream. Middle: Site AR310 – left upstream, right downstream. Bottom: AR3\_11 - left upstream, right downstream. [[Return to Text](#)]



## **CHAPTER 6**

### **ASSESSMENT UNIT 2107\_04**

#### **Watershed Characterization**

AU 2107\_04 is described as running from the confluence with Palo Alto Creek to the upper end of this segment (Figure 6-1). AU 2107\_04 is located entirely in Atascosa County. Reconnaissance of AU 2107\_04 yielded five road crossings, only two of which offered sufficient distance (300 m) of public right-of-way to perform a RUAA survey without the cooperation of an adjacent landowner. With the assistance of Texas AgriLife Research and members of the Atascosa County chapter of Texas Farm Bureau and a property owner list gathered from the Atascosa County Appraisal District, TIAER was able to gain landowner cooperation at or near two additional road crossings and seven private access only sites.

Eight sites were located on private lands (some adjacent to road crossings) that are predominantly native pasture lands though some improved pastures were observed. Three locations were natural and were dominated by native vegetation consisting of trees, shrubs and other forbs. Cattle ranches dominate this segment of the Atascosa River, though some row crop production is present. As in AU 2107\_03, streambanks in AU 2107\_04 are lower and less steep than either of the two lower segments (AU 2107\_01 and AU 2107\_02) and vegetation is less dense as well. Once at the streambank, access to the river is moderately easy to easy.

City of Lytle WWTF discharges at a permit limit of 0.450 MGD near the most upstream terminus of AU 2107\_04. The discharge enters West Prong Atascosa River, thence to the Atascosa River. The Rossville water treatment facility with a permitted discharge permit limit of 0.015 MGD for filter backwash water. The discharge is into an unnamed tributary of the Atascosa River and thence into AU 2107\_04. NPDES/TPDES permitted facilities are discussed more completely in Chapter 2.

The land use of the AU 2107\_04 watershed is provided in more detail in Chapter 2.

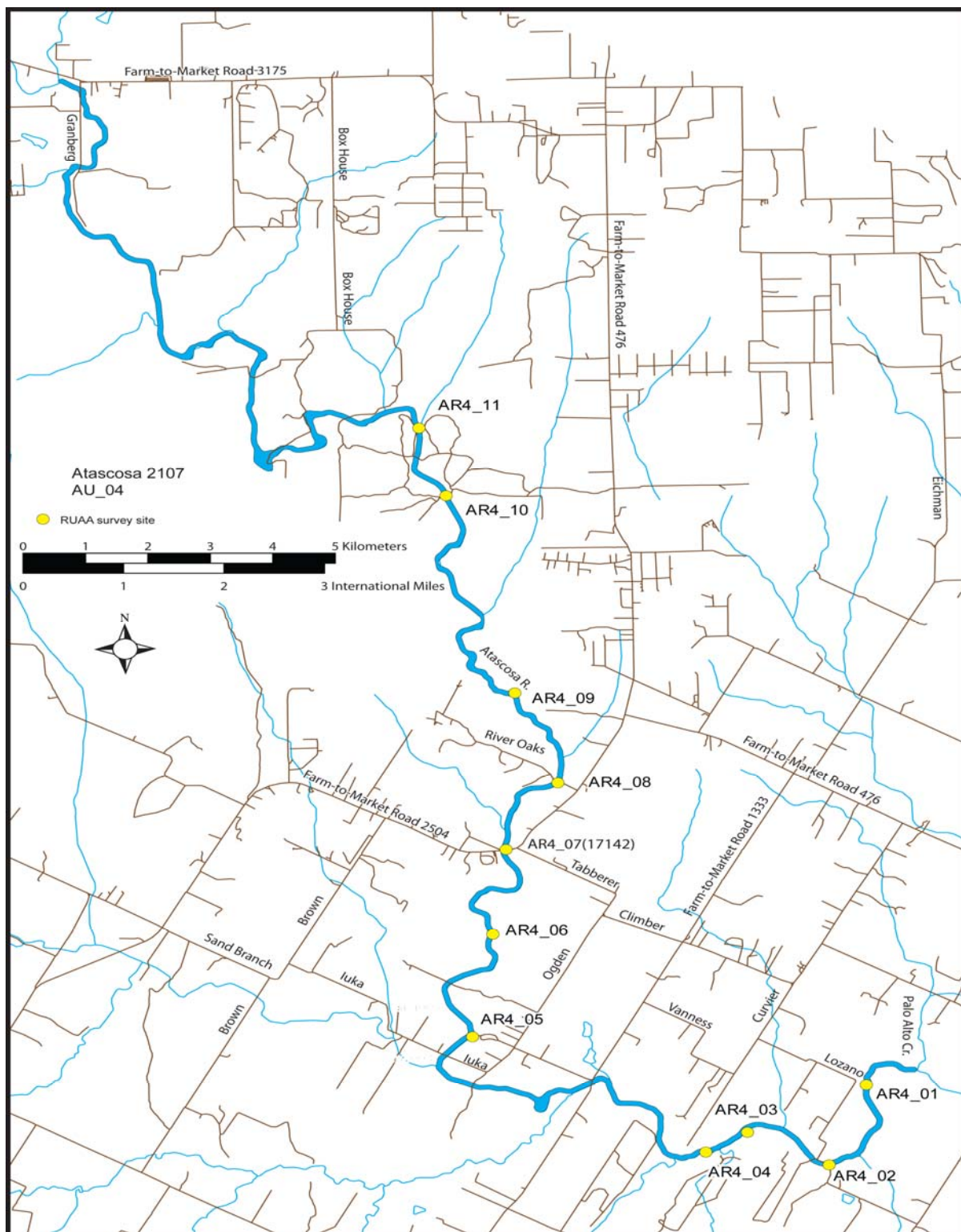
#### **Additional Information**

The review of historical information and climatic conditions is found in Chapter 2.

#### **Survey Site Descriptions**

Due to cooperation of local landowners, 11 sites were located in AU 2107\_04 (Figure 6-1). Most sites were identified through the efforts of members Atascosa County chapter of Texas Farm Bureau who were familiar with landowners in AU 2107\_04. Nine sites were located on private lands (two were adjacent to road crossings) and two were sited at road crossings where landowner permission for entry was not required. RUAA surveys were performed twice in 2010 at each site.

**TIAER Site AR4\_01** is located on the Atascosa River off Lozano Road west of Poteet. This property was only accessible through private property and required landowner permission for entry. This site was selected because the local landowner opted to cooperate and the location provided for characterization of the Atascosa River in AU 2107\_04.



**Figure 6-1** Atascosa River AU 2107\_04 showing RUAA sites



**TIAER Site AR4\_02** is located on the Atascosa River at Lozano Road. This site was selected because of the potential for public access to the stream and no permission was required to conduct the survey. It also offers the opportunity for characterization of the Atascosa River in AU 2107\_04.

**TIAER Site AR4\_03** is located on the Atascosa River west of Poteet off Atascosa County Road (CR) 302. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the location provided an opportunity for additional characterization of the Atascosa River in AU 2107\_04.

**TIAER Site AR4\_04** is located on the Atascosa River west of Poteet off Atascosa CR 302. This site is upstream of AR4\_03 and within the same property. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the location provided for characterization of the Atascosa River in AU 2107\_04.

**TIAER Site AR4\_05** is located on the Atascosa River west of Poteet near the intersection of Ogden and Iuka Roads in Atascosa County. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the location provided another site for characterization of the Atascosa River in AU 2107\_04.

**TIAER Site AR4\_06** is located on the Atascosa River west of Poteet off Ogden Road in Atascosa County, upstream of AR4\_05. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the location provided for characterization of the Atascosa River in AU 2107\_04.

**TIAER Site AR4\_07 (TCEQ Station 17142)** is located at the FM 2504 crossing of the Atascosa River. This site was selected because of the potential for public access to the stream and the upstream landowner opted to cooperate in the project.

**TIAER Site AR4\_08** is located at River Oaks Road and the Atascosa River off FM 2504. This site was selected because of the potential for public access to the stream and there appears to be nothing limiting access upstream or downstream.

**TIAER Site AR4\_09** is located on the Atascosa River west of Poteet off FM 476. This property was only accessible through private lands and required landowner permission or entry. This site was selected because the landowner opted to cooperate and the location provided for characterization of the Atascosa River in AU 2107\_04.

**TIAER Site AR4\_10** is located on the Atascosa River west of Poteet off FM 476. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the location provided for characterization of the Atascosa River in AU 2107\_04.

**TIAER Site AR4\_11** is located on the Atascosa River west of Poteet off FM 476 upstream of Site AR4\_10 on the same property. This property was only accessible through private lands and required landowner permission for entry. This site was selected because the landowner opted to cooperate and the location provided for characterization of the Atascosa River in AU 2107\_04.

## Results and Discussions

### General Description of Stream and Survey Sites for AU 2107\_04

The RUAA surveys were conducted in AU 2107\_04 on May 4 and 7, and June 15 - 16, 2010. The surveys and associated interviews were performed on weekdays, weekends or holidays at opportune times to observe recreational activities in and around AU 2107\_04 of the Atascosa River. In addition to site visits, road crossings that possibly could afford public access, but were not included in the survey due to inability to gain landowner cooperation, were visited and photographed to catalogue recreational activity, or the lack of, during weekend hours.

Surveys conducted in AU 2107\_04 were conducted during varying air and water temperatures as show in Table 6-1. Water temperatures were warm enough for recreational activities to occur.

**Table 6-1** Temperatures measured at each site along AU 2107\_04

Assessment Unit	Site Number	May 4 and 7, 2010		June 15 - 16, 2010	
		Air Temp (C)	Water Temp (C) *	Air Temp (C)	Water Temp (C) *
2107 AU_04	AR4_01	27	26.8	35	29.8
	AR4_02	29	27.0	35	27.8
	AR4_03	28	25.5	28	29.3
	AR4_04	28	31.1	29	30.4
	AR4_05	32	26.8	37	-
	AR4_06	35	23.3	34	31.2
	AR4_07	28	22.6	36	28.4
	AR4_08	22	23.0	36	-
	AR4_09	34	-	36	-
	AR4_10	28	-	28	-
	AR4_11	28	-	35	-

\* Absence of water temperature measurement because no water present at site.

Table 6-2 displays the appearance of the stream channel and corridor at each site.

Table 6-3 shows the average thalweg depth for each reach and site during each of the RUAA surveys. Access (public or private) to each site and level of effort to access the stream from the streambank at each site is also provided in Table 6-3.

Table 6-4 shows the maximum, minimum and average widths at each site for each survey. The observed flow and total discharge are also listed for each site per survey.

Stream aesthetics and wildlife observations are reported in Table 6-5 for each site and survey. In general, the majority of observed tracks and fecal droppings reported in Table 6-5 are wildlife in



origin. Avian feces were the dominant dropping observed at all sites. Tracks included birds, raccoon, deer, and rarely feral hogs. Trash on private lands, which was rarely observed, appeared to have washed in during high flow periods.

### **Physical Description of Site AR4\_01**

The Atascosa River at Site AR4\_01 was surveyed on May 7 and June 15, 2010. This site was accessible only through private lands off Lozano Road northwest of Poteet, TX in Atascosa County. As the land was fenced, gated and locked, land-lessee permission was sought and granted for access to AR4\_01. At the river's edge, streambank access was relatively easy as the bank gently sloped to the water's edge. Flow was measured near the 0-m transect. No public access points were identified along the reach. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-1](#) depicts access to and the general appearance of Site AR4\_01.

The surveyed reach at Site AR4\_01 was wadeable for its entire length with average thalweg depths at 0.25-m or less. Wading was relatively easy on the packed sand bottom, but dense vegetation and presence of log jams impeded walking somewhat. [Photogroup 6-2](#) depicts obstructions and bank access mentioned above.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. [Photogroup 6-3](#) shows water color and clarity of the surface at Site AR4\_01.

[Remainder of page intentional left blank.]

**Table 6-2** Stream Channel and corridor assessment per site sampled in the Atascosa River.

Assessment Unit	Site Number	Streambank	Stream Channel Appearance	Dominant Substrate	Corridor Appearance	Riparian Size	Park	Landscape Surroundings
AU 2107_04	AR4_01	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR4_02	Right	Natural but garbage common	Sand Gravel	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR4_03	Right	Natural	Mud/Clay	Pasture	Small	No	Improved pasture for hay
		Left			Shrubs with Trees	Large		Native
	AR4_04	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR4_05	Right	Natural	Sand	Grass w/ Trees	Moderate	No	Native rangeland
		Left			Grass w/ Trees	Moderate		Native rangeland (fenced)
	AR4_06	Right	Natural	Sand	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR4_07	Right	Natural	Sand	Shrubs few Trees	Large	No	Native
		Left			Shrubs few Trees	Large		Native
	AR4_08	Right	Natural crossed under road	Sand Gravel	Shrubs with Trees	Large	No	Native
		Left			Shrubs with Trees	Large		Native
	AR4_09	Right	Natural sand bed dry	Sand	Grass w/ Trees	Large	No	Native rangeland
		Left			Grass w/ Trees	Large		Native rangeland
	AR4_10	Right	Natural sand bed dry	Sand	Grass w/ Trees	Large	No	Native rangeland
		Left			Grass w/ Trees	Large		Native rangeland
	AR4_11	Right	Natural sand bed dry	Sand	Grass w/ Trees	Large	No	Native rangeland
		Left			Grass w/ Trees	Large		Native rangeland



**Table 6-3** Thalweg depth, stream flow type, and site accessibility for each assessment unit and site for the two surveys conducted. Stream flow type represents TCEQ descriptions (TCEQ, 2010b).

Assessment Unit (AU)	Length (miles)	# of Sites	# of Recreational Areas in AU	Avg. Thalweg depth (m) for Assessment Unit		Stream Flow Type	General Access	Bank Access
				4 & 7 May 2010	June 15 – 16, 2010			
AU 2107_04	28	11	0	0.22	0.08	perennial		
Site Name	Segment length (m)	# of Transects	# of Recreational Areas at Site	Avg. Thalweg depth (m) by Site		Stream Flow Type	General Access	Bank Access
				4 & 7 May 2010	June 15 – 16, 2010			
AR4_01	300	11	0	0.25	0.22	perennial	Private	ME
AR4_02	300	11	0	0.29	0.19		Public	E
AR4_03	300	11	0	0.60	0.39		Private	ME
AR4_04	300	11	0	0.10	0.04		Private	ME
AR4_05	300	11	0	0.16	0.0		Private	ME
AR4_06	300	11	0	0.57	0.09		Private	MD
AR4_07	300	11	0	0.30	>0.01		Private	ME
AR4_08	300	11	0	0.10	0.0		Public	E
AR4_09	300	11	0	0.00	0.0		Private	E
AR4_10	300	11	0	0.00	0.0		Private	E
AR4_11	300	11	0	0.00	0.0		Private	E

E = Easy, ME = Moderately Easy, MD = Moderately Difficult, D = Difficult

**Table 6-4** Description of surveyed streams in the Atascosa River Watershed, AU 2107\_04.

Assessment Unit	Date	Site Number	Maximum width (m)	Minimum Width (m)	Average Width (m)	Total Discharge (cfs)	Observed Flow <sup>1</sup>
AU 210_04	May 4 & 7, 2010	AR4_01	5.9	1.5	5.2	0.2	low flow
		AR4_02	5.0	0.0	4.4	0.0	no flow
		AR4_03	8.2	1.3	5.4	<0.1	low flow
		AR4_04	3.9	0.3	3.9	0.0	no flow
		AR4_05	7.5	2.3	6.0	0.0	no flow
		AR4_06	6.9	2.0	3.7	<0.1	low flow
		AR4_07	10.5	1.0	5.0	0.0	no flow
		AR4_08	3.8	0.3	2.5	0.0	no flow
		AR4_09	0.0	0.0	0.0	0.0	no flow
		AR4_10	0.0	0.0	0.0	0.0	no flow
		AR4_11	0.0	0.0	0.0	0.0	no flow
	June 15 – 16, 2010	AR4_01	6.0	4.4	0.6	0.02	low flow
		AR4_02	4.1	0.0	3.9	0.0	no flow
		AR4_03	7.5	0.0	7.3	0.0	no flow
		AR4_04	2.8	0.0	2.3	0.0	no flow
		AR4_05	0.0	0.0	0.0	0.0	dry
		AR4_06	4.4	0.0	3.4	0.0	no flow
		AR4_07	3.7	0.0	0.5	0.0	no flow
		AR4_08	0.0	0.0	0.0	0.0	dry
		AR4_09	0.0	0.0	0.0	0.0	dry
		AR4_10	0.0	0.0	0.0	0.0	dry
		AR4_11	0.0	0.0	0.0	0.0	dry



**Table 6-5** Stream aesthetics and wildlife observations in the Atascosa River Watershed, AU 2107\_02.  
(From Field Data Sheet – Sect. F)

Station	Date	Water Aesthetics						Wildlife Observations				Stream Garbage		
		Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependant Birds	Mammals	Evidence	Large in Channel	Small in Channel	Bank
AR4_01	7 May 2010	A	A	N	clear	fine seds.	clear	N	N	N	tracks	N	C	N
	15 June 2010	A	A	R	clear	fine seds.	scum	N	N	MP feral	tracks/ fecal	N	R	N
AR4_02	7 May 2010	A	A	C	black	fine seds.	scum/ foam	N	N	N	tracks/ fecal	R	C	C
	15 June 2010	R	A	C	black	fine seds.	scum/ foam	SP snake	N	N	tracks/ fecal	R	C	C
AR4_03	7 May 2010	Ab	R	N	clear	fine seds.	clear	N	N	MP livestock	tracks/ fecal	R	R	N
	16 June 2010	Ab	R	N	clear	fine seds.	clear	N	N	SP livestock	tracks/ fecal	N	N	N
AR4_04	7 May 2010	A	A	R	brown	fine seds.	clear	N	N	MP livestock	tracks	R	R	N
	16 June 2010	R	A	R	brown	fine seds.	clear	N	N	SP livestock	tracks/ fecal	N	N	N
AR4_05	4 May 2010	A	A	N	clear	fine seds.	clear	N	N	SP livestock	tracks	N	N	N
	15 June 2010	A	A	N	NW	None	NW	N	N	SP livestock	tracks/ fecal	N	N	N
AR4_06	4 May 2010	R	A	N	brown	fine seds.	debris	N	N	N	tracks/ fecal	N	R	N
	15 June 2010	R	R	R	brown	fine seds.	scum	SP snake	N	N	tracks/ fecal	N	R	N
AR4_07	7 May 2010	A	A	R	brown	fine seds.	scum	N	N	N	tracks	R	R	R
	16 June 2010	R	R	R	brown	fine seds.	clear	N	N	N	tracks/ fecal	R	R	R
AR4_08	7 May 2010	A	A	C	brown	fine seds.	scum	N	N	SP pets	tracks/ fecal	C	R	C
	16 June 2010	A	A	R	NW	fine seds.	NW	N	N	SP pets	tracks/ fecal	C	R	C

Station	Date	Water Aesthetics						Wildlife Observations				Stream Garbage		
		Aquatic Vegetation	Algae Cover	Odor	Color	Bottom Deposit	Water Surface	Reptiles	Water Dependant Birds	Mammals	Evidence	Large in Channel	Small in Channel	Bank
AR4_09	4 May 2010	A	A	N	NW	N	NW	N	N	N	tracks/ fecal	N	N	N
	15 June 2010	A	A	N	NW	N	NW	N	N	N	tracks/ fecal	N	N	N
AR4_10	7 May 2010	A	A	N	NW	N	NW	N	N	SP livestock	tracks/ fecal	N	N	N
	15 June 2010	A	A	N	NW	N	NW	N	N	SP livestock	tracks/ fecal	N	N	N
AR4_11	7 May 2010	A	A	N	NW	N	NW	N	N	SP livestock	tracks/ fecal	N	N	N
	15 June 2010	A	A	N	NW	N	NW	N	N	SP livestock	tracks/ fecal	N	N	N

A = absent, R = rare, C = common, Ab = abundant, N = none, SP = slight presence, MP = moderate presence, LP = large presence, NW = no water present



Pool measurements were made during each visit, one in May and five in June. In May, one pooled area of 190 meters was identified. In June, the five pooled areas were measured within the same area of the stream reach, but on this visit at lower water levels shallow areas within the larger pool were easily identified. Table 6-6 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 6-6** Pool measurements for AR4\_01

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	190	6.0	0.7
June 15, 2010	Pool 1	13.8	3.8	1.0
	Pool 2	34.6	5.6	0.46
	Pool 3	45.0	5.8	0.45
	Pool 4	24.0	3.4	0.28
	Pool 5	36.6	4.4	0.51

### Physical Description of Site AR4\_02

The Atascosa River at Site AR4\_02 was surveyed on May 7 and June 15, 2010. This site is easily accessible at the Lozano Road crossing northwest of Poteet, TX in Atascosa County. Lozano Road is a gravel county road that crosses the Atascosa River. There is no bridge or concrete pad at this site, only a gravel crossing through the streambed. At the crossing no fences were encountered, although downstream the remnants of a fence and a log jam were encountered. No permission was required to survey this site. Two transects were set above the road crossing in a pooled area that exceeded 100 meters in length (further investigation upstream was not pursued as it was approaching private lands to which we did not have permission for entry). The reach was surveyed downstream from the 300-m transect (above Lozano Road) to the 0-m transect downstream of the road. No flow was measured on either visit since the 240 – 180 m transects were dry, with no water encountered on the downstream side of Lozano Road until the 150-m transect. The low-water crossing was the public access point identified along the reach. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-4](#) depicts the road access and general appearance of Site AR4\_02.

The surveyed reach at Site AR4\_02 was wadeable for its entire length with thalweg depths for the two visits averaging 0.24 m. The substrate was firm making walking relatively easy, though upstream of the road, numerous snags and branches in the water made it more efficient to walk along the bank to each of the upstream transects. [Photogroup 6-5](#) depicts obstructions and dry streambed at Site AR4\_02.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. [Photogroup 6-6](#) depicts water color, aquatic vegetation and surface film.

Pool measurements were made during each visit, one in May and five in June. In May, one pooled area greater than 100 meters was identified upstream of Lozano Road due to the length of the area and the lack of shallow breaks observed. In June, four pooled areas were measured, one upstream and three downstream of the crossing. Table 6-7 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 6-7** Pool measurements for Site AR4\_02

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	>100	4.4	0.65
June 15, 2010	Pool 1	>100	3.9	0.41
	Pool 2	38.2	3.7	0.22
	Pool 3	52.0	4.6	0.48
	Pool 4	28.5	4.1	0.55

**Physical Description of Site AR4\_03**

The Atascosa River at Site AR4\_03 was visited on May 7 and June 16, 2010. This site was accessible only through private lands off Atascosa CR 302 northwest of Poteet, TX in Atascosa County. As the land was fenced, gated and locked, landowner permission was obtained to perform the survey. The access point to this site was at the southeast most corner of the property. The 0-m transect was established at this point at a narrow riffle and 30-m increments were measured upstream until the 300-m transect was identified. The right bank was sparsely lined with large willow trees immediately adjacent to a coastal Bermuda hay field. The bank was low but for most of the reach required a fairly significant step to enter the water. The left bank was densely vegetated with brush and trees dominating. This bank, too, was low to the water but relatively deep and steep below the surface. There was no public access to the stream along any portion of this reach. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-7](#) depicts the general appearance of Site AR4\_03.

The surveyed reach at Site AR4\_03 was wadeable for its entire length with thalweg depths averaging 0.6 m in May and 0.4 m in June. The substrate was relatively firm sand but pockets of soft mud made walking challenging at times. [Photogroup 6-8](#) illustrates some of the many obstructions encountered and no flow conditions at Site AR4\_03.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. [Photogroup 6-9](#) shows water color and dense rafts of duckweed at Site AR4\_03.

Pool measurements were made during each visit. In May, the entire 300-m reach was a pooled area terminating at the riffle at the 0-m transect. In June, water levels had receded, the riffle was dried up, and the pool had diminished to 190 m within the reach, though it extended beyond the reach boundary upstream. Table 6-8 below lists the pools and the lengths, the maximum width and maximum depth recorded for each.

**Table 6-8** Pool measurements for Site AR4\_03

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	>300	8.2	1.12
June 16, 2010	Pool 1	>190	9.5	0.94

**Physical Description of Site AR4\_04**

Site AR4\_04 was visited on May 7 and June 16, 2010. AR4\_04 was located on the same property as Site AR4\_03. The entry point to the stream at this site was at the northeast most corner of the property, the opposite end from Site AR4\_03. Entry to the stream was at the



confluence of a small tributary (Santa Anna Creek) and the Atascosa River. This point was set as the 150-m transect and the remaining transects were established 150 m upstream and downstream at 30-m increments. The streambank was much higher and steeper in this portion of the river than what was observed downstream at Site AR4\_03. Additionally, the right bank from the 0-m transect to the 150-m transect was more densely vegetated than Site AR4\_03. The riparian area was much wider than at Site AR4\_03. As was the case at the downstream site, the left bank was densely vegetated with brush and trees dominating the riparian area. Upstream from the 150-m transect, both banks were steep and high and both were densely vegetated with no rangeland observed on either side of the stream. There was no public access to the stream along any portion of this reach. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-10](#) depicts the general appearance of the stream.

The surveyed reach at Site AR4\_04 was wadeable from the 150-m transect to the 0-m transect with thalweg depths averaging 0.1 m in May and 0.04 m in June. Upstream of the 150-m transect the streambed was dry. Throughout the entire 300-m reach, the streambed was composed of firm sand and walking was easy.

[Photogroup 6-11](#) depicts obstructions encountered and dry streambed at Site AR4\_04.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. [Photogroup 6-12](#) shows water color and surface appearance.

Pool measurements were made during the May 7 visit, but these bodies had dried sufficiently to lose pool status by June. Table 6-9 below lists the pools, their lengths, and the maximum width and maximum depth recorded for each.

**Table 6-9** Pool measurements for Site AR4\_04

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	>50	3.4	0.45
	Pool 2	49	2.4	0.4

### Physical Description of Site AR4\_05

The Atascosa River at Site AR4\_05 was visited on May 4 and June 15, 2010. This site was accessible only through private property off Iuka Road northwest of Poteet, TX in Atascosa County. As the land was fenced, gated and locked, landowner permission was obtained to perform the survey. The portion of the stream nearest the property line (at Iuka Road) was established as the 0-m transect. The remaining transect were set at 30-m increments upstream to the 300-m mark. The banks were relatively high (1 to 2 m) and steep with a few areas from which one could climb in and out with moderate ease. Each bank was vegetated with native grasses and button bush along the entire reach. There was no public access to the stream along any portion of this reach. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-13](#) depicts fence at property boundary on Iuka Road and general appearance of Site AR4\_05.

The surveyed reach at Site AR4\_05 was wadeable for its entire length with thalweg depths averaging 0.16 m in May and 0.0 m in June, as the entire reach was dry on the June visit. Walking was easy on the firm sand substrate, but in June, button bush had leafed out and grown sufficiently that they created obstacles along the length of the reach. [Photogroup 6-14](#) depicts obstructions, the dry creek bottom and tall banks at Site AR4\_05.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. A representative depiction of the water color and surface clarity at Site AR4\_05 can be seen in previously presented Photogroups 6-13 and 6-14.

Pool measurements were made during the May 4 visit. In May, the upper 210 meters was characterized by a series of lengthy but shallow pools. No water was observed in June. Table 6-10 below lists the pools and the length, maximum width and maximum depth recorded for each.

**Table 6-10** Pool measurements for AR4\_05

Date		Length (meters)	Width (meters)	Depth (meters)
May 4, 2010	Pool 1	36	11.5	0.31
	Pool 2	33	7.5	0.16
	Pool 3	86	9.0	0.40
	Pool 4	31	9.0	0.25

### Physical Description of Site AR4\_06

The Atascosa River at Site AR4\_06 was surveyed on May 4 and June 15, 2010. This site was accessible only through private property off Ogden Road northwest of Poteet, TX in Atascosa County. At the road, the land was fenced, gated and locked. On the property, access to the river was easy in the vicinity of a concrete low-water crossing. The 300-m transect was established at in the stream above the crossing near the boundary of the property. The banks were much lower than the banks downstream at Site AR4\_05 (0.3 to 1.0 m high) with easy egress and entrance along the entire reach. Each bank was densely vegetated with native species of grasses, forbs, and shrubs among large live oaks. There was no public access to the stream along any portion of this reach. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-15](#) depicts the general appearance of Sites AR4\_06 and the contrast from May to June 2010.

The surveyed reach at Site AR4\_06 was wadeable for its entire length with thalweg depths averaging 0.57 m in May and 0.09 m in June, with most of the reach dry in June. The substrate was firm sand. [Photogroup 6-16](#) depicts obstructions and bank access at AR4\_06.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. [Photogroup 6-17](#) depicts the water color and surface clarity at Site AR4\_06.

Pool measurements were made during each visit. Pools were identified as deeper areas of the stream with lengths greater than 10 m separated by shallow stretches (riffles). In May the entire



300 meters was pooled, but in June the pool had diminished significantly. Table 6-11 below lists the pools and the length, maximum width and maximum depth recorded for each.

**Table 6-11** Pool measurements for AR4\_06

Date		Length (meters)	Width (meters)	Depth (meters)
May 4, 2010	Pool 1	>300	6.9	0.76
June 15, 2010	Pool 1	76	4.4	0.40

### Physical Description of Site AR4\_07

The Atascosa River at Site AR4\_07 was visited on May 4 and June 16, 2010. This site is accessible from the bridge crossing on FM 2504 near the community of Rossville, west of Poteet, TX in Atascosa County. The right-of-way at this location is between 60-m and 90-m wide and is bordered by private property both upstream and downstream of the bridge. The downstream boundary was fenced and permission was not acquired to access this property. Because the fence upstream of the bridge had been damaged by water flow and debris, the river channel was accessible from the FM 2504 right-of-way during each survey. Landowner permission was sought and granted to survey upstream from FM 2504. The 0-m transect was established just above the downstream property line. At the road crossing, the banks gently slope to the streambed and the stream is easily accessed. Upstream of the road the stream is more deeply incised and the banks are steep with heights of 1.5 m or greater. In the right-of-way, the banks are vegetated mostly with grasses and some small shrubs and willows. Beyond the property boundary, the banks were more densely vegetated with grasses, forbs, and shrubs among large live oaks that sparsely line the area. Other than along the right-of-way of FM 2504, there was no public access to the stream. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-18](#) depicts the general appearance of Site AR4\_06 and the contrast from May to June 2010.

The surveyed reach at Site AR4\_07 was wadeable for its entire length with thalweg depths averaging 0.3 m in May and >0.01 m in June, as most of the reach was dry in June. The substrate was firm sand. Ten depth measurements were collected on May 4 but only one collected on June 16. Walking was easy on the firm sand, but dense vegetation (button bush), log jams, and a second barbed wire fence near the 300-m transect created several obstructions that required climbing in and out of the stream at several locations. [Photogroup 6-19](#) depicts and the numerous obstructions encountered in both May and June at Site AR4\_07.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. [Photogroup 6-20](#) shows water color, surface debris and dry creek bed at Site AR4\_07.

Pool measurements were made during each visit. In May three substantial pool areas were identified and measured. By June most of the water had dried and only one small, marginal pooled area remained. Table 6-12 lists the pools and the length, maximum width and maximum depth recorded for each.

**Table 6-12** Pool measurements for Site AR4\_07

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	33	6.9	0.33
	Pool 2	99	4.0	0.52
	Pool 3	164	10.3	0.71
June 16, 2010	Pool 1	10.5	3.7	0.42

**Physical Description of Site AR4\_08**

The Atascosa River at Site AR4\_08 was visited on May 7 and June 16, 2010. This site is publically accessible from the bridge crossing at River Oaks Drive near the community of Rossville, west of Poteet, TX in Atascosa County. On the downstream side of the bridge, the bank slopes gently to the streambed, and other than wading through the tall vegetation (giant ragweed), access to the stream was relatively easy. Upstream of the bridge, access is not so easily obtained. The vegetation is very dense and tall and the streambed is not visible until one reaches the lip and climbs into the channel. The channel makes a sharp S-curve from the road, running parallel for a distance before straightening to a north-south reach. Landowner permission was not sought since there was no indication that the river ran through private property. The 150-m transect was established just downstream of the road crossing and transects. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-21](#) depicts the access and general appearance of Site AR4\_08.

The surveyed reach at Site AR4\_08 was wadeable for its entire length with thalweg depths averaging 0.11 m in May and 0.0 m in June (the reach was dry in June). The substrate was firm sand interspersed with stretches of gravel. Walking was easy in the streambed, but dense vegetation and log jams offered obstacles at several locations. The most significant obstacle was around the 180-m transect where a very large debris pile made the stream impassable in the channel to the point that it had to be by-passed using the bank. Table 6-3 displays the average thalweg depth at the site for both surveys. [Photogroup 6-22](#) depicts the numerous obstructions encountered at Site AR4\_08.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. [Photogroup 6-23](#) shows the water color and debris observed on the water surface at AR4\_08.

Pool measurements were made during May at several locations. In June, no pools were encountered as the stream was mostly dry. Table 6-13 lists the pools and the length, maximum width and maximum depth recorded for each.

**Table 6-13** Pool measurements for AR4\_08

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	27	2.9	0.35
	Pool 2	22	4.0	0.45
	Pool 3	24	2.3	0.20
	Pool 4	25	2.6	0.18
	Pool 5	63	3.8	0.25



### Physical Description of Site AR4\_09

The Atascosa River at Site AR4\_09 was surveyed on May 4 and June 15, 2010. This site is only accessible through private lands off FM 476 north of the community of Rossville, TX in Atascosa County. At the river, there is a concrete low-water bridge that fords the river and allows easy access from the bank. The streambanks are moderately sloped and not so high as to hinder entrance into the streambed. The bridge was established as the 150-m transect. Table 6-2 describes the stream channel and riparian zone appearance of this site. [Photogroup 6-24](#) depicts the access to Site AR4\_09 and the general appearance in both May and June 2010, including the lack of water along the entire reach.

The surveyed reach at Site AR4\_09 was dry during both surveys for the entire 300-m reach. The substrate was very loose sand which made walking extremely difficult, though no obstacles were encountered.

Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively.

### Physical Description of Sites AR4\_10 and AR4\_11

The Atascosa River at Sites AR4\_10 and AR4\_11 were visited on May 7 and June 15, 2010. These two sites are located on the same private ranch and are only accessible from the ranch off FM 476 north of Site AR4\_09 in Atascosa County. At both crossings access to the far side of the stream is achieved by driving through the streambed. The banks are relatively tall and steep, much steeper and taller than Site AR4\_09, but the “roads” cut through the banks at each crossing make easy access at these points. Walking down the paths to the stream was easily accomplished, but walking in the dry streambed was very difficult due to the “sugary” nature of the sand. Table 6-2 describes the stream channel and riparian zone appearance of these sites. [Photogroup 6-25](#) depicts the access to Site AR4\_10 and the general appearance in both May and June 2010. [Photogroup 6-26](#) depicts the access to Site AR4\_11 and the general appearance in both May and June 2010.

The surveyed reach at Site AR4\_10 was dry for the entire 300 m on both visits. No obstacles were encountered along the streambed. At Site AR4-11, the reach was mostly dry on both surveys, but on the May 7 survey a residual pocket of water was encountered that was photographed and measured.

Other than the pocket of water encountered, no additional depth measurements were collected on May 7 or June 15. Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey have been previously provided in Tables 6-3, 6-4, and 6-5, respectively. Table 6-14 shows the pool and the length, maximum width and maximum depth.

**Table 6-14** Pool measurements for Site AR4\_11

Date		Length (meters)	Width (meters)	Depth (meters)
May 7, 2010	Pool 1	9.5	2.5	0.2

**Additional Public Access Points**

In addition to the sites described above, one road crossing at which permission could not be obtained was visited during the watershed surveys to observe whether or not contact recreation activities or evidence of activities could be observed. The additional road crossing visited was the Atascosa River at FM 1333 west of Poteet. TIAER staff passed this location several times on scouting trips, site visits and intentionally on weekends to try to ascertain if this site afforded recreation to the public. At no time were individuals encountered at the crossing, and no evidence of any type of recreation, either primary or secondary, was recorded. [Photogroup 6-27](#) depicts typical observations at FM 1333.

**Activities: Observed and Interviewed**

During the RUAA surveys conducted on May 4 and 7 and June 15 - 16, 2010, field personnel attempted to visit the publicly accessible sites during times and days when recreational activities were likely to occur. Interviews and observations at privately owned sites were conducted with landowners when it was convenient for them. In most cases, informal conversations occurred during the scouting process in late 2009 and notes were made. Once the site was selected, there was very little contact with the landowners so phone interviews were conducted to confirm and supplement information gathered during the initial contact.

Nine of the 11 sites selected required entering private property that was fenced, gated and locked, and required landowner permission for entrance. The publicly accessible sites AR4\_02 and AR4\_08 were accessed from public road crossing and did not require landowner permission to access the 300-m reach required for each survey. No activities, either primary or secondary, were observed at any of the sites in AU 2107\_04 on either survey during 2010. There was water present at some sites in May but it was flowing only at three sites and measurable only at one (Table 6-4). In June, five sites were completely dry and the remaining sites had limited water and only one exhibited flow (Table 6-4).

The only interviews performed in AU 2107\_04 were with landowners from whom permission was obtained to gain river access. No one else was seen at any of the locations to interview. None of the landowners interviewed indicated that, to their knowledge, any form of primary or secondary contact recreation occurred on their property. At the public crossings, including FM 1333 where physical measurements were not conducted, no activities were observed nor were signs of any type of recreational activities discovered. One landowner who lived on the same property for 76 years related that the river had been dry most of her life, but shared that over 100 years ago when her mother was a child, there were springs and the river flowed and folks swam and waded back then.

Every interview conducted related the same story. The river only flows following large rainfall events, but the flow would only last a few days then quit. There may be pockets left after these events but these, too, eventually became dry, so no fish survive.

The May event occurred following a period of reportedly heavy rains in April 2010 (+/- 6 inches according to local landowners) that occurred in the area of Lytle, Texas, located at the headwaters of the Atascosa. What was observed on May 4 and 7 2010 visit to the watershed was

the residual from that event. By June the most of the pools measured in May had dried entirely or were mere puddles.

Copies of all of the interviews conducted along Atascosa River AU 2107\_04 by site are located in Appendix D-1.

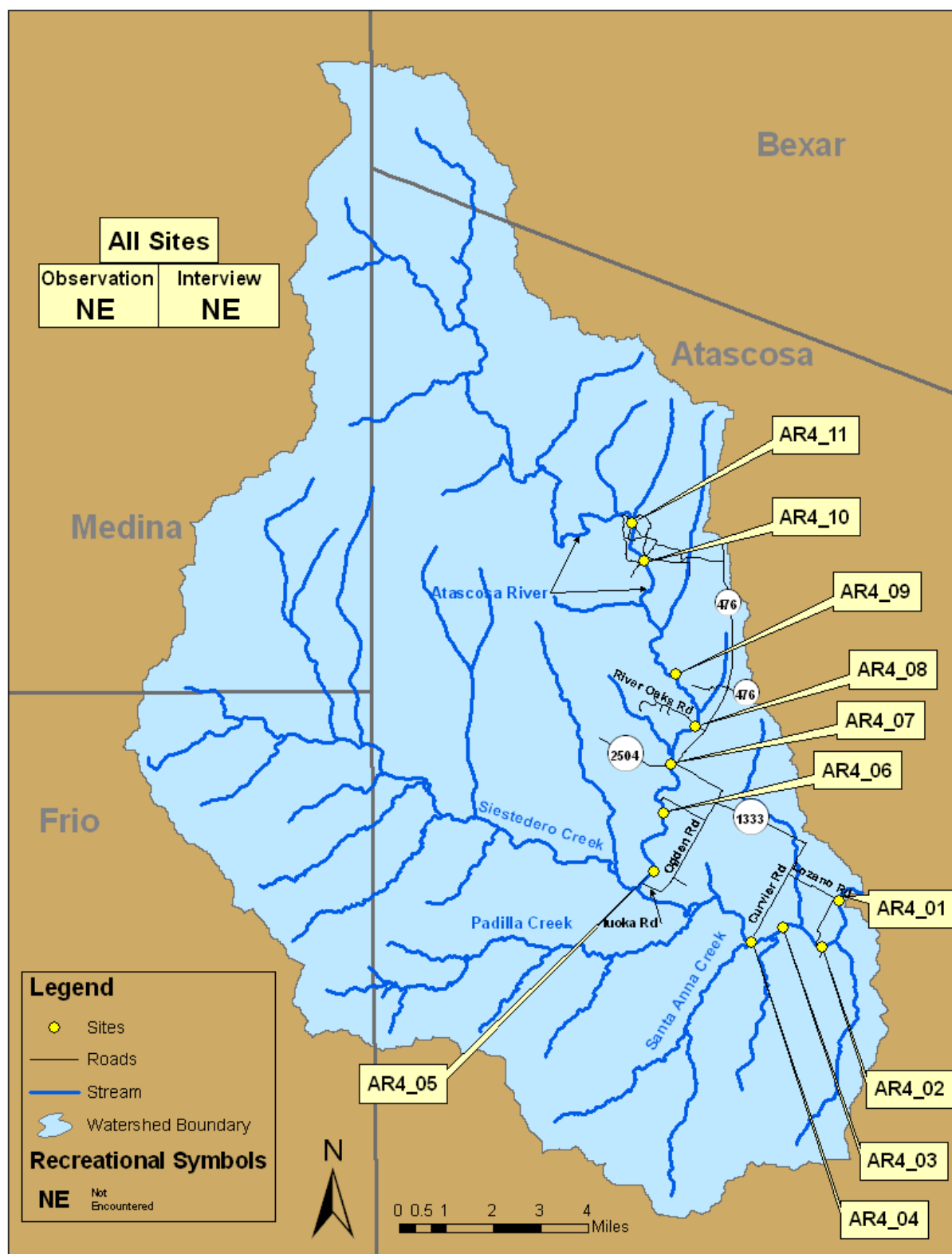
### **Summary**

RUAA surveys were conducted at 11 sites in Assessment Unit 2107\_7 on May 4 and 7, and June 15 - 16, 2010. Copies of all comprehensive interview forms, field data sheets, streamflow measurements, and transect pictures from each survey are located in the Appendices D-1, D-2, D-3, and D-4 respectively.

As observed in other assessment units of the Atascosa River, AU2107\_04 runs primarily through privately owned properties of substantial acreages. Public access is limited to the right-of-way at six road crossings, five of which were used for the survey. Fences, locked gates and distance from the road to the stream at 4 of the 11 sites surveyed limit access to the river in AU 2107\_04. No aquatic recreational activities were observed by TIAER field staff during the surveys. Similarly, none of the landowners interviewed shared any information to indicate that any form of contact recreation occurred on their property or within AU 2107\_04. One individual recollected that about 100 years ago her mother or other relatives would swim and play in the river but in her 76 years on the property that had not happened. A summary of the observed and interviewed activities, or lack thereof, is provided in Figure 6-2.

Limited flow was found in the AU 2107\_04 and most was below detection limits of the Doppler flow meter. Access to the stream was relatively easy once at the creek bank. With the exception of two of the road crossings used, landowner permission was required for entry, without which would be criminal trespass.





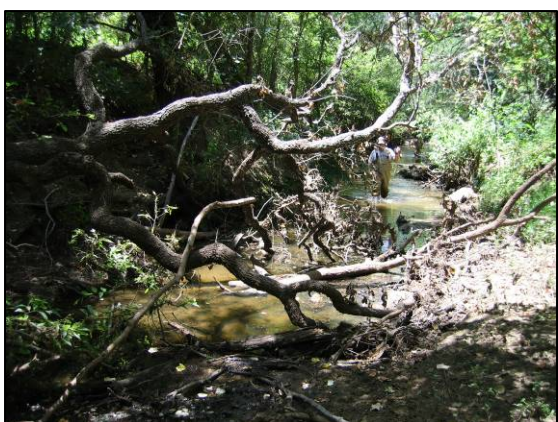
**Figure 6-2** Summary of observed and interviewed human activities in AU2107\_04

## **Atascosa River AU2107\_04 Photogroups**

**Photogroup 6-1**

Atascosa River Site AR4\_01 depicting access to and the general appearance of the river. [\[Return to Text\]](#)

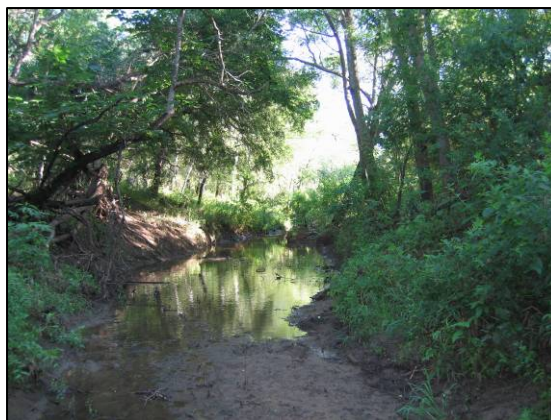




**Photogroup 6-2**

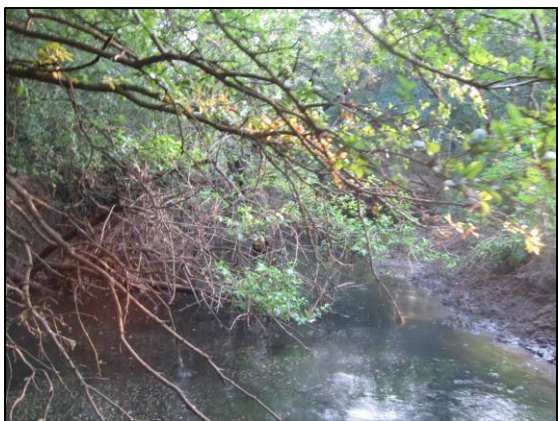
Atascosa River Site AR4\_01 depicting obstructions and bank access. (Individual in upper right photo is field staff). [\[Return to Text\]](#)



**Photogroup 6-3**

Atascosa River Site AR4\_01 showing water color and clarity of the surface. (Individual in lower right photo is field staff.) [\[Return to Text\]](#)



**Photogroup 6-4**

Atascosa River Site AR4\_02 depicting the road access and general appearance of the river. (All individuals pictured are field staff.) [\[Return to Text\]](#)



**Photogroup 6-5**

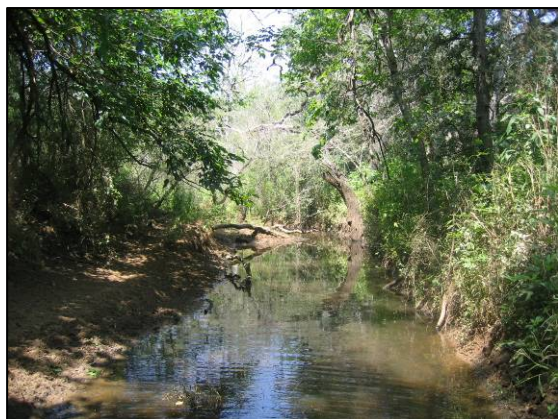
Atascosa River Site AR4\_02 depicts obstructions, bank access and dry bed with no flow. (All individuals pictured are field staff.) [\[Return to Text\]](#)



**Photogroup 6-6**

Atascosa River Site AR4\_02 depicting water color, aquatic vegetation and surface film. (Individual in center right photo is field staff.) [\[Return to Text\]](#)



**Photogroup 6-7**

Atascosa River Site AR4\_03 depicting the general appearance of the river. (Individual in lower right photo is field staff.) [\[Return to Text\]](#)



**Photogroup 6-8**

Atascosa River Site AR4\_03 showing some of the many obstructions encountered and no flow, dried conditions. (Individual in upper left photo is field staff.) [Return to Text](#)



**Photogroup 6-9**

Atascosa River Site AR4\_03 showing water color and dense rafts of duckweed. [[Return to Text](#)]





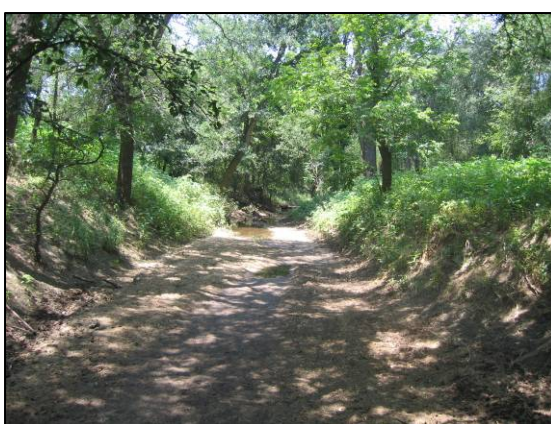
**Photogroup 6-10** Atascosa River Site AR4\_04 depicting the general appearance of the river, including dried streambeds. (Individual in upper right photo is field staff.) [\[Return to Text\]](#)





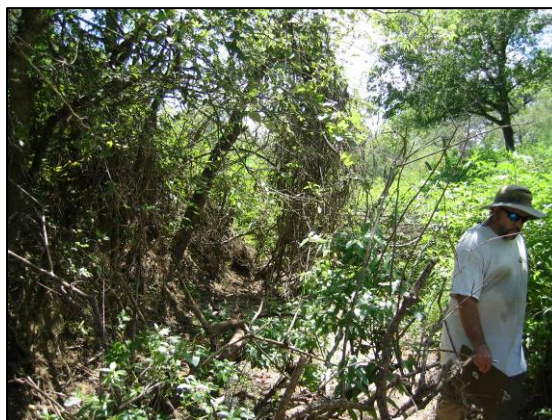
**Photogroup 6-11** Atascosa River Site AR4\_04 depicts obstructions encountered and dry streambed. [[Return to Text](#)]





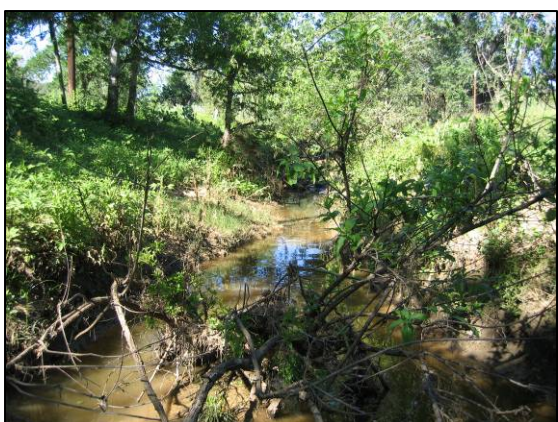
**Photogroup 6-12** Atascosa River Site AR4\_04 showing water color and surface appearance. (Individual in lower left photo is field staff.) [\[Return to Text\]](#)



**Photogroup 6-13**

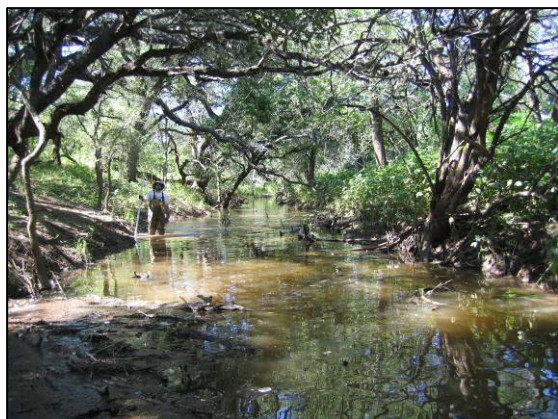
Atascosa River Site AR4\_05 depicting fence at property boundary on Iuka Road (upper left) and general appearance of site. (All individuals pictured are field staff.) [\[Return to Text\]](#)





**Photogroup 6-14** Atascosa River Site AR4\_05 depicting obstructions, the dry creek bottom and tall banks. [[Return to Text](#)]



**Photogroup 6-15**

Atascosa River Site AR4\_05 depicts the general appearance and conditions through pairs of contrasting photographs from May to June 2010. (All individuals pictured are field staff.) [Return to Text](#)





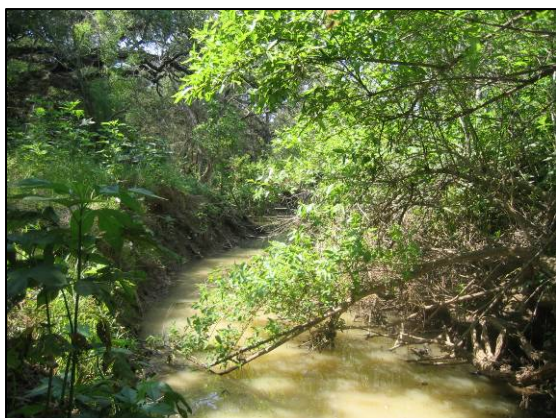
**Photogroup 6-16** Atascosa River Site AR4\_06 depicting obstructions and bank access at site. (All individuals pictured are field staff.) [\[Return to Text\]](#)





**Photogroup 6-17** Atascosa River Site AR4\_06 depicting the water color and surface clarity.  
[\[Return to Text\]](#)



**Photogroup 6-18**

Atascosa River Site AR4\_07 depicts the general appearance and conditions through contrasting sets of photographs from May to June 2010. [[Return to Text](#)]





**Photogroup 6-19** Atascosa River Site AR4\_07 depicting the numerous obstructions encountered in both May and June. [[Return to Text](#)]





**Photogroup 6-20** Atascosa River Site AR4\_07 showing water color, surface debris and dry streambed. [[Return to Text](#)]



**Photogroup 6-21**

Atascosa River Site AR4\_08 depicting the access and general appearance of the river. (All individuals pictured are field staff.) [[Return to Text](#)]



**Photogroup 6-22**

Atascosa River Site AR4\_08 depicting the numerous obstructions encountered. [[Return to Text](#)]





**Photogroup 6-23** Atascosa River Site AR4\_08 showing the water color and debris observed on the water surface. (Arm in center left photo is field staff.)  
[\[Return to Text\]](#)

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**Photogroup 6-24** Atascosa River Site AR4\_09 depicting access to and general appearance of the streambed in both May and June 2010. [[Return to Text](#)]



**Photogroup 6-25**

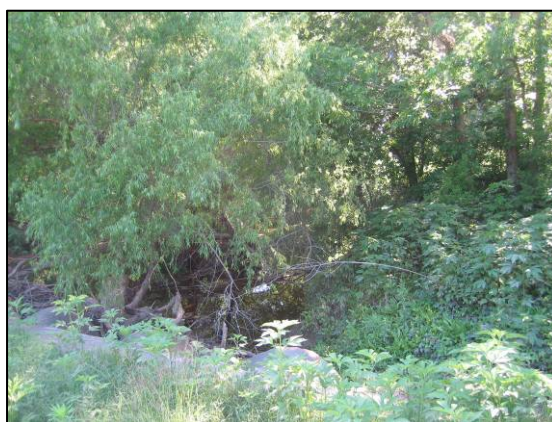
Atascosa River Site AR4\_10 depicting access and general appearance of the streambed in both May and June 2010. (All individuals pictured are field staff.) [\[Return to Text\]](#)





**Photogroup 6-26** Atascosa River Site AR4\_11 depicting access and general appearance of streambed in both May and June 2010. [[Return to Text](#)]





**Photogroup 6-27** Atascosa River depicting observations at FM1333. [[Return to Text](#)]



## CHAPTER 7

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