

**Aransas Creek
Recreational Use Attainability Analysis**

Prepared for:

**Texas State Soil and Water Conservation Board
Project 11-52**

Prepared by:

**Sam Sugarek
Beth Almaraz
Jeffrey Blake**

**Nueces River Authority – Coastal Bend Division
Corpus Christi, Texas**

11-52-FR-ARANSASRUAA

May 2013

ACKNOWLEDGEMENTS

Funding for this project was provided through a Texas State Soil and Water Conservation Board (TSSWCB) State Grant, project number 11-52, *Recreational Use Attainability Analysis for Aransas Creek*. This project was sponsored by the TSSWCB with the Nueces River Authority (NRA) in Corpus Christi, Texas, acting as a subcontractor for TSSWCB.

Authors

Sam Sugarek, Director of Water Quality Programs, NRA, ssugarek@nueces-ra.org

Beth Almaraz, Aquatic Resource Specialist, NRA, balmaraz@nueces-ra.org

Jeffrey Blake, Geographic Information Systems Associate, NRA, jblake@nueces-ra.org

TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION 1-1

 Problem Statement 1-1

 Objectives 1-2

 Stakeholder and Agency Involvement. 1-2

CHAPTER 2 STUDY AREA 2-1

 Description of Aransas Creek 2-1

 Historical Significance 2-2

 Climatic Conditions 2-2

 Land Use and Land Cover 2-4

 Regulated Sources 2-5

 Potential Unregulated Sources 2-6

 Historical Information on Recreational Use 2-8

CHAPTER 3 STUDY METHODOLOGY. 3-1

 Survey Methodology 3-1

 Site Reconnaissance and Site Selection Strategy 3-1

 Survey Site Descriptions 3-2

 Field Survey Data Collection Activities 3-5

CHAPTER 4 PHYSICAL SURVEY RESULTS..... 4-1

 General Description of Stream and Survey Sites 4-1

CHAPTER 5 OBSERVATIONS AND INTERVIEWS..... 5-1

 Activities Observed 5-1

 Activities Interviewed 5-4

CHAPTER 6 ORGANIZATION OF ELECTRONIC FILES AND RUA SUMMARY .. 6-1

 Organization of Electronic Files 6-1

 Summary 6-2

REFERENCES..... 7-1

Appendix A List of People Notified for Public Meetings A-1

LIST OF FIGURES

Figure 2-1 General map of Aransas Creek watershed for 2004A 2-1

Figure 2-2 Map of Aransas Creek watershed for 2004A showing monitoring sites used for the RUAA 2-3

Figure 2-3 Land use/land cover within the Aransas Creek watershed 2-5

Figure 4-1 Photographs of the fence line upstream at Site ACk02. 4-6

Figure 4-2 Footbridge at ACk04..... 4-7

Figure 4-3 Reinforced bank at ACk04..... 4-7

Figure 4-4 Tall vegetation at ACk05 4-8

Figure 4-5 Concrete bridge at ACk05 4-8

Figure 4-6 Wooden structures over the creek at ACk05 4-8

Figure 4-7 Leaking water trough at ACk07..... 4-9

Figure 4-8 Landowner’s pond near ACk08B 4-10

Figure 4-9 Dung beetles recycling fecal matter at ACk08 4-11

Figure 5-1 Fishing bobber at ACk03 5-1

Figure 5-2 Fishing poles, chair and boat at ACk04 5-2

Figure 5-3 Fishing bobber near ACk05 5-2

Figure 5-4 Fishing pole near ACk05 5-2

Figure 5-5 Wooden structures built in the oak trees lining Aransas Creek near ACk05..... 5-3

Figure 5-6 Small fishing pier near ACk05 5-3

Figure 5-7 Pool float near ACk05 5-3

Figure 5-8 ATV tracks and dirt road near ACk05..... 5-4

LIST OF TABLES

Table 1-1. Recreational Use Designations and Criteria for Listed Water Bodies 1-2

Table 2-1 Livestock statistics for Bee County 2-7

Table 3-1 Location and description of RUAA monitoring sites 3-4

Table 4-1 Rainfall records for the Wunderground Weather Station KBEA in Beeville
for the month prior to RUAA surveys 4-2

Table 4-2 Field Parameters measured at each station for the Aransas Creek RUAA 4-3

Table 4-3 Stream Channel and corridor assessment per site sampled in Aransas Creek 4-3

Table 4-4 Thalweg depth, stream flow type, and site accessibility for the assessment
unit and each site for the two surveys conducted 4-4

Table 4-5 Description of surveyed streams in the Aransas Creek watershed 4-4

Table 4-6 Stream aesthetics and wildlife observations in the Aransas Creek Watershed ... 4-5

Table 5-1 Activities reported in interviews at sites along Aransas Creek..... 5-5

CHAPTER 1

INTRODUCTION

Problem Statement

The Texas State Soil and Water Conservation Board (TSSWCB) is leading an effort to examine the bacteria impairment in Aransas Creek (2004A). The watershed for Aransas Creek is located in western Bee County and part of the easternmost portion of Live Oak County near the towns of Beeville (population 31,860) and Skidmore (population 925). 2004A was placed on the Texas 303(d) List in 2006 based on elevated levels of indicator bacteria *E. coli* that exceeded the geometric mean criteria established in the *Texas Surface Water Quality Standards* (TSWQS; Texas Commission on Environmental Quality, 2010a). Concerns for dissolved oxygen have also continued as part of the 2008 and 2010 water quality assessments. This report focuses on the contact recreation use of Aransas Creek (2004A) and the impairment associated with the elevated bacteria concentrations.

Aransas Creek is designated for primary contact recreation use in the TSWQS. Recent revisions to the TSWQS include an expansion of the contact recreation use into four categories: Primary Contact Recreation (PCR), Secondary Contact Recreation 1 (SCR1), Secondary Contact Recreation 2 (SCR2) and Noncontact Recreation (NCR). Below is a breakdown of definitions of each designation and corresponding bacterial concentrations.

- Primary contact recreation (PCR): Water recreation activities, such as wading by children, swimming, water skiing, diving, tubing, surfing, and whitewater kayaking, canoeing, and rafting, involving a significant risk of ingestion of water. For *E. coli*, the geometric mean criterion is 126 colony forming units (CFU) per 100 milliliters of sampled water.

- Secondary contact recreation 1 (SCR1): Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion and that commonly occur. For *E. coli*, the geometric mean criterion is 630 CFU per 100 milliliters of sampled water.

- Secondary contact recreation 2 (SCR2): Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion but that occur less frequently than for secondary contact recreation 1 due to (1) physical characteristics of the waterbody and/or (2) limited public access. For *E. coli*, the geometric mean criterion is 1030 CFU per 100 milliliters of sampled water.

- Noncontact recreation (NCR): Activities, such as ship and barge traffic, birding, and using hike and bike trails near a waterbody, not involving a significant risk of water ingestion, and where primary and secondary contact recreation should not occur because of unsafe conditions. For *E. coli*, the geometric mean criterion is 2,060 CFU per 100 milliliters of sampled water.

Table 1-1. Recreational Use Designations and Criteria for Listed Water Bodies

| Recreational Use Designations | E. coli (Freshwater) CFU/100 mL |
|----------------------------------|------------------------------------|
| Primary Contact Recreation (PCR) | 126 |
| Secondary Contact 1 (SCR1) | 630 |
| Secondary Contact 2 (SCR2) | 1030 |
| Noncontact Recreation (NCR) | 2060 |

The TSWQS also specify a process to evaluate the uses of a waterbody through a use attainability analysis (UAA). To identify and assign attainable uses and criteria to individual waterbodies, UAAs evaluate the physical, chemical, biological, and economic factors affecting attainment of a waterbody use (40 Code of Federal Regulations §131.10(g)). A recreational use attainability analysis (RUAA) is a specific type of UAA focused on determining the appropriate recreational use of a waterbody, which was implemented in this study.

Objectives

The objective of this project was to perform and report the findings of a Comprehensive RUAA for Aransas Creek following the Texas Commission on Environmental Quality (TCEQ) May 2009 *Procedures for a Comprehensive RUAA and a Basic RUAA Survey* (TCEQ, 2009). Aransas Creek is comprised of one assessment unit (AU) defined by TCEQ (2010b). A total of eight sites were selected for the study. All field surveys were performed by Nueces River Authority (NRA) located in Corpus Christi, Texas under a TSSWCB-approved Quality Assurance Project Plan.

Stakeholder and Agency Involvement

Two meetings with state agencies, river authority representatives, local officials, and stakeholders were held to obtain comments on the proposed survey sites prior to field data collection and solicit input from all interested parties within the study area throughout the project. Given the highly rural nature and the limited number of stream road crossings in the watershed, the feedback obtained along with support from local landowners at the meetings proved valuable to the field crews.

The first meeting targeted local and state agencies in an effort to inform them of the goals and objectives associated with conducting RUAA's. At the same time input was sought on the proposed sampling survey sites being recommended for the Aransas Creek RUAA. This meeting was held at the Skidmore-Tynan High school cafeteria located in Skidmore, TX on May 29th, 2012.

On September 27th, 2012, a Progress Update Meeting was held in Skidmore to provide a summary of activities conducted to date on the RUAA on Aransas Creek. This meeting was held to discuss findings from the initial RUAA survey completed on August 31st and September 1st, 2012.

Information on past meetings for this RUAA, including reports and other information, can be found on the project website: <https://www.tsswcb.texas.gov/managementprogram/aransaruaa>

CHAPTER 2

STUDY AREA

Description of Aransas Creek

Aransas Creek (2004A) is a tributary to the Aransas River within the San Antonio-Nueces Coastal River Basin and is comprised of a single assessment unit (AU 2004A_01) representing the entire waterbody (Figure 2-1). Because the impaired waterbody is comprised of only one AU, the AU descriptor is unnecessarily cumbersome and in this report Aransas Creek will be referred to synonymously as 2004A.

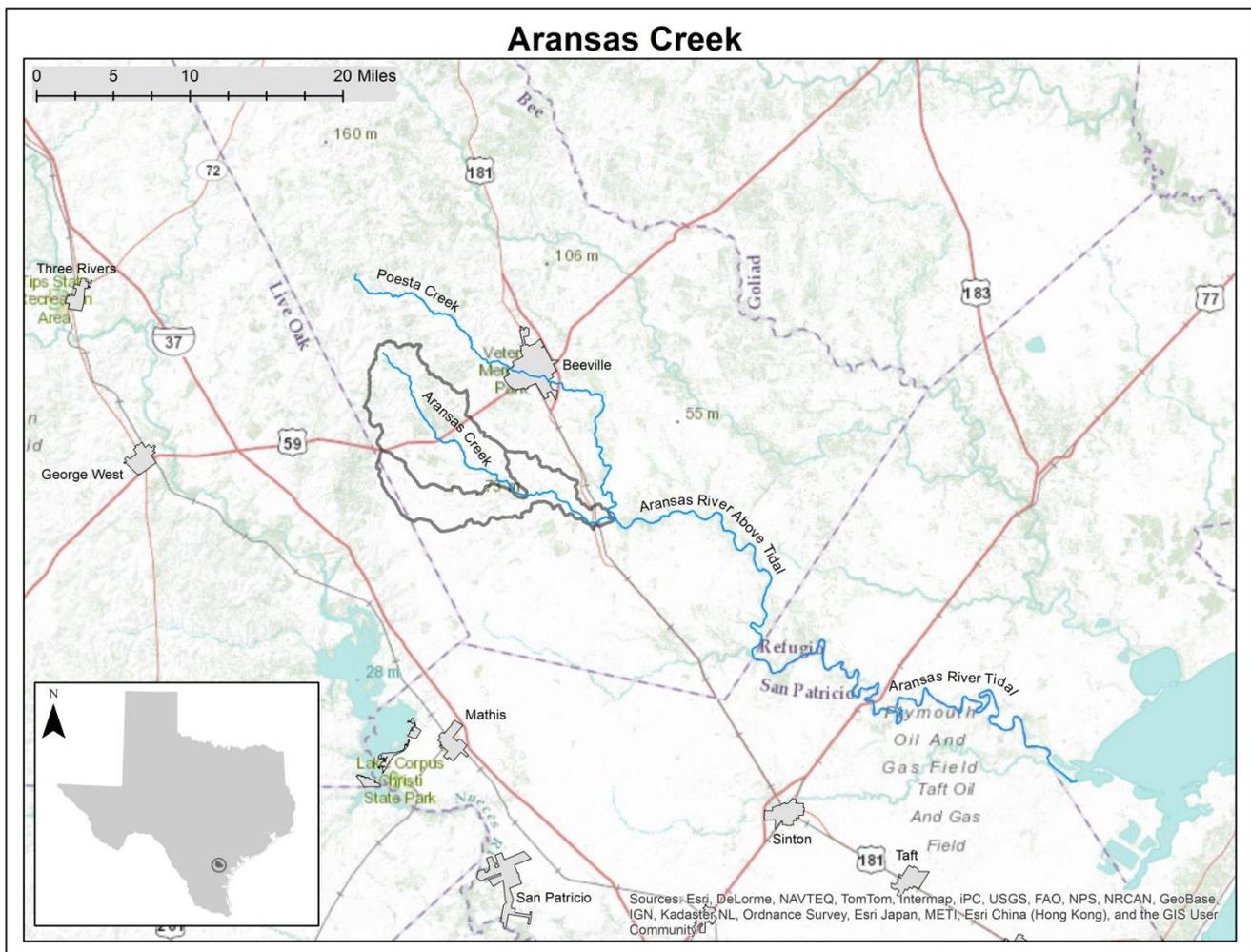


Figure 2-1. General map of Aransas Creek watershed for 2004A

The Aransas Creek watershed is approximately 45,170 acres beginning in western Bee County and flows approximately 20 miles to its confluence with the Aransas River two miles north of Skidmore (at 28°17' N, 97°40' W) in Bee County (Figure 2-1). As described in the Handbook of Texas Online for Aransas Creek, the creek traverses flat to rolling terrain surfaced by clay and sandy loam that supports water-tolerant hardwoods and grasses. The watershed of 2004A is largely rural and is dominated by shrub/scrub (33%) and hay/pasture (32%) (Figure 2-3).

The flow type for Aransas Creek can be classified as being intermittent with perennial pools (it maintains persistent pools even when the flow in the stream is less than 0.1 cubic feet per second). However, in normal years the lower half of the waterbody is generally more perennial in nature with flows persisting long after a rain event. The upper half of the watershed (upstream of FM 1349) more closely fits the definition of an ephemeral stream which is a stream that flows only during or immediately after a rainfall event, and contains no refuge pools capable of sustaining a viable community of aquatic organisms. Designated uses for 2004A are primary contact recreation, general use, and fish consumption with an assumed high aquatic life use. This unclassified waterbody was first listed on the 2006 Texas 303(d) List for excessive bacteria, specifically the geometric mean of *E. coli* concentrations of assessment data.

Historical Significance

As described on the Texas Historical Marker about the Aransas Creek Settlers, “Earliest known residents were Karankawa Indians who named the creek. On this stream was one of the most famous ranches in early Texas, occupied in 1805 by Don Martin De Leon, who in 1824 founded Victoria. In 1830’s Irish colonists came by way of Copano Bay, settling downcreek. Anglo-Americans from older settlements came by road and trail, stopping mainly upcreek. Stockraising, trucking, and freighting provided livelihoods in the rich new prairieland. John Wilson, an 1850’s upcreek settler, brought the first Durham cattle to the country, built one of the first wooden fences, enclosing 600 acres of homesite with rough heart pine plank. On the creek’s north bank stood the ranch of Frank Skidmore, founder of Skidmore, who gained fame for building the first barbed wire fence and windmill in the County. He promoted breeding of registered Herefords and in 1886 gave much of the right-of-way to the San Antonio and Aransas Pass Railroad.”

Climatic Conditions

According to the Handbook of Texas online for Bee County, the climate in Bee County is subtropical and humid, with mild winters and warm summers and lies within the East Central Texas Plains and the Western Gulf Coastal Plains. Temperatures range in January from an average low of 42° F to an average high of 65°, and in July from 73° to 96°. The average annual rainfall is approximately thirty inches. The growing season averages 275 days per year, with the last freeze in late February and the first freeze in early December.

Land Use and Land Cover

The land use/land cover data for 2004A was obtained from the 2006 National Land Cover Database of the U.S. Geological Survey. The land use/land cover categories for NLCD are described in (Homer et al., 2004) as the following:

- Shrub/Scrub – Shrub/Scrub—Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20 percent of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.
- Hay/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 – 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, Open Space – Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
- Developed, Low Intensity - Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20–49 percent of total cover. These areas most commonly include single-family housing units.
- Developed Medium Intensity – Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50–79 percent of the total cover. These areas most commonly include single-family housing units.
- Deciduous Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change.
- Woody Wetlands – Areas where forest or shrubland vegetation accounts for greater than 20 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
- Herbaceous – Areas dominated by grammanoid or herbaceous vegetation, generally greater than 80 percent of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.
- Evergreen Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species maintain their leaves all year. Canopy is never without green foliage.
- Emergent Herbaceous Wetlands – Areas where perennial herbaceous vegetation accounts for greater than 80 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
- Barren Land – 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 percent of total cover.
- Mixed Forest – Areas dominated by trees generally greater than 5 meters tall, and greater than 20 percent of total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of total tree cover.

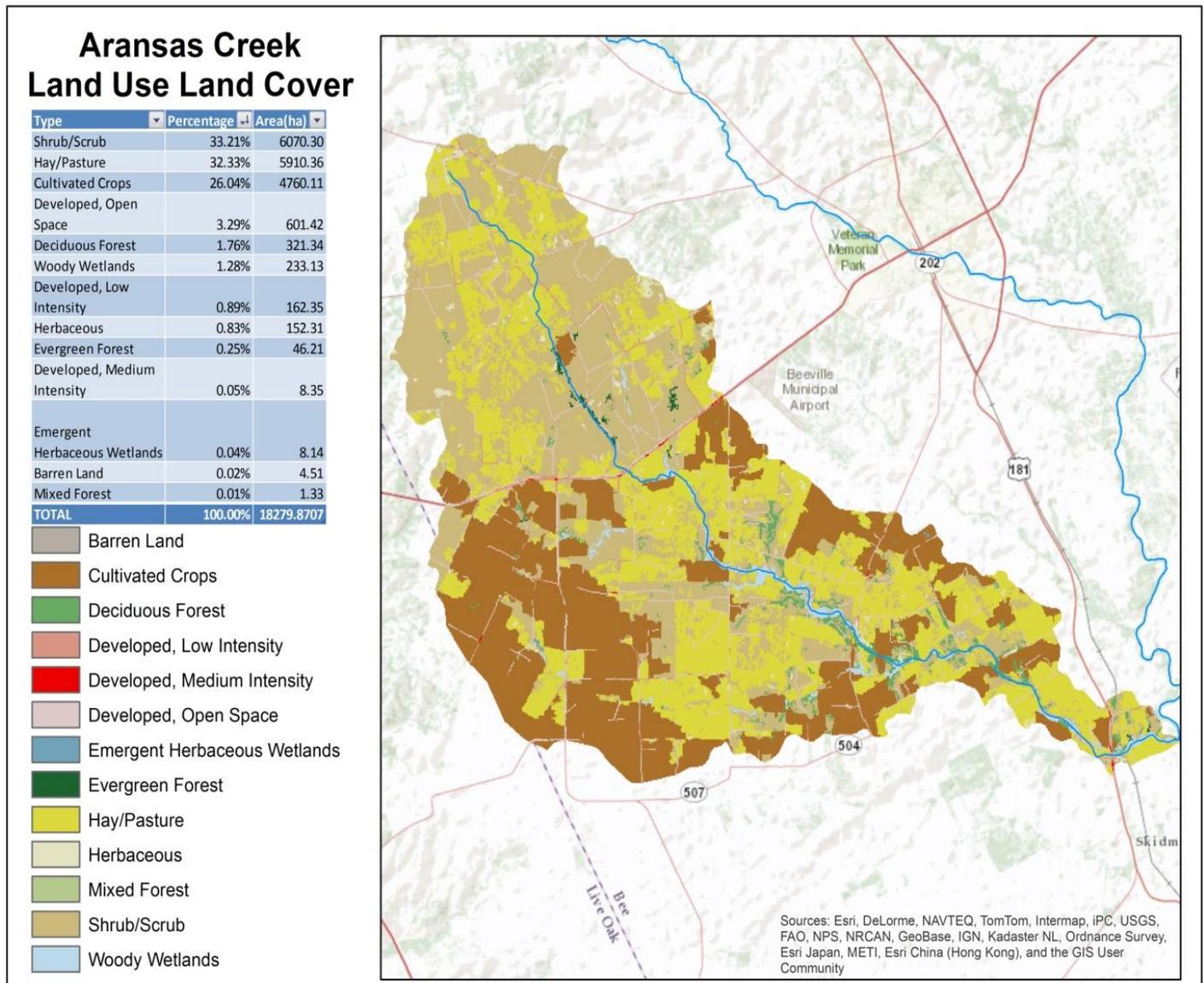


Figure 2-3. Land use/land cover within the Aransas Creek watershed.

Regulated Sources

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

Wastewater Treatment Facilities

There are no permitted domestic wastewater treatment facility (WWTF) discharges within the 2004A watershed at the time this report was written.

Regulated Stormwater

The TPDES and the NPDES MS4 Phase I and II rules require municipalities and certain other entities in urban areas to obtain permits for their stormwater systems. Phase I permits are individual permits for large and medium sized communities with populations exceeding 100,000, whereas Phase II permits are for smaller communities that are located within an “Urbanized Area.” An “Urbanized Area” is defined by the U.S. Census Bureau as an area with populations greater than 50,000 and with an overall population density of at least 1,000 people per square mile. Further, TCEQ is also authorized to “designate” MS4 Phase II applicable coverage outside of UAs if the area’s population is greater than 10,000 with a density of at least 1,000 people per square mile. The watershed for Aransas Creek is not considered to be located in an Urbanized Area based on population density and is not required to obtain a permit for a MS4.

Concentrated Animal Feeding Operations (CAFO)

The TCEQ defines an animal feeding operation (AFO) as a lot or facility, other than an aquatic animal production facility, where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and in which the animal confinement areas do not sustain crops, vegetation, forage growth, or post-harvest residues in the normal growing season over any portion of the lot or facility. AFOs are categorized based on size and fall into 3 main categories: Large, medium, and small CAFOs. All CAFO designations require written authorization from TCEQ to operate. There are no permitted CAFO operations within the 2004A watershed at the time this report was written.

Permitted Land Application of Sewage and Septic Sludge

A query performed on December 20, 2012 of the TCEQ database for registered land application sites by a member of the TCEQ Municipal Permits Team indicated that there are currently no registered land application sites in Bee County that receive Class B sewage sludge or septic sludge.

Potential Unregulated Sources

Unregulated sources are typically nonpoint source in nature, meaning the pollution originates from multiple diffuse locations and is usually carried to surface waters by rainfall runoff, and the sources generally are not regulated by permit under the TPDES and NPDES. The specifics of unregulated sources will only be summarized within this report, including a variety of sources such as wildlife (mammals and birds), unmanaged feral animals (e.g., feral hogs), on-site sewage facilities (OSSFs), pets, and livestock. Sources observed during the RUAA surveys are specifically noted in a companion report, *Aransas Creek: Historical Water Quality, Source Survey and Geographic Information System Inventory* (Sugarek et al., 2013).

Non-Permitted Agricultural Activities and Domesticated Animals

Statistics of livestock in Bee County based on estimates obtained from United States Department of Agriculture (USDA) National Agricultural Statistics Service website (USDA, 2011) indicate that a variety of livestock reside within the watershed (Table 2-2). It should be noted that the

livestock numbers obtained by the USDA represent the number of livestock present in Bee County at the time the survey was conducted, and those numbers likely change throughout the year due to economic factors and environmental conditions (e.g., market values, drought, etc.) Activities such as livestock grazing close to waterbodies and agricultural use of manure as fertilizer, can contribute *E. coli* to nearby waterbodies. Furthermore, pets can also be sources of *E. coli* bacteria, because storm runoff carries the animal wastes into streams (USEPA, 2009).

The Aransas Creek watershed is located entirely within Bee County and comprises about 8 percent of the county. Animal population estimates for Aransas Creek were derived as a direct proportion of the watershed area within Bee County.

Table 2-1. Livestock statistics for Bee County. (Source USDA, 2011).

| Livestock | Number within Bee County | Estimated Number within Aransas Creek Watershed |
|---------------|--------------------------|---|
| Beef Cattle | 29,776 | 2,388 |
| Horses | 1,232 | 101 |
| Goats | 2,458 | 197 |
| Sheep | 594 | 48 |
| Domestic Hogs | 100 | 8 |
| Poultry | 993 | 80 |
| Deer | 35,419 | 2,841 |
| Feral Hogs | 7,067 | 1,369 |

Wildlife and Unmanaged Nondomestic Animals

E. coli bacteria are common inhabitants of the intestines of all warm blooded animals, including wildlife, such as deer, raccoons, and birds. With access to the stream channel, direct deposition of animal waste can be a concentrated source of bacteria loading to a waterbody. Fecal bacteria from wildlife are also deposited onto land surfaces, where it may be washed into nearby streams by rainfall runoff.

Feral hogs have been documented in Aransas Creek. Feral hogs are not natural wildlife, they are an invasive species and as unmanaged or feral animals, they also contribute bacteria to streams in a manner similar to wildlife. Feral hogs are noted for moving in groups along waterways, and particularly in times of drought will congregate near perennial water sources to drink and wallow. Texas Parks and Wildlife Department (TPWD) classifies feral hogs as unprotected, exotic, non-game animals (Taylor, 1991). Although found throughout much of Texas, there is a scarcity of data on feral hog densities in Texas. Studies in comparable bottomland habitats indicate typical densities of nearly 1 hog for every 33.3 acres (Reidy, 2007).

Bats have been documented by NRA living under the bridge at US 181 (station 12941/site ACK02). Perched between the expansion joints of the bridge, the bats have been observed year round at this location. Bats nesting under bridges can be a source of fecal non-point source (NPS) pollution attributing to increased bacteria concentrations of streams under low flow conditions. The United States Department of Agriculture (USDA) and Texas Water Resources

Institute (TWRI) were contacted regarding estimates of wildlife populations but no information could be found regarding bat populations for 2004A.

Failing On-Site Sewage Facilities (OSSFs)

OSSFs, also known as septic systems, are often used in rural areas that do not have the ability to connect to a central wastewater collection system. The following information was obtained through communications with the Bee County permit log for OSSF and through the Coastal Bend Council of Government's (CBCOG) Geographic Information System (GIS) department's database for emergency responders.

A query of OSSFs for Bee County indicated 918 permitted septic systems were installed or inspected since 2000. Of these 918 OSSFs, 45 were located within the watershed for Aransas Creek. It should be noted that the total OSSF count does not include "grandfathered" OSSFs that are exempt from permitting requirements.

To get a more accurate number for the total number of OSSFs in the Aransas Creek Watershed, NRA contacted the CBCOG and was able to get a list of residential dwellings using their GIS database for emergency responders. NRA estimated the number of OSSFs by counting residential dwellings and assuming each uses a septic system to treat sewage since there are no connections to WWTFs in the area. Based on that data, NRA estimates that there are approximately 502 potential OSSFs located in the Aransas Creek Watershed in Bee County.

Upstream Sources/Historical Data

Aransas Creek is an isolated waterbody, meaning that it receives no flow from upstream sources. From TCEQ, bacteria data were available for TCEQ station 12941 (Aransas Creek at US 181/site ACk02). The 2006 water quality assessment indicates that for data collected between 1999 and 2004 that the Aransas Creek is not supporting of the criterion for primary contact recreation use (TCEQ, 2010b). The 2006 water quality assessment indicates a geometric mean for 2004A of 248 CFU/100 mL for *E. coli* based on 10 samples. The criterion for primary contact recreation for *E. Coli* is 126 CFU/100mL.

Additionally, data was collected at station 20066 (Aransas Creek at FM 888/site ACk05) as part of TSSWCB project 06-15, *Surface Water Quality Monitoring to Support Development and Implementation of Bacteria TMDLs in the Copano Bay Watershed*. Data collected from 2007 through 2011 indicated a geometric mean of 130 CFU/100 mL for *E. coli* based on 35 samples.

Historical Information on Recreational Use

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

Government Sources

- City of Beeville
<http://www.beevilletx.org/>
Nothing was found concerning recreational activities for 2004A.
- Joe Barnhart Public Library
NRA Spoke with librarian about records of recreational use on Aransas Creek. The librarian conducted a search but turned up nothing of significance.

Historical Society Sources

- Bee County Historical Society
No active website exists but NRA did talk to Shirley O'Neil at 1(361) 343-3118 about recreation activities. She mentioned that there are swimming and fishing holes in the creek in wet years.
- NRA explored various links and online texts. Nothing significant was found.

Newspaper

- Beeville Bee - Picayune
http://www.mysoutex.com/pages/home_bee
searched for 'Aransas Creek'
- http://www.mysoutex.com/view/full_story/2241909/article-Alligator-captured-in-Skidmore?
Article says the alligator was caught and then released into Aransas Creek.
- Beeville Bee
<http://www.beeville.net/TheBeevilleBee/index.htm>
Recreation link
<http://www.beeville.net/Recreation/index.htm>
No parks listed on Aransas Creek

Internet Searches

- NRA performed a general internet search and found nothing about recreational activities in Aransas Creek.
- The Handbook of Texas Online
NRA searched the handbook by creek name and by community. Nothing significant was found on recreational use of 2004A.
<http://www.tshaonline.org>

CHAPTER 3

STUDY METHODOLOGY

Survey 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 Aransas Creek (2004A). The major field components of a Comprehensive RUAA are summarized as the following:

- Site reconnaissance (completed August 2012)
- Site selection (completed August 2012)
- Field surveys (Survey 1: August 31 - September 1st, 2012; Survey 2: September 28th, 2012)

The first two components, site reconnaissance and site selection, did not constitute formal data collection activities requiring an approved QAPP. These two components were critical to the success of data collection activities. Under the last bullet; the field surveys, which included various field activities, was covered by a TSSWCB approved QAPP.

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 involve the watershed stakeholders and increase local landowner interest in water quality issues in Aransas Creek. The site selection process took into account locations along Aransas Creek that were accessible to the public, had the highest potential for recreational use, and had TCEQ monitoring stations where historical data may have been previously collected. The site selection process also considered bridge crossings along the river, as well as, access through private lands adjacent to the river.

In the May 2009 procedures for performing a RUAA (TCEQ, 2009), it states “In general, choose three (3) sites per every five (5) miles of stream. Based on that criterion, the recommended potential number of sites for the twenty mile reach on Aransas creek was twelve (12) sites. However, the rural nature of the watershed and the limited number of road crossings made accessibility of the stream challenging. Map reconnaissance and a ground survey of the study area yielded only two locations in the twenty mile reach that could provide public access. These sites were located at the bridge crossings at US 181 (TCEQ site 12941) and FM 888 (TCEQ site 20066). NRA attempted to secure additional survey sites on private land at the public meetings and through telephone calls to land owners. However, many landowners did not wish to participate in the study and did not allow permission to access their land. Subsequently, the number of sites was limited to eight (8) sites.

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

- The location of areas along the waterbody that were accessible to the public and had the highest potential for recreational use (see Figure 2-2);
- The land cover and land use characteristics of the watershed (see Figure 2-3);
- The hydrologic characteristics, such as stream type, streamflow, hydrologic alterations, etc. (see Millican et al., 2011); and
- The location of proposed sites for data collection following TCEQ guidance (TCEQ, 2009).

On May 29, 2012, NRA presented a list of proposed RUAA sites to an aggregate of state and local agencies, and stakeholders at the public meeting held at the high school in Skidmore. NRA had originally identified 9 sites (ACk01 through ACk09) to perform the site surveys. However, the landowner at site ACk01, a property owned by a business, politely asked to be removed from the study. Additionally, site ACk09 was mistakenly thought to be a property that was owned by the landowner that also owns property at site ACk08. However, the landowner from site ACk08 allowed NRA to access an additional 300 m section of river downstream from site ACk08. The final RUAA site list noted in Table 3-1 reflect the results of input received following the meeting. Site selection was also greatly aided by efforts of the cooperating landowners at the public meetings.

Survey Site Descriptions

Eight sites were selected for the RUAA survey in Aransas Creek. These sites were selected as a result of public accessibility and landowner cooperation. Only two publically accessible sites were located within the watershed; the other six sites were accessible only through private lands. Without the voluntary cooperation of landowners, NRA staff would not have been able to access many of the sites. Moving from the most downstream site, up the creek, the selected sites were:

Site ACk01 is a site that NRA had selected as the most downstream site location in which to conduct the RUAA site surveys. Unfortunately, the property owner had a change of heart the week before the first field survey was to be completed and rescinded permission. Site ACk01 was removed from the list of survey sites.

Site ACk02 (TCEQ Station 12941) is located in Aransas Creek at the highway crossing of US 181 just north of the town of Skidmore and is 2.25 km upstream to the confluence of Aransas River northeast of Skidmore. Site ACk02 was one of two partially publically accessible sites. The area under the bridge and downstream was accessible by the public. The portion of Aransas Creek directly upstream from ACk02 was blocked by a high game fence. Landowner permission to Aransas Creek just upstream from ACk02 was not granted so all measurements/photographic evidence was acquired under the bridge and to a point 300 meters downstream.

Site ACk03 is located in Aransas Creek 8.53km upstream from the confluence of Aransas River on private property. Site ACk03 was accessible by entering the property through a locked gate on the fenced off property and by following a trail towards the creek. Site ACk03 was selected because of landowner cooperation and because the site offered opportunity for characterization of 2004A.

Site ACk04 is located on Aransas Creek 0.90 km downstream from FM 888 south of Beeville. Site ACk04 was only accessible through private property. Access to this site is through private property in a residential subdivision. Distance from the street to the creek is approximately 70m. This site was selected because of landowner cooperation and the site provided opportunity for characterization of 2004A.

Site ACk05 (TCEQ Station 20066) is located on Aransas Creek at FM 888, south of Beeville. Site ACk05 was selected because it was publically accessible and the potential for recreational activities at the site. The site is accessible downstream of the bridge crossing only; the property located upstream was bordered by a barbed wire fence. The site provided opportunity for characterization of 2004A.

Site ACk06 is located on Aransas Creek at FM 1349, south-southwest of Beeville. The site is accessible upstream of the bridge crossing only via crossing a barbed wire fence with landowner permission; the property located downstream was also bordered by a barbed wire fence. This site was selected because of landowner cooperation and the site provided opportunity for characterization of 2004A.

Site ACk07 is located just downstream from the crossing of US 59 on private property behind a gated/locked fence. This site was accessible by following a trail approximately 1.1 km to the creek. This site was selected because of landowner cooperation and the site provided opportunity for characterization of 2004A.

Site ACk08B is located on Aransas Creek south of Gill Ranch Road, west of Beeville. Site ACk08B was accessible through fenced private property via a locked gate. This site was selected because of landowner cooperation and the site provided opportunity for characterization of 2004A. For the RUAA surveys, sites ACk08B and ACk08 were accessed from the property of a single landowner.

Site ACk08 is located on Aransas Creek at Gill Ranch Road approximately 4.50 km downstream from the upper boundary of Aransas Creek, west of Beeville. Site ACk08 was accessible. This site was selected because of landowner cooperation and the site provided opportunity for characterization of 2004A.

Site ACk09 is a site that NRA had selected as the most upstream site location in which to conduct the RUAA site surveys. NRA thought that the property owner from site ACk08 and ACk08B also owned the property at site ACk09 after a discussion about the sites. It was the day of the first site survey that NRA discovered the error. NRA attempted to contact the landowner for site ACk09 but was unsuccessful. Site ACk09 was removed from the list of survey sites.

Table 3-1. Location and description of RUAA monitoring sites.

| TCEQ ID | Map Legend | Site Description | Latitude | Longitude | Distance to Previous Station (km) | Distance from Upper Boundary (km) | Distance from Lower Boundary (km) | Private or Public Access | Private Access Landowner Approved |
|---------|------------|---|-----------|------------|-----------------------------------|-----------------------------------|-----------------------------------|--------------------------|-----------------------------------|
| --- | --- | [& AU01 upper headwaters of the stream about 10 km upstream of US HWY 59] | --- | ---- | --- | 0.0 | 32.92 | --- | --- |
| | ACK08 | Aransas Creek at Gill Ranch Road | 28.391117 | -97.864800 | 4.50 | 4.50 | 28.42 | Public | Yes |
| | ACK08B | Aransas Creek South of Gill Ranch Road | 28.381850 | -97.861783 | 1.22 | 5.72 | 27.2 | Private | Yes |
| | ACK07 | Aransas Creek at US 59 | 28.346333 | -97.837133 | 5.00 | 10.72 | 22.20 | Public | Yes |
| | ACK06 | Aransas Creek at FM 1349 | 28.322733 | -97.806517 | 5.21 | 15.93 | 16.99 | Public | Yes |
| 20066 | ACK05 | Aransas Creek at FM 888 | 28.307841 | -97.770129 | 4.63 | 20.56 | 12.36 | Public | Yes |
| | ACK04 | Aransas Creek downstream of FM 888 | 28.301938 | -97.764333 | 0.90 | 21.46 | 11.46 | Private | Yes |
| | ACK03 | Aransas Creek midway between US 181 and FM 888 | 28.301938 | -97.739100 | 2.93 | 24.39 | 8.53 | Private | Yes |
| 12941 | ACK02 | Aransas Creek at US 181 | 28.276667 | -97.691950 | 6.28 | 30.60 | 2.25 | Public | Yes |
| --- | --- | [& AU01 lower boundary with Poesta Creek and Aransas River] | --- | ---- | .28 | 32.92 | 0.00 | --- | --- |

Field Survey Data Collection Activities

As specified in the procedures for a Comprehensive RUAA (TCEQ, 2009), two different field surveys at the eight sites occurred on different weekends during the warm season (air temperature greater than or equal to 70°F) when human recreational activities were most likely to occur (March - October). Field surveys were conducted when stream flow conditions were well below normal. During the study period, it was not possible to avoid the extreme drought conditions that persisted throughout 2012. Data collection activities for each of the two field surveys included the following activities at each site:

- average depth at thalweg and substantial pool depths, lengths, and widths,
- observational/anecdotal data required by the RUAA,
- air and water temperature measurements, and
- photographic record.

Instantaneous Streamflow Measurements

Instantaneous flow measurements were not conducted at any station due to extreme drought conditions that resulted in no flow conditions and, more often, completely dry streambeds at 3 out of 8 sites. NRA attempted to achieve data collection during normal flow conditions but the extreme drought persisted on throughout much of the study period defined for this project.

Average Depth at Thalweg and Substantial Pool Depths

Determination of thalweg and substantial pool depths is applicable to contact recreation use determination for intermittent and perennial freshwaters according to (TCEQ, 2008). 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 at sites with sufficient water.

Determination of the thalweg in both wadeable and non-wadeable streams was determined as described in the RUAA Procedures (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.

Observational /Anecdotal Data

Anecdotal information was recorded on field data sheets during all surveys and studies using the field data sheets from the TSSWCB-approved QAPP. 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, in degrees C, was measured using a 600 XLM YSI multiprobe and a 650 MDS data logger. Air temperature was measured by a handheld thermometer in degrees C. Both instruments were checked against a NTIS certified thermometer on a routine basis.

Photographs

NRA staff created photographic records of each site during the site surveys. 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. 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) or impediments to recreational use. In addition, as part of the overall project, photographs were also taken to indicate potential bacteria sources to the waterbody; this is discussed in *Aransas Creek: Historical Water Quality, Source Survey and Geographic Information System Inventory* with the findings summarized in Chapter 2.

CHAPTER 4

PHYSICAL SURVEY RESULTS

General description of Stream and Survey Sites

The RUAA surveys were conducted in 2004A on August 31st – September 1st, 2012, and September 28th, 2012. Surveys and associated interviews were performed on weekdays, weekends, and holidays (Labor Day weekend) at opportune times to observe recreational activities in and around Aransas Creek. At the time of the Field Surveys, the study area was experiencing severe drought conditions which resulted in dry stream beds at five out of eight survey sites within the study area. Sites ACk03 and ACk04 were the only sites that had pools significant enough to allow field staff to acquire thalweg depth measurement information. Site ACk07 had a small pool that was fed by a leaking water trough. At sites that had sufficient water, eleven transects (cross sections) were measured along a 300-m reach at 30-m increments. All measurements are reported from downstream (30 m) to upstream (300 m) on field data sheets provided electronically as an appendix to this report (See Chapter 6).

Table 4-1 shows the rainfall data for 30-days antecedent to the RUAA surveys, which were performed on August 31st – September 1st, 2012, and September 28th, 2012. Surveys were conducted during varying air and water temperatures as shown in Table 4-2. Air temperatures were above 70° F and water temperatures were sufficiently warm enough for recreational activities to occur.

Table 4-3 describes the appearance of the stream channel and riparian corridor at each site.

Table 4-4 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 bank at each site is also provided in Table 4-4.

Table 4-5 shows the maximum, minimum and average widths of the stream at each site for each survey. Stream aesthetics and wildlife observations are reported in Table 4-6 for each site and survey. In general, the majority of observed tracks and fecal droppings reported in Table 4-6 were wildlife in origin. Tracks included birds, raccoon, deer, bovine and feral hogs. Observed trash was predominantly plastics and was most common at bridge crossings. Evidence of major dumping was observed at site ACk05 while a small amount of dumping was evident at site ACk02. Trash on private lands, which was rarely observed, appeared to have washed in during high flow periods.

A description of each site is presented along with selected photos taken during the surveys. All photos are provided electronically as an appendix to this report (See Chapter 6).

Table 4-1. Rainfall records for the Wunderground Weather Station KBEA in Beeville for the month prior to RUAA surveys. (RUAA surveys were conducted August 31st – September 1st, 2012 and September 8, 2012. Dates of surveys are highlighted in gray shades)

| RUAA Trip 1 August 31 – September 1, 2012 | | RUAA Trip 2 September 28, 2012 | |
|--|---------------|-----------------------------------|---------------|
| Date | Rainfall (in) | Date | Rainfall (in) |
| August 2012 | | September 2012 | |
| 1 | 0.0 | 2 | 0.0 |
| 2 | 0.0 | 3 | 0.0 |
| 3 | 0.0 | 4 | 0.0 |
| 4 | 0.0 | 5 | 0.0 |
| 5 | 0.05 | 6 | 0.0 |
| 6 | 0.0 | 7 | 0.0 |
| 7 | 0.0 | 8 | 0.0 |
| 8 | 0.0 | 9 | 0.0 |
| 9 | 0.0 | 10 | 0.0 |
| 10 | 0.0 | 11 | 0.0 |
| 11 | 0.0 | 12 | 0.0 |
| 12 | 0.0 | 13 | 0.03 |
| 13 | 0.0 | 14 | 0.0 |
| 14 | 0.0 | 15 | 0.0 |
| 15 | 0.0 | 16 | 0.0 |
| 16 | 0.0 | 17 | 0.0 |
| 17 | 0.0 | 18 | 0.0 |
| 18 | 0.0 | 19 | 0.0 |
| 19 | 0.0 | 20 | 0.0 |
| 20 | 0.01 | 21 | 0.0 |
| 21 | 0.0 | 22 | 0.0 |
| 22 | 0.0 | 23 | 0.0 |
| 23 | 0.0 | 24 | 0.0 |
| 24 | 0.0 | 25 | 0.0 |
| 25 | 0.0 | 26 | 0.0 |
| 26 | 0.0 | 27 | 0.0 |
| 27 | 0.0 | 28 | 0.0 |
| 28 | 0.0 | | |
| 29 | 0.0 | | |
| 30 | 0.0 | | |
| 31 | 0.0 | | |
| September 1, 2012 | | | |
| 1 | 0.0 | | |

Table 4-2. Field Parameters measured at each station for the Aransas Creek RUAA.

| Assesment Unit | Station Number | August 31 – September 1, 2012 | | September 28, 2012 | |
|----------------|----------------|-------------------------------|-----------------|--------------------|-----------------|
| | | Air Temp (°C) | Water Temp (°C) | Air Temp (°C) | Water Temp (°C) |
| 2004 A | ACk02 | 30.6 | N/A | 28.7 | N/A |
| | ACk03 | 36.5 | 32.5 | 31.5 | 26.7 |
| | ACk04 | 33.4 | 29.2 | 29.2 | 26.5 |
| | ACk05 | 31.4 | N/A | 28.7 | N/A |
| | ACk06 | 36.3 | N/A | 28.6 | N/A |
| | ACk07 | 36.6 | N/A | 27.7 | N/A |
| | ACk08a | 32.4 | N/A | 27.8 | N/A |
| | ACk08b | 31.4 | N/A | 27.7 | N/A |

Table 4-3. Stream channel and corridor assessment per site sampled in Aransas Creek.

| Assessment Unit | Site Number | Stream Bank | Stream Channel Appearance | Dominant Substrate | Corridor Appearance | Riparian Size | Park | Landscape Surroundings |
|-----------------|---------------|-------------|---------------------------|----------------------------|---------------------|---------------|---------|------------------------|
| 2004A | ACk02 | Right | Natural | Sand | Forest | Large | No | Native |
| | | Left | | | | | | |
| | ACk03 | Right | Natural | Silt | Forest, Shrub | Large | No | Native |
| | | Left | | | | | | |
| | ACk04 | Right | Natural | Silt, Mud/Clay | Mowed, Maintained | Large | No | Mowed Grass |
| | | Left | | | | | | |
| | ACk05 | Right | Natural | Sand, Silt | Forest | Large | No | Native |
| | | Left | | | | | | |
| ACk06 | Right | Natural | Silt, Mud/Clay | Forest | Large | No | Native | |
| | Left | | | | | | | |
| ACk07 | Right | Natural | Silt | Forest | Large | No | Native | |
| | Left | | | | | | | |
| ACk08a | Right | Natural | Sand, Silt | Mowed, Maintained, Pasture | Large | No | Pasture | |
| | Left | | | | | | | |
| ACk08b | Right left | Natural | Sand, Silt | Forest, Shrub | Large | No | Native | |

Table 4-4. Thalweg depth, streamflow type, and site accessibility for the assessment unit and each site for the surveys conducted.

| Assessment Unit (AU) | Segment Length (miles) | # of Sites | # of Recreational Areas in AU | Avg. Thalweg for Assessment Unit (m) | | Stream Flow Type | General Access | Bank Access |
|----------------------|------------------------|----------------|-------------------------------|--------------------------------------|--------------------|--------------------------------|----------------|-------------|
| | | | | August 31-September 1, 2012 | September 28, 2012 | | | |
| 2004a | 20 | 8 | 0 | 0.0578 | 0.0425 | Ephemeral | Private | ME |
| Site | Reach Length (meters) | # of transects | # of Recreational Areas | Avg. Thalweg by site | | Stream Flow Type | General Access | Bank Access |
| | | | | August 31-September 1, 2012 | September 28, 2012 | | | |
| ACk02 | 300 | 11 | 0 | N/A | N/A | Ephemeral | Public | ME |
| ACk03 | 300 | 11 | 0 | 0.184 | 0.142 | Intermittent w/perennial pools | Private | ME |
| ACk04 | 300 | 11 | 0 | 0.2784 | 0.198 | Intermittent w/perennial pools | Private | ME |
| ACk05 | 300 | 11 | 0 | N/A | N/A | Ephemeral | Public | ME |
| ACk06 | 300 | 11 | 0 | N/A | N/A | Ephemeral | Private | ME |
| ACk07 | 300 | 11 | 0 | N/A | N/A | Ephemeral | Private | ME |
| ACk08a | 300 | 11 | 0 | N/A | N/A | Ephemeral | Private | E |
| ACk08b | 300 | 11 | 0 | N/A | N/A | Ephemeral | Private | MD |

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

Table 4-5. Description of surveyed streams in Aransas Creek watershed.

| Assessment Unit | Date | Site Number | Maximum width (m) | Minimum width (m) | Average width | Total Discharge (cfs) | Observed Flow |
|-----------------|---------------|-------------|-------------------|-------------------|---------------|-----------------------|---------------|
| 2004A | 8/31-9/1/2012 | ACk02 | 5.4 | 4.2 | 4.4 | 0.0 | No Flow |
| | | ACk03 | 15.1 | 0.9 | 5.2 | 0.0 | No Flow |
| | | ACk04 | 17.4 | 0.4 | 7.2 | 0.0 | No Flow |
| | | ACk05 | 6.0 | 0.9 | 1.2 | 0.0 | No Flow |
| | | ACk06 | 5.5 | 0.5 | 2.5 | 0.0 | No Flow |
| | | ACk07 | | | | 0.0 | No Flow |
| | | ACk08a | | | | 0.0 | No Flow |
| | | ACk08b | | | | 0.0 | No Flow |
| | 9/28/2012 | ACk02 | 5.5 | 4.3 | 4.5 | 0.0 | No Flow |
| | | ACk03 | 14.5 | 1.0 | 1.0 | 0.0 | No Flow |
| | | ACk04 | 17.2 | 0.5 | 7.2 | 0.0 | No Flow |
| | | ACk05 | 6.0 | 0.9 | 1.2 | 0.0 | No Flow |
| | | ACk06 | | | | 0.0 | No Flow |
| | | ACk07 | | | | 0.0 | No Flow |
| | | ACk08a | | | | 0.0 | No Flow |
| | | ACk08b | | | | 0.0 | No Flow |

Table 4-6. Stream aesthetics and wildlife observations in the Aransas Creek watershed.

| Station | Survey date | Water aesthetics | | | | | | Wildlife observations | | | | Stream garbage | | |
|---------|-------------|--------------------|-------------|------|-------|----------------|---------------|-----------------------|-----------------------|--------------|--------------|------------------|------------------|------|
| | | Aquatic vegetation | Algae cover | Odor | Color | Bottom deposit | Water surface | Reptile | Water dependent birds | Mammals | Evidence | Large in channel | Small in channel | Bank |
| ACk02 | 9/1/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks/fecal | R | C | R |
| | 9/28/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks/fecal | R | C | C |
| ACk03 | 8/31/2012 | A | A | N | Brown | Fine seds | Clear | N | SP | N | Tracks/fecal | N | N | N |
| | 9/28/2012 | A | C | N | Brown | Fine seds | Clear | N | SP | SP coyote | Tracks/fecal | N | R | N |
| ACk04 | 8/31/2012 | A | A | N | Brown | Fine seds | Clear | SP turtle | SP | N | Tracks | N | N | R |
| | 9/28/2012 | A | C | N | Green | Fine seds | Clear | N | SP | SP dog | Tracks | N | N | N |
| ACk05 | 9/1/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks/fecal | C | A | A |
| | 9/28/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks/fecal | C | A | A |
| ACk06 | 8/31/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks | N | R | N |
| | 9/28/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks/fecal | N | N | R |
| ACk07 | 8/31/2012 | A | A | N | Brown | Fine seds | Clear | N | N | LP livestock | Tracks/fecal | N | N | N |
| | 9/28/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | SP livestock | Tracks/fecal | N | R | N |
| ACk08a | 8/31/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | SP livestock | Tracks/fecal | N | N | N |
| | 9/28/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks/fecal | N | N | N |
| ACk08b | 8/31/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks/fecal | N | N | N |
| | 9/28/2012 | N/A | N/A | N/A | N/A | N/A | N/A | N | N | N | Tracks/fecal | N | R | N |

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

Physical Description of Site ACk02

Aransas Creek at site ACk02 was visited on September 1st, and September 28th, 2012. This site is one of two publically accessible sites. Located at the bridge crossing of US 181 just north of the town of Skidmore in Bee County, the site can be accessed by a short hike through the heavily vegetated bank.



Figure 4-1. Photographs of the fence line upstream at Site ACk02

Accessibility upstream (west) of the bridge crossing was restricted by a large fence (Figure 4-1). All information gathered at site ACk02 occurred at the bridge and to a point 300 m downstream. Once on the river bank, access was achieved from a moderately steep bank approximately 2 m in elevation. At the creek, the left bank (facing downstream) and right bank are heavily vegetated while the streambed itself was dry sand. This section of creek was noted to have significant tree cover blocking out direct sunlight to the streambed. Streamflow has been observed on numerous occasions but was absent during the site surveys. Field staff did not report any pools present in the 300 m reach. Table 4-2 describes the stream channel and corridor assessment at the site. Photogroups 4-1 through 4-4 depict the general appearance of the stream at site ACk02.

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

Physical Description of Site ACk03

Aransas Creek at site ACk03 was visited on August 31st, and September 28th, 2012. This site was accessible only through private lands that were fenced and locked at Ridgeway Lane which is located midway between the towns of Beeville to the north and Skidmore to the south in Bee County. Distance from the gate to the creek access point is approximately 1.5 km. From the property, the site was easily accessible at a location kept clear by the landowner. Otherwise, accessibility in the vicinity would be very difficult due to a heavily vegetated riparian zone. The bank at this site was moderately steep and vegetated. Flow at the time of the surveys was absent but perennial pools were present in the 300 m reach. Table 4-2 describes the stream channel and riparian zone appearance at the site. Photogroups 4-5 through 4-8 depict the general appearance of the stream at site ACk03.

Site ACk03 was one of only three sites that had water pooled in the 300 m reach. Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey are provided in Tables 4-4, 4-5, and 4-6 respectively.

Physical Description of Site ACk04

Aransas Creek at site ACk04 was visited on August 31st, and September 28th, 2012. This site was accessible only through private lands located at a residence on Tammy Lynn Trail just off FM 888 approximately 8 km south/southwest of Beeville in Bee County. Once on the property, the site is approximately 70 m from the residential dwelling and easily accessible throughout the 300 m reach. At the creek, the leftbank (looking downstream) and rightbank are moderately vegetated with trees providing sporadic cover. A dominant structure present at the site is a footbridge connecting the right and left banks (Figure 4-2). The rightbank has also been reinforced with corrugated metal to help control erosion near the base of the footbridge (Figure 4-3). The landowner told the NRA field crew that the creek was modified by a previous landowner to hold water for fishing purposes. The landowner also mentioned some accidental primary contact recreational activities occurring while using the bridge by a family member.



Figure 4-2 Footbridge at ACk04



Figure 4-3 Reinforced bank at ACk04

Flow at the time of the surveys was absent but a perennial pool was present within the 300 m reach. Table 4-2 describes the stream channel and riparian zone appearance at the site. Photogroups 4-9 through 4-12 depict the general appearance of the stream at site ACk04. Site ACk04 was one of only three sites that had water pooled in the 300 m reach. Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey are provided in Tables 4-4, 4-5, and 4-6 respectively.

Physical Description of Site ACk05

Aransas Creek at site ACk05 was visited on September 1st, and September 28th, 2012. This site is one of two publically accessible sites located within the study area. Site ACk05 is located at the bridge crossing of FM 888 approximately 8 km south/southwest of Beeville in Bee County. Access at site ACk05 was limited to the bridge crossing and to a point 300 m downstream. Site ACk05 was moderately easy to access from side of the road by following the easement property that's directly adjacent to the bridge. Once on the creek bed, the riparian vegetation was very

thick making it difficult to travel up and down the 300 m reach (Figure 4-4). A small concrete bridge was present near the 270 m mark allowing for residents to safely traverse the creek (Figure 4-5). Portions of site had wooden structures constructed in the old oak trees that lined the creek bed (Figure 4-6). The structures resembled tree houses or possibly structures to use for fishing since they were located directly over the streambed.



Figure 4-4 Tall vegetation at ACk05



Figure 4-5. Concrete bridge at ACk05



Figure 4-6. Wooden structures over the creek at ACk05

Pools within the 300 m reach were absent and the stream bed was completely dry during the time of both field surveys. However, water was present during the site reconnaissance trip in February 2012 (Figure 4-6). Table 4-2 describes the stream channel and riparian zone appearance at the site. Photogroups 4-13 through 4-16 depict the general appearance of the stream at site ACk05. Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey are provided in Tables 4-4, 4-5, and 4-6 respectively.

Physical Description of Site ACk06

Aransas Creek at site ACk06 was visited on August 31st, and September 28th, 2012. This site was accessible from a low water crossing at FM 1349 approximately 11 km southwest of Beeville in Bee County. This site was accessible by crossing a barbed wire fence (with landowner permission) from the bridge crossing to a point 300 m upstream from the bridge. The creek is bordered by private property both upstream and downstream. Pools within the 300 m reach were absent and the stream bed was completely dry during the time of both field surveys.

Table 4-2 describes the stream channel and riparian zone appearance at the site. Photogroups 4-17 through 4-20 depict the general appearance of the stream at site ACk06. Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey are provided in Tables 4-4, 4-5, and 4-6 respectively.

Physical Description of Site ACk07

Aransas Creek at site ACk07 was visited on August 31st, and September 28th, 2012. This site was accessible only through private lands located just off CR 314 near the intersection of US 59, approximately 10 km southwest of Beeville in Bee County. Once on the property, the site can be accessed by following a dirt road approximately 1.0 km to the creek.

The creek can be classified as ephemeral at this location after talking to the landowner. The ranch foreman said the creek is generally dry unless it's been raining. Due to persistent drought conditions, the creek had been dry for years prior to the site surveys.

The streambed was completely dry during the first site survey except for the area just downstream of a leaky water trough (Figure 4-7). Water pooled at the 30 m transect was approximately 0.22 m deep and the pool was approximately 32 m long. At the time of the second survey, the leak had been repaired and the pool was slowly drying back up. Cattle were present at the time of both field surveys. No other animals were observed at this location.

Table 4-2 describes the stream channel and riparian zone appearance at the site. Photogroups 4-21 through 4-24 depict the general appearance of the stream at site ACk07. Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey are provided in Tables 4-4, 4-5, and 4-6 respectively.



Figure 4-7. Leaking water trough at ACk07

Physical Description of Site ACk08B

Aransas Creek at site ACk08B was visited on August 31st, and September 28th, 2012. This site was accessible only through gated private lands located off of Gill Ranch Road approximately 0.8 km south of the intersection of La Para Road and approximately 10 km west of Beeville in Bee County. Once behind the gated/locked high fence, NRA staff followed a dirt road approximately 1.1 km to the creek.

The creek can be classified as ephemeral at this location after talking to the landowner. The landowner said the creek is generally dry unless it's been raining. Due to persistent drought conditions, the creek had been dry for years prior to the site surveys.

Table 4-2 describes the stream channel and riparian zone appearance at the site. Photogroups 4-25 through 4-28 depict the general appearance of the stream at site ACk08B. Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey are provided in Tables 4-4, 4-5, and 4-6 respectively.

Physical Description of Site ACk08

Aransas Creek at site ACk08 was visited on August 31st, and September 28th, 2012. This site was accessible only through gated private lands located off of Gill Ranch Road approximately 0.8 km south of the intersection of La Para Road and approximately 10 km west of Beeville in Bee County. Once behind the gated/locked high fence, NRA staff parked the truck and hiked approximately 0.25 km to the edge of the property where the creek flows through culverts under Gill Ranch Road during flow events.

The streambed at ACk08 was completely dry during both of the site surveys. The landowner said that he has owned the property a few years and had not seen any flowing water in that time. The creek banks at site ACk08 were very flat with hardly any riparian vegetation within the 300 m reach. Discussions with the landowner revealed that the creek only flows after a significant rainfall event. The creek can be classified as ephemeral at this location. The landowner uses the ranch to raise livestock (beef cattle) and leases the ranch for game hunting. Although no cattle were seen near the creek bed at the time of the site surveys, fresh cattle feces were observed during both site surveys within the 300 m reach. Dung beetles (*Canthor imitator* most likely) were observed recycling fecal material (Figure 4-9). It is a well known fact that dung beetles such as these are very good at recycling large quantities of fecal material that could otherwise end up in receiving waters (Borror *et al.*, 1989)



Figure 4-9. Dung beetles at ACk08.

Table 4-2 describes the stream channel and riparian zone appearance at the site. Photogroups 4-29 through 4-32 depict the general appearance of the stream at site ACk08. Average thalweg depth, hydrographic parameters, and aesthetic appearance of the water and wildlife observations for the site during each survey are provided in Tables 4-4, 4-5, and 4-6 respectively.



Photogroup 4-1. Aransas Creek site ACK02 depicting general appearance of the site. Top Left – 30 m transect, upstream view, September 1st, 2012; Top Right – 30 m transect, upstream view, September 28th, 2012; Middle Left – 30 m transect, downstream view, September 1st, 2012; Middle Right – 30 m transect, downstream view, September 28th, 2012; Bottom Left – 30 m transect, rightbank view, September 1st, 2012; Bottom Right – 30 m transect, rightbank view, September 28th, 2012.



Photogroup 4-2. Aransas Creek site ACl02 depicting general appearance of the site. Top Left – 30 m transect, leftbank view, September 1st, 2012; Top Right – 30 m transect, leftbank view, September 28th, 2012; Middle Left – 150 m transect, upstream view, September 1st, 2012; Middle Right – 150 m transect, upstream view, September 28th, 2012; Bottom Left – 150 m transect, downstream view, September 1st, 2012; Bottom Right – 150 m transect, downstream view, September 28th, 2012.



Photogroup 4-3. Aransas Creek site ACk02 depicting general appearance of the site. Top Left – 150 m transect, rightbank view, September 1st, 2012; Top Right – 150 m transect, rightbank view, September 28th, 2012; Middle Left – 150 m transect, leftbank view, September 1st, 2012; Middle Right – 150 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, upstream view, September 1st, 2012; Bottom Right – 300 m transect, upstream view, September 28th, 2012.



Photogroup 4-4. Aransas Creek site ACK02 depicting general appearance of the site. Top Left – 300 m transect, downstream view, September 1st, 2012; Top Right – 300 m transect, downstream view, September 28th, 2012; Middle Left – 300 m transect, rightbank view, September 1st, 2012; Middle Right – 300 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, leftbank view, September 1st, 2012; Bottom Right – 300 m transect, leftbank view, September 28th, 2012.



Photogroup 4-5. Aransas Creek site ACk03 depicting general appearance of the site. Top Left – 30 m transect, upstream view, August 31st, 2012; Top Right – 30 m transect, upstream view, September 28th, 2012; Middle Left – 30 m transect, downstream view, August 31st, 2012; Middle Right – 30 m transect, downstream view, September 28th, 2012; Bottom Left – 30 m transect, rightbank view, August 31st, 2012; Bottom Right – 30 m transect, rightbank view, September 28th, 2012.



Photogroup 4-6. Aransas Creek site ACk03 depicting general appearance of the site. Top Left – 30 m transect, leftbank view, August 31st, 2012; Top Right – 30 m transect, leftbank view, September 28th, 2012; Middle Left – 150 m transect, upstream view, August 31st, 2012; Middle Right – 150 m transect, upstream view, September 28th, 2012; Bottom Left – 150 m transect, downstream view, August 31st, 2012; Bottom Right – 150 m transect, downstream view, September 28th, 2012.



Photogroup 4-7. Aransas Creek site ACk03 depicting general appearance of the site. Top Left – 150 m transect, rightbank view, August 31st, 2012; Top Right – 150 m transect, rightbank view, September 28th, 2012; Middle Left – 150 m transect, leftbank view, August 31st, 2012; Middle Right – 150 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, upstream view, August 31st, 2012; Bottom Right – 300 m transect, upstream view, September 28th, 2012.



Photogroup 4-8. Aransas Creek site ACk03 depicting general appearance of the site. Top Left – 300 m transect, downstream view, August 31st, 2012; Top Right – 300 m transect, downstream view, September 28th, 2012; Middle Left – 300 m transect, rightbank view, August 31st, 2012; Middle Right – 300 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, leftbank view, August 31st, 2012; Bottom Right – 300 m transect, leftbank view, September 28th, 2012.



Photogroup 4-9 Aransas Creek site ACh04 depicting general appearance of the site. Top Left – 30 m transect, upstream view, August 31st, 2012; Top Right – 30 m transect, upstream view, September 28th, 2012; Middle Left – 30 m transect, downstream view, August 31st, 2012; Middle Right – 30 m transect, downstream view, September 28th, 2012; Bottom Left – 30 m transect, rightbank view, August 31st, 2012; Bottom Right – 30 m transect, rightbank view, September 28th, 2012.



Photogroup 4-10. Aransas Creek site ACk04 depicting general appearance of the site. Top Left – 30 m transect, leftbank view, September 1st, 2012; Top Right – 30 m transect, leftbank view, September 28th 2012; Middle Left – 150 m transect, upstream view, September 1st, 2012; Middle Right – 150 m transect, upstream view, September 28th, 2012; Bottom Left – 150 m transect, downstream view, September 1st, 2012; Bottom Right – 150 m transect, downstream view, September 28th, 2012.



Photogroup 4-11. Aransas Creek site ACh04 depicting general appearance of the site. Top Left – 150 m transect, rightbank view, August 31st, 2012; Top Right – 150 m transect, rightbank view, September 28th, 2012; Middle Left – 150 m transect, leftbank view, August 31st, 2012; Middle Right – 150 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, upstream view, August 31st, 2012; Bottom Right – 300 m transect, upstream view, September 28th, 2012.



Photogroup 4-12. Aransas Creek site ACK04 depicting general appearance of the site. Top Left – 300 m transect, downstream view, August 31st, 2012; Top Right – 300 m transect, downstream view, September 28th, 2012; Middle Left – 300 m transect, rightbank view, August 31st, 2012; Middle Right – 300 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, leftbank view, August 31st, 2012; Bottom Right – 300 m transect, leftbank view, September 28th, 2012.



Photogroup 4-13. Aransas Creek site ACk05 depicting general appearance of the site. Top Left – 30 m transect, upstream view, September 1st, 2012; Top Right – 30 m transect, upstream view, September 28th, 2012; Middle Left – 30 m transect, downstream view, September 1st, 2012; Middle Right – 30 m transect, downstream view, September 28th, 2012; Bottom Left – 30 m transect, rightbank view, September 1st, 2012; Bottom Right – 30 m transect, rightbank view, September 28th, 2012



Photogroup 4-14. Aransas Creek site ACk05 depicting general appearance of the site. Top Left – 30 m transect, leftbank view, September 1st, 2012; Top Right – 30 m transect, leftbank view, September 28th, 2012; Middle Left – 150 m transect, upstream view, September 1st, 2012; Middle Right – 150 m transect, upstream view, September 28th, 2012; Bottom Left – 150 m transect, downstream view, September 1st, 2012; Bottom Right – 150 m transect, downstream view, September 28th, 2012.



Photogroup 4-15. Aransas Creek site ACh05 depicting general appearance of the site. Top Left – 150 m transect, rightbank view, September 1st, 2012; Top Right – 150 m transect, rightbank view, September 28th, 2012; Middle Left – 150 m transect, leftbank view, September 1st, 2012; Middle Right – 150 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, upstream view, September 1st, 2012; Bottom Right – 300 m transect, upstream view, September 28th, 2012.



Photogroup 4-16. Aransas Creek site ACh05 depicting general appearance of the site. Top Left – 300 m transect, downstream view, September 1st, 2012; Top Right – 300 m transect, downstream view, September 28th, 2012; Middle Left – 300 m transect, rightbank view, September 1st, 2012; Middle Right – 300 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, leftbank view, September 1st, 2012; Bottom Right – 300 m transect, leftbank view, September 28th, 2012.



Photogroup 4-17. Aransas Creek site ACk06 depicting general appearance of the site. Top Left – 30 m transect, upstream view, August 31st, 2012; Top Right – 30 m transect, upstream view, September 28th, 2012; Middle Left – 30 m transect, downstream view, August 31st, 2012; Middle Right – 30 m transect, downstream view, September 28th, 2012; Bottom Left – 30 m transect, rightbank view, August 31st, 2012; Bottom Right – 30 m transect, rightbank view, September 28th, 2012.



Photogroup 4-18. Aransas Creek site ACk06 depicting general appearance of the site. Top Left – 30 m transect, leftbank view, August 31st, 2012; Top Right – 30 m transect, leftbank view, September 28th, 2012; Middle Left – 150 m transect, upstream view, August 31st, 2012; Middle Right – 150 m transect, upstream view, September 28th, 2012; Bottom Left – 150 m transect, downstream view, August 31st, 2012; Bottom Right – 150 m transect, downstream view, September 28th, 2012.



Photogroup 4-19. Aransas Creek site ACk06 depicting general appearance of the site. Top Left – 150 m transect, rightbank view, August 31st, 2012; Top Right – 150 m transect, rightbank view, September 28th, 2012; Middle Left – 150 m transect, leftbank view, August 31st, 2012; Middle Right – 150 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, upstream view, August 31st, 2012; Bottom Right – 300 m transect, upstream view, September 28th, 2012.



Photogroup 4-20. Aransas Creek site ACl06 depicting general appearance of the site. Top Left – 300 m transect, downstream view, August 31st, 2012; Top Right – 300 m transect, downstream view, September 28th, 2012; Middle Left – 300 m transect, rightbank view, August 31st, 2012; Middle Right – 300 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, leftbank view, August 31st, 2012; Bottom Right – 300 m transect, leftbank view, September 28th, 2012.



Photogroup 4-21. Aransas Creek site ACk07 depicting general appearance of the site. Top Left – 30 m transect, upstream view, August 31st, 2012; Top Right – 30 m transect, upstream view, September 28th, 2012; Middle Left – 30 m transect, downstream view, August 31st, 2012; Middle Right – 30 m transect, downstream view, September 28th, 2012; Bottom Left – 30 m transect, rightbank view, August 31st, 2012; Bottom Right – 30 m transect, rightbank view, September 28th, 2012.



Photogroup 4-22. Aransas Creek site ACk07 depicting general appearance of the site. Top Left – 30 m transect, leftbank view, August 31st, 2012; Top Right – 30 m transect, leftbank view, September 28th, 2012; Middle Left – 150 m transect, upstream view, August 31st, 2012; Middle Right – 150 m transect, upstream view, September 28th, 2012; Bottom Left – 150 m transect, downstream view, August 31st, 2012; Bottom Right – 150 m transect, downstream view, September 28th, 2012.



Photogroup 4-23. Aransas Creek site ACk07 depicting general appearance of the site. Top Left – 150 m transect, rightbank view, August 31st, 2012; Top Right – 150 m transect, rightbank view, September 28th, 2012; Middle Left – 150 m transect, leftbank view, August 31st, 2012; Middle Right – 150 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, upstream view, August 31st, 2012; Bottom Right – 300 m transect, upstream view, September 28th, 2012.



Photogroup 4-24 Aransas Creek site ACh07 depicting general appearance of the site. Top Left – 300 m transect, downstream view, August 31st, 2012; Top Right – 300 m transect, downstream view, September 28th, 2012; Middle Left – 300 m transect, rightbank view, August 31st, 2012; Middle Right – 300 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, leftbank view, August 31st, 2012; Bottom Right – 300 m transect, leftbank view, September 28th, 2012.



Photogroup 4-25. Aransas Creek site ACK08B depicting general appearance of the site. Top Left – 30 m transect, upstream view, August 31st, 2012; Top Right – 30 m transect, upstream view, September 28th, 2012; Middle Left – 30 m transect, downstream view, August 31st, 2012; Middle Right – 30 m transect, downstream view, September 28th, 2012; Bottom Left – 30 m transect, rightbank view, August 31st, 2012; Bottom Right – 30 m transect, rightbank view, September 28th, 2012.



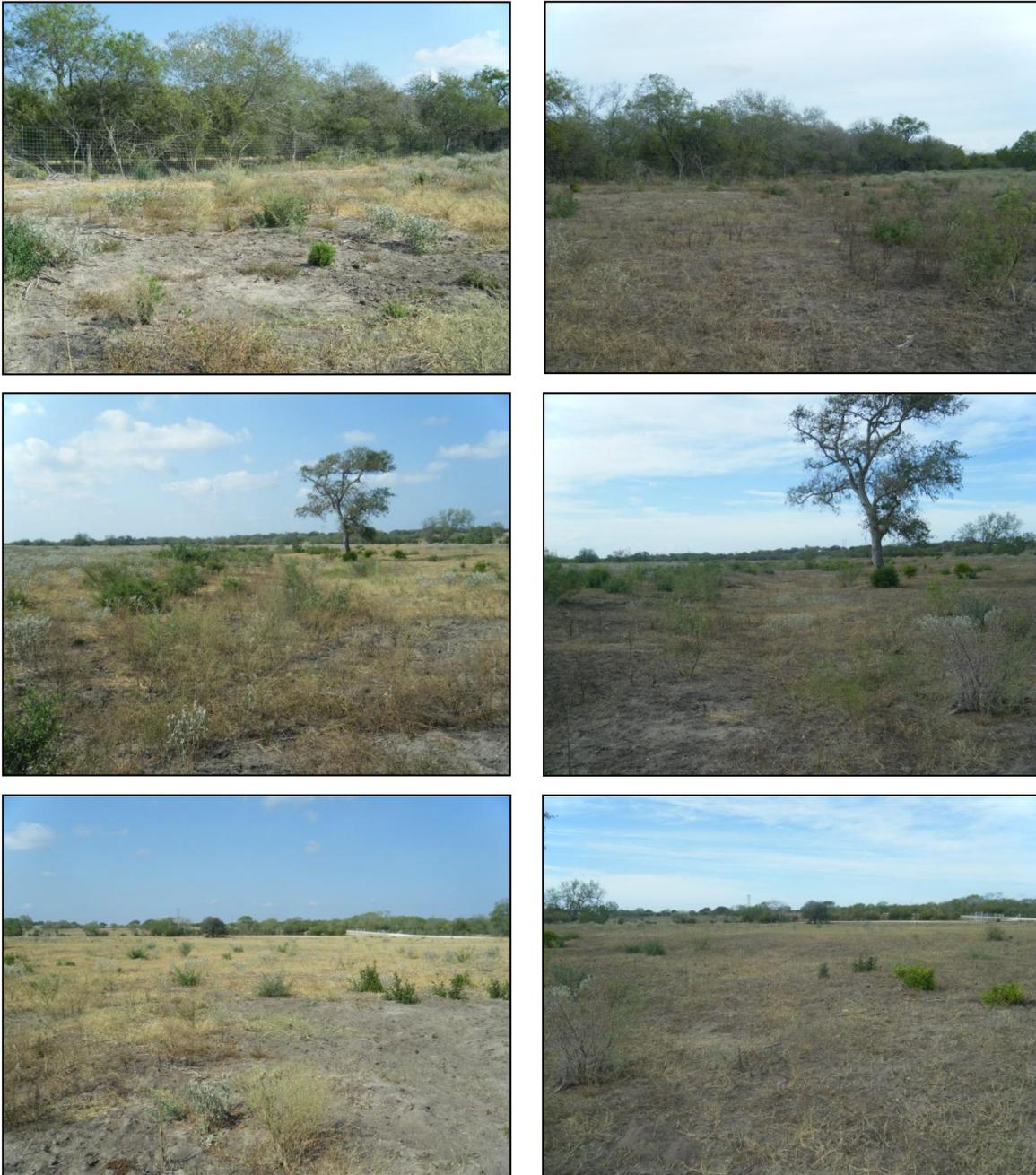
Photogroup 4-26. Aransas Creek site ACK08B depicting general appearance of the site. Top Left – 30 m transect, leftbank view, August 31st, 2012; Top Right – 30 m transect, leftbank view, September 28th, 2012; Middle Left – 150 m transect, upstream view, August 31st, 2012; Middle Right – 150 m transect, upstream view, September 28th, 2012; Bottom Left – 150 m transect, downstream view, August 31st, 2012; Bottom Right – 150 m transect, downstream view, September 28th, 2012.



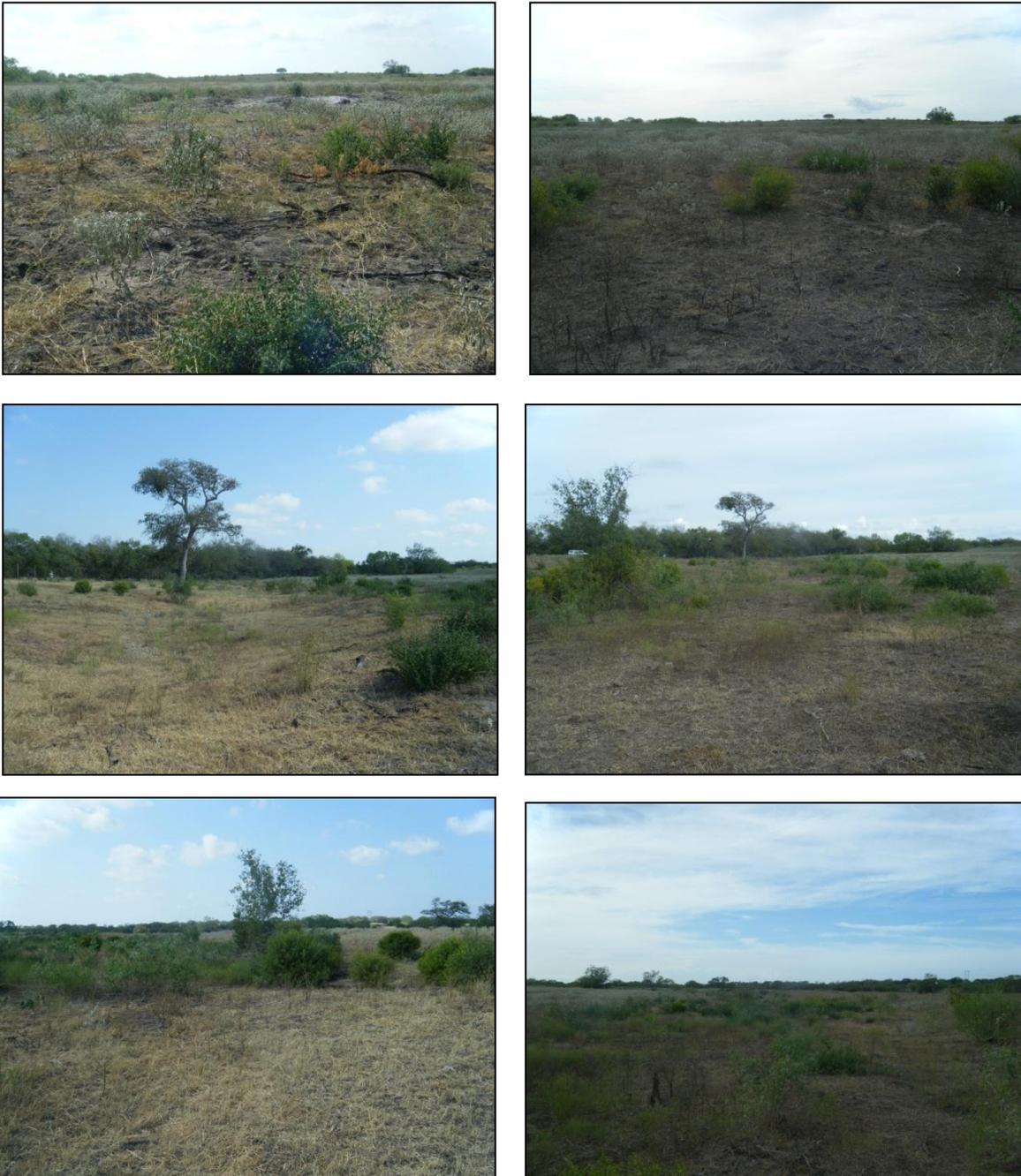
Photogroup 4-27. Aransas Creek site ACk08B depicting general appearance of the site. Top Left – 150 m transect, rightbank view, August 31st, 2012; Top Right – 150 m transect, rightbank view, September 28th, 2012; Middle Left – 150 m transect, leftbank view, August 31st, 2012; Middle Right – 150 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, upstream view, August 31st, 2012.



Photogroup 4-28. Aransas Creek site ACh08B depicting general appearance of the site. Top Left – 300 m transect, downstream view, August 31st, 2012; Top Right – 300 m transect, downstream view, September 28th, 2012; Middle Left – 300 m transect, rightbank view, August 31st, 2012; Middle Right – 300m transect, rightbank view, September 28, 2012; Bottom Left – 300 m transect, leftbank view, August 31st, 2012; Bottom Right – 300 m transect, leftbank view, September 28th, 2012.



Photogroup 4-29. Aransas Creek site ACh08 depicting general appearance of the site. Top Left – 30 m transect, upstream view, August 31st, 2012; Top Right – 30 m transect, upstream view, September 28th, 2012; Middle Left – 30 m transect, downstream view, August 31st, 2012; Middle Right – 30 m transect, downstream view, September 28th, 2012; Bottom Left – 30 m transect, rightbank view, August 31st, 2012; Bottom Right – 30 m transect, rightbank view, September 28th, 2012.



Photogroup 4-30. Aransas Creek site ACl08 depicting general appearance of the site. Top Left – 30m transect, leftbank view, August 31, 2012; Top Right – 30m transect, leftbank view, September 28, 2012; Middle Left – 150m transect, upstream view, August 31, 2012; Middle Right – 150m transect, upstream view, September 28, 2012; Bottom Left – 150m transect, downstream view, August 31, 2012; Bottom Right – 150m transect, downstream view, September 28, 2012.



Photogroup 4-31. Aransas Creek site ACh08 depicting general appearance of the site. Top Left – 150 m transect, rightbank view, August 31st, 2012; Top Right – 150 m transect, rightbank view, September 28th, 2012; Middle Left – 150 m transect, leftbank view, August 31st, 2012; Middle Right – 150 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, upstream view, August 31st, 2012; Bottom Right – 300 m transect, upstream view, September 28th, 2012.



Photogroup 4-32. Aransas Creek site ACh08 depicting general appearance of the site. Top Left – 300 m transect, downstream view, August 31st, 2012; Top Right – 300 m transect, downstream view, September 28th, 2012; Middle Left – 300 m transect, rightbank view, August 31st, 2012; Middle Right – 300 m transect, rightbank view, September 28th, 2012; Bottom Left – 300 m transect, leftbank view, August 31st, 2012; Bottom Right – 300 m transect, leftbank view, September 28th, 2012.

CHAPTER 5

OBSERVATIONS AND INTERVIEWS

During each RUAA survey, NRA field staff visited sites during times when the chance of recreational activity was most likely to occur. Surveys were conducted during warm weather (> 70° F), holidays (Labor Day 2012) and weekends when the chance for recreation was the highest. Two of the eight selected sites were at locations that provided public access. The remaining six sites were located on private property; NRA personnel were granted permission from the landowners to conduct the RUAA at these locations.

Landowners and stakeholders were interviewed using the Comprehensive RUAA Interview Forms approved by TCEQ. A total of eight interviews were collected from landowners along Aransas Creek and from other stakeholders with knowledge of the Aransas Creek watershed. Many of the interviews were conducted over the phone using contact information from the first two public meetings. Other interviews were granted by landowners during site surveys.

Activities Observed

No contact (primary or secondary) or noncontact recreational activities were directly observed by NRA employees during the field surveys but an account of all evidence of recreation and interview information is listed in this section. Evidence of secondary contact recreation (fishing) was observed at three sites (ACk03, ACk04, and ACk05).

Site ACk03

Evidence of secondary contact recreation was observed at site ACk03 during the first field survey on August 31st, 2012. Evidence in the form of a fishing bobber (Figure 5-1) was observed within the 300 m reach associated with site ACk03. The landowner from site ACk03 mentioned that the bobber must have washed downstream from fishing activity that likely occurred upstream from his property. No other evidence of fishing was observed at this site. An interview with the landowner indicated that since the property (228 acres on both sides of the creek) was acquired in 1985, the creek has been used for hunting and fishing in years when sufficient water exists. The landowner said that the family will fish the creek during rain events when the creek has flowing water.



Figure 5-1. Fishing bobber at ACk03

Site ACk04

Evidence of secondary contact recreation was observed at site ACk04 at the time both field surveys were completed. Evidence including 2 fishing poles, a chair, a fishing light, and an aluminum boat were observed at a residence located across the creek from the property owner

that allowed access at site ACk04 (Figures 5-2). The light was powered using an extension cord that connected to the residence.

Although the two fishing poles appeared to be deployed, no fishing activities were observed. The creek bed had been dug out by a family member to hold water during dry times. An interview with the landowner indicated the creek has been used by family and friends for fishing and by children with radio controlled boats. Anecdotal evidence of primary contact recreation occurred when a family member inadvertently fell from the footbridge into the water. No other forms of recreation were mentioned in the interview form.



Figure 5-2. Fishing poles, chair and boat

Site ACk05

Site ACk05 is one of two sites where Aransas Creek is publically accessible. Evidence of secondary contact recreation (fishing) was found during the bacteria source study near this site in February 2012. At the time the bacteria source study was conducted, Aransas creek was not flowing but contained numerous pools. Access to the creek was moderately difficult due to overgrown riparian vegetation. Once on the creek bed, NRA field staff navigated downstream stopping at each pool to take pictures and to look for bacteria sources. A fishing rod (minus the reel) and a bobber were found adjacent to the creek on private property (Figure 5-3 and 5-4) approximately 450 m downstream of the FM 888 bridge crossing.



Figure 5-3. Fishing bobber near ACk05



Figure 5-4. Fishing pole near ACk05

In addition, multiple wooden structures were constructed in the oak trees that lined the creek (Figures 5-5, 5-6). The structures appeared directly over the creek bed at several locations. Due to the proximity of the structures to the water, one can assume a recreational use would likely be associated. NRA field staff also encountered a small pier that might also have a recreational use associated with it (Figure 5-7). Also located nearby was a pool float that was found partially

buried in the sediment in the rightbank of the creek (Figure 5-8). No swimming pools were located in the area after a Google Earth search was performed, suggesting the pool float may have possibly been used in the creek.



Figure 5-5. Wooden structures built in the oak trees lining Aransas Creek near ACk05



Figure 5-6. Small fishing pier near ACk05



Figure 5-7. Pool float near ACk05

Numerous trails and paths were observed in the vicinity of site ACk05 suggesting regular use by humans. All Terrain Vehicle (ATV) tracks were observed on a small concrete bridge located within the 300 m reach associated with site ACk05 (Figure 5-10). ACk05 also had a lot of trash observed adjacent to the bridge at FM 888. Refuse in the form of used diapers, vehicle seats, candles, and metal cans and bottles.



Figure 5-8. ATV tracks and dirt road near ACk05

Activities Interviewed

Additional accounts and testimonies from landowners and stakeholders familiar with Aransas Creek were conducted to help determine the level/frequency of recreational activities taking place. Landowners and stakeholders familiar with the creek were interviewed and the information is summarized in this section.

A landowner familiar with Aransas Creek that attended the stakeholder meetings stated she had never heard of people using the creek for recreation. She said she did not think the creek should be designated for contact recreation based on inaccessibility and a lack of water.

A stakeholder familiar with Aransas Creek at the US 181 crossing (Site ACk02) for 18 years had not observed or conducted any recreation activities at that location. He mentioned a lack of water being the main reason for the lack of use by his immediate family.

A stakeholder familiar with Aransas Creek at the US 181 crossing (Site ACk02) for 55 years said that he had never witnessed people using this location for recreation. He was only familiar with the creek at this location. He also asked if the fish were safe to eat from Aransas River because he owns property on Aransas River.

A stakeholder familiar with Aransas Creek at the US 181 crossing (Site ACk02) for 28 years said that she has not observed recreation activities nor has she conducted any herself. She said she was not sure about the water quality in the creek. She did say that she has seen trash at ACk02 that was evidence of recreation activities.

A landowner familiar with Aransas Creek between US 181 (ACk02) and FM888 (ACk05) for 20+ years said that he and his family have used the creek for recreational activities including hunting, horseback riding and as a game preserve. He said the land served as an excellent game preserve.

A landowner familiar with the entire creek for 35 years said that he wasn't familiar with people using the creek for recreational purposes. He said that there were much better places to fish. He also stated that there is not much public access to the creek. He said that he has seen vehicles parked near the bridge crossing (US 181 and FM 888) but hadn't seen the people or witnessed any recreation. He also thought that the monitoring site at US 181 (TCEQ 12941 and site ACk02) was not a representative site for the creek.

Table 5-1. Activities reported in interviews at sites along Aransas Creek. Activities include personal use, observed use, and heard about use each counted separately.

| Watershed | Site name | Swimming | Wading | | Standing Sitting Sleeping | Hunting | Fishing |
|------------------|-----------|----------|--------|----------|---------------------------------|---------|---------|
| | | | Adults | Children | | | |
| Aransas Creek | ACk02 | | | | | | |
| | ACk03 | | | | 2 | 2 | 1 |
| | ACk04 | | | | 2 | | |
| | ACk05 | | | | | | |
| | ACk06 | | | | | | |
| | ACk07 | | | | | | |
| | ACk08a | | | | | | |
| | ACk08b | | | | | | |
| | SUM | 0 | 0 | 0 | 4 | 2 | 1 |

CHAPTER 6

ORGANIZATION OF ELECTRONIC FILES AND RUAA SUMMARY

Organization of Electronic Files

Copies of all interviews from each survey, field data sheets with flow measurements, the contact information form, the RUAA summary form, and transect and other pictures are provided electronically as an appendix to this report on the project website

<https://www.tsswcb.texas.gov/managementprogram/aransaruuaa>

Electronic files are organized by survey and provided with the following file structure:

RUAA-2013_Aransas_Creek (2004A)

Other_RUAA_Information

General Interviews

RUAA_Survey1_08_31_Aug2012_09_01_Sep2012

Field_Data_Sheets

Interviews

ACk02_photos

ACk03_photos

ACk04_photos

ACk05_photos

ACk06_photos

ACk07_photos

ACk08B_photos

ACk08_photos

RUAA_Survey2_09_28_Sep2012

Field_Data_Sheets

ACk02_photos

ACk03_photos

ACk04_photos

ACk05_photos

ACk06_photos

ACk07_photos

ACk08B_photos

ACk08_photos

Under each site folder for photos, as appropriate, are subfolders labeled other, rec_signs, source_signs, and transect_photos. All photos are labeled with date (yyyymmdd), location (site) and with other descriptive information. For example under the transect folder, the photo name 20120928_ACk02_0m_DS.jpg indicates that the picture was taken on September 28th 2012 at site ACk02 at the 0-m transect and represents the downstream orientation of the picture. In a similar manner, the notation LB indicates left bank, RB indicates right bank, and US indicates upstream for orientation of the transect photos.

Summary

The watershed for Aransas Creek is extremely rural and is dominated by large privately held tracks of land that border the creek. Public access is limited to two stream crossings located off of US 181(ACK02) and FM 888 (ACK05). Access at these two locations is limited to the downstream portion of the stream only. All other access to Aransas Creek is through private property that is either fenced or gated and locked.

RUAA surveys were conducted at eight sites along Aransas Creek (unclassified waterbody2004A) on August 31st - September 1st, 2012 (Survey #1) and September 28th, 2012 (Survey #2). No recreational activities were observed by NRA field staff during the two field surveys. Noncontact recreation was not observed or reported.

Interviewees reported that Aransas Creek was likely seldom used for primary contact recreation but was used for secondary contact recreation, primarily fishing when there is sufficient water. However, drought conditions plagued the watershed during the entire study period resulting in zero flow conditions. Significant refuge pools were observed at ACK03 and at ACK04 and an isolated pool was observed at ACK07 as a result of a leaky water trough. Drought conditions likely had much to do with the lack of observed recreational activities in 2004A.

During both field surveys, NRA personnel never observed anyone recreating in the stream at any of the eight selected sites. However, evidence of fishing (bobbers) were found at site ACK03 during the first field survey (August 31st 2012) and during a portion of the bacteria source survey conducted on February 24th 2012. Additional evidence indicating a recreational use include the following: fishing pier, structures built in the trees adjacent to the creek, dirt roads, foot trails, a pool float, an aluminum boat, fishing poles, and a fishing light mounted in a tree over the creek. This evidence was observed between sites ACK03 and ACK05 which is also the area with the highest population density within the watershed. Additionally, large amounts of trash were observed at site ACK05 in the form of the following: used diapers, vehicle seats, religious candles, and metal cans and bottles. Minimal amounts of trash were observed at the other publically accessible site at US 181 (ACK02) suggesting the trash problem at ACK05 might be of local origin.

REFERENCES

- “ARANSAS CREEK,” *Handbook of Texas Online*. Texas State Historical Association, (<http://www.tshaonline.org/handbook/online/articles/rbaaw>) (link verified January 29th, 2013).
- Borror *et al.* 1989. Texas A&M Agrilife Research Extension – Department of Entomology <https://insects.tamu.edu/fieldguide/bimg146.html> (link verified April 4th, 2013).
- Grace Bauer, ‘BEE COUNTY,’ *Handbook of Texas Online*. Texas State Historical Association, <http://www.tshaonline.org/handbook/online/articles/hcb05> (link verified January 29th, 2013).
- Homer, C., C. Huang, L. Yang, B. Wylie and M. Coan. 2004. Development of a 2001 National Landcover Database for the United States. *Photogrammetric Engineering and Remote Sensing*, Vol. 70, No. 7, July 2004, pp. 829-840.
- Millican, J., T. Adams, and A. McFarland. 2011. Mid Pecan Bayou: Historical Water Quality, Source Survey and Geographic Information System Inventory, project report to the Texas State Soil and Water Conservation Board prepared by the Texas Institute for Applied Environmental Research, Stephenville, Texas (TR1105).
- Reidy, M. M. 2007. *Efficacy of electric fencing to inhibit feral pig movements and evaluation of population estimation techniques*. Thesis. Kingsville, Texas: Texas A&M University-Kingsville.
- Taylor, R. 1991. *The feral hog in Texas*. Texas Parks and Wildlife Department. Federal Aid Report Series No. 28. Project W-125-R. 20 pp.
- TCEQ (Texas Commission on Environmental Quality). 2008. *Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue*. RG-415. Austin, Texas.
- TCEQ (Texas Commission on Environmental Quality). 2009. *Recreational Use-Attainability Analyses (RUAAs) - Procedures for a Comprehensive RUAA and a Basic RUAA Survey*. May 2009. Available on-line at: <http://www.tceq.state.tx.us/assets/public/permitting/waterquality/standards/docs/ruaa/recUAAsproceduresMay2009.pdf> (link verified January 29th, 2013).
- TCEQ (Texas Commission on Environmental Quality). 2010a. *Texas Surface Water Quality Standards*. Texas Administrative Code §307.1-307.10. Adopted by the Commission: June 30, 2010; Effective July 22, 2000 as the state rule. Austin, Texas. Available at <http://www.tceq.texas.gov/waterquality/standards/2010standards.html#the-2010-standards> (link verified January 29th, 2013).
- TSSWCB (Texas State Soil and Water Conservation Board). 2012. *Instream Bacteria Influences from Bird and Bat Habitat of Bridges*. TSSWCB Project 11-51. http://www.tsswcb.texas.gov/files/docs/11-51-QA-Bridge_Bacteria-12-11-12.pdf

(Link verified 4/4/2013)

USDA, U.S. Department of Agriculture. 2011. National Agricultural Statistics Service. Available at http://www.nass.usda.gov/Statistics_by_State/Texas/Publications/County_Estimates/index.asp (accessed January 9th, 2013).

USEPA, U.S. Environmental Protection Agency. 2009. In: Drinking Water Contaminants. Available online at <http://water.epa.gov/drink/contaminants/> (link verified September 15, 2011).

Appendix A
List of People Notified for Public Meetings

| Name | Affiliation |
|---|-------------|
| Carol Dubois | landowner |
| Rickey D & Valerie Haws | landowner |
| C J & Sarah Blankenship | landowner |
| C J & Sarah Blankenship | landowner |
| James L & Pamela Walters | landowner |
| John R & Cheryl Carter | landowner |
| Momenta Resources LLC | landowner |
| Ruth Marie Wasserman | landowner |
| R V Stubenthal Estate and Michael Ryan Stubenthal | landowner |
| Michael Ryan Stubenthal | landowner |
| La Nell Conrad | landowner |
| Duncan W Corbett | landowner |
| Barry Hoff | landowner |
| James & Janet Pawlik | landowner |
| Jimmy Myers & Happy Estate | landowner |
| Seger Family Partnership LTD | landowner |
| Charles Frances Essing, Jr. | landowner |
| Shaw and Robert K Lunday, Jr. | landowner |
| James & Cheryl Bennet | landowner |
| Jeffrey L Heldenfels | landowner |
| Anita & Jeff C Pfluger | landowner |
| David I Denham | landowner |
| Paul W Crouch | landowner |
| James O & Paula Evans | landowner |
| Mark Daniel Boatright | landowner |
| Eugene Wallace | landowner |
| Milton Marquez | landowner |
| Rolando & Irene Gonzales | landowner |
| Richard T and Mary Graf | landowner |
| Manuel Madrigal | landowner |
| E R Burney | landowner |
| Sugarek A R Est & B W Living | landowner |
| Mary and Robert Hammers | landowner |
| Mark Sugarek | landowner |
| Claude Bruce Sugarek | landowner |
| Maria & Irasema Mendiola | landowner |
| Sandra Bocanegra | landowner |
| R.J. Neely | landowner |
| James L Hartoon | landowner |
| Pamela Waid | landowner |

| Name | Affiliation |
|---|-------------|
| Walter & Adela Nolf | landowner |
| Joseph & Effie C Obregon | landowner |
| Jose Leal | landowner |
| Ralph H Salazar | landowner |
| Robert F Gutierrez | landowner |
| Thomas R Ragsdale | landowner |
| Alventor F Rodriguez | landowner |
| James R Wolfe | landowner |
| Shambo Holdings LTD | landowner |
| Marcus & Linda Trevino | landowner |
| Armando Ramirez | landowner |
| Jack Baker | landowner |
| Victor Almendarez, Jr | landowner |
| Patricia & Jim Martin | landowner |
| Carl E. William | landowner |
| James S & Sally King, Sr. | landowner |
| James Kelton & Milton Ferguson | landowner |
| Juan A & Deborah Montes and Ricardo P Montes | landowner |
| Stephen Mark Winton | landowner |
| Joseph B Lindsay | landowner |
| Edward Bush Church | landowner |
| Karen M Johnston | landowner |
| John B Gilligan | landowner |
| James & Era Wallek, Jr | landowner |
| Ned Kinkler Handly | landowner |
| John W & Mary Ellen Oneil | landowner |
| Douglas Bolland & Judy Kunkel | landowner |
| W Alex& Laura May Miller and Robert & Lou Adele May | landowner |
| Fred E Long | landowner |
| Peggy Sue Mican | landowner |
| Sally Crofutt | landowner |
| Terry Blankenship | landowner |
| John Barrett | landowner |
| Danny Beyer | landowner |
| David Edwards | landowner |
| Bob McCann | landowner |
| Scott Mitchell | landowner |
| Mark Wheelis | landowner |
| Tom Pardlau | landowner |
| William Smith | landowner |

| Name | Affiliation |
|---|---------------------------------|
| Patrick and Bob May | landowner |
| Wes O'Neal | landowner |
| Denise & Danny Garcia | landowner |
| Ray & Ester Gonzales | landowner |
| Jeff Holdmeyer | landowner |
| Bill Hartman | landowner |
| Jack Linney III | landowner |
| Howard Duge | landowner |
| Doug Bolland | landowner |
| Robert A May | landowner |
| Liz and Dave Smith | landowner |
| Richard Hoepfner | landowner |
| Ken & Susan Haggard | landowner |
| Louis & Yvonne Younts | landowner |
| Rick Sramek | landowner |
| Daniel Gonzales | landowner |
| Ray Allen | CBBEP |
| Leo Trevino | CBBEP |
| Jace Tunnell | CBBEP |
| Sam Sugarek | NRA |
| Beth Almaraz | NRA |
| Kirk Wiles | TDSHS |
| Richard Eyster | Texas Department of Agriculture |
| David Villarreal | Texas Department of Agriculture |
| Scott Cambell | Texas General Land Office |
| Brad Porter (Wildlife Biologist) | TPWD |
| Daniel Kunz (Technical Guidance Biologist) | TPWD |
| Jesus Franco (Wildlife Diversity Biologist) | TPWD |
| David Veale (District Leader) | TPWD |
| Alex Nunez | TPWD |
| John Findeisen (District Supervisor Inland Fisheries) | TPWD |
| Gary Garrett | TPWD |
| Patricia Radloff | TPWD |
| Sally Morehead | MANERR |
| Adrian Perez | TSSWCB |
| Jana Lloyd | TSSWCB |
| Brian Koch | TSSWCB |
| Lawrence Brown | TSSWCB |
| Aaron Wendt | TSSWCB |
| Tony Franklin | TSSWCB |

| Name | Affiliation |
|---------------------------------------|--|
| Luis Pena | TSSWCB |
| Rusty Ray | TSSWCB |
| Sha Thomas (District Conservationist) | NRCS |
| Kelly Ruble (Region 14) | TCEQ |
| Julie Mcentire | TCEQ |
| Joe Martin | TCEQ |
| Garrett Engelking | Refugio Groundwater Conservation District |
| Lynn Drawe | San Patricio County GCD |
| SWCD 324 | San Patricio SWCD #324 |
| Jon Whatley | San Patricio SWCD #324 |
| Bill Hyman | ICA |
| Jeff Nunley | South Texas Cotton & Grain Association |
| Kirk Feuerbacher | The Nature Conservancy of Texas |
| Fred Diaz | Parks and Rec |
| Sheriff Carlos Carrizales | Police (Bee County) |
| Joe Trevino | Police (Beeville) |
| David Silva | Bee County Judge |
| Carlos Salazar | County Commissioner |
| Dennis DeWitt | County Commissioner |
| Eloy Rodriguez | County Commissioner |
| Kenneth Haggard | County Commissioner |
| Mike Scotten | Mayor Pro-temp (Beeville) |
| Jimmy Martinez | Mayor (Beeville) |
| John Fulghum | Councilman |
| David Carabajal | Councilman |
| Florette Spires | Councilwoman |
| Lonnie Stewart | Bee Groundwater CD |
| Troy Berthold | Bee SWCD |
| Arturo Gaitan | Bee SWCD #344 |
| William Lohse | Bee SWCD |
| Hilario Chapa III | Bee SWCD |
| Kenneth Chandler | Bee SWCD |
| Jason Furmaniak | Forest Service |
| Larry Jones | Bee County Wildlife Management Association |
| Randy Walls | Bee County Wildlife Management Association |
| Ray Richards | Bee County Wildlife Management Association |
| John Tomerlin | Bee County Wildlife Management Association |
| Don Liska | Bee County Wildlife Management Association |
| Jim Devlin | Bee County Wildlife Management Association |
| Bill Fox | Bee County Wildlife Management Association |

| Name | Affiliation |
|---|--|
| Jaime Garza | Bee County Wildlife Management Association |
| Mike Kuhn | Bee County Wildlife Management Association |
| Pat True | Bee County Wildlife Management Association |
| Theresa Finch | CBCOG |
| Allan Strand | FWS Field Supervisor |
| Comer Tuck | TWDB |
| Cameron Turner | TWDB |
| Kari Means | TXDOT |
| Malcom McDonald | TPWD Game Warden |
| Virginia Smith | Texas AgriLife Extension - Aransas County |
| Joe Paschal | Texas AgriLife Extension - AREC Corpus Christi |
| Robert Lyons | Texas AgriLife Extension - AREC Uvalde |
| Ryan Gerlich | Texas AgriLife Extension - BAEN |
| Matthew Bochat | Texas AgriLife Extension - Bee County |
| Larry Redmon | Texas AgriLife Extension - College Station |
| 183 Texas AgriLife Extension - District 11 | Texas AgriLife Extension - District 11 |
| Brian Yanta | Texas AgriLife Extension - Goliad County |
| 185 Texas AgriLife Extension - Refugio County | Texas AgriLife Extension - Refugio County |
| Monty Dozier | Texas AgriLife Extension - RPD South |
| Duane Champion | Texas AgriLife Extension - San Patricio County |
| Juan Landivar | Texas AgriLife Research - Corpus Christi |
| Kevin Wagner | Texas AgriLife TWRI |
| Allen Berthold | Texas AgriLife TWRI |
| Jay Bragg | Texas Farm Bureau |
| Ned Meister | Texas Farm Bureau |
| Don Sugarek | Texas Farm Bureau - Area 12 |
| Justin Dreibelbis | Texas Wildlife Association |
| Helen Holdsworth | Texas Wildlife Association |
| Jason Skaggs | TSCRA |
| Gary McEwen | USDA APHIS WS College Station |
| Rhonda Liles | USDA APHIS WS Corpus Christi |
| Michael Bodenchuk | USDA APHIS WS San Antonio |
| Daren Harmel | USDA ARS |
| Sha Thomas | USDA NRCS Bee County |
| Kirby Sauer | USDA NRCS Goliad County |
| Will Blackwell | USDA NRCS Refugio County |
| Leroy Wolff | USDA NRCS San Patricio County |
| Susan Baggett | USDA NRCS Temple |
| Robbie Davis | USDA NRCS Zone 3 Corpus Christi |
| Tomas Dominguez | USDA NRCS Zone 3 Corpus Christi |

| Name | Affiliation |
|---------------|---------------------------------|
| Sonny Vela | USDA NRCS Zone 3 Corpus Christi |
| Henry Brewer | USEPA Region 6 |
| Tina Hendon | USEPA Region 6 |
| Robert Joseph | USGS |
| George Ozuna | USGS |
| David Trevino | USDA |