CHAPTER 11
FISH CREEK (SEGMENT 0841J)
&
North Fork Fish Creek (Segment 0841Q)

Watershed Characterization

According to the TCEQ 2008 Water Quality Inventory and 303(d) List (TCEQ, 2008b) Segment 0841K includes the north and south branches of Fish Creek. The draft 2010 Integrated Report (TCEQ, 2010), however, clearly separates the Fish Creek system into Fish Creek (Segment 0841J), formerly the south branch, and North Fork Fish Creek (Segment 0841Q), formerly the north branch and locally referred to as Pioneer Creek (Figure 11-1). Segment 0841J of Fish Creek is a 10.5 mile stretch running upstream from approximately 100-m downstream of FM 382 in Grand Prairie, Texas, to approximately 0.25 miles upstream of Collins Road in Arlington, Texas. Segment 0841Q, North Fork Fish Creek, is approximately 5 miles long and flows west to east from Collins Road in Arlington parallel to IH 20 to the confluence with the south branch underneath IH 20. The land use in the watershed of the combined streams is predominately residential with a significant amount of undeveloped land (land use on Figure 11-2 and aerial photograph on Figure 11-3). Note that because of the large number of schools in the watershed, on Figure 11-2 each school is marked by a dot on the map but not labeled because of space constraints. The flow type listed by TCEQ for both branches of Fish Creek is perennial, and based on this flow type the presumed aquatic life use is high (TCEQ, 2010c).

Additional Information

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

Site Selection Strategy

An objective of the survey efforts under the RUAA was to include an appropriate number of sites in each of the eleven streams. The urban nature of much of the watershed contributes to numerous road crossings and neighborhood parks at which the various streams may be accessed.

The strategy used in site selection for the RUAA surveys incorporates the following:

Survey locations were found (completed May – June 2009) in each of the eleven streams described in the section above.

Existing TCEQ stations were used whenever these stations were located in areas that afford at least some access opportunity for various forms of recreational use. Some TCEQ monitoring stations may not provide inviting access for recreational contact.

Special attention was focused on the numerous parks located on many of the streams in the RUAA study.

On June 11, 2009, TIAER presented a list of proposed sites to an aggregate of state and local agencies, i.e., the TCEQ, TSSWCB, Trinity River Authority, Texas Parks and Wildlife, North Central Texas COG, DFW Airport, and the cities of Fort Worth, Dallas, Grand Prairie, Irving, and Coppell. As a result of the meeting, some locations were moved, some added and some

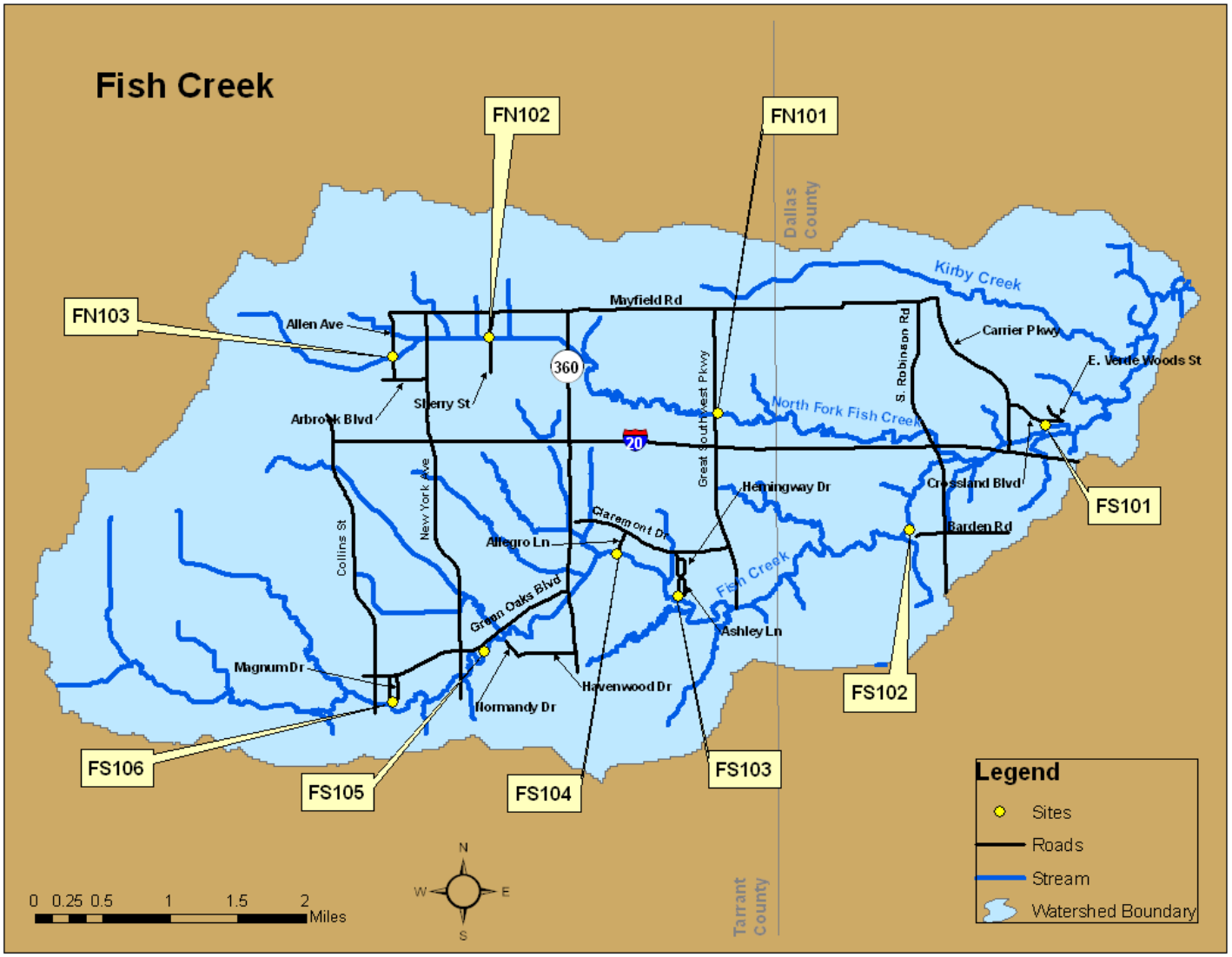

Figure 11-1 Fish Creek (0841K) and North Fork Fish Creek (Segment 0841Q) showing RUAA survey sites.

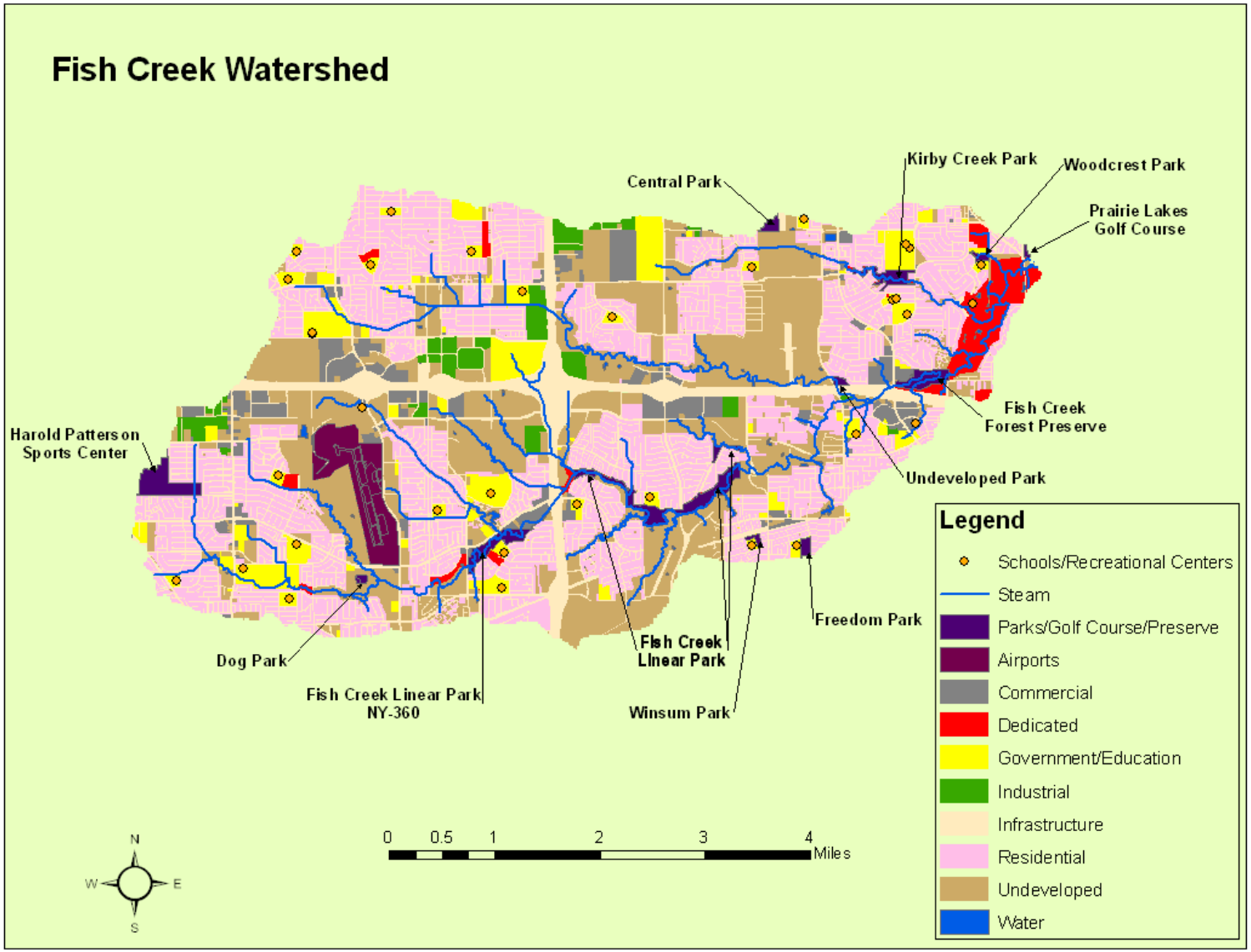

Figure 11-2 Land use/land cover for Fish Creek and North Fork Fish Creek watershed (Source: NCTCOG, 2007 & 2009)

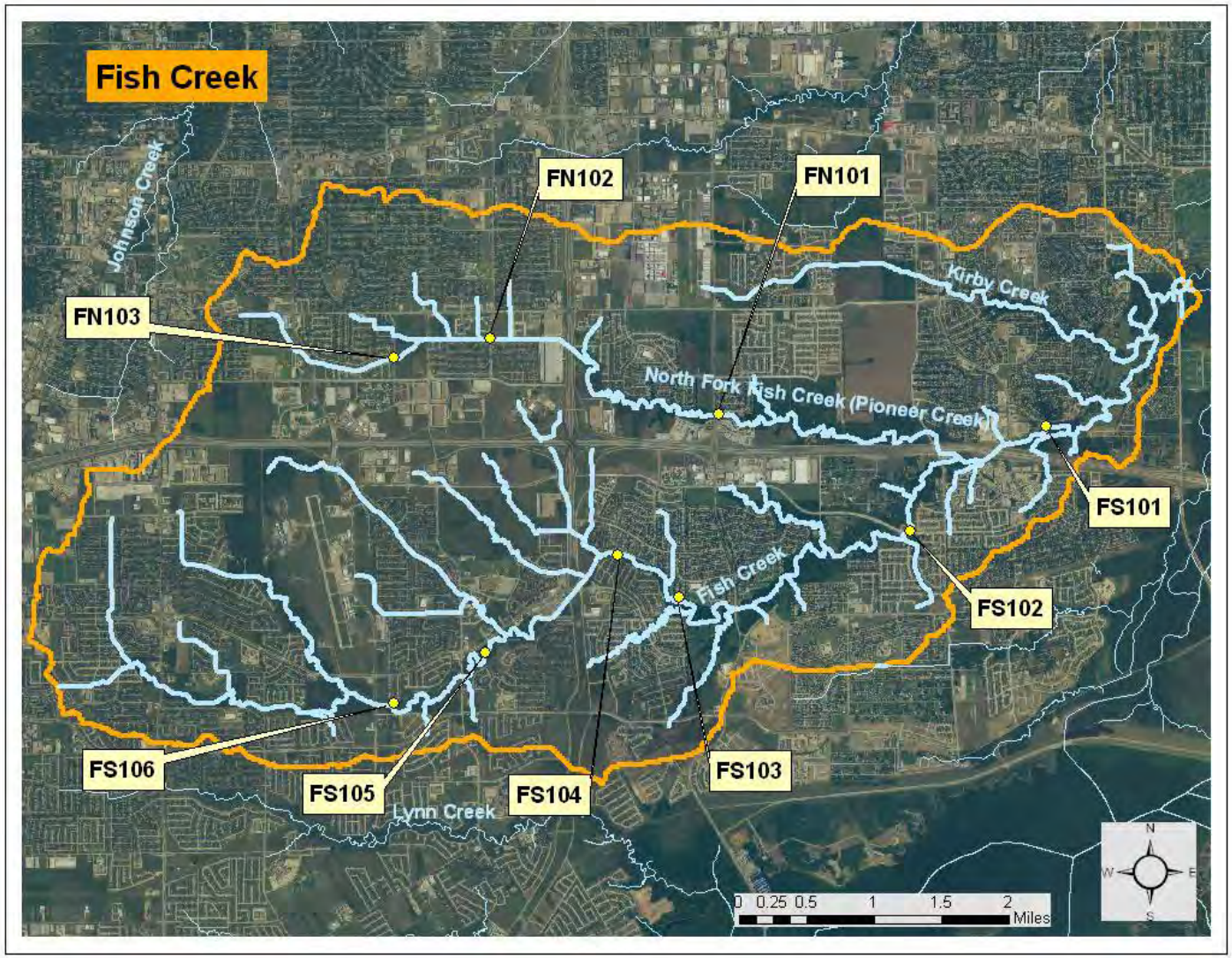

Figure 11-3 Aerial photograph of Fish Creek and North Fork Fish Creek watershed (Source: NAIP, 2005)

dropped. The sites listed below reflect the results of input received following the meeting. For Fish Creek and North Fork Fish Creek site selection the major interaction occurred with City of Arlington and City of Grand Prairie staff.

Survey Site Descriptions

The survey sites selected for Fish Creek (Segment 0841K) and North Fork Fish Creek (Segment 0841Q) are provided in Figure 11-1. Six sites were selected along Fish Creek and three sites along North Fork Fish Creek. A brief description of each site follows.

Fish Creek

Site FS101 (TCEQ Station 20342) is located on Fish Creek in Fish Creek Preserve, 662 meters downstream of S Carrier Parkway and 59 meters due south of the intersection of E Crossland Boulevard and E Verde Woods Street in Grand Prairie. There is a hike/bike trail in the area and the creek is accessible from this location.

Site FS102 is located at Barden Rd and Fish Creek in Grand Prairie. There is a hike and bike trail under the road at this location and access to the creek is moderately difficult due to dense vegetation and steep banks. The area around this location is residential and commercial.

Site FS103 is located at Fish Creek near Starrett Elementary school off Hemingway Dr. and Ashley Ln. in Grand Prairie. There is an access point at this location and a rope swing in a tree that indicates that this was once used recreationally. The pool that existed at one time has filled in with endemic gravels; presumably washed in during a period of high flow.

Site FS104 is located at Fish Creek off Allegro Lane in Grand Prairie. There is a play structure at this location as well as a hike and bike bridge across the stream. Access to the creek can occur under the bridge.

Site FS105 is located at the end of Normandy Drive off Havenwood Dr. in Arlington, Texas. Bryant Elementary school and a family park are just upstream of Normandy and the stream is accessible via a well traveled dirt path that passes though the trees at the end of Normandy Drive. Additionally, a bike path that crosses upstream from Normandy Drive affords relatively easy access to the creek. Otherwise, the area surrounding the stream is densely vegetated, with giant ragweed and poison ivy, making access at other points difficult.

Site FS106 is located on Fish Creek at Beagle Dr. off Magnum Dr in Arlington. There is access at this location and several children were observed in the neighborhood.

North Fork Fish Creek (Pioneer Creek)

Site FN101 is located on North Fork Fish Creek (Pioneer Creek) just upstream of Great Southwest Parkway in Grand Prairie. This area is residential on the north side with commercial development on the south. The stream is natural in appearance and is accessible from a commercial parking lot on the southwest corner of Great Southwest Parkway and Fish Creek North Branch.

Site FN102 is located at Sherry Street west of SH 360 in Arlington. If parking on the south side of the creek, there is a foot bridge that must be used to cross North Fork Fish Creek. Once on the north side, the site is accessible using the steep sides of the concrete channel.

Site FN103 (TECQ Station 17187) is located at Allen Ave. approx. 260 meters north of E. Arbrook in Arlington. A portion of the reach is natural downstream of Allen Ave. but is a concreted channel on the upstream side of Allen Ave. Houses back up to the stream on both sides of the upstream reach but appear to be fenced to limit access. Access can occur at Allen Ave.

Results and Discussions

General Description of Stream and Survey Sites

The RUAA surveys were conducted on August 4-8, 2009, August 25-29, 2009 and May 27-31, 2010. The surveys and associated interviews were performed on weekdays, weekends and holidays at opportune times to observe recreational activities in and around Fish Creek.

Surveys conducted on Fish Creek and North Fork Fish Creek were conducted during varying air and water temperatures as shown in Table11-1. Water temperatures were warm enough for recreational activities to occur.

Table 11-1 Temperatures measured at each site along Fish Creek and North Fork Fish Creek

Assessment Unit	Site Number	August 4-8, 2009		August 24-29, 2009		May 27-31, 2010	
		Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)
Fish Creek	FS101	27.4	27.4	29.0	27.0	32.0	25.6
	FS102	31.3	28.0	26.1	27.6	36.0	26.7
	FS103	32.8	27.6	28.0	27.9	35.0	26.1
	FS104	36.0	28.9	28.1	30.9	36.0	27.7
	FS105	36.2	28.7	31.2	dry	33.0	27.0
	FS106	33.1	28.4	34.1	28.1	34.0	28.2
North Fork Fish Creek	FN101	29.5	32.7	35.0	37.8	36.0	27.8
	FN102	38.5	36.0	36.0	n/a*	33.0	37.0
	FN103	35.7	32.4	36.7	37.4	32.2	28.9
* Water depth too shallow for an accurate temperature							

Table 11-2 contains information on the appearance of the stream channel and riparian zone at each site.

Table 11-3 shows the average thalweg depth for each reach and site during each of the RUAA surveys of Fish Creek and North Fork Fish Creek. Site FS101 was the only site where wading was not able to be performed at all transects. The thalweg depth was estimated based on observations by field personnel and assumed to be greater than 1.0 m at the upper 240 m of the reach. At these transects, the stream was considered as non-wadeable and only width measurements were collected. Where depth was assumed to be >1.0 m, a depth of 1.0 m was used to calculated the average thalweg depth for the stream segment.

Table 11-2 Stream channel and riparian zone assessment for Fish Creek and North Fork Fish Creek during August 4-8, 2009, August 24-29, 2009 and May 27-31, 2010 surveys

Assessment Unit	Site Number	Side of Stream	Stream Channel Appearance	Riparian Appearance	Riparian Size	Park	Landscape Surroundings
Fish Creek	FS101	Right Bank	Natural	Tree/shrub dominated	Large	Fish Creek Linear Park	Forest
		Left Bank		Mowed/maintained	Large		Park
	FS102	Right Bank	Natural	Shrub dominated	Moderate	Fish Creek Linear Park	Natural / residential
		Left Bank		Shrub dominated	Large		Natural
	FS103	Right Bank	Natural	Shrub/tree dominated	Large	Fish Creek Linear Park	Natural
		Left Bank		Shrub/tree dominated	Moderate		School/residential
	FS104	Right Bank	Natural	Tree/shrub dominated	Large	Fish Creek Linear Park	Natural
		Left Bank		Tree/shrub dominated	Moderate		Natural/residential
	FS105	Right Bank	Natural	Tree/shrub dominated	Large	Fish Creek Linear Park	Natural
		Left Bank		Tree/shrub dominated	Large		Natural
	FS106	Right Bank	Lower 1/3 natural; Upper 2/3 channelized	Tree/shrub dominated	Large	Fish Creek Linear Park	Natural
		Left Bank		Tree/shrub dominated	Large		Natural/residential
North Fork Fish Creek	FN101	Right Bank	L/R ½ shrub dominated; L/R ½ denuded/eroded bank	Shrub dominated	Large	None	Natural
		Left Bank		Shrub dominated; natural	Large		Natural
	FN102	Right Bank	Channelized	Concrete	Small	None	Residential
		Left Bank		Concrete	Small		Mowed/maintained
	FN103	Right Bank	Channelized	Lower ¼ shrub dominated; Upper ¾ concrete	Lower ¼ large; Upper ¾ small	None	Lower ¼ natural; Upper ¾ residential
		Left Bank					

Table 11-3 Physical Descriptors of Fish Creek. Stream flow type from TCEQ (2008b).

Stream	Segment #	Length (miles)	# of Sites	# of Recreational Areas on Stream	Avg. Thalweg Depth (m) for Stream Segment			Stream Flow Type
					August 4-8, 2009	August 25-29, 2009	May 27-31, 2010	
Fish Creek	0841K	6.5	6	6	>0.46*	>0.40*	>0.50*	perennial
					Avg. Thalweg Depth (m) for Site Reach			
Site Name	**Reach length (m)**	**# of Transects**	**# of Recreational Areas at Site**		**August 4-8, 2009**	**August 25-29, 2009**	**May 27-31, 2010**	
FS101	300	11	1		>1.10*	>1.11*	>1.1*	
FS102	300	11	1		0.42	0.44	0.49	
FS103	300	11	1		0.43	0.38**	0.48	
FS104	300	11	1		0.26	0.23**	0.31**	
FS105	300	11	1		0.25	0.11	0.22	
FS106	300	11	1		0.31	0.13	0.41	

* Non-wadeable stream. Estimated some depths, where stream was unwadeable
** Not all 11 measurements were collected due to safety concerns.

Table 11-4 shows the average thalweg depth for each reach and site during each of the RUAA surveys of North Fork Fish Creek.

Table 11-5 shows the maximum, minimum and average widths at each site for each survey. The observed flow and total discharge and also listed for each site and survey.

Physical Description of Site FS101

The stream at Site FS101 is natural stream with a concrete hike/bike trail located on the north side of the stream. The trail runs alongside the stream the entire reach and is part of the Fish Creek Linear Park. At this location the north side of the stream is a grass field mowed and maintained by the city parks department up to the top of the streambank. Both streambanks are shrub/tree dominated with steep banks. There is a large pavilion with a small parking lot associated with the park. The site is located in a residential area with light commercial businesses in the area. South of the stream is a natural shrub/tree dominated area beyond which lies Interstate-20. Table 11-2 describes the stream channel and riparian zone appearance at this site. Access to the top of the streambank is easy due to the maintained nature of the area while access to the stream is moderately difficult due to the steep banks and dense vegetation. Photogroup 11-1 and Photogroup 11-2 depict the hike/bike path, pavilion, entry point utilized by field personnel and the streambanks of the stream.

The surveyed reach at Site FS101 contained both wadeable and non-wadeable portions. The lower 60 meters of the reach was wadeable with depths less than one meter. In the areas above the 60-m transect, depths increased quickly to well over 1.0 m. During the first survey, wading was attempted in this area but was stopped due to depths being over 1.5 meters and no shallow areas observed upstream. Based on the uniformity of the stream, a width of seven meters was obtained at a wadeable transect and used as the width for all of the non-wadeable transects of the reach.

The dominant substrate of the stream was mud/clay. There were footpaths observed atop the streambank but no obvious entry points to the stream were found. Fishing tackle was observed in the stream but it was unknown if it was washed down from another location on the stream or if it originated at this location. There were no obstructions observed at any transect of the reach.

Table 11-5 shows the hydrographic parameters collected at the site during each of the three surveys. Flow measurements collected during each survey show discharges around 2.0 cfs or less.

Two pools were identified during the three surveys and the dimensions are listed in Table 11-6. The first pool was located between the 0-m and 30-m transects. The area above the 60-m transect was originally thought to be a glide, although visible movement of the water was not observed and it was determined to be a very large pool.

During the first two surveys, aquatic vegetation or algae cover was absent. During the third survey both were recorded as rare. The stream was brown in color during the first two surveys and green the third. No unusual odors were detected during any survey. Scum was observed on the surface only during the first two surveys. There was a slight presence of domesticated pets,

Table 11-4 Physical Descriptors of North Fork Fish Creek. Stream flow type from TCEQ (2008b).

Stream	Segment #	Length (miles)	# of Sites	# of Recreational Areas on Stream	Avg. Thalweg Depth (m) for Stream Segment			Stream Flow Type
					August 4-8, 2009	August 25-29, 2009	May 27-31, 2010	
North Fork Fish Creek	0841K	4.0	3	0	0.10	<0.08	0.11	Perennial
					Avg. Thalweg Depth (m) for Site Reach			
Site Name	**Reach length (m)**	**# of Transects**	**# of Recreational Areas at Site**		**August 4-8, 2009**	**August 25-29, 2009**	**May 27-31, 2010**	
FN101	300	11	0		0.21	0.17	0.23	
FN102	300	11	0		0.01	<0.01	0.01	
FN103	300	11	0		0.08, 0.23, 0.03*	0.07, 0.18, 0.03*	0.10, 0.33, 0.03*	

* Three depths provided are average, below transition, and above transition

Table 11-5 Additional hydrographic parameters of Fish Creek and North Fork Fish Creek Creek.

Survey Dates	Assessment Unit	Site Number	Maximum width (m)	Minimum Width (m)	Average Width (m)	Discharge (cfs)	Observed Flow Condition[1]
August 4-8, 2009	Fish Creek	FS101	7.5	1.4	7.0	1.55	Normal
		FS102	6.8	1.4	5.0	1.22	Normal
		FS103	6.1	0.52	5.0	0.54	Normal
		FS104	6.3	0.25	2.5	0.27	Normal
		FS105	5.5	0.31	2.0	<0.05	Normal
		FS106	5.1	0.5	3.5	<0.01	Normal
	North Fork Fish Creek	FN101	10.35	1.55	3.7	0.38	Normal
		FN102	2.85	0.60	0.80	0.06	Normal
		FN103	4.4	0.25	0.8	<0.01	Normal
August 25-28, 2009	Fish Creek	FS101	7.5	1.4	7.0	2.02	Normal
		FS102	6.65	1.65	5.0	1.57	Normal
		FS103	6.0	0.5	5.0	0.13	Normal
		FS104	6.3	0.09	2.5	<0.01	Low
		FS105	3.0	0.0	3.0	0.0	No Flow
		FS106	5.2	0.0	2.5	0.0	No Flow
	North Fork Fish Creek	FN101	10.4	0.38	3.7	0.04	Normal
		FN102	2.36	0.14	0.67	0.0	No Flow
		FN103	4.4	0.0	2.2	0.0	No Flow
May 27-31, 2010	Fish Creek	FS101	7.5	1.4	7.0	2.15	Normal
		FS102	7.4	1.34	5.9	1.35	Normal
		FS103	9.1	0.85	4.5	0.55	Normal
		FS104	4.9	1.33	3.0	0.57	Low
		FS105	5.8	0.53	1.7	0.53	Normal
		FS106	6.0	1.83	2.86	0.14	Normal
	North Fork Fish Creek	FN101	10.9	1.1	3.8	0.2	Normal
		FN102	2.75	1.0	1.2	0.18	Low
		FN103	9.8	0.53	2.1	0.08	Low

[1] Possible flow condition categories: no flow, low flow, normal flow, high flow

Table 11-6 Pool dimensions at Site FS101

Survey Dates	Length (m)	Width (m)	Depth (m)
August 4-8, 2009	30.0	7.3	0.81
	>100.0	7.0	>1.0
August 25-28, 2009	30.0	7.3	1.3
	>100.0	7.0	>1.0
May 27-31, 2010	24.0	7.4	0.75
	>100.0	7.0	>1.0

with owners at the site. No other vertebrates were observed during any of the three surveys. Both bank and channel garbage, large and small, consisting of plastic bags and bottles and automobile tires, was rare to common

Physical Description of Site FS102

The Fish Creek at Site FS102 is a natural appearing stream located at Bardin Road. Fish Creek Trails hike/bike path coursed along the north side of the stream as the path curls beneath the Bardin Road bridge. There was a protective pipe railing along the edge of the path nearest the stream. The floodplain of the stream was not mowed or maintained and consisted of dense shrubs. The grass areas above the hike/bike path were mowed and maintained by the city. The streambanks were steep and densely vegetation which made access to the edge of the stream and to the stream difficult. Table 11-2 describes the stream channel and riparian zone appearance at this site. Photogroup 11-3 shows the hike/bike path and streambanks of the site.

The dominant substrate of the stream at this site was mud/clay with areas of gravel. There were several obstructions identified in the study reach. Just downstream of the 0-m transect is a large pipe crossed the streambed, three log jams were identified at the 30-m, 60-m and 180-m transects, and there was a small metal pipe crossing the stream at the 90-m transect as well as a concrete storm water drainage pad on the left bank. The features mentioned above are depicted in Photogroup 11-4.

The surveyed reach at Site FS102 was a wadeable stream with a total of five pools identified during two of the three RUAA surveys. No pools were identified during the first survey of the site. Table 11-7 shows the dimensions of the identified pools.

The stream is located in a highly residential area. The area east of the stream contains several residences which were observable from the stream. The left riparian zone was natural and tree/shrub dominated. No parking is immediately available for the casual visitor at this site.

Table 11-7 Pool dimensions at Site FS102

Survey Dates	Length (m)	Width (m)	Depth (m)
August 25-28, 2009	35	6.65	1.2
May 27-31, 2010	28	5.4	0.85
	60	6.5	1.04
	25	5.9	0.90
	38	6.0	1.13

Aquatic vegetation at Site FS102 was absent to rare, while algae cover was absent to common. Odor of the stream was absent to rare while the color ranged from clear to green. Scum was observed on the stream during the third survey. There was a slight presence of water dependent birds during all three surveys and one snake was observed during one survey. No other vertebrates were observed at the site, although fecal droppings and tracks were observed during all three surveys. Bank garbage was rare during each survey. Channel garbage, both large and small, ranged from rare to common and consisted of plastic bags and bottles, tires, small appliances, and automobile parts.

Physical Description of Site FS103

The Fish Creek at Site FS103 is a natural channel located in a highly residential area. Grand Prairie ISD Starrett Elementary School is located north of the 0-m transect. The area south of the stream is tree/shrub dominated. North of the stream, the riparian zone is tree/shrub dominated and is not maintained by the city. Fish Creek Trail hike/bike path identified at Sites FS101 and FS102 continues at this site on the north side of the stream. A width of two to three meters is mowed and maintained on either side of the path, but the maintained area does not continue to the edge of the stream. Beyond the maintained area on the creek side of the trail, the vegetation is dense and foreboding, and poison ivy is common. There is a play structure associated with the school and part of the large mowed area is utilized as a soccer field. A rope swing was located at the 0-m transect, although the depth of the stream at the current time prevents the swing from being utilized for aquatic recreation. The streambanks are tree/shrub dominated and steep making access moderately difficult. Table 11-2 describes the stream channel and riparian zone appearance at this site. Photogroup 11-5 and Photogroup 11-6 depict the aforementioned items.

Available parking is limited to the sides of neighborhood streets and the parking lot of the elementary school. While access to the stream was moderately difficult, there were two footpaths identified through the vegetation along the sides of the stream. One footpath was located at the 0-m transect and another was located at the 300-m transect. Both of the footpaths were observed on both sides of the stream indicating some crossing of the streambed occurred at these locations (Photogroup 11-7).

The reach surveyed at Site FS103 was a wadeable stream. The dominant substrate of the stream was mud/clay with gravel encountered within the reach. Thalweg depth measurements were collected at all transects during two of three surveys. Depth measurements for the 210 to 270-m transects were not collected during the second survey because of inaccessibility above the 180-m transect. A large fallen tree, deep pockets of water and the hazardous slick substrate encountered below the 300-m transect proved limiting in terms of safe wading. Table 11-3 shows the thalweg depths collected at this site.

Five pools were identified during the three surveys of the stream. Table 11-8 shows the dimensions of the pools identified.

Obstructions were identified at several locations of the stream. Three log jams were observed at the 120-m, 180-m, and 270-m, transects and one pipe at the 60-m transect (Photogroup 11-8).

Table 11-8 Pool dimensions at Site FS103

Survey Dates	Length (m)	Width (m)	Depth (m)
August 4-8, 2009	33.0	7.6	1.2
August 25-28, 2009	35.0	7.5	1.02
May 27-31, 2010	42.0	7.2	1.07
	30.0	9.1	1.2
	68.0	4.5	1.1

Aquatic vegetation and algae cover was absent to rare. Unusual odor was detected only rarely. Water color was clear to green. Scum was observed on the surface of the water during two of the three surveys. There was a slight presence of snakes during the first survey. Domestic pets were observed during the third survey. There were no other observances of vertebrates during any of the three surveys. Bank garbage was rare, but when present, consisted of plastic bags, bottles, and paper. Channel garbage, both large and small, was rare during the first two trips, but common during the final survey. Channel garbage consisted largely of plastic bags and bottles although tires and pieces of metal from either household appliances or automobiles were encountered.

Physical Description of Site FS104

The stream at Site FS104 is a natural channel within the recurring Fish Creek Linear Park. As observed at downstream locations, the Fish Creek Trails, the hike/bike path, passed north of the stream at this site. The grass border along the trail was maintained by the city. The 300-m transect was established a foot-bridge that crossed the stream at this site. Beneath the bridge, a foot path leads to the streambank. The gently sloped bank made access to the stream at this location moderately easy. Overall, bank and stream access was moderately difficult due to dense vegetation (tree/shrub dominated) along the riparian zone of the stream. In addition, boulders in the stream channel make walking in the stream very difficult. Table 11-2 describes the stream channel and riparian zone appearance at this site. There is a play structure located beside the hike/bike path which is utilized by neighborhood children. Photogroup 11-9 and Photogroup 11-10 depict the hike/bike trail with play structure, the riparian zone, and stream channel appearance.

Access to the stream was moderately difficult, though footpaths to the stream were observed at the 0-m transect and the 300-m transect (Photogroup 11-11). The dominant substrate of the stream was cobble to boulder in size, which made walking in the stream very difficult and dangerous. Due to the risk of personal injury, only the 0-m, 150-m and 180-m transect depths were collected during the second survey. During the third survey, conditions had changed somewhat and field personnel were able to collect nine of the eleven depths. During one of the surveys, neighborhood children sitting on the bridge crossing the stream volunteered the comment that field personnel were going into the “scary” part, which led field staff to assume they rarely ventured into that portion of the stream. This segment of FS104 was a cobble-bottom stream that was wadeable in depth but dangerous to attempt.

Flow measurements obtained during each survey indicated discharges less than 1.0 cfs as shown in Table 9-4. The table also shows the narrow width of the flowing stream. Table 9-3 display the average thalweg depth collected during each of the surveys. Photogroup 11-12 shows the

low flow condition at the site during the second survey. No pools were identified during any of the three surveys.

Aquatic vegetation at the site was absent to rare while algae cover ranged from absent to rare on the first two surveys to common during the third trip. No unusual odors were detected and the water color was brown during the first two surveys and clear during the third. No scum or film was observed during any of the three surveys. There was a slight presence of water dependent birds documented one time with no other vertebrates being observed, although tracks and fecal dropping were observed. Bank garbage consisting of plastic bags and bottles was common during all three surveys. Channel garbage varied from common to rare for both large and small garbage and mainly consisted of metal debris.

Physical Description of Site FS105

Site FS105 is a natural stream located in a highly residential neighborhood behind the Arlington ISD Bryant Elementary School. Banks are not as tall as banks encountered at sites surveyed downstream, but they are fairly steep. The left and right riparian zones are grass/shrub dominated with trees scattered throughout. There is a tributary that feeds into the stream at the 30-m transect. The Fish Creek Trials hike/bike path associated with Fish Creek Linear Park is located along the southern side of the stream and crosses the stream just above the 300-m transect. Access to the stream is available at the hike/bike path crossing above the 300-m transect and dirt path that leads to the stream and across at the 0-m transect. Overall, access to the stream is moderately easy. There is a play structure located at the public school and part of the school yard is utilized as a soccer field. Table 11-2 describes the stream channel and riparian appearance. Photogroup 11-13 and Photogroup 11-14 show the streambank vegetation, tributary, play structure, hike/bike path, and entry points to the stream.

The surveyed reach at Site FS105 was wadeable with a gravel bottom. The substrate changed to a very unusual concrete block bottom between the 240-m and 270-m transects (Photogroup 11-14; upper left photograph). During the first two surveys, no stream channel obstructions were observed. However, during the third survey, five log jams were encountered near the 60-m, 120-m and 180-m transects (Photogroup 11-15).

No pools were identified during the first two surveys. However, four pools were identified during the third survey. The dimensions of the pool are listed in Table 11-9.

Table 11-9 Pool dimensions at Site FS105

Survey Dates	Length (m)	Width (m)	Depth (m)
May 27-31, 2010	22	4.3	0.60
	37	4.6	0.38
	17	4.0	0.81
	22	5.8	0.87

Flow measurements, collected during each of the surveys, were <0.01 and 0.0 cfs in August 2009. In May 2010, staff measured 0.5 cfs (Table 11-5). The table also shows the narrow characteristics of the stream, with maximum widths less than 6.0 m and average widths ≤3.0 m. During one of the surveys, two youths came down the path and jumped across the stream from bank to bank, without touching the water.

Parking in this area is available at the cul-de-sac on Normandy Drive and the parking lot of the elementary school. There were no fences or high banks that would impede individuals from getting to or into the stream. Both sides of the hike/bike path are mowed and maintained for a few meters but the area between the path and the stream is densely vegetated (Photogroup 11-16).

Aquatic vegetation was absent while algae cover was absent to rare during all surveys. A faint odor was detected in the stream during one survey. Water color was clear to green. Scum was observed on the water surface during the first two surveys when flow was minimal to absent. On the third survey, when the stream was flowing around 0.5 cfs, there was no scum observed on the surface. There was a slight presence of snakes during one survey. No other vertebrates were observed, although tracks and fecal dropping were identified. Bank and channel garbage was rare to common and, when present, primarily consisted of plastic bags and bottles, though tires and a refrigerator were observed.

Physical Description of Site FS106

Fish Creek at Site at FS106 is a natural stream located in a residential neighborhood on Beagle Drive between Creekridge and Magnum Drives. Arlington Municipal Airport is located approximately 600 meters northeast of the site. The area west and south of the stream is natural in appearance up to Harwood Road. The area north is residential with the Fish Creek Trails hike/bike trail located between the stream and residences. The riparian zone to the top of the streambank is tree/shrub dominated. A mowed buffer is present between the trees and hike/bike trail. Access to the stream is moderately difficult with steep banks and dense vegetation from the bank rim to the stream. No footpaths were observed through the vegetation, therefore TIAER personnel were obliged to create one. Table 11-2 describes the stream channel and riparian zone appearance at this site. A storm water drainage pipe was located at the 300-m transect along the left bank. Photogroup 11-17 shows the riparian areas around the stream and the storm water drain pipe.

The surveyed reach at Site FS106 was wadeable stream with a cobble dominant substrate. The banks of the stream were bare with exposed tree roots. One segment of the reach from the 120-m transect to the 210-m transect went from a largely un-vegetated stream to a densely vegetated channel. Also the 210-mark, the right bank of the stream went from natural to rock gabions that rose all the way to the edge of Harwood Road. There was a drainpipe located at the 150-m transect in the wall formed by the gabions. Photogroup 11-18 depicts the aforementioned features at Site FS106.

Two log jams were observed at the 180-m transect and the 240-m transect (Photogroup 11-19). A total of five pools were identified during the three surveys. One pool was identified during each of the first two trips and three pools were identified during the third survey. Dimensions of the pools are listed in Table 11-10.

Only curbside parking was available along Beagle Dr. There were no fences or other features that would impede individuals from getting to the water, although the dense vegetation makes it difficult.

Table 11-10 Pool dimensions at Site FS106

Survey Dates	Length (m)	Width (m)	Depth (m)
August 4-8, 2009	24.9	6.0	0.56
August 25-28, 2009	30.0	5.7	0.55
May 27-31, 2010	28.0	5.3	0.39
	41	6.0	0.66
	90.5	5.7	0.84

Aquatic vegetation was common at the site while algae cover was rare to common. An unusual odor was detected at the site during one survey; otherwise the stream odor was normal. Scum was observed on the surface of the water during two of the surveys. Water color was clear during two surveys and green during the other. There was a slight presence of water dependent birds during one survey with no other vertebrates being observed, although track and fecal droppings were identified. Bank and channel garbage, both large and small, was rare except for the third survey when all were common. Garbage consisted of plastic bottles, plastic bags, paper, tires, and dishwasher parts.

Physical Description of Site FN101

North Fork Fish Creek at Site FN101 is a natural stream. The 0-m transect was set near a concrete culvert immediately upstream of Great Southwest Parkway. The banks of the stream are very steep and where vegetation occurred was densely vegetated with trees and shrubs. Access to the streambank and stream is moderately difficult. The only public access was at Great Southwest Parkway where the bank is steep and overgrown. A path through the bank vegetation was identified during the second survey at the 0-m transect, but it was speculated it was likely a result of the road construction occurring at that site rather than by individuals seeking recreation. Road construction at this location made public access difficult. Table 11-2 describes the stream channel and riparian zone appearance at this site. Photogroup 11-20 depicts the observed path, concrete culvert and banks of the stream.

The surveyed reach at Site FN101 was a wadeable stream with a shale bottom. Walking in the stream was relatively easy with depths generally less than 0.5 m. Table 11-4 shows the average thalweg depths for each survey. In addition to the depth measurements, Table 11-5 shows flow measured at less than 0.5 cfs during each of the three surveys. The steep banks of the stream were almost vertical in some locations and consisted of shale layers. Previously referenced Photogroup 11-20 shows the shale bottom and the vertical shale banks.

A total of seven pools were identified during the surveys and their dimensions are displayed in Table 11-11.

Due to the road construction, TIAER field personnel parked in a business owned parking lot located immediately south of the site and walked through the vegetation to the site. The area north of the site between the 0-m and 210-m transects is natural and from the 210-m transect to the 300-m transect is residential. The areas south of the study reach are natural beyond which is light commercial business facilities and IH 20. There were no fences or posted signs that would impede reaching the stream.

Table 11-11 Pool dimensions at Site FN101

Survey Dates	Length (m)	Width (m)	Depth (m)
August 4-8, 2009	35.0	10.4	0.48
	17.1	5.4	0.74
August 25-28, 2009	35.0	10.35	0.45
	21.3	5.0	0.71
May 27-31, 2010	25.0	4.2	0.8
	60.0	9.2	0.58
	10.0	10.9	0.43

Aquatic vegetation at the site was absent to rare while algae cover was common. The clear stream contained no scum or foam on the water surface. No unusual odors were detected. There was a slight presence of water dependent birds and domesticated pets observed during one survey, with no other vertebrates observed. Tracks and fecal dropping were reported. Large garbage in the stream channel was absent to rare during the three surveys. Small channel and bank garbage was rare and when present consisted of plastic bags, bottles and cups. Overall, the stream was aesthetically appealing but water levels were low.

Physical Description of Site FN102

The stream at FN102 is a concrete lined channel with a foot-bridge across the stream. The 300-m transect was located at this point and 30 m intervals were measured downstream until the 300-m reach had been defined. The downstream most point became the 0-m transect. Access to the stream is moderately easy as the concrete bank of the channel is steep but manageable. A mowed field borders the concrete channel on the left. Residential back yard fences line the top of the right side. A concrete storm water channel entered the main channel from the left at the 30-m transect and a round concrete storm water pipe was observed near the 300-m transect. Table 11-2 describes the stream channel and riparian zone appearance at this site. Photogroup 11-21 contains images of the channel and riparian areas.

The surveyed reach at Site FN102 was a wadeable stream with depths of 0.01 m or less measured during each of the three surveys. As mentioned above, the area is residential. TIAER staff parked at the dead-end of Sherry Street near the guard rail that borders the channel; although, there were no parking signs at this location. During the May 2010, the mowed field located north of the reach had a fenced in area in which it appeared gas-well drilling was beginning to occur.

Tables 11-4 and 11-5 show the average thalweg depths and hydrographic parameters collected at the site during each survey. It should be noted that the temperatures collected at this site and as listed in Table 11-1 were very high and were taken from very shallow water flowing over concrete. During the second survey, water could not be found of sufficient depth to completely submerge the thermometer for an accurate temperature reading.

Aquatic vegetation in the channel was absent to rare but algae cover was common. The water was clear and no surface film or scum was observed. No unusual odors were detected. A slight presence of water dependent birds was observed during one of the three surveys, but no other vertebrates were observed during the other two visits. Avian fecal dropping were noted. Large garbage in the channel was absent to rare, but consisted of household trash when present. Small

garbage in the channel and bank garbage consisting of plastic bags and bottles was considered rare to common during the three surveys.

Physical Description of Site FN103

The stream at Site FN103 is a natural channel from the 0-m transect up through the 60-m transect. From above the 70-m transect, the stream flows west through a concrete channel beginning above the 300-m transect, continuing through the 70-m transect, and finally into the pool below the Allen Avenue crossing. The lower 60 m of the reach is natural in appearance with streambanks dominated by shrubs, grasses though willow trees are present. The upper 240 m of the reach is a concrete channel with backyard fences lining both streambanks. Table 11-2 describes the stream channel and riparian zone appearance at this site. Photogroup 11-22 contains visual images of the channel and riparian areas.

Three round storm water drains were identified at the site. One drain was located on the right bank of the 60-m transect and two other drains are located on each bank of the 90-m transect. Access to the site is limited to the area around the Allen Avenue crossing the stream below the 90-m transect. The access point to the stream used by TIAER was on the southeast corner of the Allen Avenue bridge. This approach was through a fallow pasture adjacent to the streambank. At the bank, dense vegetation, including trumpet creeper vines made access to the stream moderately difficult at best. Photogroup 11-23 depicts the access point to the stream.

The surveyed reach at Site FN103 was wadeable with the dominant substrate for the upper portion of the reach being concrete. The lower, more natural portion contained a dominant substrate of mud/clay. Depths of the stream were, particularly in the concrete channel were shallow and only four pools were identified during the three surveys. Dimensions of the pools are located in Table 11-12.

Table 11-12 Pool dimensions at Site FN103

Survey Dates	Length (m)	Width (m)	Depth (m)
August 4-8, 2009	33.0	4.4	0.69
August 25-28, 2009	30.0	4.4	0.62
May 27-31, 2010	16.0	2.4	0.77
	17.0	4.0	0.72

Table 11-5 displays flow measurements collected during each of the surveys. Table 11-4 shows the average thalweg depth for each survey of the site. The average thalweg depth is provided as three values; one was the overall reach average, one was the average depth below the transition zone at 70-m transect and one was the average above the 70-m transition zone.

Aquatic vegetation and algae cover were both ranged rare to common. The stream was clear in color and overall no scum or foam was observed on the surface of the stream. No unusual odors were detected. A slight presence of water dependent birds was observed while no other vertebrates were noted. Fecal dropping were observed during all three surveys, while tracks were observed during two of the three surveys. Large garbage in the channel was rarely observed. The observance of small channel garbage and bank garbage was rare to common and consisted of plastic bags, cups, broken toys, and yard waste.

Activities: Observed and Interviewed

During each RUAA survey, field personnel visited the sites during times of days and on days when recreational activities were apt to be observed. The selected sites were located in residential areas with well established roads and public access. Although activities were observed at several of the sites, no primary or secondary contact recreational activities were observed by TIAER personnel at any of the sites located on Fish Creek. Table 11-13 shows the types of general activities observed by TIAER field personnel. The "number observed" column shows the approximate number of persons observed at the site when the survey was performed, with general activities listed as individual columns.

At Site FS101, an individual interviewed stated that the bike/hike path is utilized by people to walk, run and ride bikes. The mowed field is utilized to play Frisbee, throw balls, play with pets or just sit under shade trees. It was further stated that persons do travel into the brush, east of the mowed field, as couples or large groups and stay "hidden" for a period of time. It was assumed by this individual that drinking, drugs or "adult recreation" was occurring based on the age of the individuals, he was speculating as to their activities. As for activities in the stream, he has never seen anyone in or near Fish Creek at Site FS101.

At Site FS103, TIAER staff documented a rope swing, though streambed below the swing is now a gravel bar (previous Photogroup 11-7). At the June 11, 2009 meeting of entities interested in the RUAA project, an attendee mentioned that she grew up near Fish Creek and her brother and friends would swing on the rope into the water at this location. That comment provided the information that influenced the selection of this location as a sampling site.

Though multiple visits were made to each site in Fish Creek and North Fork Fish Creek, only 13 interviews resulted. On most visits no one was present. Of the collected interviews, all 13 occurred at the Fish Creek sites. No interviews were collected from any of the North Fork Fish Creek sites. Table 11-14 show the types of activities identified during the interviews on Fish Creek.

The most common response given for not recreating in the stream was the water was "nasty." Two responders reported children (youths) wading in the stream at Sites FS103 and FS104. In addition to wading, it was reported that youths often throw rocks into the stream at Site 104. It was reported by the interviewee that she only observed youths wading after a rainfall event, when stream levels are elevated and moving. The rest of the time they just throw things into the water.

At Site FS105 two people indicated that the footpath leading to the stream is utilized by youths leaving school who jump across the stream on their way home. TIAER personnel did watch this occur during one of the surveys conducted in August of 2009, but interviews were not collected due to the age of the youths. (Note: the youths observed by staff were not young children, but youths in their early teens who were athletically developed. Although the site is directly behind an elementary school, there is a junior high school just a few blocks south on Cornwell Drive).

Table 11-13 Summary of general activities observed during surveys of Fish Creek and North Fork Fish Creek*

Date	Site Number	Number Observed[1]	Drinking Water in mouth	Bathing	Walking Jogging Running	Bicycling	Standing	Sitting	Lying down	Playing on shore	Picnicking	Motorcycle /ATV	Hunting/ trapping	Wildlife watching	< 8 m from shore	> 8 m from shore	Other
August 4-8, 2009	FS101	1-10	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-
	FS102	1-10	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-
	FS103	1-10	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X[2]
	FS104	1-10	-	-	X	-	X	-	-	-	-	-	-	-	X	-	-
	FS105	1-10	-	-	X	X	-	-	-	-	-	-	-	-	X	-	-
	FS106	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August 24-29, 2009	FS101	1-10	-	-	-	-	-	X	-	-	-	-	-	-	-	X	-
	FS102	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FS103	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X[2]
	FS104	1-10	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-
	FS105	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FS106	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May 27-31, 2010	FS101	1-10	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-
	FS102	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FS103	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X[2]
	FS104	1-10	-	-	X	X	-	-	-	-	-	-	-	-	-	X	X[3]
	FS105	1-10	-	-	-	X	-	-	-	-	-	-	-	-	-	X	-
	FS106	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[1] None; 1-10; 11- 20; 20-50; >50
[2] Rope swing at 300-m transect
[3] Skateboarding

*No activities were observed at any of the North Fork Fish Creek sites during any survey.

Table 11-14 Activities reported in interviews at sites along Fish Creek (No interviews obtained on North Fork Fish Creek)

Watershed	Site Name	Swimming	Walking Jogging Running	Wading		Standing Sitting Sleeping	Wildlife Watching	Picnicking	Fishing	Bicycling
				Adults	Children					
Fish Creek	FS101	-	1	-	-	-	-	-	-	1
	FS102	-	-	-	-	-	-	-	-	-
	FS103	-	-	-	1	-	-	-	-	-
	FS104	-	-	-	1	-	-	-	-	-
	FS105	-	-	-	-	-	-	-	-	-
	FS106	-	-	-	-	-	-	-	1	-

Although no activities, either primary or secondary contact or general, were observed or revealed through interviews at the North Fork Fish Creek sites, evidence was found to indicate some type of activity at FN101. ATV tracks were observed in the stream leading from off the bank of a backyard that abuts up to the creek through the culvert that flows under Great Southwest Parkway. In addition to the ATV tracks, a tarp and tent poles were discovered on a flat rock ledge on the left bank at Site FN101 during the May 2010 survey. Photogroup 11-24 shows the ATV tracks and tarp and tent poles mentioned above.

Photogroup 11-25 shows the graffiti painted on the concrete banks of the stream at Sites FN102 and FN103.

Copies of all of the interviews conducted along Fish Creek are provided in Appendix I-4. No interviews could be obtained for North Fork Fish Creek.

Summary

RUAA surveys were conducted at six sites along Fish Creek and three sites along North Fork Fish Creek August 4-8, 2009, August 25-29, 2001 and May 27-31, 2010. Copies of all field data sheets, flow sheets, transect pictures, and interviews from each survey are located in the Appendix I-1, I-2, I-3 and I-4, respectively.

Minimal activities were observed by TIAER field staff during the surveys or reported by interviewees. These activities are summarized in Figure 11-4. The Fish Creek Trails hike/bike path that winds throughout the extensive Fish Creek Linear Park and mowed fields maintained by the parks department are mainly utilized by many people for walking, jogging, bicycling and playing ball.

Both observations and interviews indicated that most people who utilize the hike/bike trail do not intend to recreate in the stream. Many interviewees described the water as “too nasty” or “too shallow” to recreate in. The play structures in some of the neighborhoods, adjacent to the hike/bike trail, are utilized by families with smaller children. These structures are located along the Fish Creek Trails but the stream is not visible from these structures due to the dense, natural riparian zone that borders the creek for the entire distance surveyed.

Two interviews of youths wading during elevated stream levels were reported for Sites FS103 and FS104. No other forms of primary contact recreation were identified. A rope swing was located at Site FS103, though the pool at this site is presently filled with gravel and sediment and no longer conducive to such activity. Infrequent fishing was reported at site FS106 by one interviewee. It should be noted that no footpaths to the stream were identified at Site FS106 by TIAER personnel.

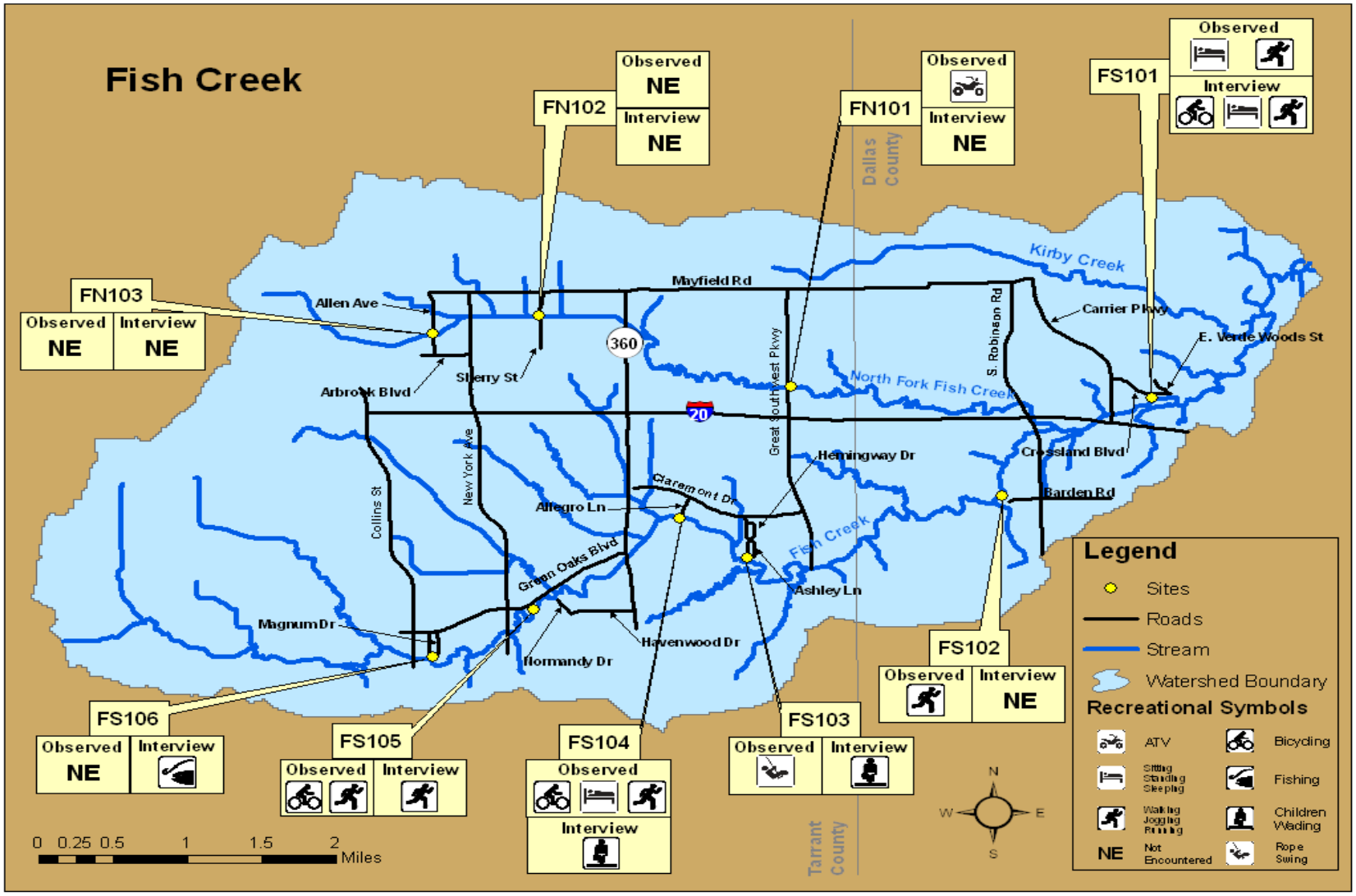

Figure 11-4 Summary of activities observed and reported in interviews at sites along Fish Creek and North Fork Fish Creek

Fish Creek (Segment 0841J)
&
North Fork Fish Creek (Segment 0841Q)
Photogroup

Photogroup 11-1 Fish Creek Site FS101 showing amenities along Fish Creek Linear Park (top row) and access point to stream used by field staff (lower row). (Individuals pictured are TIAER staff.) [Return to Text]

[Remainder of page intentionally left blank]

Photogroup 11-2 Fish Creek Site 103 showing streambanks and typical stream characteristics. [Return to Text]

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Photogroup 11-3 Fish Creek Site FS102 showing hike/bike path (upper left) and general stream and streambank characteristics. (Individuals pictured are TIAER staff.) [Return to Text]

Photogroup 11-4 Fish Creek Site FS102 showing various obstructions in stream and storm drain entry (lower right). (Individuals pictured are TIAER staff.) [Return to Text]

Photogroup 11-5 Fish Creek Site FS103 showing natural stream characteristics (upper and middle rows), elementary school (lower row, left) and hike/bike path. [Return to Text]





Photogroup 11-6 Fish Creek Site FS103 showing play structure and soccer fields near stream and photographs of rope swing (field crew shown in photograph). [Return to Text]

Photogroup 11-7 Fish Creek Site FS103 showing footpaths at 0-m and 300-m transects providing access to creek from both banks. (Individual pictured is TIAER staff.) [Return to Text]

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Photogroup 11-8 Fish Creek Site FS103 showing obstructions of trees at 120-m, 180-m, and 270-m transects and pipe crossing at 60-m transect. (Individuals pictured are TIAER staff.) [Return to Text]

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Photogroup 11-9 Fish Creek Site FS104 showing adjacent hike/bike trail and play structure (upper left photograph; note wooded area to right contains the creek), parking near creek, and general characteristics of the creek. (Individual pictured is TIAER staff.) [Return to Text]

Photogroup 11-10 Fish Creek Site FS104 showing typical stream characteristics and riparian zone with wooded/shrub area immediately adjacent to stream and mowed park area further from stream. [Return to Text]

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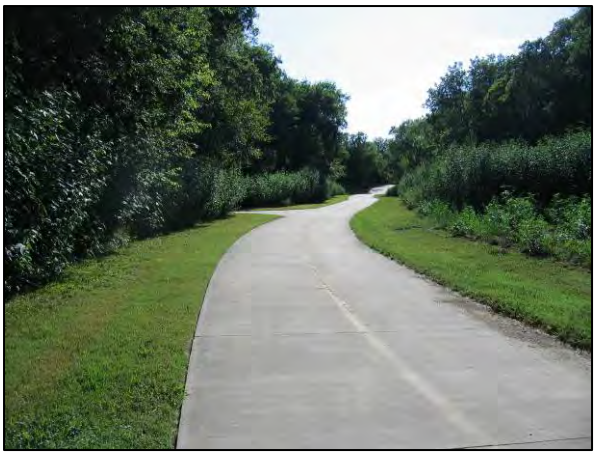
Photogroup 11-11 Fish Creek Site FS104 showing footpaths to stream. (Individual pictured is TIAER staff.) [Return to Text]

Photogroup 11-12 Fish Creek Site FS 104 showing low flow encountered during second survey. (Individual pictured is TIAER staff.) [Return to Text]

Photogroup 11-13 Fish Creek Site FS105 showing general stream and bank characteristics. (Individuals pictured are TIAER staff.) [Return to Text]

Photogroup 11-14 Fish Creek Site FS105 showing stream and streambank characteristics (upper left photograph the concrete block streambed), stream tributary (upper right), access point (middle left), and surround area, including footpath leading to creek. [Return to Text]

Photogroup 11-15 Fish Creek Site FS105 showing debris and tree obstructions at and around the 60-m, 120-m, and 180-m transects. [Return to Text]



Photogroup 11-16 Fish Creek Site FS105 showing hike/bike trail and mowed areas adjacent to trail. [Return to Text]

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Photogroup 11-17 Fish Creek Site FS106 showing hike/bike trail (upper row), typical stream and streambank characteristics, and storm drain entry (lower right). Note: Middle right photograph shows temporary markings from field crew used in surveying. [Return to Text]

Photogroup 11-18 Fish Creek Site FS106 showing area of cobble dominated substrate (upper left), area of abundant stream vegetation between 120-m and 210-m transects, and gabions along right bank in the areas of the 150-m transect. (Individual photographed is TIAER staff.) [Return to Text]

Photogroup 11-19 Fish Creek Site FS106 showing obstacles from fallen trees and associated debris at the 180-m and 240-m transects. [Note field crew in both photographs] [Return to Text]

Photogroup 11-20 North Fork Fish Creek Site FN101 showing footpath to stream at 0-m transect (upper left), culvert at 0-m transect, and general stream and streambank characteristics at 0-m, 150-m, and 300-m transects. (Individuals photographed are TIAER staff.) [Return to Text]

Photogroup 11-21 North Fork Fish Creek Site FN102 showing concrete lined channel along entire length of reach. (Individuals photographed are TIAER staff.) [Return to Text]

Photogroup 11-22 North Fork Fish Creek Site FN103 showing natural channel between 0-m and 60-m transects and concrete channel for remainder of reach. (Note backyard fences visible near concrete channel; Individual photographed is TIAER staff.) [Return to Text]






Photogroup 11-23 North Fork Fish Creek Site FN103 showing various access points (besides possible gates in backyard fences).([Note that with the exception of one access point (middle left photograph) these access points were heavily vegetated; Individual pictured is TIAER staff.) [Return to Text]

Photogroup 11-24 North Fork Fish Creek showing ATV tracks and trail at Site FN101 (upper row and lower row left) and tent stakes and tarp for tent at Site FN101. (Individuals photographed are TIAER staff.) [Return to Text]

Photogroup 11-25 North Fork Fish Creek Sites FN102 and FN103 showing graffiti on concrete embankments. [Return to Text]

CHAPTER 12
KIRBY CREEK (SEGMENT 0841N)

Watershed Characterization

Segment 0841N is a 4 mile segment running upstream from confluence with Fish Creek in Grand Prairie, Texas, to just upstream of Great Southwest Parkway in Arlington, Texas (Figure 12-1). The watershed of Kirby Creek is primarily residential with some interspersed undeveloped open fields (land use on Figure 12-2 and aerial photograph on Figure 12-3)). A major portion of the channel west of SH 161 is a concrete ditch while east of SH 161 the stream becomes more natural in appearance. There are no NPDES WWTP outfalls in the segment watershed. Flow type for this creek is listed as perennial and the presumed aquatic life use based on flow type is high (TCEQ, 2008).

Additional Information

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

Site Selection Strategy

An objective of the survey efforts under the RUAA was to include an appropriate number of sites in each of the eleven streams. The urban nature of much of the watershed contributes to numerous road crossings and neighborhood parks at which the various streams may be accessed.

The strategy used in site selection for the RUAA surveys incorporates the following:

Survey locations were found (completed May – June 2009) in each of the eleven streams described in the section above.

Existing TCEQ stations were used whenever these stations were located in areas that afford at least some access opportunity for various forms of recreational use. Some TCEQ monitoring stations may not provide inviting access for recreational contact.

Special attention was focused on the numerous parks located on many of the streams in the RUAA study.

On June 11, 2009, TIAER presented a list of proposed sites to an aggregate of state and local agencies, i.e., the TCEQ, TSSWCB, Trinity River Authority, Texas Parks and Wildlife, North Central Texas COG, DFW Airport, and the cities of Fort Worth, Dallas, Grand Prairie, Irving, and Coppell. As a result of the meeting, some locations were moved, some added and some dropped. The sites listed below reflect the results of input received following the meeting. For Kirby Creek site selection the major interaction occurred with City of Grand Prairie staff.

Survey Site Descriptions

The survey sites selected for Kirby Creek (Segment 0841N) are provided in Figure 12-1. Two sites were selected along Kirby Creek. A brief description of each site follows.

Site KC101 (TCEQ Station 17675) is located on Kirby Creek at Corn Valley Road in Grand Prairie. The site was located at Kirby Creek Park jointly operated by the City of Grand Prairie

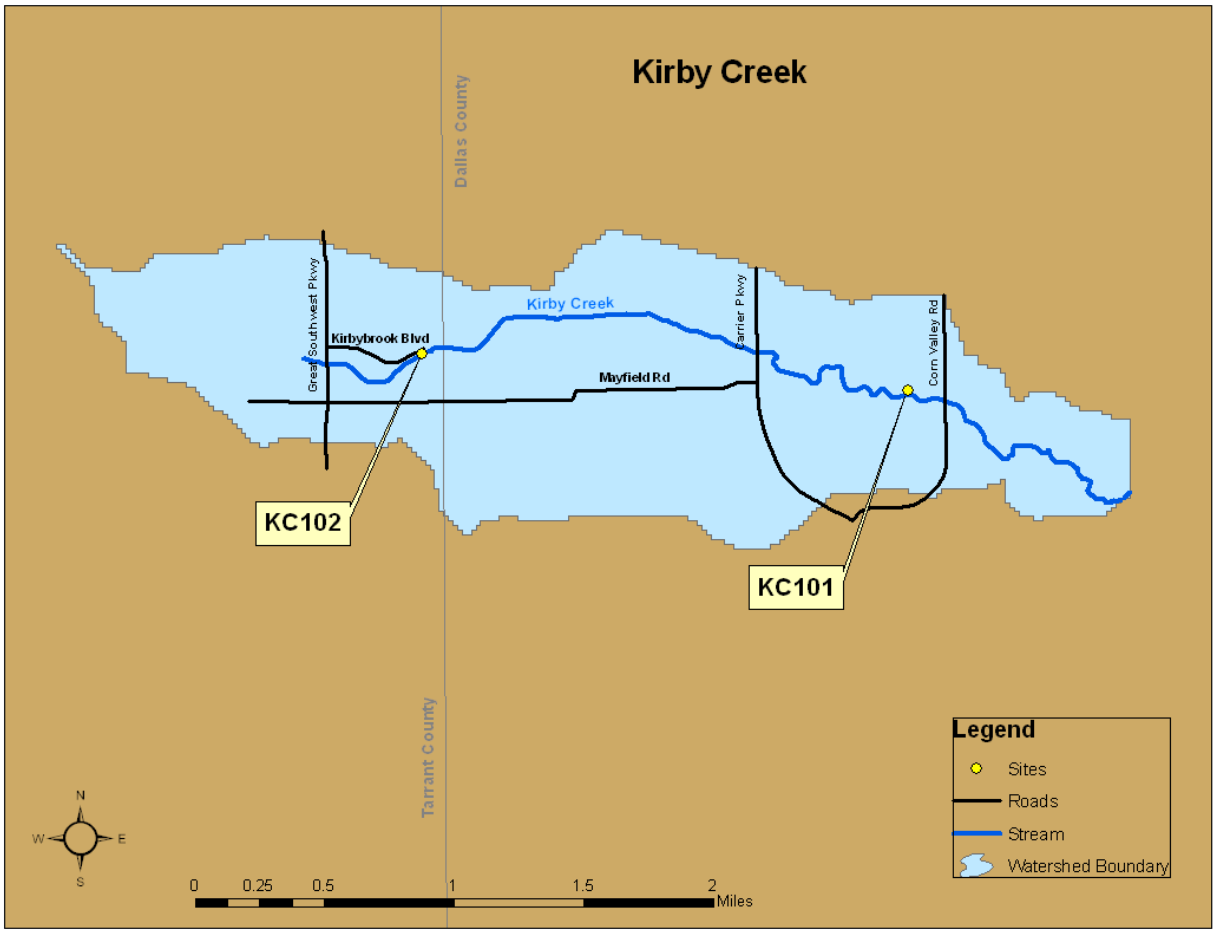

Figure 12-1 Kirby Creek (Segment 0841N) showing RUAA survey sites

and the Grand Prairie ISD. The park which is adjacent to the South Grand Prairie High School campus houses the GPISD Natural Science Education Center. The program facilitator at the facility indicated that several hundred students per year pass through the nature center and perform Texas Stream Team activities in Kirby Creek at this location (as well as locations in Cottonwood and Fish Creeks).

Site KC102 is located in a residential area near Kirbybrook Blvd in Grand Prairie. The creek at this location is concrete and highly channelized. At the intersection of Kirbybrook Blvd., Kirbybrook Trail and Southbrook Trails, the channel skirts a large pond. Signs were posted prohibiting trespassing onto the pool area.

Results and Discussions

General Description of Stream and Survey Sites

The RUAA surveys were conducted on August 4-8, 2009, August 25-29, 2009 and May 27-31, 2010. The surveys and associated interviews were performed on weekdays, weekends and holidays at opportune times to observe recreational activities in and around Kirby Creek.

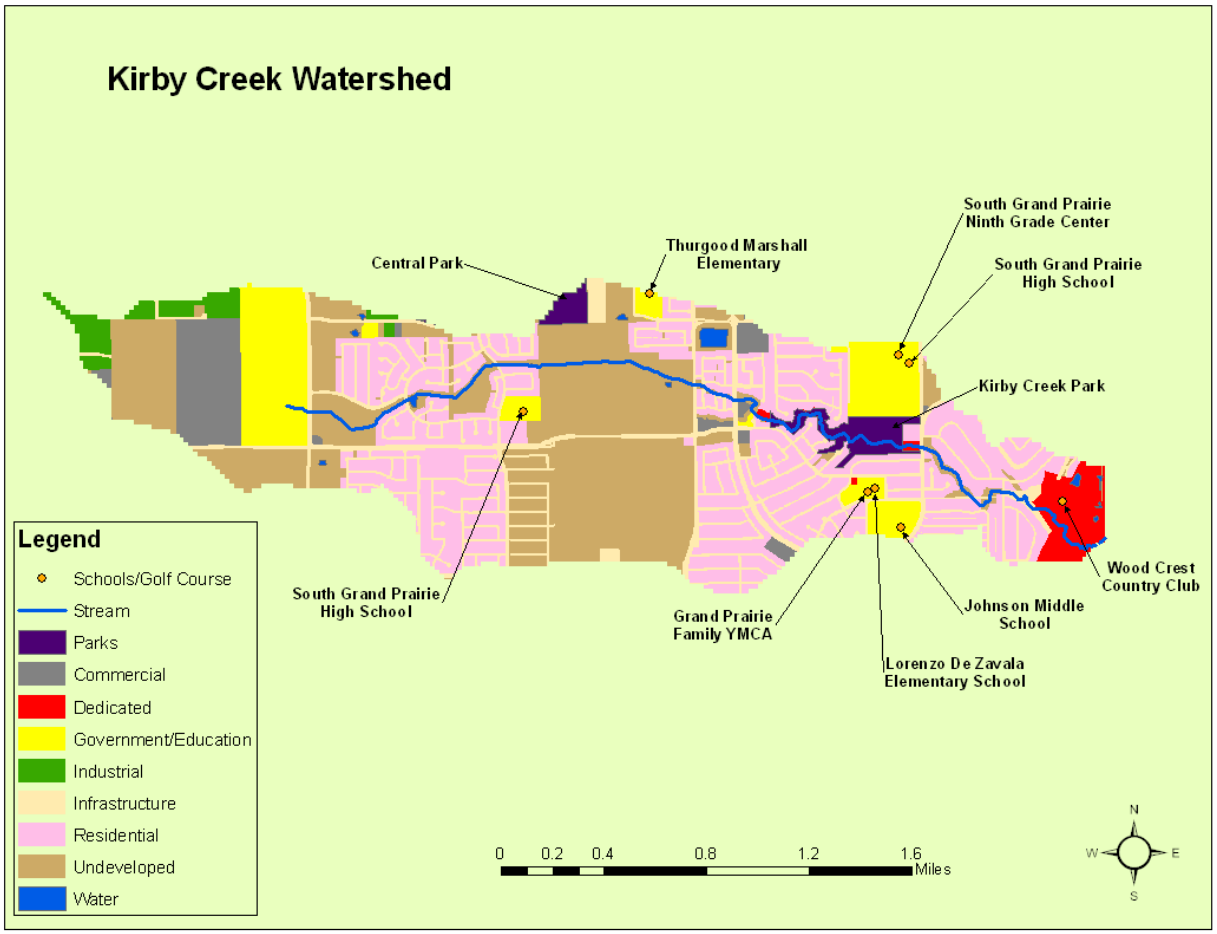

Figure 12-2 Land use/land cover for Kirby Creek Watershed (Source: NCTCOG, 2007 & 2009)

Surveys conducted on Kirby Creek occurred during varying air and water temperatures as shown in Table 12-1. Water temperatures were warm enough for recreational activities to occur.

Table 12-1 Temperatures measured at each site along Kirby Creek

Assessment Unit	Site Number	August 4-8, 2009		August 24-29, 2009		May 27-31, 2010	
		Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)
Kirby Creek	KC101	27.0	26.0	27.0	27.1	31.0	22.8
	KC102	36.0	31.0	37.4	n/a*	35.0	28.3
* - Water depth was too shallow for accurate temperature reading.							

Table 12-2 contains information on the appearance of the stream channel and riparian zone at each site.

Table 12-3 shows the average thalweg depth for each reach and site during each of the RUAA surveys.

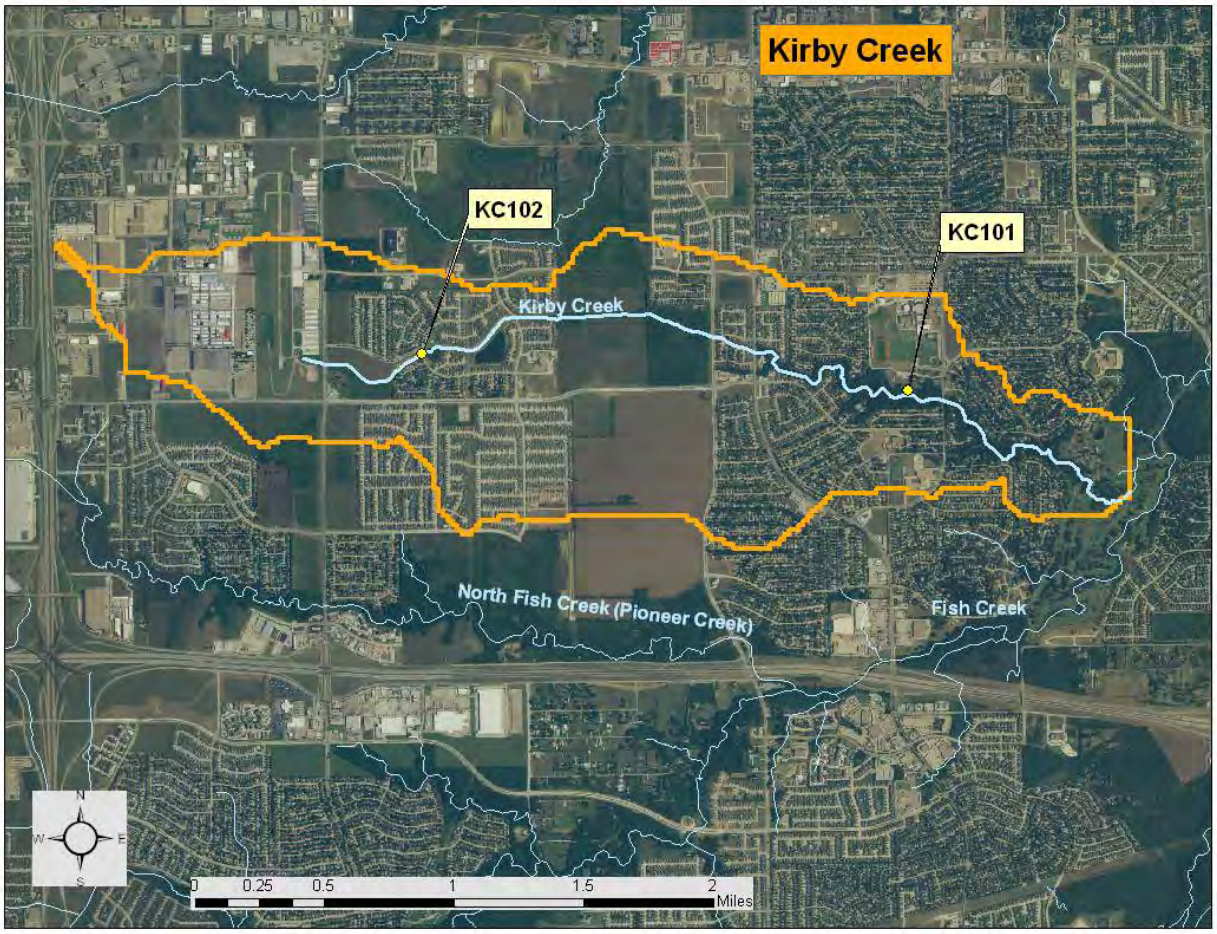

Figure 12-3 Aerial photograph of Kirby Creek Watershed (Source: NAIP, 2005)

Table 12-4 shows the maximum, minimum and average widths at each site for each survey. The observed flow and total discharge and also listed for each site and survey.

Physical Description of Site KC101

The stream at Site KC101 has a deeply incised channel and is natural in appearance. The Natural Science Education Center is located adjacent to the stream as part of the Grand Prairie Independent School District. There is a large mowed area that serves as an amphitheater with numerous benches and a large open area ample for demonstrations. Large trees are located along both sides of the stream and a residential area is located along the right, side of the stream. Beyond the entrance road to the nature center and parking lot is South Grand Prairie High School and associated athletic fields. Access to the stream is moderately easy. Table 12-2 describes the stream channel and riparian zone appearance at this site. Photogroup 12-1 depicts the education center and mowed and maintained area surrounding the upper portion of the study reach.

The surveyed reach at Site KC101 was a wadeable stream with sand being the dominant substrate. Both right and left banks were steep with moderately easy access points at the 0-m and 270-m transects. According to an instructor at the nature center, the 270-m transect is area where she takes classes to study the stream. Between the 270 m and 0 m transect, footpaths

Table 12-2 Stream channel and riparian zone assessment for Kirby Creek during August 4-8, 2009, August 24-29, 2009 and May 27-31, 2010 surveys.

Assessment Unit	Site Number	Side of Stream	Stream Channel Appearance	Riparian Appearance	Riparian Size	Park	Landscape Surroundings
Kirby Creek	KC101	Right Bank	Natural	Wooded	Moderate	Natural Science Education Center	Natural/residential
		Left Bank		Wooded	Moderate		Natural/park
	KC102	Right Bank	Channelized	Concrete	Small	None	Residential
		Left Bank		Concrete	Small		Residential

Table 12-3 Physical Descriptors of Kirby Creek. Stream flow type from TCEQ (2008b).

Stream	Segment #	Length (miles)	# of Sites	# of Recreational Areas on Stream	Avg. Thalweg Depth (m) for Stream Segment			Stream Flow Type
					August 4-8, 2009	August 25-29, 2009	May 27-31, 2010	
Kirby Creek	0841N	4.0	2	1	0.23	0.22	0.28	Intermittent
					Avg. Thalweg Depth (m) for Site Reach			
Site Name	**Reach length (m)**	**# of Transects**	**# of Recreational Areas at Site**		**August 4-8, 2009**	**August 25-29, 2009**	**May 27-31, 2010**	
KC101	300	11	1		0.42	0.40	0.50	
KC102	300	11	0		0.04	0.03	0.05	

Table 12-4 Additional hydrographic parameters of Kirby Creek

Survey Dates	Assessment Unit	Site Number	Maximum width (m)	Minimum Width (m)	Average Width (m)	Discharge (cfs)	Observed Flow Condition[1]
August 4-8, 2009	Kirby Creek	KC101	8.6	0.75	3.5	0.30	Normal
		KC102	2.9	0.45	1.35	0.42	Normal
August 25-28, 2009	Kirby Creek	KC101	8.4	0.69	3.3	0.11	Normal
		KC102	4.3	0.50	0.95	0.03	Normal
May 27-31, 2010	Kirby Creek	KC101	6.35	1.0	2.3	0.74	Normal
		KC102	9.1	0.45	1.3	0.096	Normal

[1] Possible flow condition categories: no flow, low flow, normal flow, high flow

and nature trails wound through the forested riparian zone atop the left bank, but none offered stream access.

The right bank was densely vegetated and dominated by trees and shrubs. A residential area was located beyond the right bank riparian zone. Photogroup 12-2 depicts the entry points to the stream and the footpaths atop the left bank.

Depth measurements were collected from all 11 transects during each survey as shown in Table 12-3. The sand substrate that dominated the reach made it difficult to walk in some areas. Several obstructions were identified along the stream channel which helped create three to four identifiable pools. Table 12-5 shows the dimensions of each of the pools identified for each survey.

Table 12-5 Pool dimensions at Site KC101

Survey Dates	Length (m)	Width (m)	Depth (m)
August 4-8, 2009	15.4	5.1	1.12
	32.0	5.2	0.93
	52.0	3.5	0.91
	81.0	8.6	0.91
August 25-28, 2009	15.4	5.1	0.79
	51.0	3.3	0.69
	30.0	5.0	0.70
May 27-31, 2010	30.0	6.35	1.2
	30.0	4.75	0.79
	39.0	5.35	1.05
	75.0	6.0	0.85

The number of channel obstructions observed varied with the three surveys. Photogroup 12-3 and Photogroup 12-4 depict obstructions located at the 90-m, 120-m, 130-m and 150-m transects. The obstructions consisted mainly of limbs, logs and trash. One large tractor tire was photographed in one of the obstructions. One storm water drainage pipe was also observed at the 240-m transect (Photogroup 12-5).

There was one parking lot associated with the Natural Science Education Center located near the upper end of the reach. The road leading to the education center and parking lot is gated and has restricted hours of access. The footpaths appeared well traveled during the two August 2009 surveys, but appeared more overgrown in May 2010.

Aquatic vegetation and algae cover were absent to rare. There was a slight presence of water dependent birds with no other vertebrates observed. Tracks of mammals and fecal dropping from mammals and birds were observed. Large garbage, tires and appliance remnants, was rare to common. Small bank and channel garbage was rare to common, and when present consisted mainly of plastic bags and bottles.

Physical Description of Site KC102

The Kirby Creek at Site KC102 is a concrete lined channel. The 0-m transect is located on the upstream side of a box culvert that channels water beneath Southwood Trail. The stream flows

into a large impoundment on the downstream side of the road and is posted no trespassing. A chain-link secured community swimming pool is located on the north side of the pond. There is one drainage culvert which flows into the stream at the 240-m transect and another pair of drainage pipes at the 150-m transect. Riparian zones on both sides of the stream are mowed and maintained for approximately the lower 100 meters. The upper 200 meters is predominantly grasses and shrubs which is not obviously mowed or maintained. An entrance ramp with a bar gate is located at the 0-m transect. Parking is available on the side of the street and access to the stream is easy. Table 12-2 describes the stream channel and riparian zone appearance at this site. Photogroup 12-6 shows some of the aforementioned characteristics of the site.

The surveyed reach at Site KC102 was a wadeable stream with depths not greater than 0.15 meters. The site is located in a highly residential area with yards of houses backing up to the stream (Photogroup 12-7). Graffiti on the banks of the concrete walls of the stream indicate that people do get into the stream. TIAER personnel observed several graffiti locations that were painted over from one survey to the next. The entire length of the stream was relatively shallow and narrow with not much water for contact recreation (Photogroup 12-8).

Aquatic vegetation was absent to rare while algae cover was rare to common. Scum was observed on the surface during two of the three surveys. No unusual odors were detected during any visit. Garbage on the banks and in the stream was absent to rare, but when present consisted mainly of small plastics and bottles. There was one observation of a domestic pet with no other vertebrates observed. Ducks were observed on the pond beneath the 0-m transect, but they were not observed in the 300-m study reach. Fecal dropping were observed during all three of the surveys.

Activities: Observed and Interviewed

During each RUAA survey, field personnel visited the sites during times of days and on days when recreational activities were apt to be observed. Neither primary nor secondary contact recreation was observed at either of the Kirby Creek sites during any of the three RUAA surveys or interview sessions. Two persons were observed fishing in the pool (Photogroup 12-9) and one person was observed walking down the road below Site KC102 during the August 4-8, 2009 survey. The persons fishing were standing behind a guardrail and the person walking appeared to be going to a residence.

During the last survey at site KC101, May 27-31, 2010, a group of approximately 50 young high school ROTC students were conducting an end of the year party (Photogroup 12-10). The leader of the group was interviewed and knew of no recreation occurring in the stream at any time. He, in turn, asked the entire group if anyone ever recreated in the stream or knew of anyone who did. Their reply was that no recreation occurs in the stream. The only activity anyone knew of was the classes at the education center which uses the stream for the Texas Stream activities. The youths stated that the water was nasty and questioned why anyone would want to get in the water when there are public and private pools available.

A formal interview of the instructor at the education center was unable to be completed. Several attempts were made to complete the interview sheet but none were successful. Informally, she stated that she does take the children to the stream and they may get in the water about ankle

deep in order to collect water samples or look for bugs. Nobody associated with the class recreates in the water.

One City of Grand Prairie employee completed the interview form and stated that he heard of people catching minnows for fishing at the KC101 site. No other forms of recreation were identified at this site. He stated that at Site KC102, he has heard of children swimming, wading and fishing in the pool below the study reach. He further indicated that the area has been posted for restricted use. Attempts to follow-up on the definition of "restricted use" were unsuccessful.

Copies of all of the interviews conducted along Kirby Creek grouped by site are located in Appendix J-4.

Summary

RUAA surveys were conducted at two sites along Kirby Creek on August 4-8, 2009, August 25-29, 2001 and May 27-31, 2010. Copies of all field data sheets, flow sheets, transect pictures and interviews from each survey are located in the Appendix J-1, J-2, J-3 and J-4, respectively.

Very few activities were observed by TIAER field staff during the surveys and reported by interviewees, and these activities are summarized in Figure 12-4. The instances of swimming, wading and fishing from the City of Grand Prairie employee interview are displayed at the impoundment just below Site KC102.

Overall, the upper site, Site KC102, has a limited amount of water for recreation, other than the large impoundment below the site. Site KC101 has accessibility difficulties. Interviews reveal that most people have no desire to recreate in the stream when public and private pools are available. The one area where it supposedly did occur is posted no trespassing.

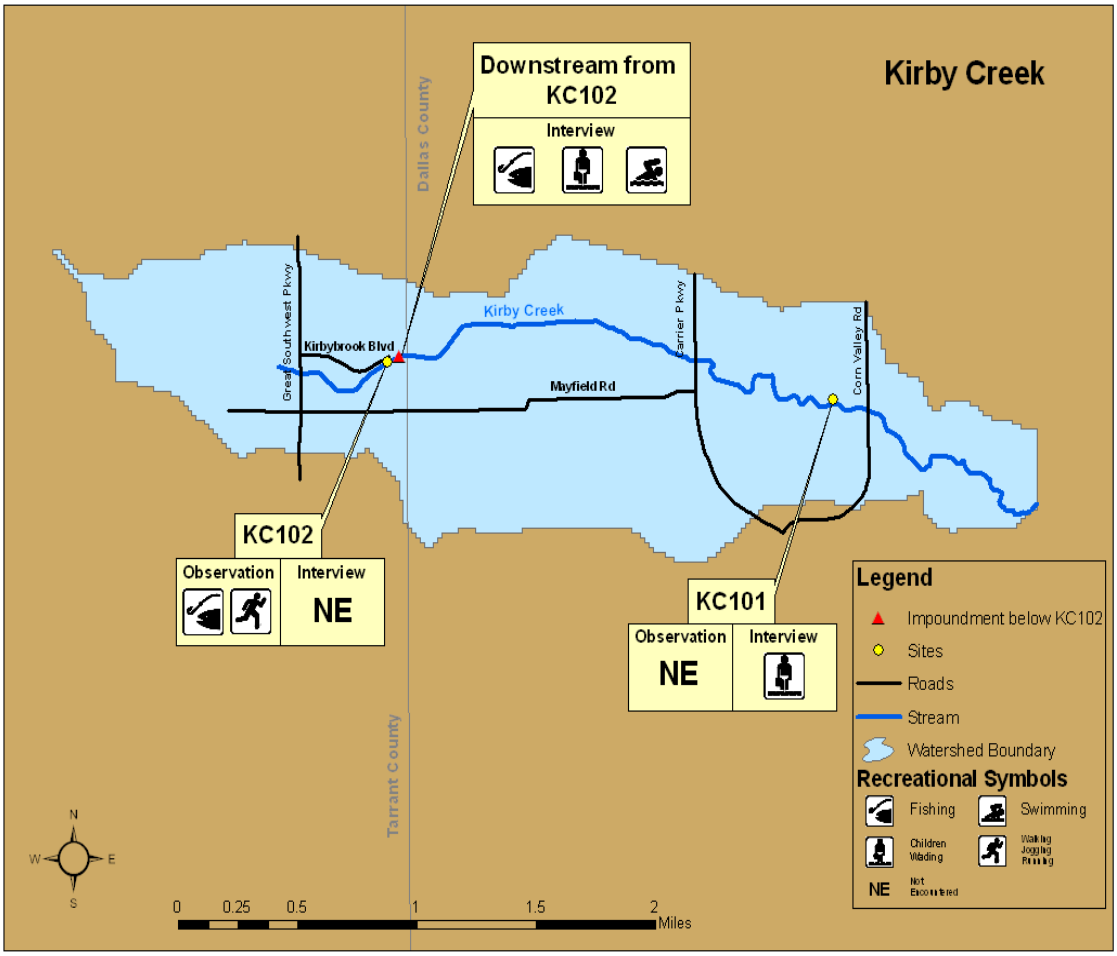

Figure 12-4 Summary of activities observed and reported in interviews at sites along Kirby Creek.

Kirby Creek (Segment 0841N)
Photogroups





Photogroup 12-1 Kirby Creek Site KC101 showing Natural Science Education Center Grounds of the upper portion of the study reach [Return to Text]





Photogroup 12-2 Kirby Creek Site KC101 showing footpaths and easy access points to stream. (Individual photographed is TIAER staff.) [Return to Text]

Photogroup 12-3 Kirby Creek Site KC101 showing obstructions observed at several transects during the surveys. [Return to Text]

Photogroup 12-4 Kirby Creek Site KC101 showing obstruction containing large tire [Return to Text]

Photogroup 12-5 Kirby Creek Site KC101 showing entry point of stormwater drain pipe at 240-m transect. (Individuals photographed are TIAER staff.) [Return to Text]

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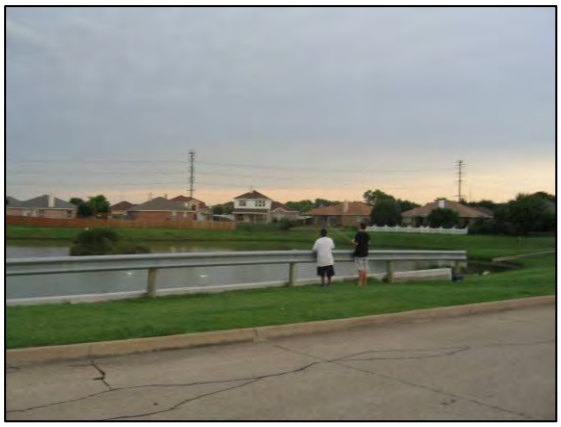
Photogroup 12-6 Kirby Creek Site KC102 showing general characteristics of stream and adjacent area [Return to Text]

Photogroup 12-7 Kirby Creek Site KC102 showing proximity of residential backyard fences adjacent to stream [Return to Text]

Photogroup 12-8 Kirby Creek Site KC102 showing channelized stream channel and normal water levels (Upper photographs at 150-m transect and lower photographs at 300-m transect looking downstream and upstream; Field staff shown in photographs). (Individual photographed is TIAER staff.) [Return to Text]



Photogroup 12-9 Kirby Creek Site KC102 showing youths fishing in impounded pool [Return to Text]

Photogroup 12-10 Kirby Creek Site KC101 showing in distance, under the trees, some of the school-aged children at the end-of-school year party (because of age of persons involved, close up photographs were avoided) [Return to Text]

CHAPTER 13
WEST IRVING CREEK (SEGMENT 0841U)

Watershed Characterization

Segment 0841U is a 4-mile reach running upstream from approximately 0.4 miles downstream of Oakdale Road to just south of Sowers Road entirely within the city of Irving, Texas (Figure 13-1). West Irving Creek is channelized and concrete for majority of its length. The land use of West Irving Creek watershed is predominately residential ((land use on Figure 13-2; aerial photograph on Figure 13-3). . There are no NPDES WWTP outfalls in the segment watershed. Flow type for West Irving Creek is listed as intermittent and the presumed aquatic life use is limited based on the flow type (TCEQ, 2008).

Additional Information

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

Site Selection Strategy

An objective of the survey efforts under the RUAA was to include an appropriate number of sites in each of the eleven streams. The urban nature of much of the watershed contributes to numerous road crossings and neighborhood parks at which the various streams may be accessed.

The strategy used in site selection for the RUAA surveys incorporates the following:

Survey locations were found (completed May – June 2009) in each of the eleven streams described in the section above.

Existing TCEQ stations were used whenever these stations were located in areas that afford at least some access opportunity for various forms of recreational use. Some TCEQ monitoring stations may not provide inviting access for recreational contact.

Special attention was focused on the numerous parks located on many of the streams in the RUAA study.

On June 11, 2009, TIAER presented a list of proposed sites to an aggregate of state and local agencies, i.e., the TCEQ, TSSWCB, Trinity River Authority, Texas Parks and Wildlife, North Central Texas COG, DFW Airport, and the cities of Fort Worth, Dallas, Grand Prairie, Irving, and Coppell. As a result of the meeting, some locations were moved, some added and some dropped. The sites listed below reflect the results of input received following the meeting. For West Irving Creek site selection the major interaction occurred with City of Irving staff.

Survey Site Descriptions

The survey sites selected for West Irving Creek (Segment 0841U) are provided in Figure 13-1. Two sites were selected along West Irving Creek. A brief description of each site follows.

Site WI101 (TCEQ Station 17179) is located on West Irving Creek at W. Vilbig St. in Irving. Upstream of W. Vilbig St., the creek runs next to Shady Grove Trail Park that has open space

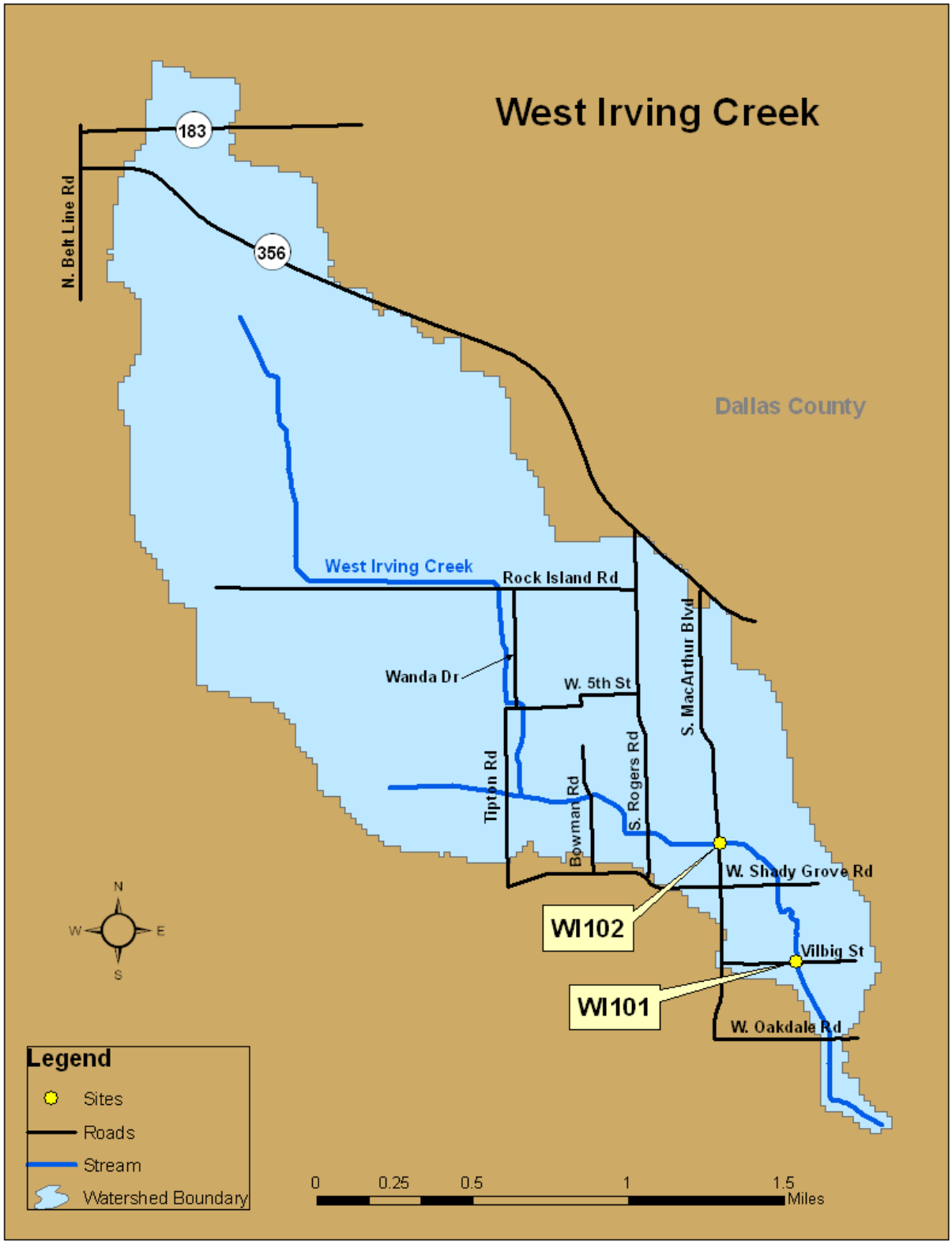


Figure 13-1 West Irving Creek (Segment 0841U) showing RUAA survey sites

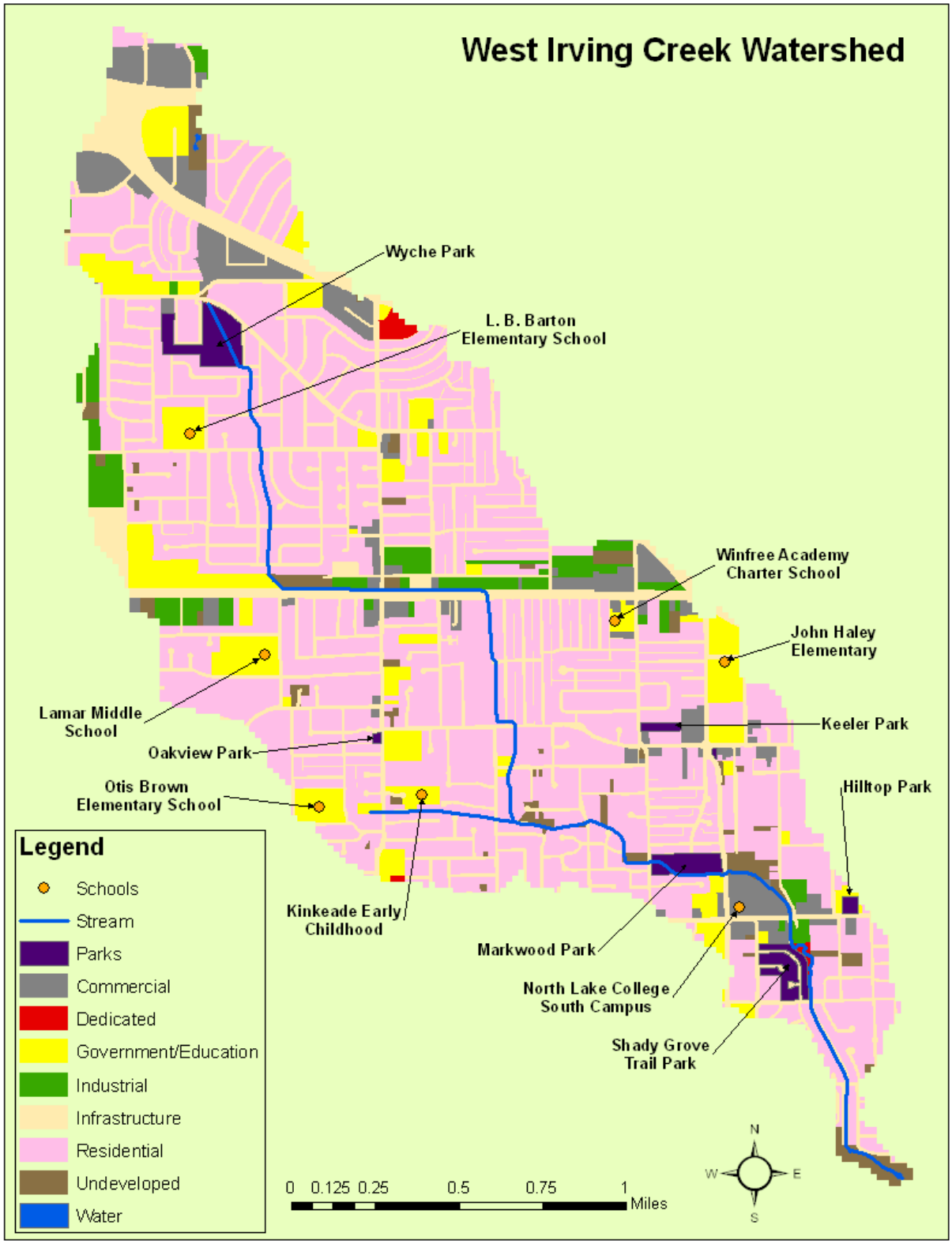


Figure 13-2 Land use/land cover for West Irving Creek Watershed (Source: NCTCOG, 2007 & 2009)

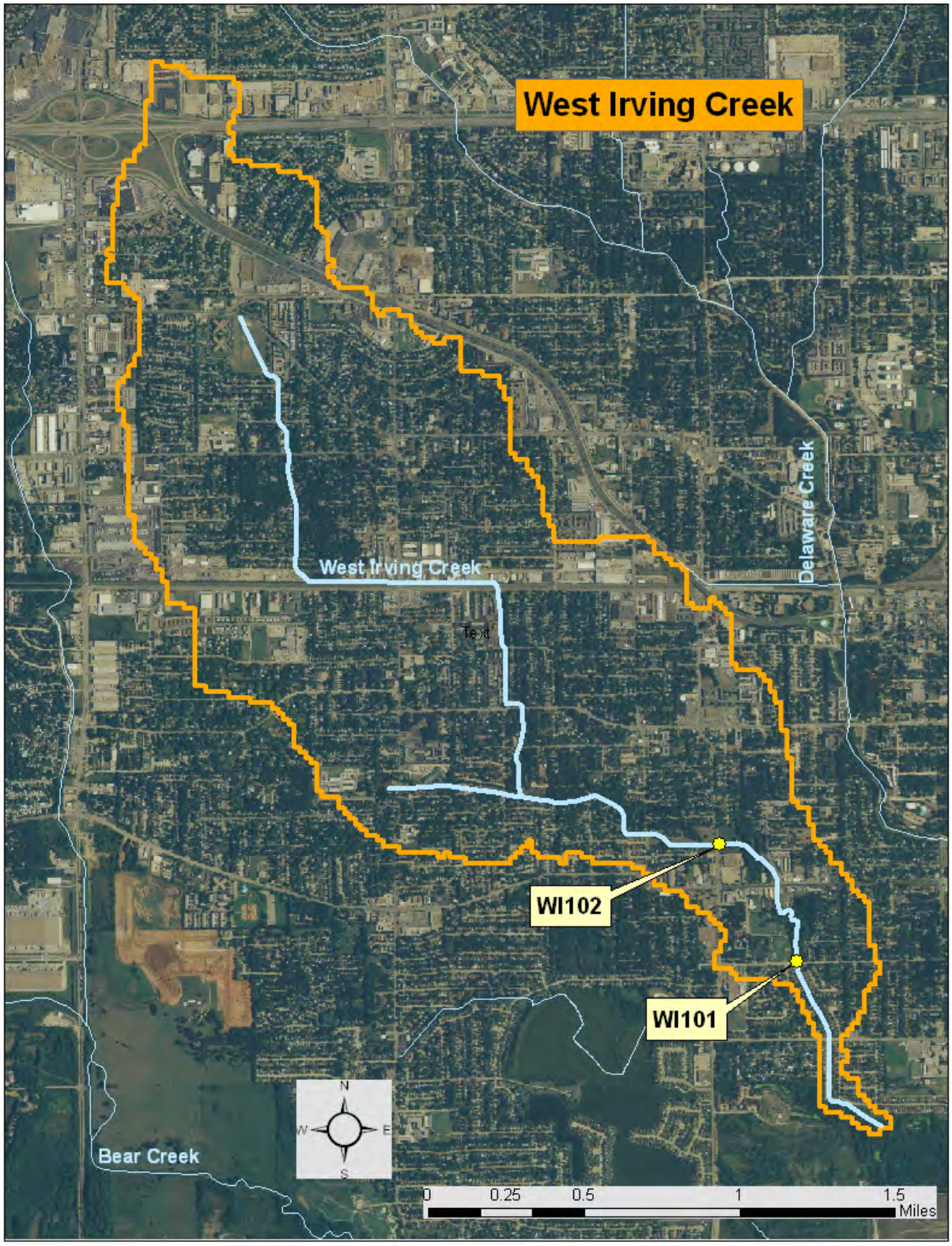


Figure 13-3 Aerial photograph of West Irving Creek Watershed (Source: NAIP, 2005)

and play structures. The only access point to the stream at this site is from the southeast corner of the park upstream of the W. Vilbig St. bridge crossing. Access from other areas of the park is very difficult due to dense vegetation and steep banks. One footpath was found in the riparian zone upstream of W. Vilbig, but it did not reach the streambank. Below the road crossing, access to the channel was fenced at the bridge and fenced back yards lined the right and left banks for the entire reach.

Site WI102 is located at a new park between S. McArthur Blvd. and S. Rogers Rd in Irving. The stream is accessible from the park on the north side and from a vacant lot downstream of McArthur.

Other locations along West Irving Creek were investigated as potential sites but were deemed inappropriate for a RUAA survey. At these other sites the stream is a concrete lined channel within an urban residential environment without amenities such as park facilities. Descriptions of the other sites are provided below to document the urban residential nature of the West Irving Creek along the majority of its length.

West Irving Creek at the Rock Island Road crossing is a concrete channel with little water observed (Photogroup 13-1). An apartment complex parking lot was located on the east side of the stream with a walkover to the complex that was situated on the left. Fences are located atop the culvert to make access to the stream difficult. Close to Rock Island Road, there is a portion which may offer public access; and this area appeared mowed and maintained. Upstream of the crossing, the road is under construction and access to the concrete lined channel is difficult.

West Irving Creek near 5th Street was investigated and the stream continued as a concrete lined channel with very little flow (Photogroup 13-2). A chain link fence is located atop the concrete lined stream channel and access to the stream at this location was moderately difficult.

West Irving Creek at Wanda Drive is a concrete lined channel in a residential area (Photogroup 13-3). Chain link fences are located atop the concrete channel and the only access to the stream was at the road crossing. Access would be classified as moderately difficult and no evidence of recreational activity was observed at the site.

The creek crossing at Tipton Road is a concrete-lined tributary to West Irving Creek in a residential area (Photogroup 13-4). Backyard fences abut the stream channel making access from residences difficult. Access from the Tipton Road crossing is relatively easy. Very little water was observed in the stream and no evidence of water recreation was observed. The confluence with West Irving Creek at this location is slightly downstream. West Irving Creek is also concrete lined in this area and contained very little water at the time of the visit.

West Irving Creek at Bowman Street is a concrete lined channel in a residential area (Photogroup 13-5). The right bank is shrub/tree dominated atop the concrete channel and the left bank is a mowed and maintained grass corridor. Access to the stream appeared easy. No observed evidence of recreation was identified at this site.

West Irving Creek at West Shady Grove Road appeared natural upstream of the road and as a concrete lined channel below (Photogroup 13-6). This potential site was located just to the north of Site WI101. Due to the similarities and proximity of Site WI101 and this location, the presence of the park at WI101 (no park was observed here) swayed the selection of Site WI101. Access to the stream from the Shady Grove location appeared to be moderately easy.

West Irving Creek at the West Oakdale Road crossing is a concrete lined channel in a residential neighborhood (Photogroup 13-7). A chain link fence is atop the upstream left bank of the channel and the upstream right bank has trees/shrubs to the edge of the stream. Residential backyard fences are located on the downstream sides of the channel. Access to the stream appeared moderately easy with very little water observed in the channel. No signs of recreation were observed.

Results and Discussions

General Description of Stream and Survey Sites

The RUAA surveys were conducted on August 4-8, 2009, August 25-29, 2009 and May 27-31, 2010. The surveys and associated interviews were performed on weekdays, weekends and holidays at opportune times to observe recreational activities in and around West Irving Creek.

Surveys conducted on West Irving Creek occurred during varying air and water temperatures as show in Table 13-1. Water temperatures were warm enough for recreational activities to occur.

Table 13-1 Temperatures measured at each site along West Irving Creek

Assessment Unit	Site Number	August 4-8, 2009		August 24-29, 2009		May 27-31, 2010	
		Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)	Air Temp (C)	Water Temp (C)
West Irving Creek	WI101	32.5	30.5	23.5	26.8	31.0	27.8
	WI102	33.0	31.5	23.0	28.5	34.0	28.0

Table 13-2 contains information on the appearance of the stream channel and riparian zone at each site.

Table 13-3 shows the average thalweg depth for each reach and site during each of the RUAA surveys. For Site WI101, the upper portion of the stream is a natural channel and the lower portion of the reach is in a concrete lined channel. The thalweg depth is listed in three categories, overall average depth, depth of the natural portion and depth of the concrete lined portion. For Site WI102, the depth measurements were collected during the first trip. Due to safety concerns over the difficulty in wading the stream, the depths were not re-measured during the following two surveys. The concerns at this site influencing the option not to try to wade the stream at this location are described herein. The dominant substrate at this site was very soft silt into which field personnel sank to their knees during the first survey. Extraction was only accomplished after considerable effort that included twisting, contortions and the difficulty in keeping waders in place. Because of concerns over the potential physical harm that could result from the difficulties created by this substrate, it was determined that field staff would not risk

Table 13-2 Stream channel and riparian zone assessment for West Irving Creek during August 4-8, 2009, August 24-29, 2009 and May 27-31, 2010 surveys.

Assessment Unit	Site Number	Side of Stream	Stream Channel Appearance	Riparian Appearance	Riparian Size	Park	Landscape Surroundings
West Irving Creek	WI101	Right Bank	Lower ½ concrete; Upper ½ natural	Lower ½ Concrete; Upper ½ shrub	Small	Shady Grove Trail Park	Upper right Park; All other areas residential
		Left Bank			Small		
	WI102	Right Bank	Natural	Shrub dominated	Moderate	Tim Markwood Park	Natural
		Left Bank		Mowed/maintained	Moderate		Park

Table 13-3 Physical Descriptors of West Irving Creek. Stream flow type from TCEQ (2008b).

Stream	Segment #	Length (miles)	# of Sites	# of Recreational Areas on Stream	Avg. Thalweg Depth (m) for Stream Segment			Stream Flow Type
					August 4-8, 2009	August 25-29, 2009	May 27-31, 2010	
West Irving Creek	0841U	4.0	2	1	0.68	0.68	0.68	intermittent
					Avg. Thalweg Depth (m) for Site Reach			
Site Name	Reach length (m)	# of Transects	# of Recreational Areas at Site		August 4-8, 2009	August 25-29, 2009	May 27-31, 2010	
EC101	300	11	1		0.48, 1.07, 0 [a]	0.48, 1.07, 0 [a]	0.47, >1.0, 0.03 [a]	
EC102	300	11	1		0.88 [b]	0.88 [b]	0.88 [b]	

[a] Three depths provided are average, above concrete channel, concrete channel

[b] Depth measurements were collected during August 4-8, 2009 survey. Based on substrate and safety concerns, the depths were not re-measured. Based on stream level and flow rate, conditions did not change significantly, so the same depth measurements were used for latter two surveys.

entering the stream on subsequent visits. Since water levels in the pooled area above MacArthur Blvd were unchanged and flow rates were identical during the second survey and minimally change during the third, the depths were not re-measured.

Table 13-4 shows the maximum, minimum and average widths at each site for each survey. The observed flow and total discharge and also listed for each site and survey. For Site WI101 during the third survey, there was flow in the concrete channel portion of the channel. Average widths were recorded for the upper portion and also the lower portion separately.

Physical Description of Site WI101

West Irving Creek at Site WI101 is a channelized stream with the 0-m to 150-m transect being in a concrete-lined channel and the 180-m to 300-m transects being a natural channel. The site is located in a highly residential area with backyard fences located atop the streambank on both sides of the lower 150 meters of the reach and atop the left bank of the upper 150 meters. Shady Grove Trail Park is located along the right bank of the upper 150 meters reach. There is a play structure, picnic areas, basketball court, and walking paths associated with the park. The park is mowed and maintained by the City of Irving Parks and Recreation Department. Table 13-2 describes the stream channel and riparian zone appearance at this site. Photogroup 13-8 and Photogroup 13-9 depict the channel types and the park facility located adjacent to the stream.

Park parking is available along West Vilbig Street and access to the edge of the stream is moderately easy. The only access point to the stream at this site is from the southeast corner of the park upstream of the W. Vilbig St. bridge crossing. Access from other areas of the park is very difficult due to dense vegetation and steep banks. One footpath was found in the riparian zone upstream of W. Vilbig, but it did not reach the streambank. Below the road crossing, access to the channel was fenced at the bridge and fenced back yards lined the right and left banks for the entire reach. The small riparian zones are concrete on the lower half and wooded/shrubs on the upper half. Photogroup 13-10 shows the locations of backyard fences in relation to the stream and the riparian zones.

The substrate at Site WC101 was a combination of mud/clay in the upper 150 m and concrete in the lower. Depth measurements collected in the upper half were difficult to obtain due to large rocks on the stream bed and the depth of water. Due to the large submerged rocks that were not visible from the water surface, safety concerns dictated these measurements were only collected during the first survey.

Aquatic vegetation and algae cover was absent during the first two surveys when the stream was not flowing. Aquatic vegetation was rare and algae cover was common during the third survey when the stream was flowing. No surface film or scum was observed during any of the three surveys. No unusual odors were detected. There was a slight presence of domestic pets, and water dependent birds were observed during one survey. There were no other observances of vertebrates. Garbage, large and small, was rare in the channel and on the bank.

Physical Description of Site WI102

The West Irving Creek at Site WI102 is a natural stream, though impounded, with the 0-m transect just below a concrete culvert at MacArthur Blvd. The riparian zone on the right bank is

Table 13-4 Additional hydrographic parameters of West Irving Creek.

Survey Dates	Assessment Unit	Site Number	Maximum width (m)	Minimum Width (m)	Average Width (m)	Discharge (cfs)	Observed Flow Condition[1]
August 4-8, 2009	West Irving Creek	WI101	13.2	0.0	8.55	0.0	No Flow
		WI102	22.0	17.0	17.0	0.0	No Flow
August 25-28, 2009	West Irving Creek	WI101	13.2	0.0	8.55	0.0	No Flow
		WI102	22.0	17.0	17.0	0.0	No Flow
May 27-31, 2010	West Irving Creek	WI101	18.7	0.79	1.2 (dn) / 8.7 (up)	0.09	Low
		WI102	22.0	2.30	17.0	<0.10	Low

[1] Possible flow condition categories: no flow, low flow, normal flow, high flow

shrub/tree dominated with a gentle to steep slope. The left bank riparian zone is mowed and maintained by the City of Irving and has the newly built Tim Markwood Park adjacent to the stream. The park contains play structures and a concrete walking trail winds through the park. Other than the 0-m transect below the road, the remaining 270 m of the reach was measured in the impoundment created by the MacArthur Blvd crossing. Upstream of the 300 m transect the pool terminated at the crossing at S. Rogers Road. Table 13-2 describes the stream channel and riparian zone appearance at this site. Photogroup 13-11 depicts the stream, riparian zones and park located at the site.

The majority of the reach (270 m) at Site WI102 was a marginally wadeable stream with depths deep enough for contact recreation. There were no fences or guardrails preventing entrance to the stream. As stated above, concerns over staff safety encountered on the first visit to this site influenced the option not to try to wade the stream at this location on either of the subsequent visits. As water levels in the pooled area above MacArthur Blvd were unchanged and flow rates were identical during the second survey and minimally change during the third, the depths were not re-measured.

The park is located between South MacArthur Boulevard and South Rogers Road in a densely populated residential area. Parking was available at a business to the south of the site. Additional parking was located on the north side of the park at the end of a cul-de-sac off of Fair Oaks Drive. The park was well manicured and clean of trash. Residences are located north and south of the stream with backyard fences atop the bank on the right south side of the stream (Photogroup 13-12).

Aquatic vegetation observed at the site was rare and algae cover was rare to common. No unusual odors were detected. The water surface was free of scum or film. There was a slight presence of water dependent birds with no additional vertebrates observed. Small garbage in the channel of the stream was rare to common consisting of plastic bags and bottles. Large trash in the channel and trash on the streambanks was rare.

Activities: Observed and Interviewed

During each RUAA survey, field personnel visited the sites during times of days and days when recreational activities were apt to be observed. It should be noted that according to an interview with a City of Irving Parks and Recreation Department official there is a city ordinance against entering a stream within the City of Irving city limits.

During the RUAA surveys, nobody was observed recreating in or near the stream at either site. There was a bicycle observed in the concrete channel of Site WI101 with graffiti also observed underneath the road culvert (Photogroup 13-10; middle left photograph). There was an observation of sticks stuck into the mud at WI102 indicating someone may have been near the stream, possibly fishing or playing (Photogroup 13-13).

In addition to conducting interviews during the RUAA surveys, subsequent trips were made to the sites in an attempt to gather additional interviews. Phone and mail-in interviews were also collected for information pertaining to contact recreation activities. Of 11 interviews conducted, there was no mention of any water-related activities occurring at either site on West Irving

Creek. Additional interviews were attempted, but the persons either declined to talk or a language barrier prevented the interview from being conducted.

According to the interviews, the main reason for no one recreating in the stream was the appearance of the water. The water looked too nasty, was polluted, or had raw sewage in it according to one person. It was stated that one person wouldn't even let their dog get into the water. No one interviewed knew of the city ordinance prohibiting entrance into the stream. Their concern was the appearance.

Activities observed at both sites occurred more than eight meters from the stream. Many people utilized the walking trails at the parks for exercise. A game of basketball was also observed on the basketball court at Site WI101, which was well over 100 m away from the stream. People with small children were observed utilizing the play structures at both of the parks and the picnic tables at Site WI101. Photogroup 13-14 depicts some of the activities observed at the two locations along West Irving Creek.

Copies of all of the interviews conducted along West Irving Creek grouped by site are located in Appendix K-4.

Summary

RUAA surveys were conducted at two sites along West Irving Creek August 4-8, 2009, August 25-29, 2001 and May 27-31, 2010. Copies of all field data sheets, flow sheets, transect pictures and interviews from each survey are located in the Appendix K-1, K-2, K-3 and K-4, respectively.

A minimal amount of activities were observed by TIAER field staff during the surveys and reported by interviewees, and these activities are summarized in Figure 13-4. The park facilities are well maintained by the City of Irving Parks and Recreation Department and are utilized by many people.

Both observations and interviews indicated most people utilizing the park facilities have no interest in entering the stream or impoundments along the stream. Interviewees described the water as "too nasty" or "too polluted" for recreation. The parks adjacent to the stream are predominately used to exercise, play basketball, and use the play structures or just for relaxation. Fishing was not reported by any interviewees. The sticks stuck in the mud at Site WI102 suggest that activity could possibly occur, although no fishing tackle or evidence of fishing was observed.

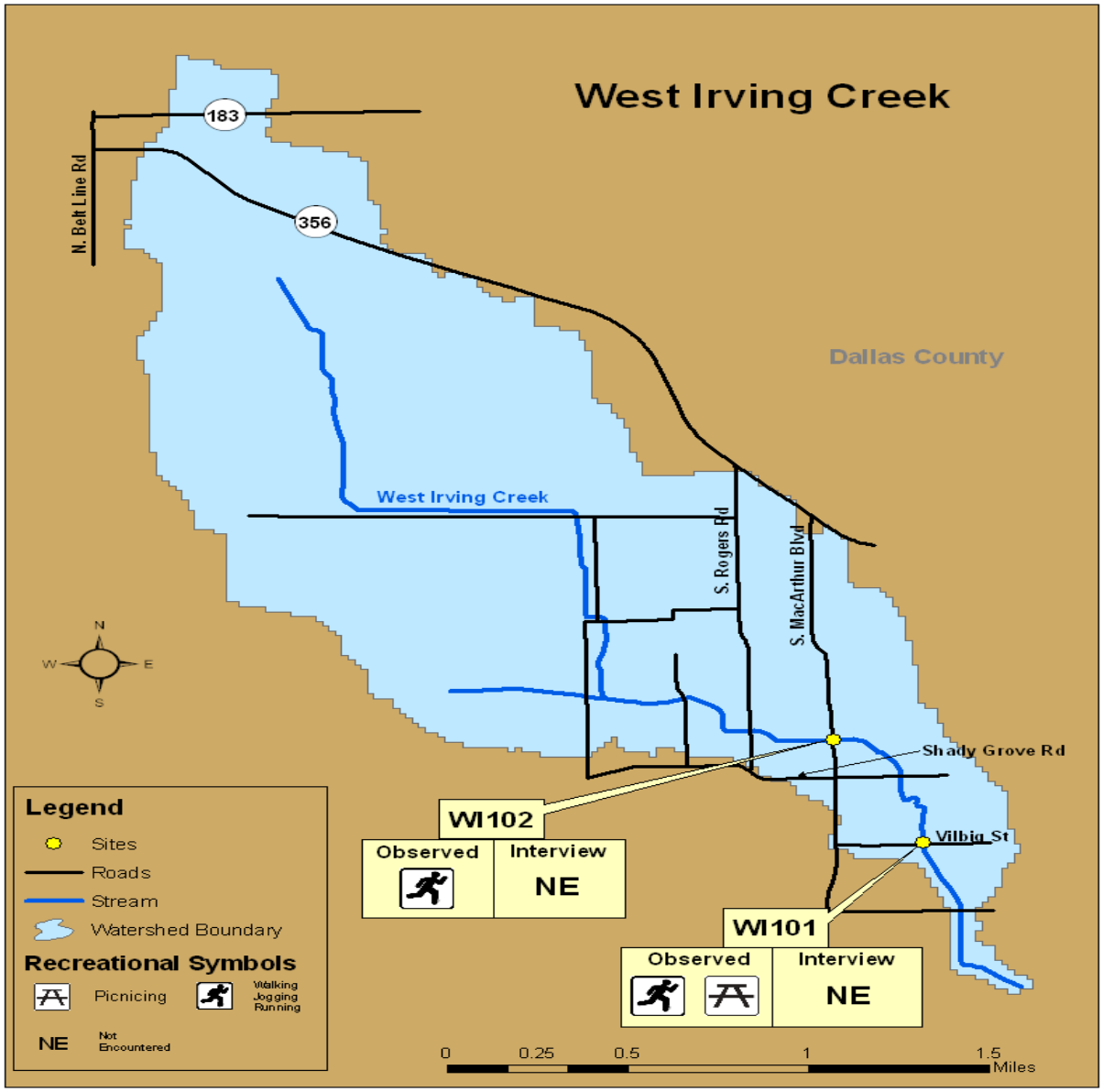


Figure 13-4 Summary of activities observed and reported in interviews at sites along West Irving Creek.

West Irving Creek (Segment 0841U) Photogroups

Photogroup 13-1 West Irving Creek at Rock Island Road looking upstream and downstream [Return to Text]

Photogroup 13-2 West Irving Creek at 5th Street showing stream at this location [Return to Text]

Photogroup 13-3 West Irving Creek at Wanda Driver showing upstream and downstream views [Return to Text]

Photogroup 13-4 A tributary West Irving Creek at Tipton Road showing upstream and downstream views (field crew in downstream view). [Return to Text]

Photogroup 13-5 West Irving Creek at Bowman Street showing upstream and downstream views [Return to Text]

Photogroup 13-6 West Irving Creek at Shady Grove Road showing upstream and downstream views [Return to Text]

Photogroup 13-7 West Irving Creek at West Oakdale Read showing upstream and downstream views [Return to Text]

Photogroup 13-8 West Irving Creek Site WI101 showing natural channel (180-m to 300-m transects) and concrete channel (0-m to 150-m transects). [Return to Text]

Photogroup 13-9 West Irving Creek Site WI101 showing Shady Grove Trail Park [Return to Text]

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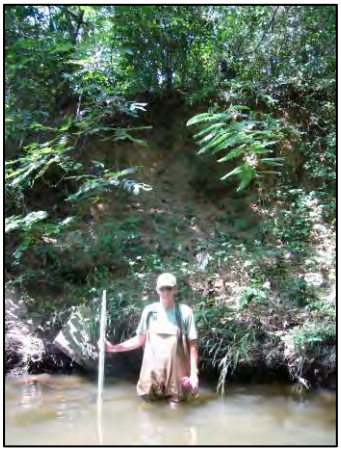

Photogroup 13-10 West Irving Creek Site WI101 showing areas adjacent to stream at 0-m, 150-m and 300-m transects (top, middle and bottom photographs). (Field crew only persons in photographs.) [Return to Text]






Photogroup 13-11 West Irving Creek Site WI102 showing stream at 0-m transect (upper left), 150-m transect (upper right, middle left), 300-m transect (middle right), and Tim Markwood Park (bottom). [Return to Text]

Photogroup 13-12 West Irving Creek Site WI102 showing proximity of residence to stream (residence in upper left corner of right photograph). (Individual photographed is TIAER staff.) [Return to Text]

Photogroup 13-13 West Irving Creek Site WI102 showing sticks placed in mud by human activity [Return to Text]

[Remainder of page intentionally left blank]

Photogroup 13-14 West Irving Creek showing activities observed in parks associated with Sites WI101 and WI102 [Return to Text]

CHAPTER 14
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