Edwards Aquifer Recovery Implementation Program

Initial Study on the Recreational Impacts to Protected Species and Habitats in the Comal and San Marcos Springs Ecosystems

Part 1

HALFF

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Melani Howard, CSM Watershed Protection Manager
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EXECUTIVE SUMMARY

This report is an initial study and compilation of existing data and research that illustrates the impacts of water-based recreational activities on protected species and habitats in the Comal and San Marcos Springs ecosystems for the Edwards Aquifer Recovery Implementation Program (EARIP). The EARIP limited the project area to those portions of the Comal and San Marcos Springs that are within the city limits of New Braunfels and San Marcos.

This study is a summary of existing data that was made available to Halff Associates by the Edwards Aquifer Recovery Implementation Program, the cities of New Braunfels and San Marcos, Texas Commission on Environmental Quality, U.S. Fish and Wildlife Service and the River Systems Institute of Texas State University. During the course of the study, existing data from various sources was reviewed and evaluated in an effort to identify and locate water-based recreational activities within the limits of the project area. Halff Associates worked to quantify and map the numbers of users, times of use, types of users and the areas they frequent, numbers and locations of endangered species, the locations and limits of their habitats. Halff also conducted review of existing ordinances that pertain to recreation and recreation development on and around the springs. Interviews with various stakeholders were conducted. Water quality data on protected species and their habitats was mapped. A review of existing scientific studies regarding recreational impacts on protected species and economic data from existing studies that was pertinent to the project area was reviewed. The sources of all this data include scientific studies, consultant studies, public agency records and stakeholder interviews.

Existing ordinances from the cities of New Braunfels and San Marcos that relate to water-based recreational activities and development within the limits of the project were reviewed. This section of the report summarizes what those specific ordinances are. Of particular note is the restricted (recreation) use by respective city ordinance on the upper reaches of both the Comal Springs (Mill Run Channel and upstream) and San Marcos Springs (Spring Lake) systems. Also included in this summary are ordinances that pertain to development or potential recreation development adjacent the rivers.

Geographical Information Systems software was utilized to map locations of water-based recreational activities, locations of water quality sampling stations and locations of listed species. While waters of the Comal and San Marcos springs systems are considered State property, access to and from the banks is restricted by land use/ownership; this information is also provided in the mapping data.

Interviews with stakeholders included members of city staff, chambers of commerce, recreation and tourist based business owners/managers, representatives of user groups and members of city council. A questionnaire prepared by Halff Associates, with the assistance of the EARIP was provided to stakeholders in advance of the interviews, to give interviewees the opportunity to elaborate on the questions and requested data.

Scientific studies relative to the impacts of recreational activities on endangered species and their habitats were sought but few were found. Documents and studies included in the reviews were habitat conservation plans, information pertaining to flood control and raw data from an ongoing doctoral study. There were also studies that were cited and referred to by some of the data providers, but several of these were not accessible for review.

Economic information pertaining to recreational activities within each of the cities is very limited. There is no published data for San Marcos, although Halff provides extrapolated figures based on survey data provided by the Texas State University doctoral candidate and the information provided by the one and only tube vendor in this city for one particular year. Two studies for the New Braunfels area on tourism and hospitality were made available, and information on river based recreational activities was extrapolated from data included in both of the studies as there is no specific data on recreation in either study.

The **recreational impacts** on these river systems are cultural, social, economic, and most importantly, physical. The rivers are iconic elements within each of the two cities. With a large portion of the river banks fronting public parks, they are the center of community events and prime socializing spaces. As populations increase in Central Texas, so does the popularity of recreating in these rivers and as such, there were reports of physical degradation of adjacent parks and banks, but quantitative data to identify the extent of the degradation is minimal at best. The physical impact of litter and erosion is evident in the public parks and there are no real controls for capacity other than parking restrictions.

Conclusion

Further study is needed in the pursuit of specific and quantitative correlations between recreational uses and listed species. Most of the important information in this document is anecdotal and perceived, and some of the factual information is peripheral and could definitely be used to support more specific research. In summary, the information that Halff has explored within the body of this report provides a good starting point from which further study could be pursued.

I. DATA COLLECTION

Sources of information for this report were derived from a list of activities and facilities provided by the EARIP, the cities of New Braunfels and San Marcos, their chambers of commerce, stakeholders referred to by the EARIP, the Texas Commission on Environmental Quality, Texas Department of Parks and Wildlife, United States Fish and Wildlife Services and sources of literature provided by the River Systems Institute and the EARIP. Information regarding types of recreation vendors, activities, types of users, times of use, numbers of users, regulations of use, economic information, water quality, and species locations were sought and GIS mapping was developed to illustrate locations of various attributes. The GIS mapping will also provide a base from which further study can be documented. The information provided within this document is known to be limited as some information sources that were referred to are not available.

A. New Braunfels

Recreation activities on the Comal River include: swimming, wading, lounging/picnicking, snorkeling, scuba diving, tubing, fishing, paddle boating, swift water rescue, and rope/tree jumping (though it is not lawful). The most common activities are tubing, swimming, wading and lounging, and fishing. Paddle boating and fishing are the only activities permitted in Landa Lake, closer to the springs although there is very small area in Landa Park that permits wading and there is a spring fed public swimming pool that is dammed off from the Comal River and dates to the 1930's within Landa Park. Most activity in the water is concentrated at the stretch from Landa Falls / Wurstfest grounds downstream to the Union Avenue exit commonly known as the last public exit. Upstream of Landa Lake is Texas Water Recreation District No. 1, which is a legislated area designated for restricted use by adjacent property owners. Wooden docks and stacked canoes were observed along this water front.

Members from the Halff team gathered information and data about recreational activities and events from city staff, members of the convention and visitors bureau/chamber of commerce, recreational outfitters and various users of the springs.

Tubing is the predominant recreational activity in the river. The City has an agreement with the tubing outfitters that limits the number of tubers on the river at any one time. There are significant number of tubers that do not rent tubes however, but choose instead to provide their own tube to enjoy the river. The costs of tube rentals range between $10-$15 per person, and the rental fee typically includes a shuttle ride from the tube outfitter to the river drop-off and

pick-up points. $1.25 of each tube rental is a river management fee that goes directly to the City of New Braunfels.

The following list of water-based recreational outfitters illustrates the variety of recreational activities available along the Comal River. Tube rental outfitters located along the banks of Guadalupe River were excluded from the list even though they are located within the city limits. It is also note worthy to advise that year 2010 was a bit of an anomaly because of the severe flooding experienced in early June; as a result, many outfitters were not accessible for participation.

Table 1

Type of Vendor	Company	Address	Phone	Hours of operation
Tube Rental	Rock'n R River Rides	1405 Gruene Road New Braunfels, TX 78130	830-629-9999	No information available
Tube Rental	Texas Tubes	250 Meusebach St. New Braunfels, Texas	830-626-9900	March 13 – May 1 11a.m. to 7 p.m. May 2 – Sept. 10 9 a.m. to 8 p.m. Sept. 11 – Sept 30 11 a.m. to 7 p.m. October 1 and later Weather permitting
Tube Rental	Corner Tubes	120 South Liberty Avenue New Brauanfels, TX	830-626-6687	No information available
Tube Rental	Felger Tube Rental	161 South Liberty Avenue New Braunfels, TX	830-625-4003	No information available
Tube Rental	Landa Falls/Wurstfest	178 Landa Park Drive New Branfels, TX	830-627-1440	May-June 10 a.m. – 5 p.m. July 10 a.m. – 8 p.m.
Paddel Boat Rental	City of New Braunfels Landa Park Paddle Boats	Landa Park Boathouse	830-221-4350	March 22 to 26 Noon – 7 p.m. Weekends only Apr – Memorial Day Noon – 7 p.m. Daily Memorial Day – Aug 22 Noon – 7 p.m. Weekends only Aug 28 – Labor Day Noon – 7 p.m.
Campground	Landa RV Park and Campground	565 North Market Street New Braunfels, TX	830-625-1211	Year round
Other	S chlitterbahn Waterpark Resourt	381 East Austin Street New Braunfels, TX 78130 And 305 West Austin Street New Braunfels, TX 78130	830-625-2351 830-608-8520	Various hours throughout the year

Other activities that occur in the Comal River but do not generally require rental equipment or professional guidance include wading, swimming / snorkeling, fishing, swift water rescue training, rope/tree jumping, and lounging / picnicking.

In addition, there are numerous locations where river users can purchase tubes, and ad hoc tube outfitters are present along the river intermittently during the summer months.

B. San Marcos

Information gathered from interviews with stakeholders revealed that recreation activities on the San Marcos River include swimming, wading, lounging/picnicking, boat touring, snorkeling, scuba diving, tubing, fishing, rope swinging/jumping, boating (kayak and canoe), white water kayak training, dog playing. The most common activities are tubing, swimming, wading and lounging/picnicking. Spring Lake, where the springs originate, is restricted to research use and guided boat tours either by kayak or glass bottom boat. Cost for glass bottom boat tours range between $6-$9; kayak tours are by appointment and are available through an the Aquarena Nature Center, operated by Texas State University. Scuba diving on this lake is permitted research purposes only. The prime areas of activity along the San Marcos River are between Sewell Park and Rio Vista Falls Park falls.

Most of this stretch is adjacent public park property and access to the water is only limited by vegetation on the banks. As the demand for river activity grows, there is compelling physical evidence of trampled vegetation, bank damage and bank erosion caused by visitors to the River in their efforts to access the water.

Information gathered regarding recreational activities and the events that surround them is from city staff, members of the convention and visitors bureau/chamber of commerce, recreational outfitters, various users, and researchers.

The following list of water-based recreational outfitters illustrates the variety of recreational activities available along the San Marcos River.

Table 2				
Type of Vendor	**Company**	**Address**	**Phone**	**Hours of operation**
Tube Rental	Lion's club Tube Rentals	170 Bobcat Trail San Marcos, TX	512-396-0342	Mid May – Sept 11 a.m. to 4 p.m. Last shuttle 7 p.m.
Kayak and Canoe Rental	TG Kayaks and Canoes	402 Pecan Park Drive San Marcos, TX	512-353-3946	
Kayak Instruction	White Water kayak instruction	Power Olympics Outdoor Center 602 N. Interstate 35 San Marcos, TX		
Other	Aquarena Nature Center	601 University Drive San Marcos, TX	245-7570	

Other activities that occur in the San Marcos River but do not generally require rental equipment or professional guidance include wading, swimming / snorkeling, fishing, swift water rescue training, rope/tree jumping, lounging / picnicking, scuba diving and dog play.

II. EXISTING ORDINANCES

Existing ordinances were collected from the cities of New Braunfels and San Marcos with the assistance of planning staff from each city. The majority of the ordinances in place in each city deal with development restrictions along the rivers, while there are a few ordinances that address particular behaviors or activities that typically occur. New Braunfels has a higher number of ordinances pertaining to recreation activities on the river than San Marcos does.

A. City of New Braunfels

Land use and zoning districts alongside the Comal River within the city of New Braunfels identifies areas of open space, commercial/resort land use districts, as well as low density residential. Each of these land uses and zones permit recreation activity of varying degrees. Ordinances related to development of recreation facilities within the floodplain as well as ordinances that relate directly to activities on the water are summarized in the following text.

Most notable and of specific relevance to river-based activities (not specific to Comal) are the following ordinances:

Table 3

Ordinances Specific to Recreational Activity on the Rivers	New Braunfels	San Marcos
Prohibition of Alcohol @ riverside parks	X	
Means to Restrict Beverage Consumption on the River (cooler size & limit)	X	
Prohibition of Glass in parks and rivers	X	X
Prohibition of Styrofoam	X	
Prohibition of dangerous jumping	X	X
Prohibition of Litter in the river	X	
Prohibition of Wastewater in rivers		X
Restrictions on Recreation in parts of the spring rivers	X	X
Minimum size of open containers on the river	X	
Noise restrictions at parks	X	X
Restrictions on types of floating devices	X	
River tax collected on Water-based Recreation Equipment	X	
Restricted methods of fishing and bait type	X	X
Fishing bait must be artificial	X	
Unlawful to release any type of aquatic organism into waters of a city park		X
Unlawful to wash bodies/animals, personal belongings in the river		X
Park curfews	12am - 6am	11pm - 6am
No overnight camping in riverside parks unless otherwise designated	X	X
Restrictions on use of motorized vehicles within riverside parks	X	X
Unlawful to damage/destroy vegetation @ parks	X	X
Regulations on Water Rereational Service Shuttles	X	X
Unlawful to disturb wildlife in city parks		X

The following ordinances are focused on the control of recreational activities and providers within the city of New Braunfels.

(NB) Section 23-50(f) – Entering rivers by jumping or dangerous acts

It is a violation of this code to enter any river, lake stream or waterway by jumping, diving or doing any other dangerous act on or off any publicly owned bridge, street, highway, appurtenance, publicly owned land or public right of way unless for reason of rescuing someone from drowning.
It is also a violation to jump dive or perform any dangerous acts on or off of trees, platforms, high banks, dams or other walkways to enter streams, rivers or waterways.

(NB) Sec. 50-57. - Prohibited accumulations; litter; weeds; graffiti; duty of property owner, occupant.

(Code 1961, § 8-34; Ord. No. 98-22, § II, 8-10-98; Ord. No. 2006-22, § 1, 3-13-06)

Owners and supervisors of real property occupied or not are not lawfully permit to allow filth, carrion, weeds, rubbish, junk, trash, waste products, brush and refuse, graffiti of any kind to remain on the property.
Deposit of any such matter into or along any drain, gutter, alley, sidewalk, street or right of way, vacant lot (private or public)
Weeds and Unsightly vegetation greater than 12 inches height within 150 feet of any right of way, alley or utility easement, building or structure is not permitted and Owners of real property shall maintain or remove such.
Graffiti is not permitted on real property and shall be removed within 15 days of notice from health official.

(NB) Section 58-33 Same – Duties and responsibilities (of the floodplain administrator)

(Code 1961)

To review permit applications to determine whether proposed building sites including mobile homes will be safe from flooding
To review permits for proposed development to assure all necessary permits have been obtained from federal, state or local government agencies.
To notify the state water commission and adjacent communities prior to any alteration or relocation of a watercourse and submit copies of such to FEMA
Assure the flood carrying capacity within the altered or relocated portion of any watercourse is maintained
To interpret the exact location of the boundaries of the flood plain in areas of special flood hazards where interpretation is needed
When regulatory floodway has not been designated, the administrator must require no new construction, substantial improvements, or other development be permitted unless it can be demonstrated that the cumulative effect of the

proposed development when combined with all other existing and anticipated development will not increase the water surface elevation of the base flood more than one foot at any point within the community

(NB) Section 58-34 Permit procedures

(Code 1961, ss 5-31, Ord. No. 98-29, ss I)

Dev Permits must describe extent of alteration or relocation of any watercourse or natural drainage as result of development

(NB) Section 58-36 Provision for flood hazard reduction

In areas of special flood hazard, structures must be adequately anchored to prevent flotation, collapse or lateral movement

Construction methods and practices must minimize flood damage and of materials resistant to flood damage

Water supply systems as well as sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters

Recreation vehicle parks must develop a plan for evacuating residents

All recreation vehicles must not be permitted to have uninflated tires or any condition that would impede, delay or hinder immediate evacuation

With respect to floodways, encroachments are prohibited: including fill, excavation , ew construction, substantial improvements unless certification by a profession engineer or architect is provided to demonstrate encroachments do not increase in flood levels

(NB)Section 74-1. - Park rangers and river project manager authorized to issue citations.

(Ord. No. 2004-24, § I, 4-12-04)

For the violation of any of the city ordinances under Chapter 86 "Parks and Recreation", Chapter 126 "Traffic and Vehicles", Chapter 6 "Animals" and section 82-9 and section 82-10 of Chapter 82 "Offenses and Miscellaneous Provisions."

(NB) Section 82-10. - Noise prohibitions, public rights-of-way and public property, exceptions; penalty.

(Ord. No. 2003-34, § I, 5-12-03; Ord. No. 2006-53, § I, 6-26-06)

It is unlawful to operate any radio, tape recorder, cassette player, CD player, DVD player or MP3 player or any other sound reproducing device any louder than audibility at 50 feet or more while located on public property, exceptions are for athletic and city authorized events

(NB) Section 82-12. - Volume drinking devices prohibited

(Ord. No. 2006-54, § I, 6-26-06)

(a)*Definitions.* For the purpose of this section, the following definitions shall apply:

Volume drinking devices means an object used, intended for use or designed for use in artificially increasing the speed with which, and/or amount of, alcohol is ingested into the human body by carrying the liquid from a higher location into the mouth by force of gravity or mechanical means, including but not limited to funnels, tubes and hoses. The term includes a beer bong.

It is an offense to use or possess with intent of use in a public place

(NB) Section 82-13. - Amplified sound devices prohibitions on the Comal and It is unlawful to operate or permit to be operated any amplified sound device or equipment between the hours of 10pm-8am. Violations may result in fines ranging Guadalupe Rivers.

from $100-$500.

(NB) Section 86-1 – Overnight camping prohibited; hours parks closed; penalty

No tents for camping and no overnight camping is permitted within parks.

No overnight parking of vehicles, portable buildings, camping units of any type are permitted.

No person, vehicle or equipment or activity is permitted between the hours of 12am and 6 am with exception of grant by the city.

(NB) Section 86-4 – Additional rule and regulations for control of parks and recreation ares and facilities

(Code 1961, ss 14A-6; Ord. No. 2003-51, ss I(2.))

With the exception of city and city authorized equipment, it is unlawful to launch any type of boat, canoe, water vehicle or flotation device from the banks of Land Park Lake.

It is unlawful to deposit /throw/drop/place loose paper, cans, bottles, sacks, boxes, cloths, waste materials, rubbish alongside any body of water within city limits.

It is unlawful to drive any motor vehicle on any trail/footpath/footbridge spanning a creek or stream with the exception of golf carts or maintenance vehicles

It is unlawful to remove, destroy or damage any vegetation within parks and recreation areas.

It is unlawful to wade or swim in any water body within the Landa Park Golf Course to retrieve golf balls or for any other purpose.

(NB) Section 86-6 Swimming or wading prohibited in Landa park Lake; exception

(Code 1961, ss 14A-5)

It is an offense to enter, wade, swim or engage in any aquatic activity in any area of Landa Park Lake with exception of area posted 'wading area'; exception is law enforcement and public safety agencies operating water craft

(NB) Section 86-7. - Operation of vehicles in parks

(Code 1961, § 14A-7; Ord. No. 98-7, § I, 2-9-98; Ord. No. 01-18, § I, 3-12-01; Ord. No. 01-63, § I, 12-10-01; Ord. No. 2003-51, § I(3.), 8-11-03; Ord. No. 2004-25, § I, 4-12-04; Ord. No. 2008-41, § 1, 6-9-08)

Landa Park: operation of motor vehicles on designated portions of Landa Park Drive prohibited by law: 7am-8pm, Saturdays, Sundays and legal holidays from Easter weekend through Labor Day

Hinman Island: operation of motor vehicles of any kind prohibited by lawn on that portion of Hinman Island Drive from its west side intersection with Liberty Avenue in a westerly direction to its east side intersection with Elizabeth Avenue 7am – 8pm Saturdays, Sundays and legal holidays from Easter weekend through Labor Day when the barricades on Hinman Island Drive are closed..

Parking fees in Prince Solms Park East. There shall be a parking fee applicable 9am-6pm Saturdays, Sundays and holidays from Easter weekend through Memorial Day weekend and on weekdays and weekends from Memorial Day weekend through Labor Day, unless exempt by city manager.

Fees are designated for the restoration and improvement of Prince Solms Park East

No through commercial truck traffic except Light trucks including any truck with a manufacturer's rated carrying capacity not to exceed 2,000 pounds and including those trucks commonly known as pickup trucks, panel delivery trucks, vans and carryall trucks shall be excluded from the provisions of this section. Recreational vehicles and passenger buses shall be excluded from the provisions of this subsection.

Any truck which has a destination point, for commercial purposes, within Landa Park or Hinman Island Park shall be permitted to proceed by the shortest route through such parks to its destination, and shall exit by the same route.

Maximum weight limits for bridges in Landa Park:

(1) Bridge on Landa Park Drive at the Comal River and Landa Railroad Train Depot, TxDOT location number 15-046-8403-15-004, shall have a maximum safe load limit of 12,500 pounds, axle or tandem;

(2) Bridge in Landa Park at the main spring flow from Panther Canyon area nearest the wading pool, TxDOT location number 15-046-8403-15-003, shall have a maximum safe load limit of 24,000 pounds tandem;

(3) Arched bridge on Landa Park Drive at the Comal River Springs closest to California Street, TxDOT location number 15-046-8403-15-002, shall have a maximum safe load limit of 24,000 pounds tandem.

(NB) Section 86-8 Glass containers prohibited in park areas and on rivers, lakes and streams

(Ordinance No. 2005-62)

It is a misdemeanor offense to be carrying, using and/or disposing of glass beverage containers in all city parks adjacent rivers, lakes and streams

Cross reference—Waterways, ch. 142.

(NB) Section 86-10. - Prohibition of alcoholic beverages in city parks and city-owned property

(Ord. No. 2007-12, § 1, 2-12-07; Ord. No. 2008-11, § 1, 1-28-08)

(a)It shall be unlawful for anyone to consume liquor or any alcoholic beverage, or possess an open container of intoxicating liquor or alcoholic beverage within the boundaries of the following public parks or city-owned property within the city limits:

(1)Prince Solms Park; (2)Hinman Island Park; (3)Cypress Bend Park; (4)The City-owned tuber exit on the Comal River that borders Lincoln Street and Union Avenue. (5)River Acres Park; (6)H.E.B. Soccer Park; (7)Jesse Garcia Park; (8)Ernest Eikel Field; (9)Haymarket Park; (10)Torrey Park; (11)Kraft Park; (12)Northridge Park; (13)Dry Comal Trails; (14)Solms Park; and (15)Fredericksburg Sports Complex.

(b)It shall be unlawful for anyone to consume intoxicating liquor or any alcoholic beverage, or possess an open container of intoxicating liquor or alcoholic beverage in all designated parking areas or within 25 feet, either side of any roadway, within the boundaries of the following public parks or city-owned property within the city limits:

(1)Landa Park;

(2)Camp Comal.

City permitted functions are exempt. Fine $500

(NB) Section 86-11. - Noise restrictions in city parks

(Code 1961, § 14A-10.1; Ord. No. 2006-53, § II, 6-26-06)

Unlawful between the hours of 10:00 p.m. and 8:00 a.m.:

(1) Operating of any radio receiving set, tape player, cassette tape player, compact disc player, DVD player, MP3 player, musical instrument, television, phonograph, drum or other machine or device for the production or reproduction of sound.

(2)Operating or permitting to be operated any loudspeaker or sound-amplifying equipment.

It shall be unlawful and considered a misdemeanor offense for any person to play musical instruments or provide live music any time within the boundaries of all city parks within the city limit. City park events exempt.

Violations may result in fines $100-$500

(NB) Section 86-13 – Prohibition of use of foam, polypropylene, expanded polypropylene and polystyrene in certain public waters

(Ord. No. 94-36, ss I)

It is unlawful to use, carry, possess or dispose of any of above referenced on or in the public waters of the portions of Guadalupe River, Lake Dunlap and Comal River with exception of

Foam for boat flotation devices when enclosed within the structural framework of the boat or are fully encapsulated by a water based acrylic coating

Foam minnow buckets which meet or exceed a 2 lb density

Foam dock supports fully encapsulated in a water based latex coating

(NB) Section 86-14 – Coolers that are allowed on rivers, lakes and streams

Cooler size is limited to maximum 16 quarts, must be able to be securely fastened as to prevent contents from falling out cannot be Styrofoam.

Only one cooler per person is permitted on Guadalupe and Comal Rivers.

No containers constructed of Styrofoam or glass are permitted on or in the public waters of Guadalupe and Comal Rivers.

It is unlawful to dispose of any container into the waters or banks of the Guadalupe or Comal River unless it is an authorized and placed trash receptacle.

No open containers with capacity of 5 oz or less permitted on Guadalupe, Comal Rivers and Lake Dunlap.

(NB) Section 86-15 – Use of life jackets on rivers

Young children and individuals who cannot swim or are poor swimmers are recommended to wear life jackets on the Comal River.

Outfitters shall provide information to customers concerning recommendations and requirements for life jackets

(NB) Section 86-14 – Coolers that are allowed on rivers, lakes and streams

Coolers: not to exceed 16 quarts, must be secured by zipper, Velcro snap, mechanical latch or bungee cord to prevent contents from falling out cannot be Styrofoam

Only one cooler per person is permitted on Guadalupe and Comal Rivers

No containers constructed of Styrofoam or glass are permitted on or in the public waters of Guadalupe and Comal Rivers

It is unlawful to dispose of any container into the waters or banks of the Guadalupe or Comal river unless it is an authorized and placed trash receptacle

No open containers with capacity of 5 oz or less permitted on Guadalupe, Comal Rivers and Lake Dunlap

(NB) Section 86-16 – Rivers, flotation devices, Ord. No. 2007-20, ss II

It is unlawful to float the Guadalupe or Comal Rivers except by canoe, kayak, boat or raft (including inflatable vessels), not exceeding 18' length.

Sat, Sun and holidays: Persons floating on such vessels are not permitted to exit 'last tubers' exit adjacent to Garden St. and Union Ave. between May 1 and October 1.

Rafts (non-inflatable structures used to transport 2 or more) are not permitted on the Comal River.

On the Comal River, inflatable devices are limited to 2 person capacity and cannot be greater than 5' diameter (or have any length of the vessel greater than 5').

(NB) Section 86-100 Requirements for rental of water-oriented recreational equipment

(Ord. No. 01-22. ss II)

There shall be a written record of (name, DOB, address) all those renting water-oriented equipment

(NB) Section 86-101 – Wristband; public exits, City Tube Chute, Prince Solms Park, Hinman Island Park.

(Ord. No. 01-22, ssII)

All persons on these city premises in possession of water oriented rented equipment or using the public exits on the Comal or Guadalupe rivers between Apr 1 and Oct 1 shall wear a city approved wristband

(NB) Section 86-117. - Public river exits

(Ord. No. 01-32, § II, 5-14-01; Ord. No. 2008-29, § III, 4-14-08)

Each water oriented recreation equipment rental customer is required to remit $1.25 river management fee to the city for us of any public river exit unless this fee has already been included as a shuttle passenger fee; this river management fee is valid only for the date that it is collected.

(NB) Section 86-118 – Water recreation shuttles

(Ord. No. 01-32, § III, 5-14-01; Ord. No. 2008-29, § IV, 4-14-08)

Water recreation shuttle permit holders collect and remit to the city $1.25 river management fee for each shuttle passenger transported to the city, unless the fee has already been collected as part of the water oriented recreation equipment rental; this fee is valid only for the date it is collected.

(NB) Section 86-119 – Fee payment; reports

(Ord. No. 01-32, § IV, 5-14-01; Ord. No. 2008-29, § V, 4-14-08)

River management fees are required to be recorded and reported to the city monthly between April 1st and November 1st of each year. Reports are to include, numerical counts for each day, total counts for the month and a calculation of fees based on $1.25 per person. This revenue is directly allocated to the city management of the river.

(NB) Section 86-120 – Penalty

River management fees are required to be submitted to the city within 15 days of the following calendar month; the penalty for failure to comply is a suspension of the water recreation shuttle permit and use of the public river exits.

(NB) Sec. 126-334. - Trailers, time limit

(Code 1961, § 23-140)

Trailers or semitrailers may not be parked or left standing on a public street for one continuous period of more than 30 minutes without authority from the chief of police

(NB) Sec. 126-346. - Stopping, standing or parking prohibited in specified places

(Code 1961, § 23-127; Ord. No. 93-15, §§ 1, 2, 4-12-93; Ord. No. 94-9, § I, 2-28-94; Ord. No. 94-15, § I, 4-25-94; Ord. No. 94-34, § I, 8-22-94; Ord. No. 96-22, § I, 4-8-96; Ord. No. 97-40, § I, 11-24-97; Ord. No. 98-19, § I, 7-27-98; Ord. No. 98-28, § I, 10-26-98; Ord. No. 99-10, § I, 2-22-99; Ord. No. 99-27, § I, 4-26-99; Ord. No. 99-40, § 6-28-99; Ord. No. 99-45, § I, 7-12-99; Ord. No. 99-68, § I, 10-25-99; Ord. No. 00-09, § I, 2-28-00; Ord. No. 2000-44, § I, 11-13-00; Ord. No 2000-54, § I, 11-13-00; Ord. No. 01-25, § I, 4-9-01; Ord. No. 2001-39, § I, 8-13-01; Ord. No. 2001-62, § I, 12-10-01; Ord. No. 2002-13, § 1, 4-8-02; Ord. No. 2002-47, § I, 12-9-02; Ord. No. 2003-37, § I, 5-27-03; Ord. No. 2003-69, § I, 10-13-03; Ord. No. 2004-18, § I, 3-8-04; Ord. No. 2004-36, § I, 5-10-04; Ord. No. 2004-41, § I, 6-14-04; Ord. No. 2005-51, § I, 6-13-05; Ord. No. 2005-83, § I, 11-28-05; Ord. No. 2005-84, § I, 11-28-05; Ord. No. 2006-04, § I, 1-23-06; Ord. No. 2006-19, § I, 2-27-06; Ord. No. 2006-27, § I, 4-10-06; Ord. No. 2006-39, § I, 5-8-06; Ord. No. 2007-40, § I, 5-29-07; Ord. No. 2008-14, § I, 1-28-08; Ord. No. 2008-25, § I, 3-24-08; Ord. No. 2008-72, § I, 11-10-08; Ord. No. 2008-75, § I, 12-8-08; Ord. No. 2009-06, § I, 2-9-09; Ord. No. 2009-42, § I, 7-27-09)

Pedestrians shall not stand nor stop in vehicular areas that will put them in conflict with other traffic.

There is no parking permitted on many of the streets and intersections near and surrounding public access points to the river: streets surrounding Landa Park, Hinman Island, Prince Solms Park and the public tuber exits at Garden Street and Union Avenue. Some locations are restrictive only from 8am to 8pm and from May 1st to September 15th. Other locations are restrictive between 7am and 8pm weekends and holidays from Easter weekend through to Labor Day weekend.

(NB) Section 126-368. - Fifteen-minute parking on Lincoln Street

(Code 1961, § 23-136.1; Ord. No. 2000-46, § I, 11-27-00; Ord. No. 01-25, § III, 4-9-01; Ord. No. 2001-39, § II, 8-13-01; Ord. No. 2003-32, § I, 5-12-03; Ord. No. 2004-39, § I, 6-14-04; Ord. No. 2006-92, § I, 9-25-06; Ord. No. 2009-05, § I, 2-9-09; Ord. No. 2009-42, § I, 7-27-09)

No parking is permitted on the southeast curb of Lincoln Street at Union Ave. for a distance of 710 feet west.

No parking for more than 15 minutes is permitted on the north side of Lincoln from 600 feet west of Union for a distance of 100 feet between 8am and 8pm weekends and holidays from Memorial Day through Labor Day

On certain parts of Liebsher Drive, parking is restricted to water recreation shuttle vehicles (by permit) from 7am – 8pm April 1st to October 31st; these areas are loading zones for such permitted vehicles and are restricted to 15 minutes.

A 15 minutes loading zone is designated for water recreation shuttles on parts of Lincoln Street near Union Avenue, and on Union Avenue near Lincoln Street.

There is no parking on Common Street near Liberty Avenue other than for water recreation shuttles for the purposes of loading and unloading.

Same for Liberty Avenue near the near W. South Street.

(NB) Part II

Chapter 138 – Vehicles for Hire

Article VI – Water Recreation Shuttle Services

Commercial shuttle operators used for water recreation require an annual permit from the city. The number of seats permitted for the Comal River is limited to 1,205 annually, whereas it is unlimited for the Guadalupe River.

By Ordinance, shuttle entry and exit points for the Comal River are restricted to city property: Shuttle Zone at Prince Solms Park Garden Street and Union Avenue tubing exits

(NB) Section 138-2 – Annual permit required

(Ord. No. 01-10, § I, 2-12-01)

An operating permit from the city authorizing transport of passengers for compensation from a point within the city is required.

(NB) Section 138-3 – Transferability of operating permit

(Ord. No. 01-10, § I, 2-12-01)

Operating permits are not transferrable unless approved in writing by the city manager or his designee. Transfers may be made to different operators after all ordinance requirements are met and a fee of $75 collected by the city secretary for administering permit records.

(NB) Section 138-4. - Application for operating permit

(Ord. No. 01-10, § I, 2-12-01)

Applications for a taxicab permit are filed with the city secretary and must be filed before December of each calendar year with the following information: owner(s), address, telephone, make, hp, vehicle identification number, seating capacity, license number of every vehicle to be used for service, evidence of insurance, names, addresses, dates of birth and DL#'s of each driver operating vehicles for the company, schedule of rates, statement that no felony convictions or other offense involving moral turpitude exist which adversely affects the applicant's ability to provide safe and reliable passenger transportation, history of any revocation or suspension of like permits. A fee of $75 plus $10 for each vehicle is collected.

(NB) Section 138-5. - Issuance of permit

(Ord. No. 01-10, § I, 2-12-01)

Upon written proof of insurance and determination all documents for application are met, a permit is issued for period of January 1 to December 31

(NB) Section 138-167 - permit

(Code 1961, ss 25-71; Ord. No. 01-17, ss I, Ord. No. 2005-12, ss I, Ord. No. 2005-30, ss1, Ord. No. 2008-35, ss II)

Guadalupe and Comal River permits are required for operating water recreation vehicles
Limited shuttle zones for Guadalupe River
Guadalupe River Shuttle seats are annually unlimited
Limit of 1,205 Shuttle seats permitted annually for Comal River

(NB) Section 138-170 – shuttle entry/exit points

(Code 1961, ss 25-74; Ord. No. 01-22, ss IX; Ord. No. 01-32, ss VI; Ord. No. 2005-12, ss I; Ord. No. 2005-30, ss I; Ord. No. 2008-29, ss VII)

Comal River entry and exit points on **city property:**
Shuttle zone at Prince Solms Park
Union Street tubing exit
Guadalupe River exit point on **city property:**
Public river exit at Cypress Bend Park

(NB) Part II Chapter 142 – Waterways

(NB) Section 142-2 – powers of city concerning water bodies; responsibilities of property owners

(Code 1961, ss4-4, Ord. No. 01-24,ss I)

the city shall have the power to alter or improve any water body within its limits; no owner of property fronting any river within city limits shall alter any

body of water without first obtaining and permit and without the approval of the city engineer.

(NB) Section 142-3 – Comal River; Guadalupe River

(Code 1961, ss4-2,4-2.1(a),(b))

Rafts, boats or floats are not permitted beyond speed limit of 5 mph on any portion of the Comal River and on the Guadalupe River: between Textile Mill Dam and where the G River meets the city limits (excludes law enforcement and public safety agencies)

Horsepower of motor; exception

On Comal River: no motors rated in excess of 10 hp

This does not apply to any existing franchise, concession, lease or license to operate any boat, float or raft on the Comal.

(NB) Section 142-4 – Methods of fishing

(Code 1961,ss4-3)

Fishing is lawful only by pole & line, casting rod and reel, artificial bait, trotline or set line; seines may be permitted in accordance with state laws or parks and wildlife commission regulations

(NB) Section 142-5Control of aquatic activities on Mill Race (Comal Channel)

(Code 1961,ss 4-5)

It is an offense to enter or engage in any aquatic activity between Landa Park Lake and the confluence with the Comal River (dry Comal Crk)

It is unlawful to launch in water vessel or flotation device on any portion of the same

This does not apply to law enforcement and public safety agencies

(NB) Section 144-5.12 Bowling alleys, dance halls, shooting galleries, shooting ranges, skating rinks, commercial or public tuber entrance or take out facilities, and similar commercial recreation buildings or activities

(Ord. No. 2006-99, ss 1 (exh. A))

No commercial or public tuber entrance or take out facility shall be developed without a special use permit

B. City of San Marcos

Recreation activity on the San Marcos River predominantly occurs along city owned parkland, however, there is also privately owned property where recreation is permitted within their zoning so long as development of recreation within the floodplain is in accordance with the municipal code. These development ordinances, and those that relate directly to activities on and in the water aim to protect the waterways (biological diversity, natural and traditional character) and water quality are reported. All these related ordinances found for the City of San Marcos are reported.

Ordinances that pertain specifically to recreation activities include:

- ordinances pertaining to parks adjacent the San Marcos River: curfew, hunting, fishing, camping, disruptive conduct, restriction of motorized vehicles on trails, possession of alcohol, horseback riding restrictions
-

Ordinances that pertain specifically to activities of the river include:

- prohibition of glass
- Release of any organisms into the waters
- Washing of bodies, pets and personal items are prohibited
- Restriction of activities in Spring Lake
- Prohibition of speargun use
- Jumping into the river from bridges is prohibited
- Restrictions regarding operation of river shuttles: including parking allowances and franchise application detailing routes, stops, seating capacity, parking allowances, documentation of revenue

<u>(SM) Chapter 58 Public Facilities, Parks and Recreation</u>
<u>Article 3 Water Activities</u>

<u>(SM) Section 58.029 Night curfew in city parks</u>
11pm – 6am

<u>(SM) Section 58.030 Disruptive conduct</u>
It is unlawful to remove, destroy, deface, tamper with or disturb any artifact, or cultural feature to take, remove, disturb any rock, soil, gem mineral except by permit.
It is unlawful to mutilate, injure, destroy, pick, cut or remove and any plant life except by permit

(SM) Section 58.032 Motor vehicles

It is unlawful to drive a motor vehicle in a city park area that is not an improved roadway or park in area not designate for such

No motors on trails or bike paths

Abandoning, storing or leaving a vehicle, boat, trailer or other personal property beyond park facility hours if not permitted

(SM) Section 58.033 Possession of alcoholic beverages in certain parks

It is unlawful to possess any alcoholic beverage within 500' of a softball or baseball field, within a children's park, within a fenced area surrounding a city swimming pool

(SM) Section 58.034 Glass beverage containers are prohibited

In any city park

In or on the waters of the San Marcos River

(SM) Section 58.037 Hunting, fishing and camping in city parks

It is unlawful to hunt, harm, harass, disturb trap, confine, catch, possess or remove wildlife from or in city parks

To release any fish, bait-fish, plant or other aquatic organism into the waters of a city park

Fish, grapple or catch and release in an area where fishing is prohibited by sign

No fires unless designated otherwise

No wood gathering

No camping unless otherwise designated

No washing of bodies, clothing, pets or other personal belongings in drinking fountains, pools, sprinklers, reservoirs, lake, river or any other water body in a park

No depositing wastewater, sewage or effluent from sinks, toilets or other plumbing fixtures onto grounds or waters of a city park

(SM) Section 58.040 animals

No riding, driving, leading or saddling of horses without a permit in a city park unless designated a horseback riding trail

(SM) Section 58.067 Using public waters of Spring Lake

Restrict uses to:

Sightseeing, excursion boats, archaeological and scientific projects

(SM) Section 58.068 Possessing of or shooting spearguns in San Marcos River
It is unlawful to possess or shoot a speargun while in or upon the San Marcos River

(SM) Section 58.069 Activities on bridges crossing San Marcos River
It is unlawful to jump or dive into San Marcos River from any bridge crossing the river

(SM) Section 58.072 Bridge construction over river; prohibited entry ; warning signs
During periods of construction over the San Marcos River, city manager may prohibit entry of persons within or along the San Marcos River into the areas, unless contracted to work in the area

(SM) Chapter 90
Article 5 River Shuttles
Division 1. Generally

(SM) Section 90.3903 Restrictions to operation
Written approval of routes and stops, dates and times from city manager ('s office)

(SM) Section 90.310 Franchise required and application
Application to include seating capacity, maps detailing routes, dates of operation, parking allowances for customers, statement of gross revenues generated from river related activities for the previous year, a comprehensive description of type and nature of business

(SM) Section 90.313 Fees
Annual franchise fee valid May 1 – Apr 30

(SM) Chapter 5 – Environmental Regulations
(SM) Section 5.1.1.2 Erosion Control Standards
Preserve natural drainage patterns whenever possible
Limit loss of pervious character of soil
Utilize open surface drainage through grass lined swales
Located stormwater runoff to avoid sinkholes, fractures, faults
Channelizing stormwater permitted by Engineering Director
Dissipate point discharges in sheet flow
Minimize erosion impacts of runoff and control contaminants with sediment control devices

Vegetate detention ponds
Provide internal rock berm baffles in ponds
Trap floating matter in ponds
Provide maintenance access to ponds

(SM) Section 5.1.1.3 Runoff Attenuation
Utilize strategies for energy dissipation, sediment and pollutant traps
Detention required to maintain runoff rates at pre-development levels

(SM) Section 5.1.1.4 Wastewater collection and Disposal
Not permitted in water quality corridors: septic tanks, holding tanks, evapotranspiration units, cesspools or other sewage disposal systems

(SM) Section 5.1.1.5 Impervious Cover Limitations
A percentage is permitted and varies with grade/slope of hillside

(SM) Section 5.1.1.6 Street and Drainage Improvements
Must be designed to 25 year frequency rainfall
Drainage improvement costs at sole responsibility of property owner
Drainage improvements serving multiple developments shall be dedicated to the public
(in an easement that contains all storm water flows to the limits of the 100 year floodplain; drainage improvements serving streets or other public property may dedicated in a public street ROW rather than a drainage easement); Easements must be 25'5" in width for open drainage systems or 15' width for enclosed
Maintenance of drainage easement corresponds with ownership

(SM) Section 5.1.1.7 BMP Improvements Maintenance Criteria
Holder of an approved watershed protection plan is required to maintain any required permanent BMP's after construction; submit an annual maintenance report to Engineering Director

(SM) Section 5.1.1.8 Continuing Responsibilities
Passes on with any transfer of property

(SM) Div.2 Stream and River Corridor Water Quality Standards

(SM) Section 5.1.2.1 Purpose, Applicability and Exceptions
To protect water quality and prevent flood damage, applies to SMRC and Edwards Aquifer recharge zone, exception is a drainage basin of less than 120 acres upstream from development

(SM) Section 5.1.2.2 Water Quality Zones

FEMA mapped waterway & for each stream, river or waterway in SMRC and Edwards Aquifer Recharge zone: 50' extending out from each side of CL of minor waterway, 100' extending out on each side of the CL of intermediate waterway or 100 yr flooplain resulting from full developed conditions in the watershed
Required when a plat is required for development

(SM) Section 5.1.2.3 Buffer zones

= 100' width measured from the outer boundary of the water quality zone, buffer and WQZ not to exceed width of 100 yr floodplain

(SM) Section 5.1.2.4 Impervious Cover Limitations

Not permitted in a water quality zone
Permitted within a buffer zone, dependent on gradients
Exceptions permitted where access (vehicular) across waterway is limited

(SM) Section 5.1.2.5 Clustering and Development Transfers

Clustering of residential density and impervious cover allowed in accordance with Table 5.1.16.1, when approved under a cluster development plan

(SM) Section 5.1.2.6 Performance Standards in Water Quality and Buffer Zones

Shall be stabilized with 70% vegetation/ground cover; areas disturbed shall be restored
Sheet flow point discharges
No fertilizers nor pesticides permitted within water quality zones
Limitations on excavation and fill (see Article 4, Div. 2 Chapt 5)

(SM) Art 3: Development Related to the San Marcos River Corridor
Div. 1: General Provisions

(SM) Section 5.3.1.1

(a)(6) corridor is facing potential for intense development
(10) city Mgr has directed staff to conduct a study of characteristics of the corridor, adverse impact of development activities and how to mitigate
(b) (1) prevent stripping of native vegetation
(2) prevent soil erosion and sedimentation
(3) prevent increase in stormwater runoff
(4) prevent or reduce pollution concentrations
(5) protect biological integrity of SMR habitat
(6) preserve natural and traditional character of the land and waterway

Map of areas located at City Clerk's Office
(d) (1) additional requirements of this article shall not apply to SF detached residence on a properly platted subdivision lot that has been properly platted before the effective date of the ordinance

(SM) Div.2 Development Standards

(SM) Section 5.3.2.1 Ecological Preservation
Restoration of disturbed areas containing native plants shall be approved by Engineering Director.
Stabilization of eroding creek banks is permitted to protect threatened property, as approved by federal and state agencies and the Engineering Director.
Excavating or filling permitted as necessary for structural engineering for a building or structure.

(SM) Section 5.3.2.2 Water Quality Standards
Impervious cover not permitted except for trails for walking, running and non-motorized biking or for access to another public road (within distance limitations of other crossings)
Disposal of contaminants must be approved by Engineering Director and in accordance with the Contaminant Removal Guidelines of the City
Input and release from water quality basins shall utilize grass lined swales and /or overland dispersion measures.

(SM) Section 5.3.2.3 Overland Flow and Natural Drainage
Limit to prevent erosion and attenuate impact of contaminants transported by flow
Open surface drainage via grass lined swales preferred (leave in undeveloped or natural state for runoff to occur); use of streets as central drainage network is prohibited
Storm Sewers
Enclosed and impervious channels by permission of Engineering Director

(SM) Section 5.3.2.4 Velocity Attenuation and Surface Drainage Channels
Channelization of San Marcos and Blanco Rivers and any tributary of the SMR within the SMRC is prohibited

(SM) Section 5.3.2.5 Creation of Impervious Cover
Permitted outside water quality zone, % varies with various slopes

III. GIS DATABASE PREPARATION

Section 1. Data Collection

Recreation use data provided during stakeholder interviews, as described in Section IV, was collected and mapped for the San Marcos River in San Marcos, Texas and the Comal River in New Braunfels, Texas. The San Marcos River study area extends from Spring Lake downstream to the San Marcos City Limit. The Comal River Study area extends from Landa Park to the confluence with the Guadalupe River.

The following data sets were obtained for use in delineation of recreation uses on the Comal River and the San Marcos River. Halff coordinated with the Capital Area Council of Governments (CAPCOG), the City of San Marcos, the City of New Braunfels, Texas Water Development Board (TWDB), Texas Commission on Environmental Quality (TCEQ), and the United States Geological Survey (USGS) to gather available data . The following is a summary of data obtained for the purpose of executing this study effort.

- CAPCOG Aerial Imagery, 0.5 meter resolution, February 2008
- National Hydrography Dataset (NHD) Streams and water bodies, USGS
- San Marcos City Parks, City of San Marcos
- TNRIS Stratmap (TWDB) Parks, Roads, and City Limits
- TCEQ Clean Rivers Water Quality Stations

The Comal County Regional Habitat Conservation Plan Environmental Impact Statement (Draft) was also referenced to delineate areas of potential wildlife habitat of protected species within the study area.

In addition to the basemap data collected as described above, Halff Associates conducted two days of stakeholder meetings to collect recreation use information as discussed in Section I, IV, V, and VI. Recreational activities identified in these meetings are listed in Table 4.

Table 4
Reported Recreation Activity
Swimming
Picnicking
Paddle Boats
Swift Water Rescue Training
Tubing
Fishing
Wading
Rope Swing
Lounging
Playing
RV Campground
Snorkeling
SCUBA
Kayak
Canoe

A limited amount of temporal use data was provided during stakeholder interviews, as described in Section IV. The temporal use data that was collected was presented in terms of intensity, not numerical values. Based upon the data gathered during stakeholder interviews, temporal use data was grouped into four categories of intensity: high, medium, low, and unknown to best describe the intensity of use occurring at the recreation area. Based on the limited data available at this time, no temporal patterns of use intensity were indentified. However, the GIS geodatabase attribute table was prepared such that any future data may be added to the database and analyzed. Entrance and exit locations were also identified and delineated from interviews and surveys. Locations shown are those described by stakeholders during interviews and do not necessarily represent all points of access. Critical habitat areas for the species, as discussed in Section VI, have also been delineated. Tubing, kayak, canoe, and paddleboat vendors were identified from interviews, surveys, and internet data searches. Preparation of the data is discussed in Section 2.

Section 2. GIS Database Preparation

Recreational areas were delineated using ArcGIS version 9.3.1.
A file geodatabase feature class was set up with the attribute fields listed in Table 5.

Table 5		
Attributes – Recreation Area		
Field Name	**Data Type**	**Description**
OBJECTID	Object ID	Unique id
SHAPE	Geometry	Type of feature (Polygon, point, etc.)
LOCATION_ID	Long Integer	Identifier for entries using common SHAPE.
ACTIVITY	Text	Recreation activity reported for the area
INTENSITY	Text	Intensity of recreation activity reported for area
ENTRY_EXIT	Text	Identifies if area is reported as a specific entry/exit area.
NOTE	Text	Additional notes if applicable
SHAPE_Length	Double	Perimeter length of area (feet)
SHAPE_Area	Double	Area of recreation area (square feet)
Public_or_Private	Text	Identifies if area is reportedc as public or private access.

Metadata for the Recreation_Area feature is summarized below:
File Geodatabase: EARIP_Recreation.gdb
Feature Dataset: EARIP_Recreation
Feature: Recreation_Area

-+Coordinate System: NAD 1983 State Plane Texas South Central 4204
Projection: Lambert Conformal Conical
Geographic Coordinate System: GCS North American 1983
Horizontal Datum: North American 1983
The recreation areas were delineated for each type of use reported. The reported recreation areas can be queried and symbolized by activity. Areas reported as specific entry and exit areas are identified in the ENTRY_EXIT field. Additional fields were also included to identify the intensity of use and if the area is for public or private use. These attributes can be updated if information becomes available.

Section 3. Associated Exhibits

The attached exhibits illustrate recreation areas and areas of potential wildlife habitat of protected species. Table 6 summarizes these exhibits. They are grouped by city and further arranged by type of area.

Table 6

Exhibit Index

Exhibit #	Title	Description
	New Braunfels Recreation Areas	
NB.1	Tubing	Identifies areas where tubing occurs in the Comal River.
NB.2	Paddle Boats	Identifies areas where paddle boats are used in the Comal River.
NB.3	Picnic Areas, RV Campground	Identifies areas along the banks of the Comal River where picnic areas and RV Campgrounds occur.
NB.4	Swift Water Rescue Training	Identifies the area where swift water rescue training occurs in the Comal River.
NB.5	Swimming	Identifies areas in the Comal River where swimming occurs.

Table 6 continued

NB.6	Tube, Paddle Boat, Kayak, Canoe Rentals	Illustrates the locations of rentals categorized by tube rental and paddle boat, kayak, and canoe rentals near the Comal River in the City of New Braunfels.
NB.7	Fishing	Identifies areas of fishing along the banks and in the Comal River
NB.8	Wading, Lounging, Playing, Rope Swing	Identifies areas where wading occur in the Comal River and the locations of lounging, playing, and rope swing use occur along the banks.
NB.9	All Uses	Summarizes all of the identified recreation uses along and in the Comal River, all entry/exit areas, and the storm water quality stations.
New Braunfels Potential Wildlife Habitat Areas		
NB.10	Comal Springs Dryopid Beetle, Peck's Cave Amphipod	Illustrates areas of potential wildlife habitat.
NB.11	Comal Springs Riffle Beetle	Illustrates areas of potential wildlife habitat.
NB.12	Fountain Darter	Illustrates areas of potential wildlife habitat.

San Marcos Recreation Areas		
Exhibit #	**Title**	**Description**
SM.1	Dog Parks Tubing	Identifies areas where tubing occurs in the San Marcos River.
SM.2	Fishing	Identifies areas of fishing along the banks and in the San Marcos River.
SM.3	Kayaking, Canoeing	Identifies areas where kayaking and canoeing occur in the San Marcos River.
SM.4	Picnic Area	Identifies areas along the banks of the San Marcos River where picnicking occurs.

Table 6 continued

SM.5	Swimming	Identifies areas in the San Marcos River where swimming occurs.
SM.6	Tube, Kayak, Canoe Rental Locations	Illustrates the locations of rentals categorized by tube rental and kayak and canoe rentals near the San Marcos River in the City of San Marcos.
SM.7	Tubing Dog Parks	Illustrates three locations where dogs are allowed.
SM.8	Wading, Lounging	Identifies areas where wading occur in the San Marcos River and the location of lounging along the banks.
SM.9	All Uses	Summarizes all of the identified recreation uses along and in the San Marcos River, all entry/exit areas, and the storm water quality stations.
San Marcos Potential Wildlife Habitat Areas		
SM.10	Fountain Darter	Illustrates areas of potential wildlife habitat.
SM.11	San Marcos Gambusia	Illustrates areas of potential wildlife habitat.
SM.12	San Marcos Salamander, Texas Blind Salamander, Comal Springs Riffle Beetle	Illustrates areas of potential wildlife habitat.
SM.13	Texas Wild-rice	Illustrates areas of potential wildlife habitat.

IV. STAKEHOLDER INTERVIEWS

Stakeholder interviews were conducted June 29th and 30th 2010. The lists of interviewees were provided by EARIP representatives and city staff in both cities. A questionnaire was provided to all individuals in advance of the interviews. Stakeholders from San Marcos and New Braunfels were comprised of city representatives, river committee members, active river users and commercial operators.

Twenty two (22) stakeholders from San Marcos were sent questionnaires and invited to be interviewed. Eleven responded, and ten (10) attended the interview and answered the questionnaire. One(1) submitted the questionnaire but did not attend the interview.

Thirteen (13) stakeholders from New Braunfels were invited to be interviewed and sent a questionnaire. Nine (9) responded and seven (7) attended the interview and answered the questionnaire. Two (2) submitted the questionnaire but did not attend the interview.

Interviews were conducted by two members of the Halff team and interviewees were scheduled individually or as part of group of not more than three (3) at 30 minute intervals. Questionnaires and maps were made available at the interviews and participants were given the option to respond to the questionnaire during the interview or provide them via email following our dates. The list of questions not only aimed to obtain information directly regarding recreation activity but also peripherally and indirectly to identify potential impacts recreation activities have on the cities, be they economic, operational or physical. Not all individuals provided an answer to every question and answers provided may be based on the perceptioins of the stakeholder and not necessarily factual data. (See Appendices B and C for specific responses)

Responses common to both cities include:

- Peak use occurs between Memorial Day weekend and Labor Day
- During this period, weekends and holiday long weekends have the highest use numbers
- occur between 11am and 4 pm
- The most highly used areas of these springs are along city owned parks that run adjacent the rivers.
- During high use periods, parking is an issue for both these cities
- and the current rate of use of these rivers is having a degrading effect on these surrounding parks
- Litter is a constant maintenance issue

- Despite the crowds and trash, these rivers are highly valued for the economic opportunities, and social as well as health benefits they provide to their respective communities.

A. New Braunfels

Stakeholders from New Braunfels hold their rivers in high regard for the quality of life they provide and as an economic resource. Based on a 2009 economic study commissioned by the City of New Braunfels, tourism contributed $469.7 million in revenue for the area.

There is no definitive study or tracking methodology in place to determine how many people use the river as a recreational resource as it is an open source of recreation without fee. While one respondent perceived between 3000-5000 people per typical weekend during the peak season used the river, another thought there might be three times this many.

Prime activities are tubing and picnicking in the peak season. Hinman Island and the Tube Chute at Prince Solms Park seem to draw the most crowds as they are considered both launch and exit points, but also the surrounding parks offer plenty of free space for picnickers.

Although there is a perception that the parks are overcrowded and the amount of users are negatively impacting the condition of the parks, there is also the feeling that there is a reasonable amount of control on number of (tube) users on the river, as it is monitored by the river manager and commercial (tube) outfitters, who have learned to work together to prevent congestion on the river. The river manager has the authority to prohibit use of the river if he feels there is such numbers to cause safety concerns.

The use of water recreation shuttles is common in New Braunfels. Stakeholders estimated that 50-70% of all tubers use this service. Shuttles provide service to satellite parking lots as well as tuber pick up and drop off points along the river. In the off season, the river is used for swift water rescue training by fire departments from all over Central Texas and beyond.

New Braunfels has ordinances in place to minimize the amount of trash, reduce potential for misconduct on the river as well as protect the users of the river, but some offer that though these are admirable, people find a way around every rule and that there is inadequate enforcement to enforce the rules that exist. The issue of alcohol consumption is an ongoing contentious issue. Alcohol is not permitted to be consumed in public parks, however, once in the water,

standing or floating, consumption cannot be regulated as the river is within the State's jurisdiction. The consumption of alcohol is often enjoyed with recreation on the river; however, many stakeholders commented that they felt it also contributed to altercations and unfavorable public behavior.

Although not ranked by priority, the following table illustrates number of respondents who identified specific issues.

Table 7

New Braunfels Comal Springs River Stakeholder Perceived Issues	of 8 respondents:
Trash / Litter	6
River is Overregulated	4
Behavior	4
Adequate Enforcement (Non-issue)	4
Alcohol	3
Wear on the Landscape / Deterioration of Environment	2
Crowding	1

New Braunfels Stakeholder Interview Responses
June 30, 2010

1. What are the peak times of recreation use: days, seasons, months, holidays, hours?

- *Memorial Day – Labor Day*
- *Weekends / Long weekends, more Saturday than Sunday*
- *Afternoon hours (11am-4pm)*

a) How many people are using the river at these times?

- *Comal: 3,000-5,000 (per typ. Peak season weekend)*
- *Uknown because there is no entry fee*
- *Estimate: 187,000/yr on both rivers over approx. 110 days = approx 1700 people/day*

b) What areas of the river see the highest amount of use?

- *@ Tube Chute*
- *Hinman Island to Last Tubers Exit (@ Union)*

2. Should there be restrictions on times of use or hours of use?

- *Yes, to daylight hours only, as safety factor*

3. Does use have any correlation with water flow or river levels?

- *No, Comal springs brings constant flow*
- *Perception of flooding events around central Texas reduces #'s*

4. Can recreational activities on the river continue at current levels of activity?

- *Mixed response, see below*

a) Why or why not?

- *Yes because recreational outfitters are active about controlling their rate of users*
- *Yes, because habitats are surviving and thriving*
- *No because parks where people access are free and are over-capacity now*

5. If arriving at the river by vehicle, where do people park (private lots, owned by recreation outfitters or other private lots? Street? Public park?).

- *City: Public parks, public owned lots, streets*
- *Private businesses (satellite lots)*

a) Do the majority of recreational users use commercial shuttle buses and are those desirable?

- *50% -70% of tubers use shuttle*

b) How many people (or what percentage of people) arrive at river tubing/raft launch locations by private vehicle versus shuttle bus?

- *60% private*
- *40% shuttle*

c) Is one method of arrival preferable over the other?

- *Shuttle is preferred*

6. Do most users access / launch from public/city owned property or private property?

- *Public:City Parks*

a) Please list all known points of access and launching.

- *Hinman Island*
- *Tubers Chute (Prince Solms)*
- *Wurst Fest (Landa Falls)*
- *Texas Tubes*
- *Resort properties on the Comal*

7. Do most users exit the river at public/city owned property or private property?

- *70% exit on public*

a) Please list all known points of exit.

- *Last tubers/public exit (@Union)*
- *Garden St.*
- *Resort Properties*
- *Rock'n R*

8. What recreational activities other than tubing, rafting and fishing occur along the river?

- *Rope swinging*
- *Camping*
- *scuba*
- *Wading/water play /water lounging/ drinking/sunbathing*
- *grilling/picnicking*
- *swimming*
- *fire dept. swift water rescue training*
- *nefarious activity*

9. What specific locations are most frequented by these other users?

- *Tube Chute*
- *Hinman Island*
- *Landa Park*
- *Wurstfest*

10. What are the positive aspects of recreation on the river?

- *Economic: tourism $, Jobs for young people*
- *Education about the river*
- *Outdoor enjoyment: mental, physical health*

11. What are the negative aspects of recreation on the river?

- *Trash*
- *Negative behavior (3-5% of users cause trouble, of which half are local)*
- *Wear on the landscape*

12. How important are river-based recreational activities to the local economy?

- *Extremely as it is the 'brand' of New Braunfels; impacts everything, not just water related activities*

a) What are its contributions: i.e. sales tax, property taxes, other taxes/fees, spin-off businesses (related revenue sources for the city)?

- *Employment & wages*
- *City & other local taxes from hospitality industry*

b) How much does recreation activity contribute to the local economy? (in $ or % of city revenue)

- *$12 million annually in tax revenue (response closely approximated what was reported by Impact Data Source, 2009)*
- *$469.7 million in 2009 (response closely approximated what was reported by Impact Data Source, 2009)*

13. What is your perception of the level of enforcement on the river? Too much, not enough? Why?

- *Good, sometimes excessive*

14. Is the amount of regulation with regards to activities on the river acceptable? Should there be more? Or less?

- *Less*

a) Are there certain things that should be regulated that aren't currently?

- *Alcohol on the river*
- *Access points aren't managed/controlled*
- *Pop up tents and crowding at access points*

b) Are there certain things that are currently regulated that shouldn't be?

- *No other than: number of coolers per tube and size of ice cooler*

15. What is your perception of the level of maintenance? Too much, not enough? Why?

- *Ok, Acceptable*

16. Are there operational issues with regards to emergency flood situations?

- *None*

Additional Notes:

- *Tubers: 50% rent, 50% bring their own*
- *The amount of negative behavior associated with river activity is within normal range of any 'open source, no price point activity'; placing a $ value on the activity would make a difference*
- *NBU has a wastewater facility that has flooded 3x in the last 12 years: contamination downhill, especially @ Lake Dunlap*
- *A study done in 2008(interviewee did not specify) showed overall positive economic impact of recreation but not as great as thought (see page 63: average daily expenditure per individual)*
- *Regulating alcohol is an ongoing contentious issue*

B. San Marcos

The San Marcos River, as compared to the Comal, has a greater variety of uses in specific zones of the river. Spring Lake, near the San Marcos springs is an area with restricted recreation activities: sightseeing (glass bottom boats), and scuba diving and snorkeling for the purposes of research.. Down river has much greater activity with tubing and swimming as the primary day use activities and canoeing and kayaking as the night time activities. It is informally agreed upon that the kayak / canoe community uses the river during night time hours, in addition to the off-season.

It is unknown as to how many total users there are of the San Marcos River at any given time. Data from year 2000 reported 500,000 people visit the river each year (Greater San Marcos Economic Development Council 2000); it is also reported that there is approximately 2500 kayaks per year that travel the river and that the only tube rental outfitter in town reported to have rented out 29,829 tubes in the year 2005, which estimated to account only for about 50-60% of tubers. These numbers do not account for all others that swim, snorkel, dive, picnic, wade, play, lounge or bring their dogs.

The city has restrictions on hours of use (nighttime curfew: 11pm-6am) for their parks, however, kayakers and canoeists are tolerated during these hours. When asked if there should be restrictions on hours of use of the river, most of those that responded said no while one responded that the hours should be restricted to 6pm when the less desirable users seem to arrive.

Recreation seekers in San Marcos typically arrive by private vehicle and though there is a shuttle in place to transport those who rent tubes back upstream, most people tubing will use the park trails (walk) to return upriver, which is unlike those tubing the Comal River in New Braunfels. It is important to note also that the tube trip in San Marcos is approximately 45 minutes as compared to 2 to 2-1/2 hours on the Comal River in New Braunfels.

Aside from the already stated positive and negative aspects of recreation on the San Marcos River, there is perceived gang activity, social disorder, degradation of the river banks and bed.

It is undetermined as to how much recreation on the river contributes to the local economy but it is an attraction to visitors whose primary focus may not necessarily be recreation on the river. Regardless, visitors contribute to the local economy via patronizing local retail and hospitality services and businesses.

Although the level of law enforcement didn't seem to be an issue, it was reported that there is only one park ranger on staff and part time staff is added

to patrol the parks during peak times. With the growing population and popularity of the river, more law enforcement is welcomed.

San Marcos does not have restrictions regarding litter (food/beverage packaging) type, cooler size, or alcohol consumption in their parks though it was reported that some individuals felt alcohol should be banned and that there should be stricter rules regarding litter including prohibiting Styrofoam containers. In general, it was expressed that maintenance-wise, it was challenging to keep up with the amount of trash generated at these park sites. There is perception that the growing popularity of the river is degrading the surrounding parks and that there is conflicted sentiment about the lack of dredging of the river bed, to remove the wild rice, as once was the practice, with some users perceiving the water not as clean as it once was.

Although not ranked by priority, the following table illustrates number of respondents who identified specific issues.

Table 8

San Marcos Springs River Stakeholder Perceived Issues	of 11 respondents:
Trash / Litter	10
Traffic / Parking	9
Crowding	7
Alcohol	6
Behavior	4
Noise	4
Wear on the Landscape / Deterioration of Environment	3
Dog Feces	3
Information Lacking regarding Natural River & Ecosystem	3
Not Enough Enforcement	3

San Marcos Stakeholder Interview Responses

June 29, 2010

1. **What are the peak times of recreation use: days, seasons, months, holidays, hours?**
   - *Memorial Day to Labor Day*
   - *Weekends/Long weekends*
   - *11am-4pm*

   a) **How many people are using the river at these times?**
      - *Approx 2500 kayaks/ year*
      - *May-Sept 2005: tube rentals: 29,829 (estimate to represent only about 50% of tube users)*
      - *Data from 2000 (Greater San Marcos Economic Development Council): 500,000 visitors/yr*

   b) **What areas of the river see the highest amount of use?**
      - *University & City parks on the river*

2. **Should there be restrictions on times of use or hours of use?**
   - *No*

3. **Does use have any correlation with water flow or river levels?**
   - *No, because the spring is a constant flow*

4. **Can recreational activities on the river continue at current levels of activity?**
   - *No*
   - *Increasing levels each year but somewhat capped by having on 1 tube rental outfitter*

   a) **Why or why not?**
      - *No due to degradation to water quality and parks*
      - *Yes, if it is possible to create a culture of respect and stewardship for the river*

5. **If arriving at the river by vehicle, where do people park (private lots, owned by recreation outfitters or other private lots? Street? Public park?).**
   - *There is current exploration on utilizing a shuttle to/from remote (private) parking lots*
   - *Public: streets, parks, city owned lots*
   - *Private: illegally on TSU campus*

   a) **Do the majority of recreational users use commercial shuttle buses and are those desirable?**
      - *Most people walk the park trails for tubing*
      - *Most arrive to/nr river by private vehicle*

   b) **How many people (or what percentage of people) arrive at river tubing/raft launch locations by private vehicle versus shuttle bus?**
      - *Most arrive at river via private vehicle*

   c) **Is one method of arrival preferable over the other?**
      - *Non motor is preferable*

6. **Do most users access / launch from public/city owned property or private property?**
   - *City Park (90%)*

   a) **Please list all known points of access and launching.**
      - *City Park*
      - *Sewell Park*
      - *Dog Park (San Marcos Plaza)*
      - *All City parks along the river*
      - *Rio Vista*
      - *Immediately south of I-35 (kayaks)*
      - *Stokes Park*
      - *Nr. Water treatment plant/ Animal Shelter Rd.*
      - *Ramon Lucio (ball) Park (dogs)*
      - *Children's Park*

7. **Do most users exit the river at public/city owned property or private property?**

   a) **Please list all known points of exit.**
      - *Rio vista*
      - *Beyond City Limits*

8. **What recreational activities other than tubing, rafting and fishing occur along the river?**
   - *Swimming*
   - *Wading, water lounging (lawn chairs in the water)*
   - *barbecuing/ picnicking*
   - *canoeing, kayaking dog swimming*
   - *Ducky Derby (no longer)*
   - *special olympics (kayak) practice*
   - *junior (kayak) olympics trials (both at Rio Vista*
   - *canoe racing*
   - *tours on glass bottom boats at Spring Lake*
   - *scuba @ Spring Lake*
   - *Power Olympic outdoor kayak courses*

9. **What specific locations are most frequented by these other users?**
   - *Swimming at the Spring Lake Dam (all over but this is the ideal location because of clarity of the water)*
   - *dog swimming at Dog Park (San Marcos Plaza)*
   - *Wading at all park locations: City Park, Sewell Park, Rio Vista Park*
   - *Kayak instruction at Rio Vista Falls*
   - *Canoes at City Park*
   - *All city and university parks*