

Linking Watershed Education and Outdoor Physical Activities Through Communications Technology (QR Codes)

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City of Laredo



- The City of Laredo has an estimated population in excess of 236,091 people (2010 U.S. Census)
- Close to 50% of the population is under the age of 25
- A high percentage of all the households in Laredo still have what's considered a low mean annual income per year, defining Laredo as an Environmental Justice Community.
- Laredo's explosive growth has not only put more stress on the environment, but it has also placed burdens on all local school systems as they try to provide good quality education to this rapidly increasing population.
- The City of Laredo faces high rates of obesity and diabetes.

Chacon Creek Hike & Bike Trail

- ✓ Largest watershed in Laredo- 116 sq miles
- ✓ Walking Trail- 6 miles
- ✓ Since 2007, the City of Laredo has invested about 4 million in the building of this hike & bike trail
- ✓ Currently in Phase 2 of restoration project
- ✓ Phase 3 is expected in May
- ✓ Phase 4- final phase, is expected next year in 2015
- ✓ By the end of all 4 phases, 7.5 million is the estimated investment toward the building and restoration of the Chacon Creek Hike and Bike Trail.



Chacon Creek Hike & Bike Trail

State and federal grant funding is essential for the implementation critical Master Plan improvements.

Chacon Creek Watershed has been negatively affected by:

- encroachment of development into the floodplain
- illegal dumping
- loss of native vegetation due to clearing and invasive species.



Chacon Creek Hike & Bike Trail

Agencies that have been involved in the Chacon Creek watershed projects have been the:

- Environmental Protection Agency
- National Park Service
- U.S. Department of Transportation
- Department of Housing and Urban Development
- Texas Parks and Wildlife
- Army Corps of Engineers.

Laredo city leaders envision the creek offering recreational, educational, and economic opportunities by developing amenities, including a hike and bike trail system and a regional park.



Welcome to the Chacon Creek Bat Colony at Meadow Avenue Bridge

What to Expect

An Amazing Natural Spectacle

Thousands of Mexican free-tailed bats streaming skyward on their nightly journey to eat tons of insect pests.

A Sky Transformed at Sunset

Bats usually begin leaving their roost under the bridge around half an hour before sunset.

A Seasonal Show by Southern Visitors

Bats roost under Meadow Bridge during the warmer months. Most migrate to Mexico for the winter.

Please Respect the Bats

Help these beneficial bats have a safe flight. Don't shine lights at them, distract them with flash photography, or throw rocks or other objects at them.

Keep as quiet as possible so everyone can enjoy the amazing sounds of the bat flight and the surrounding natural area.

Don't touch any bats! A bat landing on the ground may be injured or ill. Keep children and pets away from any grounded bat! If you encounter a bat on the ground, call the City of Laredo Health Department at (956) 795-4902.

Want to learn more about bats?

Visit the website of Bat Conservation International
www.batcon.org



City of Laredo

art by Faith Rumm

Bienvenido a La Colonia de Murciélagos del Arroyo del Chacón en el Puente de la Avenida Meadow

Que le espera ...

Un Asombroso Espectáculo Natural

Miles de murciélagos cola de ratón en su recorrido nocturno hacia el cielo devorando toneladas de plagas de insectos.

Un Cielo Transformarse al Atardecer

Los murciélagos comienzan a dejar sus refugios bajo el puente alrededor de media hora antes de caer la tarde. (puesta del sol)

Un Espectáculo de Temporada con Visitantes del Sur.

Los murciélagos duermen bajo el Puente Meadow durante los meses más cálidos. La gran mayoría migran a México durante el invierno.

Favor de respetar a los murciélagos.

Ayude a estos benéficos murciélagos a tener un vuelo seguro. No les ilumine directamente, no les distraiga con la luz de su cámara fotográfica, no les arroje piedras u otros objetos.

Manténgase lo más callado posible. Para que todos disfruten del maravilloso sonido del vuelo del murciélago y la naturaleza a su alrededor.

No tocar los murciélagos! Si hay algún murciélago en el suelo indica que puede estar lastimado o enfermo. Mantenga a los niños y mascotas alejados! Si usted se encuentra un murciélago en el piso, favor de reportarlo al departamento de Salud de la Ciudad de Laredo al telefono (956) 795-4902.

Le gustaría saber más sobre murciélagos?

Visite la página de internet de Bat Conservation International
www.batcon.org



Ciudad de Laredo

art by Faith Rumm

A Public Treasure

Nightly bat flights from Meadow Avenue Bridge and other highway structures around Texas delight audiences of all ages. Besides providing a fun and educational aerial show, bat roosts under bridges help make our communities better places to live. Bridge-dwelling bats contribute important ecological benefits, including insect pest control. They can also generate local revenue as tourist attractions.

Bats In Bridges

As human activities reduce the availability of caves, dead trees, and other natural roosts, bats increasingly depend on artificial habitats such as bridges and highway culverts for their survival.



Perfect Bat Abode

Deep, narrow crevices running the length of Meadow Avenue Bridge provide bats a protected home with ideal conditions of heat and humidity.



Gentle Insect Eaters

Many different kinds of bats find homes in Texas bridges, but Mexican free-tailed bats make up the colony roosting under Meadow Avenue Bridge. Bat watchers have nothing to fear from these gentle, amazingly sophisticated insect hunters. Be sure to observe them at a distance and never attempt to handle a bat.



batcon.org
**BAT CONSERVATION
INTERNATIONAL**



art by Faith Ruffin

A Farmer's Best Friend

Bats take a big bite out of the swarms of crop-destroying insects that threaten the grains, vegetables and other farm products we depend on for food and clothing. Each night, thousands of hungry bats emerge from under Meadow Bridge and consume tons of insect pests, reducing the need for pesticides.



Beneficial Bats

Bats help people and benefit the environment in numerous ways. Of the more than 1,200 bat species worldwide, many help control insect pests, others pollinate plants and some play a critical role in reseeding tropical forests.



Natural Pest Control

Bats are primary predators of night-flying insects. They consume great quantities of bugs, ranging from backyard pests, including mosquitoes, to destructive moths, beetles and other insects that attack crops and forests.



Seed Dispersers

In tropical forests cleared by logging and other human activities, seeds dropped by fruit-eating bats can account for up to 95% of the "pioneer plants", that begin restoring the forest.



Pollinators

Many of the plant products we use every day owe their existence to pollination by bats, including bananas, avocados, dates, figs, mangoes, cashews and tequila!



batson.org
**BAT CONSERVATION
INTERNATIONAL**



Chacon Creek Education

Project Proposal



- Informative plaques, or signs to be placed at a local creek in Laredo, Chacon Creek Hike & Bike Trail.
- These signs will serve as an educational model tool for the public that is visiting the site.
- The informative signs will show several aspects of what a watershed is and the function of it as well as information on the different types of animals and plants that live along the Chacon Creek trail.

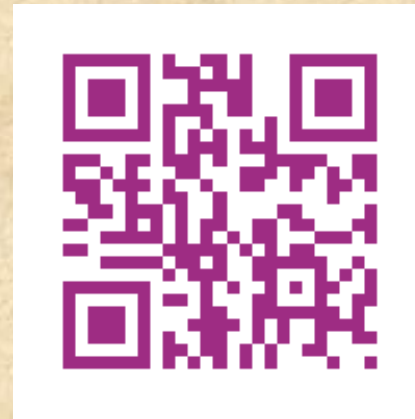
Quick Response Code (QR Code)

- In addition, we would like to input a QR (Quick Response) Code in each plaque.

E-mail



ESD Website



- This specific barcode will be linked to an educational website that we would create for further detailed information on the specific item they are viewing and reading about.

QR Code Application

- With the increase of technology within the community, local schools, and environmental programs, anyone can have access to these barcodes by simply uploading the free application on their tablet, iPhone, or other electronic device.
- The application is called “**QR Scanner**” and by scanning these barcodes with their electronic device, it will send them directly to the educational website, we would create; pertaining to the specific detail on plaque.



Registration

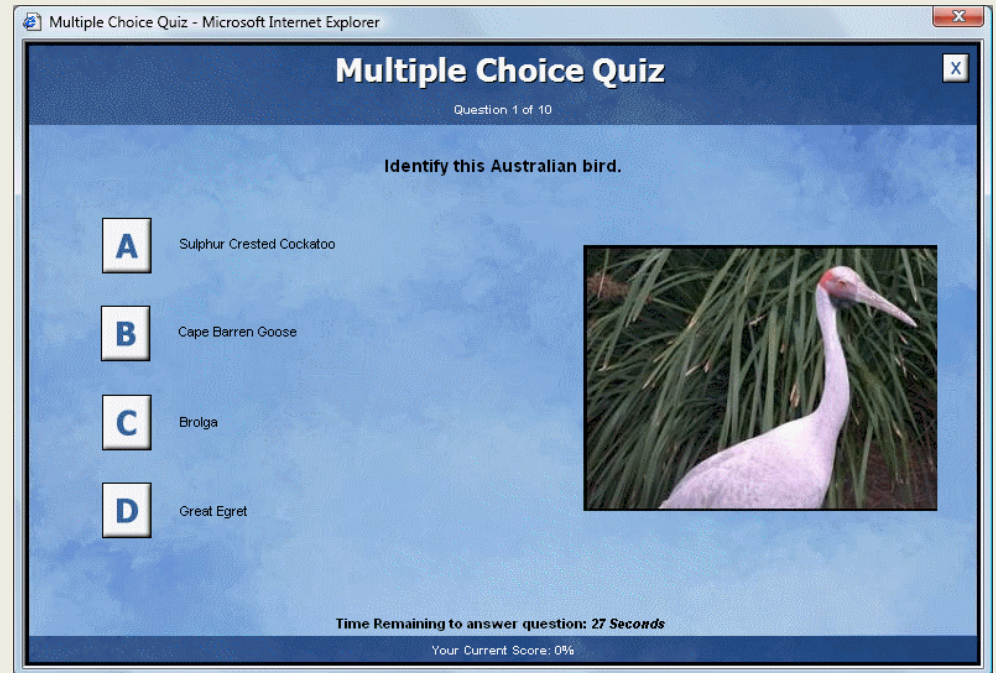
- ❖ Website will prompt them to register with:
 - First name
 - Last Name
 - E-mail Address
 - School
- ❖ Proof of visiting the location and targeting which informative plaque they were viewing at that particular time.

For Example:

Student ID:	<input type="text"/>
	<small>(Student ID is required if purchasing via vouchers... if purchasing on a creditcard, Student ID or email address is acceptable)</small>
First Name:	<input type="text"/>
Last Name:	<input type="text"/>
Semester:	<input type="text" value="Choose A Semester"/>
	<input type="button" value="Enter"/>

Evaluation

- **After they have visited all signs, they will be prompted to take a short multiple choice quiz regarding the information on the signs to test their knowledge regarding the watershed's function, along with its flora and its fauna.**



Certificate of Completion

After they have completed the quiz, with a 100% score, they will receive a Certificate of Completion with their name on it, and can be printed out from website.

CERTIFICATE OF COMPLETION		
<hr/>		
THIS AWARD CERTIFIES THAT		
<Enter Name of Recipient>		
<hr/>		
HAS SUCCESSFULLY COMPLETED		
<enter comments>		
<hr/>		
<small>SIGNATURE</small>	<small><enter title></small>	<small><enter date></small>
<small>SIGNATURE</small>	<small>TITLE</small>	<small>DATE</small>

Incentives

- **Local schools**
 - **Teachers can use this as an incentive for test grades, extra points, or environmental projects.**
- **City of Laredo Departments**
 - **By presenting other departments with the Certificate of Completion, they can provide incentives or rewards of different kinds, such as, discount coupons for gym memberships, general stores, t-shirts, caps, or other services provided.**

ENVIRONMENTAL
SERVICES
DEPARTMENT



Health Issues

- **Great motivational tool!**
- **This project will allow people to exercise without them being aware of it in hopes of completing the trail and gaining incentives.**



Target Audience

- The target audience for this proposal is the general public of all ages which includes students in elementary, middle, high school, teenagers, adults, senior citizens, and people with health issues, such as obesity and diabetes.
- For younger children, it will serve as a sharing experience with their parents as well, since they are the ones who may invite them to this trail and help them complete this activity.





Chacon Creek Hike & Bike Trail



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