

**San Marcos/Texas State University 2015 Work Plan**  
**8 May 2014 Science Committee**

**5.3.1/5.4.1 Texas Wild-Rice Enhancement and Restoration**

Target 2015/Performance Measure: Successful expansion of TWR stands through selective gardening within and around existing stands and plantings where non-native vegetation and silt is removed. These strategies will target a goal of 1100 m<sup>2</sup> total coverage.

2015 Change: Plantings will occur in upper Sewell, Sewell, City and Bicentennial Parks.

EAHCP Section 5.3.1: The City of San Marcos, in partnership with Texas State University, will implement a Texas wild-rice enhancement and restoration program. Model results will be used to identify restoration/enhancement areas for Texas wild-rice that have a high probability of success (*i.e.*, optimal habitat). In mixed (Texas wild-rice and non-native vegetation) stand areas, the non-natives will be removed and the original Texas wild-rice stand monitored for expansion. Similarly, for Texas wild-rice occupied optimal areas with adjacent non-native vegetation, the non-native plants will be removed and the Texas wild-rice stand monitored for expansion. Finally, in optimal areas for Texas wild-rice that are unoccupied by Texas wild-rice, non-native vegetation will be removed and Texas wild-rice plants planted and monitored to assess the potential success of transplants.

Biological goal is 12,000 m<sup>2</sup> broken down between Spring Lake, segment above IH-35 and below IH-35 as shown in Table 4-10

**5.3.6/5.4.4 Sediment Removal**

Target 2015/Performance Measure: Successful removal of 1000 m<sup>2</sup> (and associated volumes) of fine silt and associated non-native vegetation. The 2015 target goal was decreased based the amount of time required to accomplish this measure.

2015 Change: The mesh covering for the intake hose will increase from ¼” to 1” and the amount of sediment removal.

EAHCP Section 5.3.6: The City of San Marcos will remove sediment from the river bottom at various locations from City Park to IH-35. These areas include but are not limited to reaches of the river in City Park, Veramendi Park, Bicentennial Park, Rio Vista Park, and Ramon Lucio Park.

**5.3.8/5.4.12 Control of Non-Native Plant Species**

Target 2015/Performance Measure: *Non-native Aquatic* - Non-native aquatic plant removal will occur in conjunction with sediment removal along with removal within and around TWR stands. The 2015 goal is 1500 m<sup>2</sup> of plant removal.

*Littoral* – The area from Spring Lake to IH-35 has undergone initial removal of elephant ears, so in 2015 all areas will be monitored for regrowth and littoral areas will be planted with natives.

2015 Change: Planting and removal of aquatic vegetation will occur in upper Sewell, Sewell, City and Bicentennial Parks. Removal of littoral invasives is complete. 2015 will focus on removal of re-growth.

EAHCP Section 5.3.8: The City will partner with Texas State University to implement an on-going non-native plant replacement program for the recreational corridor from Spring Lake to city limits. Non-native species of aquatic, littoral, and riparian plants will be replaced with native species to enhance Covered Species habitat.

### **5.3.3/5.4.3 Management of Floating Vegetation Mats and Litter (change is removal of spring lake)**

Target 2015/Performance Measure: Continued implementation of the established protocols.

EAHCP Section 5.3.3: To minimize the impacts of recreation on Texas wild-rice and other Covered Species, the City of San Marcos will perform activities to manage floating vegetation and litter to enhance habitats for Covered Species. Management activities will include removal of vegetation mats that form on top of the water surface as well as on top of Texas wild-rice plants, particularly during low flows, and removal of litter.

### **5.3.5/5.3.9/5.4.11/5.4.13 Non-Native Species Control**

Target 2015/Performance Measure: Contractor will use methods that have proven to be successful in efficient capture of invasive species from Spring Lake to IH-35. Contractor will continue to count and trend captured individuals for all targeted species.

2015 Change: Contractor will also develop an acceptable method of nutria removal.

EAHCP Section 5.3.5: To mitigate the impacts of recreation and pumping from the aquifer during drought, the City of San Marcos will stop or substantially reduce the introduction of non-native species from aquarium dumps.

EAHCP Section 5.3.9: To mitigate the impacts of incidental take by pumping and recreational activities, the City of San Marcos, in partnership with Texas State University, will implement non-native and predator species control for the San Marcos River on a periodic basis with expanded effort of control, if needed, at low flows. The species include suckermouth catfish, tilapia, and *Melanoides* and *Marisa* snails.

### **5.7.1 Native Riparian Habitat Restoration**

Target 2015/Performance Measure: Treat the remaining riparian areas as shown in maps of Sites A & B below.



Site A – 840 linear feet/4,050 square feet



Site B. 3330 linear feet/16,400 square feet

**Existing Invasive Plant Composition in new areas:**

Ligustrum: extreme majority

Paper Mulberry: scattered stands of paper mulberry

Chinaberry: scattered large specimen, large crop of seedlings

Chinese Tallow: scattered large specimen, crop of seedlings

**Native Plantings for new areas:**

<u>Common Name</u>	<u>Plant / Pot Size</u>
Bald Cypress	5 Gal.
Sycamore	5 Gal.
Eastern Persimmon	5 Gal.
Texas Ash	5 Gal.
Arizona Walnut	5 Gal.
Mexican Plum	5 Gal.
Fragrant Sumac	5 Gal.
Cedar Elm	5 Gal.
Red Mulberry	1 Gal.
Palmetto "Brazoria"	5 Gal.
Emory Sedge	4", 1gal
Coral Bean	1 Gal.
Mexican Olive	1 Gal.
Chinquapin	5 Gal.
Carolina Buckthorn	5 Gal.
Nimblewill	1 Gal.
Buttonbush	1 Gal.
Red Buckeye	3 Gal.
Bur Oak	5 Gal.
Bald Cypress	3 Gal. Sapling
Shumard red Oak	3 Gal. Sapling
Chinquapin Oak	3 Gal. Sapling
American Plum	3 Gal. Sapling
Honey Locust	3 Gal. Sapling
Fragrant Mimosa	1 Gal.
False Indigo	1 Gal.
Switch Grass	4", 1 gallon
Inland Sea Oats	4"

2015 Changes: see above maps and tables

EAHCP Section 5.3.8: The riparian zone will be restored to at least 15 meters in width where possible.

EAHCP Section 5.7.1: The City of San Marcos will undertake a program to increase the area of the riparian zone on public lands from City Park to IH-35 using native vegetation. Texas State University will undertake a similar program to restore the riparian zone with native vegetation in upper Sewell Park.

**5.3.2/5.4.2 Management of Recreation in Key Areas**

Target 2015/Performance Measure: Educate the public engaged in water-based recreation on sustainable river use that protects listed species and their habitats. Collect data on recreational activities to determine impacts on listed species and success of HCP measures. The seasonal workers will also conduct miscellaneous cleanup and HCP project maintenance while walking/kayaking. Establish signage at each new access point to educate the public on HCP projects and goals.

EAHCP Section 5.3.2: Recreation control is not meant to curtail recreation for large stretches of the river, but simply within key high quality habitat areas for Texas wild-rice to limit unnecessary impacts during low-flow conditions. To minimize the impacts from recreation, the City of San Marcos will establish permanent river access points. Permanent access will be located at Dog Beach, Lion's Club Tube Rental, Bicentennial Park, Rio Vista Park, the Wildlife Annex, and potentially other areas (as determined through the AMP). Areas between access points will be densely planted with vegetation that discourages streamside access.

Additionally, TPWD will pursue the creation of State Scientific Areas by limiting recreation in these specified areas during low flow conditions. With the exception of the eastern spillway immediately below Spring Lake dam, none of the protected areas would extend across the entire river channel in order to allow longitudinal connectivity for reasonable recreation throughout the river. The City of San Marcos will install kiosks showing access points, exclusion zones, and associated educational components at key locations. To minimize the impacts of incidental take resulting from recreation, the City of San Marcos will implement the Recreation Mitigation Measures adopted by the San Marcos City Council on February 1, 2011 (Resolution 2011-21) (Appendix N)

1. Trespassing Enforcement. The public is accessing the river via private property without the permission of the property owners. Private property owners have requested City assistance through signage to enforce trespassing laws.
2. Buffer zones. Create an appropriate buffer zone by location to keep picnic tables, pop-up tents, shelters, and portable grills away from the river. Pushing these amenities farther away from the river will reduce litter getting into the river and decrease bank compaction/erosion.
3. Education of the river user and the community. Suggestions include:
  - a. Signage. Post signage at the City Park tube rental facility, Rio Vista Falls and at proposed hard access points along the river. Signage will be simple, natural, and when possible the existing sign locations will be used (trying to avoid too many signs). Signs will have the same template and coloration so they are recognized up and down the river. Signs will cover the rules of the river and educate the public on the importance of the resource. All signs will be bilingual.
  - b. Video Loop at City Park offering information about the river and safety rules while people are waiting for shuttle or tubes. Possibly also at Rio Vista Falls.
  - c. Posted maps showing trail, access points, fishing access and other amenities. Include a map at Stokes Park to help inform about the San Marcos River/Blanco confluence.
  - d. Recreation information at hotels/restaurants, bed and breakfast facilities, Chamber of Commerce, Visitor's Center, City of San Marcos internet site, etc. could include information on restrictions so river users are prepared prior to entering the river.
  - e. Park Rangers. Include a section on river biology in the training of the park rangers so they can help disseminate the information.
  - f. School Outreach. Implement an outreach program for San Marcos Consolidated Independent School District (SMCISD) so this information can be relayed to youth in San Marcos and indirectly to the parents.
  - g. Overall Interpretation Plan. This would pull all the informational ideas together for conformity, continuity, and implementation.

h. Lecture series at Texas State University.

4. Reduce turbidity and sedimentation through the establishment of watershed management strategies. This will decrease erosion and subsequent sedimentation and filter runoff to enhance water quality. Remove silt and accumulated sediment from designated areas within the river to more closely match historical conditions.

5. The development of a partnership between the City and the University to enforce suggested measures and educate river users, and the use of officers dedicated to enforcing environmental regulations working both in and along the river.

### **5.7.6 Impervious Cover/Water Quality Protection**

Target 2015/Performance Measure: Continue the implementation of the Water Quality Protection Plan by Texas State University and City of San Marcos incorporating all jurisdictional watershed areas that directly or indirectly impact Covered Species' critical habitat for the purpose of meeting the goals stated in the long-term objective. Include public education, staff integration, four conceptual designs for retrofit water quality projects, grant proposals, and coordination with ongoing stormwater management plans for city and university.

2015 Changes: none – continue implementation

EAHCP Section 5.7.6: The City of San Marcos will establish a program to protect water quality and reduce the impacts of impervious cover (such as through LID). The City of San Marcos will develop criteria and incentives for the program based upon the LID/Water Quality Work Group Final Report (Appendix Q) recommendations for Implementation Strategies and BMPs.

### **5.7.5 Management of Household Hazardous Waste**

Target 2015/Performance Measure: Continue outreach to 1400 participants; contract with two additional part-time personnel to conduct public outreach events and then convert or dispose of the HHW between events. Fund outreach to surrounding communities within the San Marcos River watershed that cannot afford to partner in a HHWC program.

2015 Changes: None

EAHCP Section 5.7.5: The City of San Marcos also will maintain a HHW program that involves the periodic collection of HHW and its disposal.