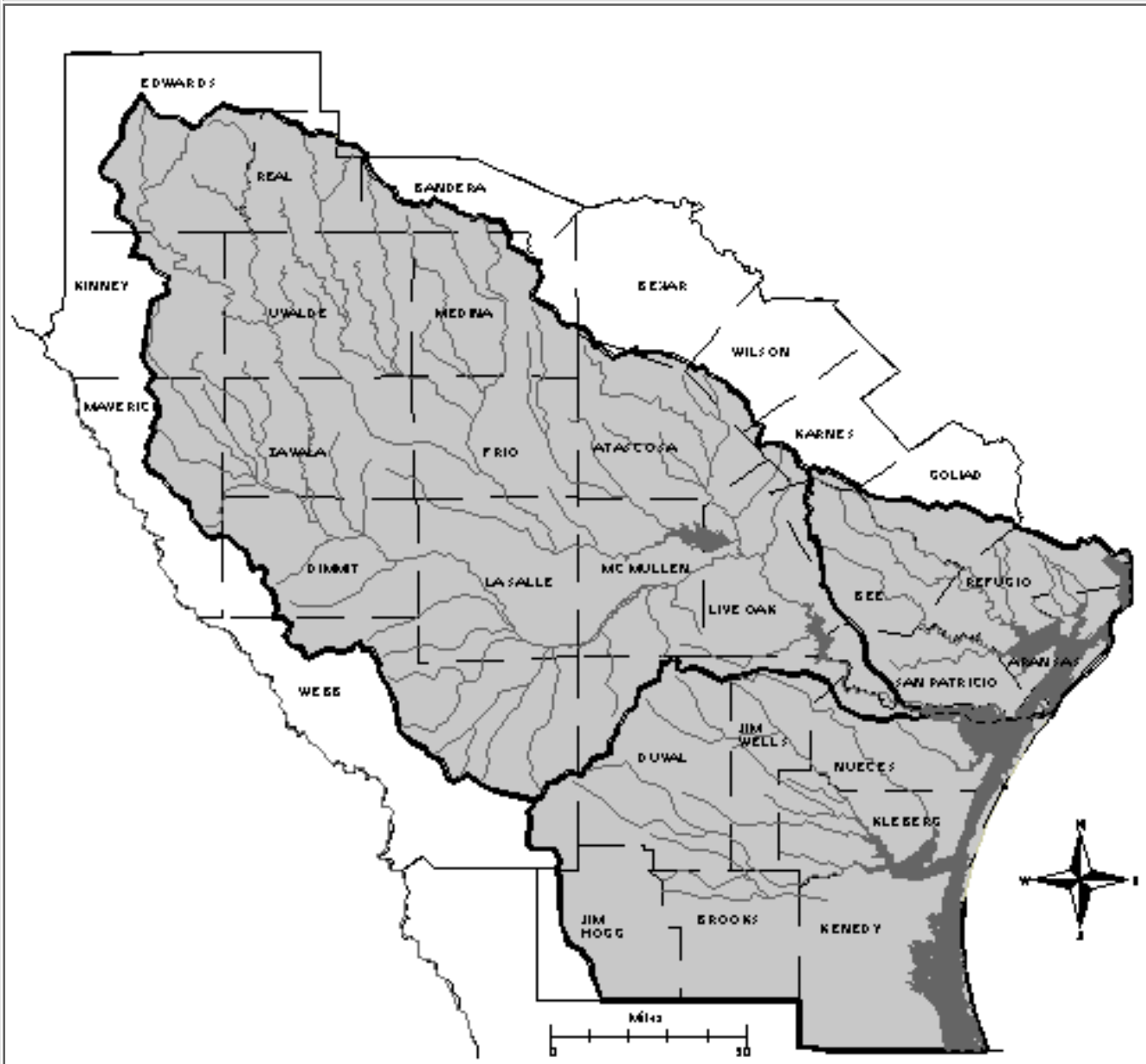
Basin Highlights Report Nueces River Authority May 1998

The Basin Highlights Report provides an update of activities in the Nueces River Basin and the Nueces Coastal Basins.

River Basin & Coastal Basins Joined Together

Figure 1



As of September 1, 1998, the Nueces River Authority (Authority) is the contracting partner for the Nueces Coastal Basins and the Nueces River Basin. The Clean Rivers Program (CRP) in the Nueces Coastal Basins had previously been administered by the Texas Natural Resource Conservation Commission (TNRCC).

The Authority is now administrating the CRP program from the headwaters of the Nueces and Frio Rivers all the way to the Nueces Coastal Basins. A map depicting the area is presented in Figure 1. The new arrangement will improve the ability to study water quality issues affecting the whole area and will provide for improved efficiency where overlaps in tasks had been occurring previously.

Authority Opens Coastal Bend Office in Corpus Christi

The Authority has added an additional staff member as of March 1, 1998. James Dodson, formally with the City of Corpus Christi, has taken on the position of Regional Director of the Nueces River Authority, Coastal Bend Division. The address for the Coastal Bend Division office is:

James Dodson, Regional Director
Nueces River Authority, Coastal Bend Division
TAMU-CC
6300 Ocean Drive, NRC 3100
Corpus Christi, TX 78412
Tel.: (512) 980-3193

Authority Contracts with Texas A&M University - Corpus Christi

The Authority has entered into a second contract with TAMU-CC to assist in completing tasks for the CRP. The data management tasks for the CRP work has been performed by Rocky Freund of the Conrad Blucher Institute at TAMU-CC for several years. The Authority has expanded its relationship with TAMU-CC to acquire assistance with monitoring in the Nueces Coastal Basins. Brien Nicolau of the Center for Coastal Studies at TAMU-CC is coordinating the sampling effort at stations in the Coastal Basins. This is an effort by the Authority to involve local natural resource-oriented entities in the CRP process.

The agreement with TAMU-CC will provide for assistance with routine monitoring as well as targeted monitoring, including a receiving water assessment for San Fernando Creek at the U.S. Naval Air Station. The first CRP sampling event conducted by TAMU-CC occurred in February of this year.

Water Quality Monitoring in the Basins

Separate Quality Assurance Project Plans (QAPP) for all monitoring activities were prepared for the Nueces Coastal Basins and the Nueces River Basin. Sampling and analyses for routine monitoring in the Nueces River Basin continues to be accomplished through an agreement with the San Antonio River Authority (SARA). Table 1 and Table 2 show the monitoring stations. Monitoring is conducted quarterly. All monitoring activities are coordinated with other agencies, in order to prevent overlaps and achieve maximum coverage with the available funds.

Table 1

Segment	County	Station Description
2102	Nueces	Nueces River at Bluntzer Bridge
2102	Jim Wells	Nueces River at LaFruta Bridge
2106	Live Oak	Nueces River at Three Rivers Dam
2106	Live Oak	Nueces River at US 59 East of George West
2107	Atascosa	Atascosa River West of Whitsett
2107	Atascosa	Atascosa River East of Pleasanton
2108	McMullen	San Miguel Creek at SH 16
2117	McMullen	Frio River Near Tilden

Table 2

Segment	County	Station Description
2001	Refugio	Mission River at FM 2678
2002	Refugio	Mission River at US 77

Targeted monitoring activities addressing specific concerns will occur in Oso Bay, the Aransas River above Tidal, the San Fernando Creek, the Atascosa River, and the Upper Frio River. The monitoring activities are further discussed in the next two articles.

2003	Aransas	Aransas River at FM 136
2004	Refugio	Aransas River at US 77
2004	Bee	Aransas River above Skidmore
2462	Refugio	San Antonio Bay at Austwell
2472	Aransas	Copano Bay at SH 35
2472	Aransas	Port Bay at FM 188
2473	Aransas	St. Charles Bay
2483	Nueces	Redfish Bay at SH 361
2485	Nueces	Oso Creek at SH 286
2485	Nueces	Oso Bay at SH 358
2492	Kleberg	San Fernando Creek at US 77

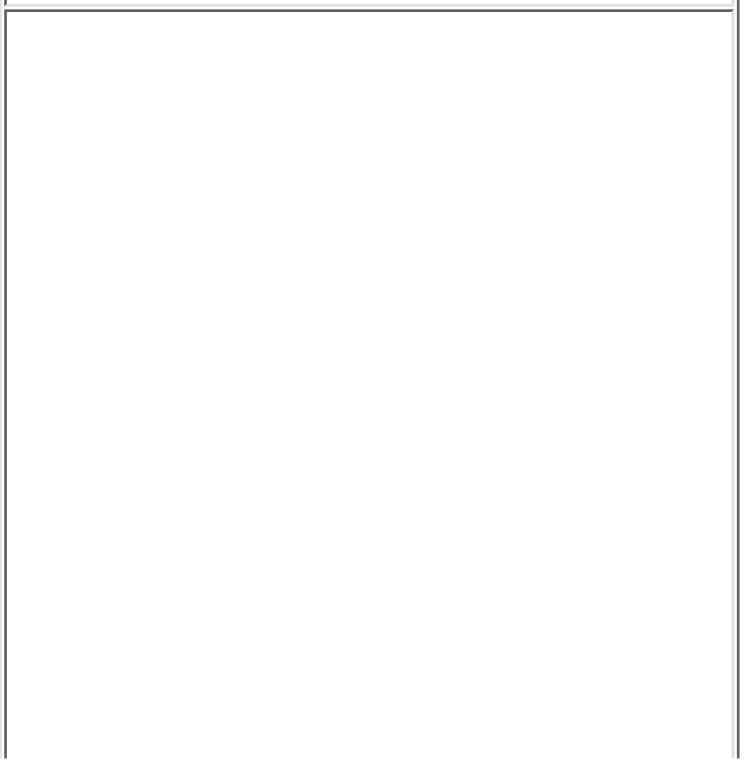
Upper Frio River Found in Good Shape

A targeted monitoring study was conducted on the Upper Frio River. The objective of this study was to evaluate the impact of recreational use and land development in the Upper Frio River on the water quality and the aquatic biological community. Impacts were evaluated through the collection and interpretation of information on land uses and historic utilization, and by conducting biological assessments, toxicity testing, and water quality analyses. The study was limited to a reach from about one mile downstream of Concan to the confluence of the West Frio River and the East Frio River as shown on Figure 2.

The results of the study indicate that recreational uses and the current level of development in the watershed may have a minimal impact on both water quality and the benthic macroinvertebrate community, but the river is, generally, in good condition. Four monitoring stations were established at the locations indicated on Figure 2. The sites were located to provide information about background conditions, conditions at the most extensively used section of the river, and conditions downstream of the extensive use area.

Water quality samples were collected four times in the spring and summer of 1997, in order to characterize impacts during the moderate and high visitation periods of the year (Thursday, April 24, Wednesday-Thursday, May 14-15, Monday, June 16, and Saturday- Sunday, July 5-6). In addition, benthic organisms and samples for toxicity testing were collected during the sample events in May and July. The flow at the U.S. Geological Survey (USGS) gage at Concan (Station 4) over the period of the study was above long-term averages but within the range observed in the previous ten years. The chemical and physical water quality of the study reach of the Upper Frio River was very good and was minimally impacted by recreational usage of the July 4th weekend but remained low at about 1.5 nephelometer turbidity units (NTU).

Figure 2



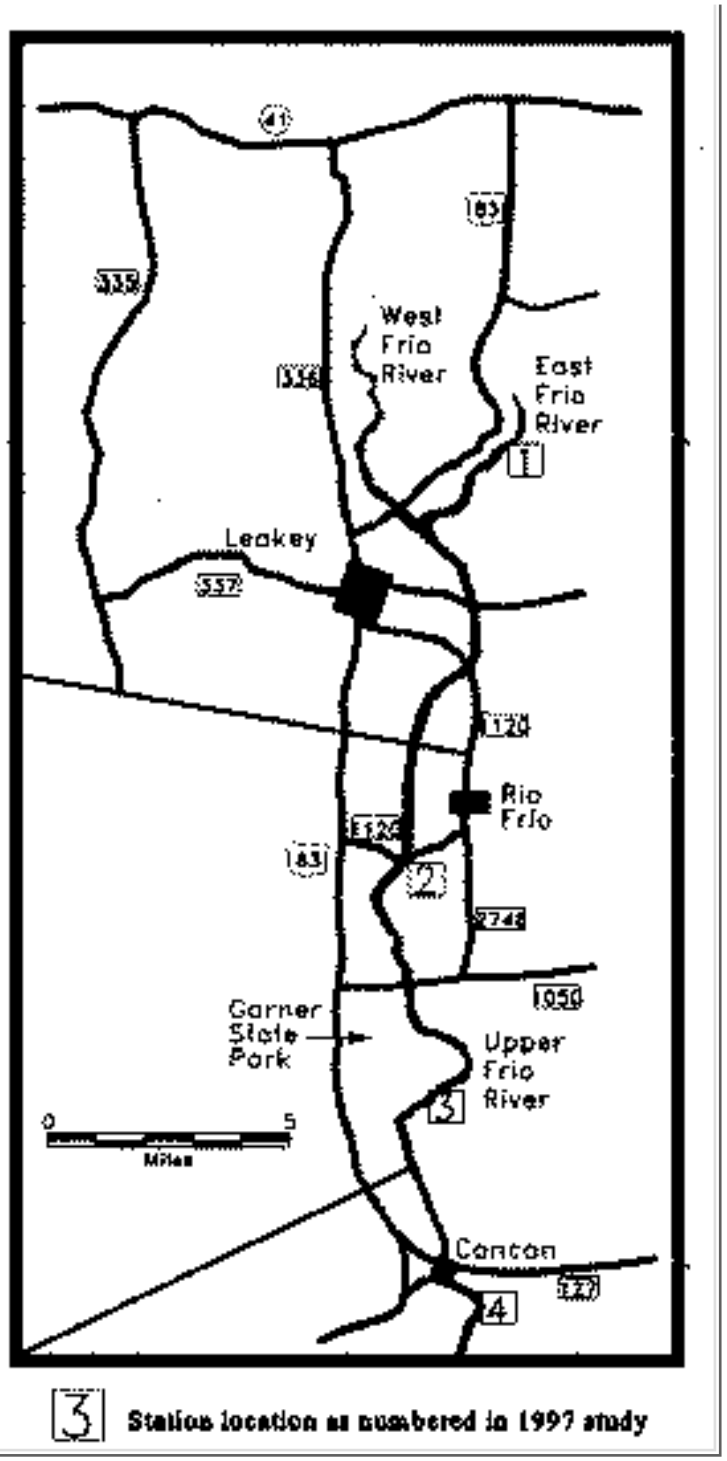
Based on the biological assessments in May, Station 2 was moderately impaired, while Station 3 and Station 4

were non-impaired. In July, all three lower stations were essentially non-impaired, indicating minimum impact from recreational activities. Any impairment is measured relative to the reference station on the East Frio River.

At Station 3 dissolved oxygen values were consistently lower than at the other three locations during all four sampling events. This condition may indicate the presence of a continuous source of oxygen demand such as recreational use, refuse or septic tank effluent seepage in the reach from Station 2 to Station 3. Alternatively, spring flows in this area may have a lower dissolved oxygen concentration. Sewage at Garner State Park is treated and disposed by land irrigation with no direct discharge to the river; therefore, park sewage is not a likely source of oxygen demand.

A follow-up study is underway in an attempt to better understand the water quality conditions in the reach of concern.

During the spring and summer 1997 visitation period, recreational use had little impact on river water quality. Summer visitation was approximately 2.5 times greater than spring visitation. The 1997 spring-early summer period, over which this study was conducted, was characterized by higher than average rainfall and river flow rates. Because of the higher than average flows, these conditions may not represent typical water quality conditions. However, the biological assessment was designed to evaluate long- term water quality conditions, relatively independent of the flow conditions at the time of sampling.



3 Station location as numbered in 1997 study

NRA Internet Site Evolves

The Internet site for the Authority's CRP home page, *www.sci.tamucc.edu/nra*, has evolved to the home page for the Authority. Access to the water quality data, including the data collected by the Authority through funding by the CRP, is available, via links from the home page, or directly at *www.sci.tamucc.edu/nra/dm.html*. The home page consists of an executive summary that includes background information, lists the Board of Directors and staff members, describes its service area and primary activities, and explains the Authority's statutory authority and funding. Reports produced by the Authority will also be made available via the page.

Impaired Water Bodies

The TNRCC, in collaboration with other federal, regional, and local agencies, carries out a regular assessment to determine which water bodies are meeting the standards set for their use and which are not. The agency also assesses whether the water bodies may violate standards in the near future. The results of this effort are published in the *State of Texas Water Quality Inventory*, or Clean Water Act (CWA) Section 303(b) Report. The 305(b) Report and other available data and information on water quality are then used to produce *The State of Texas List of Impaired Water Bodies*, or CWA Section 303(d) List. This list identifies:

- water bodies which do not meet the standards set for their use or are expected not to meet their use in the near future;
- pollutants responsible for the failure of a water body to meet standards; and
- water bodies that are targeted for clean-up activities within the next two state fiscal years.

All water bodies listed on the Section 1998 draft 303(d) List must eventually be cleaned up, if possible. Segments on the 303(d) List in the Nueces River Basin and the Nueces Coastal Basins include:

2471 Aransas Bay
2481 Corpus Christi Bay
2473 St. Charles Bay
2472 Copano Bay
2482 Nueces Bay
2485 Oso Bay

Based on Texas Department of Health shellfish maps, portions of the bays do not support the oyster water use. Nonsupporting areas are restricted or prohibited for growing and harvesting shellfish for direct marketing due to potential microbial contamination.

2484 Corpus Christi Inner Harbor - Dissolved oxygen concentrations are occasionally below the standard established to assure optimum habitat conditions for aquatic life in the Avery and Viola Turning Basins.

The TNRCC is collecting additional data to better define the problem.

2485 Oso Bay - Dissolved oxygen concentrations are occasionally lower than the standard established to assure optimum habitat conditions for aquatic life in the lower portion of the bay.

TAMU-CC has been collecting dissolved oxygen data at various locations in the bay for almost five years. This data will be summarized by TAMU-CC.

The Authority will contract with TAMU-CC to conduct a bacteria study in the bay in order to evaluate bacteria levels over a 12-month period. The study will aid in obtaining a better understanding of the distribution of bacteria and help understand the potential threat to human health.

2201 Arroyo Colorado Tidal
2202 Arroyo Colorado Above Tidal
2202-A Donna Reservoir -
See article: TMDL for the Arroyo Colorado

2002 Mission River Above Tidal - Bacteria levels sometimes exceed the criterion established to assure the safety of contact recreation.
(See note on bacteria below.)

2004 Aransas River Above Tidal - The average level of total dissolved solids is elevated above the criterion in the lower part of the segment.

The Authority will collect additional water quality data to obtain a better understanding of the problem.

2106 Nueces/Lower Frio River - Bacteria levels sometimes exceed the criterion.
(See note on bacteria below.)

2107 Atascosa River - Bacteria levels sometimes exceed the criterion. Dissolved oxygen concentrations are sometimes lower than the standard established to assure optimum habitat quality for aquatic life.

The Authority will conduct an investigation of the segment to obtain a better understanding of the dissolved oxygen concentration and flow during summer low-flow conditions.
(See note on bacteria below.)

2116 Choke Canyon Reservoir - Bacteria levels sometimes exceed the criterion.
(See note on bacteria below.)

2117 Frio River Above Choke Canyon Reservoir - Bacteria levels sometimes exceed the criterion.
(See note on bacteria below.)

Note on Bacteria: The screening procedure identifies bacteria as a concern across the basins. However, it is believed that the screening method is too sensitive. In order to address this, the TNRCC is preparing a study to evaluate bacteria data for the whole state, with the intend to establish a more meaningful way to screen the data and identify areas of concerns.

TMDL for the Arroyo Colorado

Beginning in 1997, the TNRCC initiated a total maximum daily load (TMDL) evaluation for the two classified segments of the Arroyo Colorado, a water body in the Lower Rio Grande Valley in Texas. These two segments are together 90 miles long and traverse Hidalgo and Cameron Counties in far south Texas. The Arroyo Colorado was originally a tributary of the Rio Grande, but extensive modification over the last fifty years has significantly altered the above tidal segment (to serve as a floodway) and the tidal segment (dredged to serve as a waterway to the Port of Harlingen). The Arroyo also serves as a conduit for irrigating return flows in this important agricultural area and receives the wastewater of a dozen municipal and two industrial treatment plants. The Arroyo eventually empties into the Laguna Madre, a critically important water body to the region for both ecological and economic reasons.

The 1996 State of Texas 303(d) List identified nine different impairments for these two segments. In the tidal segment low dissolved oxygen impairs aquatic life use. In the above tidal segment chlordane, toxaphene, and DDE have been found in fish tissue and have resulted in a fish consumption advisory issued by the Texas Department of Health; concentrations of nitrobenzene, isophorone, and bis(2-ethylhexyl) phthalate in water have exceeded the criteria established to protect aquatic life; and bacteria levels have exceeded the criterion established to assure safety of contact recreation. In addition, TDH has issued an aquatic life closure for Donna Reservoir, a 333-acre lake in the upper watershed that

stores water pumped from the Rio Grande, due to elevated levels of PCBs in fish tissue. The TMDL underway will address all of these impairments.

The Arroyo Colorado was one of the first water bodies in the state to be targeted for TMDL development based on the confidence in the existing data that the water body was indeed impaired, the importance of the waterway, the complexity of the watershed, and the variety of impairments.

A TMDL is a measure of the amount of pollution a water body can receive and still meet surface water quality standards for its uses (e.g., aquatic life, recreation, water supply) as established by the state.

The TMDL process culminates in a quantitative assessment of water quality problems and contributing sources, and an implementation plan (watershed action plan) identifying responsible parties and specifying actions needed to restore and protect water quality standards.

Progress to date consists of:

- Stakeholders in the watershed have been notified of the upcoming TMDL and selecting representatives from agricultural, municipal, industrial, aquaculture, recreational, and environmental interests. This group will guide the TMDL process.
- Preliminary discussions have been held with appropriate state and federal agencies who will help to form a Science and Technical Advisory Committee to assist the stakeholder group.
- Approximately $500,000 has been identified and committed. These funds will be used primarily for additional data collection and modeling.
- Existing data is being analyzed.

The development of the TMDL will take an estimated 2-3 years. Although some implementation efforts will occur concurrently with the development of the TMDL, full implementation of the TMDL will begin in the years 2000 and 2001. The time required to complete implementation is dependent on the outcome of the TMDL development and cannot be estimated at this point.

For more information contact Roger Miranda (512) 239-6278 or Gail Rothe (512) 239-4617 at the TNRCC.

Receiving Water Assessment (RWA) for U.S. Naval Air Station Discharge to San Fernando Creek

The Authority is scheduled to perform a RWA of San Fernando Creek during the summer of this year. RWAs are conducted primarily on unclassified streams to determine the appropriate aquatic life use classification. The assessment is based on physical, chemical, and biological characteristics of the stream. The TNRCC has identified San Fernando Creek as a receiving stream that could benefit from additional site-specific water quality information. The information will be useful during the next permitting process for the U.S. Naval Air Station discharge by allowing the permit conditions to be based on actual conditions rather than statewide default conditions.

The RWA assessment will be completed for the Authority by TAMU-CC, with training being provided by the TNRCC.

Wetland Conservation Plan for Mission/Copano Bay Area

The establishment of working partnerships between local governments, agencies, and natural resource personnel has been identified as an integral component in the development of wetland conservation plans. The primary purpose of this demonstration project is to develop a local wetland conservation plan for the wetlands within the Mission/Copano Bay area using the tools contained in *Texas Coastal Wetlands: A Handbook for Local Governments*.

The diversity of wetlands and land uses within this planning area are representative of rural areas along the Texas coast. Therefore, the completed Mission/Copano Bay Wetland Conservation Plan will serve as a model for other Texas coastal communities.

Local governments are concerned with balancing community growth while protecting our remaining natural resources. The planning area of this project encompasses several municipalities in which their citizens depend primarily on agricultural, ranching and small businesses to make a living.

Planning opportunities that seek to incorporate economics and wetland conservation have been limited; however, management strategies designed to streamline evaluation procedures and identify ecologically-sensitive habitats are necessary in planning future community growth. The plan is being developed by the creation of a planning team that includes local government, private citizens, business, and natural resource representatives.

This team has been subdivided into workgroups in relation to identified wetland issues including: wetland restoration and enhancement, wetland mitigation banks, alternate uses of wastewater effluent, shoreline protection, water quality monitoring, environmental education, and ecotourism.

Specific wetland sites are being evaluated for each of these issues within the Mission/Copano Bay planning area, and alternatives will be considered at several public workshops. A wetland draft plan will be developed based upon the alternatives selected by the local government(s), which will be submitted for review and comments to each local government in October 1998. The final Mission/Copano Bay Wetland Conservation Plan will be resubmitted for final adoption by April 1999. Completion of this demonstration project will

- demonstrate the important role of local governments in managing coastal wetlands on a long-term, areawide basis,
- provide a model for other coastal communities
- contribute to the "no net loss" goal for coastal wetlands.

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