

**LIVE OAK
UNDERGROUND WATER
CONSERVATION DISTRICT**

**DISTRICT
MANAGEMENT PLAN**

Mr. Craig Pedersen
Executive Administrator
Texas Water Development Board
1700 N. Congress
Austin, Texas 78711-3231

Dear Mr. Pedersen,

The Live Oak Underground Water Conservation District (LOUWCD) is pleased to submit to the Texas Water Development Board (TWDB) a copy of our adopted Management Plan as mandated by Senate Bill 1 of the 75th Texas Legislature. The Live Oak Underground Water Conservation District Management Plan (LOUWCD MP) was adopted by the LOUWCD Board of Directors at their quarterly meeting on June 11, 1998, by unanimous consent. In addition, a certified copy of the LOUWCD Board of Directors resolution adopting the plan is also attached.

The LOUWCD, established in 1991, has historically had an excellent working relationship with the TWDB and it is our hope that we can count on your support as we implement the enclosed plan, it is the intent of our Board of Directors that we will begin implementation of this plan immediately to facilitate the success of our efforts.

The LOUWCD MP was developed during open meetings of the Board of Directors in accordance with all notice and hearing requirements stated in the District's procedures. Documentation that notice and hearing requirements were followed is presented in a separate attachment.

Recently we provided your staff with a copy of our District Rules. In accordance with the requirements of 36.1071(f) we are attaching an additional copy of the District Rules in a separate enclosure. These District Rules were adopted by the LOUWCD Board of Directors at the regularly scheduled meeting on July 1, 1997, and will be used during the implementation of the LOUWCD MP.

36.1071(g) and TAC 356.6(a)(5) will not be applicable at this time, but will be addressed in five years in 2002 when the LOUWCD MP must be recertified.

The LOUWCD MP will be in force for 10 years from the date of certification. If there is any other documentation we can provide to the TWDB that will ensure the prompt certification of the Live Oak Underground Water Conservation District Management Plan, please do not hesitate to call me or my staff. I look forward to working with you and your staff throughout the implementation of the various elements of Senate Bill 1.

Sincerely,

Scott Bledsoe III

DISTRICT MISSION

The Live Oak Underground Water Conservation District will strive to develop, promote, and implement water conservation, augmentation, and management strategies to protect water resources for the benefit of the citizens, economy, and environment of the district.

TIME PERIOD FOR THIS PLAN

This plan becomes effective upon certification by the Texas Water Development Board and remains in effect until a revised plan is certified or September 1, 2008, whichever is earlier.

STATEMENT OF GUIDING PRINCIPLES

The district recognizes that the groundwater resources of the region are of vital importance. The preservation of this most valuable resource can be managed in a prudent and cost effective manner through regulation and permitting. This management document is intended as a tool to focus the thoughts and actions of those given the responsibility for the execution of district activities.

General Description

The District was created by the citizens of Live Oak County through election, November, 1991. The current Board of Directors are Scott Bledsoe III - Chairman, Mark Katzfey - Vice-Chairman, Lonnie Stewart - Secretary and Treasurer, Mark Riser and Howard Crawford, Live Oak Underground Water Conservation District (LOUWCD) has the same areal extent as that of Live Oak County. The county has a vibrant economy dominated by agriculture and petroleum. The agriculture income is derived primarily from beef cattle production, wheat, corn, sorghum, and cotton, with some sheep and goat ranching.

Location and Extent

Live Oak County, consisting of 1,072 square miles, is located in South Texas. The county is bounded on the east by Bee, San Patricio, and Karnes counties, on the north by Atascosa county, on the west by McMullen County, and on the south by Jim Wells County. George West, which is centrally located in the county, is the county seat. Three Rivers, the only other municipality in the county, is located in the northern portion of the county.

Topography , Drainage and Groundwater Resources of Live Oak County

Live Oak County is on the Gulf Coastal Plain in southern Texas. Most the 1,072 square miles of the county are devoted to farming and ranching which provide the principal income for the 9,000 inhabitants. The production of oil is also an important industry.

The principal water-bearing formations underlying the county are the Carrizo sand, Oakville sandstone, Lagarto clay, and Goliad sand, and range in age from Eocene to Pliocene. The formation dip toward the coast at rates ranging from less than 20 to about 140 feet to the mile.

About 2,150,000 gallons per day of ground water was withdrawn in 1957 from approximately 1,000 wells in the county. Some irrigation, municipal, and stock supplies were obtained from surface-water sources. In Live Oak County the water-bearing sands above a depth of 2,000 feet contain approximately 20 million acre-feet of fresh and slightly saline water. Even though it may be impractical to recover much of the stored water, the rate of withdrawal could be increased several times more than the 1957 rate without appreciably depleting the water available from storage for many decades. A large but unestimated amount of fresh to slightly saline water occurs in the Carrizo sand in the northern and northwestern parts of the county at depths as much as 6,000 feet. Most of the water in the Carrizo sand in Live Oak County is more than 4,000 feet below land surface and therefore is too deeply buried to be economically developed for most uses.

Most of the ground water in Live Oak County is substandard in quality for municipal, industrial, and irrigation uses. However, because better water is not available in most areas in the county, substandard water has been used successfully by users of all three categories. Generally the Goliad sand contains water of better quality than that in any formation except the Carrizo sand. In favorable areas properly constructed wells in the Carrizo, Oakville, Lagarto, and Goliad may yield 1,000 gallons per minute or more. Yields from wells tapping the other water-bearing formations generally are small and the water commonly is suitable only for stock.

Most of Live Oak County is rolling to moderately hilly, although some areas are nearly flat. The altitude ranges from about 460 feet in the southwestern part of the county to about 90 feet near Lake Corpus Christi. The county is drained by the Nueces River and its tributaries, the Frio and Atascosa Rivers, with the exception of a small, elongated area near the Bee County line which is drained by tributaries of the Aransas River.

The water-bearing formations in Live Oak County are continually recharged by the infiltration of a small part of the precipitation, which falls on the more permeable strata. However, most of the precipitation that falls in the county runs off in streams,

evaporates, or is transpired by plants. The remaining water, probably less than five percent, may reach the zone of saturation where it moves slowly toward an area of discharge such as a well, natural outlet, or, under artesian pressure, it may seep or percolate slowly upward into overlying beds.

Surface Water Resources of Live Oak County

There are two surface impoundment's used to supply water other than for livestock consumption, Choke Canyon and Lake Corpus Christi. The average annual supply from these impoundment's is 241,000 acre-feet, however, the calculated firm yield is 252,000 acre-feet. For planning calculations the impoundment's will be assumed to supply 162,500 acre-feet per year by the year 2050. These figures came from the City of Corpus Christi. The owners and operation is the Nueces River Authority and the City of Corpus Christi within all reaches of the Nueces River in Live Oak County. The City of Corpus Christi is the major user of surface water in Live Oak County with the City of Three Rivers and the petrochemical plant, Diamond Shamrock.

Projected Water Supplies of Live Oak County

The total usable groundwater in the district is 5,242 acre-feet. The estimated recharge rate for the Gulf Coast aquifer is 80 acre – feet per year. At present there is no feasible method of artificial recharge.

Data Procurement

All of the data relating to water usage was derived from the Texas Water Plan 96 or the Texas Water Development Board.

Groundwater Use in Live Oak County

During the past five years, annual groundwater usage in the County has varied from a high of 8960 acre-feet to a low of 7,479 acre-feet. Annual usage for the past five years is as follows:

1995	7691	acre-feet
94	7479	acre-feet
93	7769	acre-feet
92	8960	acre-feet
91	8689	acre-feet

Projected Demands for Water in Live Oak County

This management planning document is based upon the estimates provided by the Texas Water Development Board and will be used until alternatives are generated,

The TWDB has projected that the total water demands for Live Oak County will be 9783 acre-feet by the year 2050. This estimate is based on projections of the following breakdown and population statistics. George West will have a demand of 584 acre-feet per year and a population of 3499 by the year 2050. Three Rivers will have a demand of 448 acre-feet per year and a population of 2341 by the year 2050. The projected agricultural demands are 2145 acre-feet per year, projected mining demands are 2915 acre-feet per year, projected domestic and stock demands are 1324 acre-feet per year, and projected manufacturing demands are 1345 acre-feet per year by the year 2050. Total projected demands in 2050 will be 9,783 acre-feet per year. With the exception of Three Rivers and Diamond Shamrock (used both surface and groundwater), all others use is from groundwater.

Potential Demand and Supply Issues

The supply and demand totals for 2050 are as follows:

Groundwater from	
Carrizo Wilcox aquifer	2,399 acre-feet/year
Gulf Coast aquifer	5,242 acre-feet/year
Surface water	162,500 acre-feet/year
Total projected Supply	170,141 acre-feet/year
Total projected Demand	9,783 acre-feet/year
Balance (plus)	160,358 acre-feet/year

The total demand of groundwater is estimated to be 7,641 acre-feet per year by the year 2050 which is the same as projected supply. Projected supply will meet projected demand until the year 2050. A majority of the surface water is contracted already.

Actions, Procedures, Performance and Avoidance for Plan Implementation

The District will implement the provisions of this plan and will utilize the provisions of this plan as a guidepost for determining the direction or priority for all District activities.

All operations of the District, all agreements entered into by the District and any additional planning efforts in which the District may participate will be consistent with the provisions of this plan.

The District will adopt rules relating to the permitting of wells and the production of groundwater. The rules adopted by the District shall be pursuant to TWC Chapter 36 and the provisions of this plan. All rules will be adhered to and enforced. The promulgation and enforcement of the rules will be based on the best technical evidence available.

Methodology for Tracking the District's Progress in Achieving Management Goals

The District manager will prepare and present an annual report to the Board of Directors on District performance in regards to achieving management goals and objectives. The presentation of the report will occur during the last monthly Board meeting each fiscal year, beginning December 31, 1999. The report will include the number of instances in which each of the activities specified in the District's management objectives was engaged in during the fiscal year. The Board will maintain the report on file, for public inspection at the District's offices upon adoption. This methodology will apply to all management goals contained within this plan.

Management of Groundwater Supplies

The District will manage the supply of groundwater within the District in order to conserve the resource while seeking to maintain the economic viability of all resource user groups, public and private. In consideration of the economic and cultural activities occurring within the District, the District will identify and engage in such activities and practices that, if implemented, would result in a reduction of groundwater use. A monitor well observation network shall be established and maintained in order to evaluate changing conditions of groundwater supplies (water in storage) within the District. The District will make a regular assessment of water supply and groundwater storage conditions and will report those conditions to the Board and to the public. The District will undertake, as necessary and cooperate with investigations of the groundwater resources within the District and will make the results of investigations available to the public upon adoption by the Board.

The District will adopt rules to regulate groundwater withdrawals by means of well spacing and production limits. The District may deny a well construction permit or limit groundwater withdrawals in accordance with the guidelines stated in the rules of the District. In making a determination to deny a permit or limit groundwater withdrawals, the District will consider the public benefit against individual hardship after considering all appropriate testimony.

In pursuit of the Districts mission of protecting the resource, the District may require reduction of groundwater withdrawals to amounts which will not cause harm to the aquifer. To achieve this purpose, the District may, at the Boards discretion, amend or revoke any permits after notice and hearing. The determination to seek the amendment or revocation of a permit by the District will be based on aquifer conditions observed by the District. The District will enforce the terms and conditions of permits and the rules of the District by enjoining the permit holder in a court of competent jurisdiction as provided for in Texas Water Code (TWC) §36.102.

**LIVE OAK UNDERGROUND
WATER CONSERVATION DISTRICT
MANAGEMENT PLAN**

MISSION STATEMENT

The mission of the Live Oak Underground Water Conservation District is to protect and assure a sufficient quantity of quality water for our constituents use.

We value:

- *Collection and maintenance of data on water quantity and quality to help control and prevent waste
- *Efficient use of groundwater
- *Conjunctive water management issues
- *Development and enforcement of water district rules concerning conservation of ground water.

GOALS , OBJECTIVES , AND ACTION STEPS

Goal 1.0. Collection and maintenance of data on water quantity and quality to help control and prevent waste.

1.1. Measurement of water quantity and quality

a. Take a measurement of depth to water level below the land surface on strategic wells annually.

Performance standard: 1 well per year

b. Take a water sample for chemical analysis on strategic wells annually.

Performance standard: 1 well per year

Goal 2.0 Efficient use of groundwater

2.1. School education

a. Distribute a water resource education packet for use in the classroom

Performance standard: 1 packet per year

Goal 3.0 Conjunctive water management issues

3.1 Coordinate an emergency response/drought contingency meeting with surface-water entities annually.

Performance standard: 1 meeting per year.

SB-1 MANAGEMENT GOALS DETERMINED NOT -APPLICABLE

Goal

1.0 Control and prevention of subsidence.

The rigid geologic framework of the region precludes significant subsidence from occurring.

Goal

2.0 Cooperative resolution of natural resource management issues.

The district has no documented occurrences of endangered or threatened species dependent upon groundwater resources.

RESOLUTION

Whereas, the Live Oak Underground Water Conservation District has held the appropriate public hearings, and;

Whereas, the District has presented the management plan to the county officials and the Nueces River Authority.

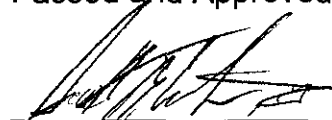
Whereas, the District has followed the rules set forth by SB 1 and the TWDB.

Now, Therefore be it Resolved, that the Live Oak Underground Water Conservation District voted to pass the District management plan.

In favor 5

Against 0

Passed and Approved this 15th day of September, 1998.



Scott Bledsoe III, President

Attest by Lonnie Stewart
Lonnie Stewart, Secretary