

Irion County  
Water Conservation District  
Management Plan

2018 - 2028

Re-Adopted:, 2018



# Irion County Water Conservation District

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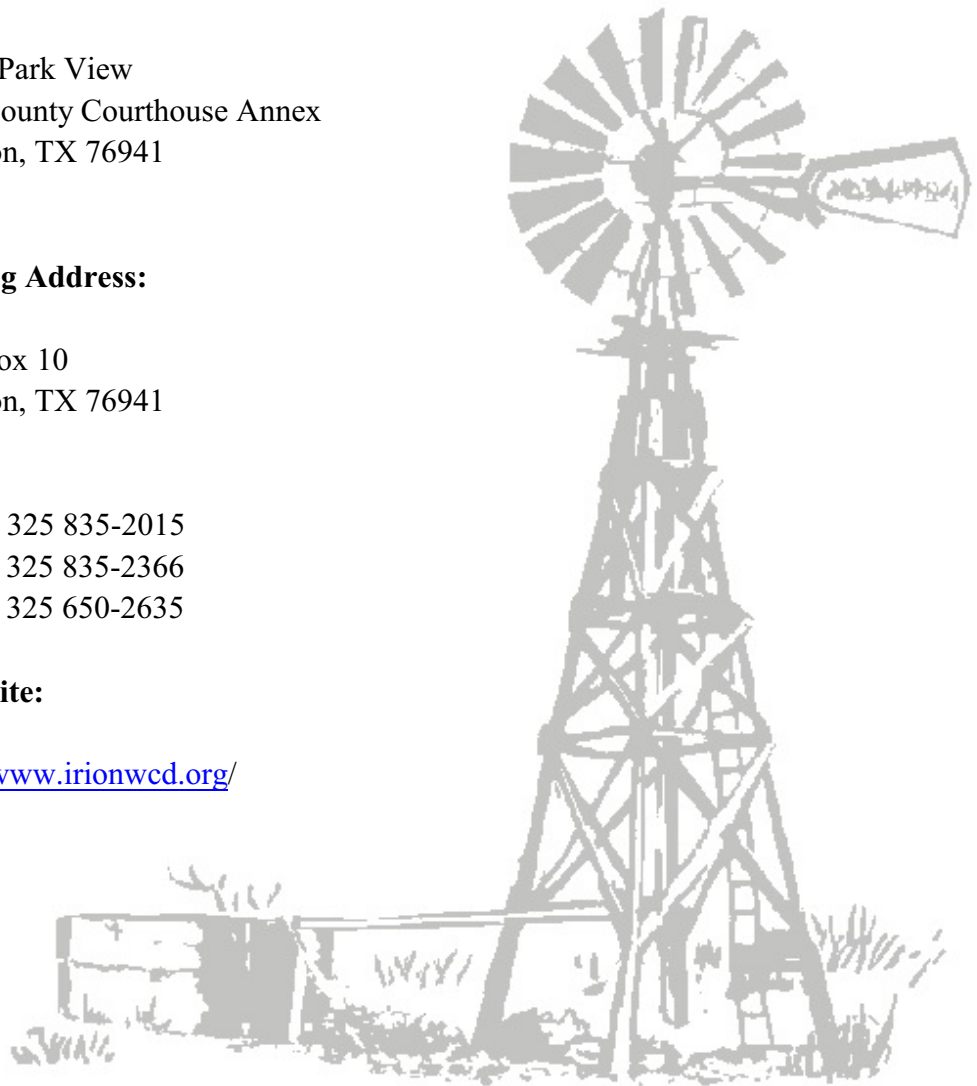
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## **Irion County Water Conservation District Management Plan 2018-2028**

The Irion County Water Conservation District (the “District”) was created by the 69th Texas Legislature under the authority of Section 59, Article XVI, of the Texas Constitution, and in accordance with Chapter 51 and 52 of the Texas Water Code (“Water Code”) as recorded in Section 6, Chapter 65, Acts of the 69<sup>th</sup> Legislature, Regular Session, 1985. In 1995, by Acts of the 74th Legislature, Chapter 52 of the Water Code was repealed and replaced with Chapter 36 of the Water Code effective September 1, 1995. In 2011, by Acts of the 82<sup>nd</sup> Legislature, the enabling legislation for the District was recodified in Texas Special District Local Laws Code Ann. ch. 8845 Irion County Water Conservation District.

The District is a governmental agency and a body politic and corporate. The District was created “to provide for the conservation, preservation, protection, recharge, and prevention of waste and pollution of the district’s groundwater and surface water” consistent with the objectives set forth in Section 59, Article XVI, of the Texas Constitution, and Chapter 36, Water Code. The District is composed of the territory described by Section 6, Chapter 65, Acts of the 69<sup>th</sup> Legislature, Regular Session, 1987, and as that territory has been modified under Chapter 36, Water Code, or other law.

### **District Mission**

The mission of the District is to develop, promote and implement water conservation and management strategies to:

- a) conserve, preserve, and protect the groundwater supplies of the District,
- b) protect and enhance recharge,
- c) prevent waste and pollution, and
- d) to effect the efficient, beneficial and wise use of water for the benefit of the citizens and economy of the District.

The District seeks to protect the groundwater quality and quantity within the District, pursuant to the powers and duties granted under Chapter 36, Subchapter D of the Texas Water Code. Any action taken by the District shall only be after full consideration and respect has been afforded to the individual property rights of all citizens of the District.

The District also seeks to maintain groundwater ownership and rights of the landowners and their lessees as provided in the Texas Water Code §36.002.

### **Purpose of Management Plan**

The 75th Texas Legislature in 1997 enacted Senate Bill 1 (“SB 1”) to establish a comprehensive statewide water planning process. In particular, SB 1 contained provisions that required groundwater conservation districts to prepare management plans to identify the water supply resources and water

demands that will shape the decisions of each district. SB 1 designed the management plans to include management goals for each district to manage and conserve the groundwater resources within their boundaries. In 2001, the Texas Legislature enacted Senate Bill 2 (“SB 2”) to build on the planning requirements of SB 1 and to further clarify the actions necessary for districts to manage and conserve the groundwater resources of the state of Texas.

The Texas Legislature enacted significant changes to the management of groundwater resources in Texas with the passage of House Bill 1763 (HB 1763) in 2005. HB 1763 created a long-term planning process in which groundwater conservation districts (GCDs) in each Groundwater Management Area (GMA) are required to meet and determine the Desired Future Conditions (DFCs) for the groundwater resources within their boundaries by September 1, 2010. In addition, HB 1763 required GCDs, to share management plans with the other GCDs in the GMA for review by the other GCDs.

The Irion County Water Conservation District’s management plan satisfies the statutory requirements of Chapter 36 of the Texas Water Code, and the administrative requirements of the Texas Water Development Board’s (TWDB) rules.

### **Time Period for this Plan**

This plan becomes effective upon adoption by the Board of Directors. The plan remains in effect for ten years with the required review and re-adoption, with or without revisions, every five years.

### **Statement of Guiding Principles**

The District recognizes that groundwater resources are of the utmost importance for the economy for all groundwater users, first for the residents of the District, and then the region. Also recognized is the importance of understanding the aquifers and aquifer characteristics for proper management of these resources. Integrity and ownership of groundwater are also recognized as important for the management of this precious resource.

The primary goal of the District is to preserve the integrity of the groundwater in the district from all potential contamination sources, mainly oil and gas production and related activities. This is accomplished as the District sets objectives to provide for the conservation, preservation, protection, recharge, prevention of waste and pollution, and efficient use of water including:

- a) acquiring additional hydrogeologic data for the aquifers within the District;
- b) protecting the landowner’s right to the beneficial use of groundwater resources beneath his land;
- c) promulgating rules for the protection of all users while maintaining adequate future supplies and;
- d) cooperation with other local GCD to manage shared groundwater resources.

These objectives are best achieved through guidance from the locally elected board members who



understand the local conditions and can manage the resource for the benefit of the residents of the district and region. The District shall seek to ensure that maximum groundwater withdrawals do not exceed amounts that would be significantly detrimental for future residents of the District.

## **General Description**

### **History**

The residents of Irion County, recognizing the benefit of local control of groundwater resources and the importance of protecting the integrity of groundwater from potential contamination from the vast amount of oil and gas production and associated activities, introduced legislation in the 69<sup>th</sup> Regular Legislative Session (1985) for creation of the District. A confirmation election was held on August 24, 1985 with a 72% voter turnout and 97% of the voters approving the creation of the District and taxing authority.

Government of the District is by a five member locally elected board with four single member precincts, based on County Precincts, and one member At Large. The directors serve staggered four year terms which provide the voters an opportunity to voice approval or disapproval of the local management of their groundwater resources and/or the services provided by the District.

### **Location and Extent**

The District has an areal extent of 712,800 acres (1,114 square miles) in Irion and Tom Green Counties located in the west-central part of Texas. Elevation ranges from approximately 2,000 to 2,700 feet above mean sea level. Estimated 2020 population is 1,684<sup>1</sup> including the Irion County Seat, the City of Mertzon, and the unincorporated City of Barnhart. Economy in the District consists of agriculture and oil and gas activities. Agriculture land use is mainly range land with limited crop land. The vast majority of irrigated crop land is along Spring Creek using surface water while there is limited groundwater use in other parts of the District.

The majority of the District overlies the Edwards-Trinity (Plateau) Aquifer. Minor aquifers of Dockum and Lipan are also present. The District is included in the Upper Colorado Region of the Colorado River Basin, Region F Regional Water Planning Group and Groundwater Management Area 7.

### **Regional Cooperation and Coordination**

#### West Texas Regional Groundwater Alliance

Since 1988 the District has been involved in coordination of district activities with other GCD managing the Edwards-Trinity (Plateau) Aquifer. In 1988, four groundwater conservation districts;

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<sup>1</sup> Table 2-1, Historical and Projected Population by County, 2016 Region F Water Plan

Coke County UWCD, Glasscock County UWCD, Irion County WCD, and Sterling County UWCD signed an original Cooperative Agreement. As new districts were created, they too signed the Cooperative Agreement. In the fall of 1996, the original Cooperative Agreement was redrafted and the West Texas Regional Groundwater Alliance was created.

The regional alliance consists of seventeen locally created and locally funded groundwater conservation districts covering all or part of twenty-two counties, that encompass approximately 18.2 million acres or 28,368 square miles, of West Central Texas. This West Texas region is as diverse as the State of Texas. Due to the diversity of this region, each member district provides it's own unique programs to best serve its constituents. Current member districts are:

Coke Co. UWCD	Crockett Co. GCD	Glasscock GCD
Hickory UWCD # 1	Hill Country UWCD	Irion Co. WCD
Kimble Co. GCD	Lipan-Kickapoo WCD	Lone Wolf GCD
Menard Co. UWD	Middle Pecos GCD	Permian Basin UWCD
Plateau UWC & SD	Santa Rita UWCD	Sterling Co. UWCD
Sutton Co. UWCD	Wes-Tex GCD	

This Alliance was created because the local districts have a common objective: to facilitate the conservation, preservation, protection of groundwater supplies, protection and enhancement of recharge, prevention of waste and pollution, and beneficial use of water and related resources. Local districts monitor water-related activities which include but are not limited to the State's largest industries of farming, ranching and oil and gas production. The alliance provides coordination essential to the activities of these member districts as they monitor these activities in order to accomplish their objectives.

#### West Texas Weather Modification Association

In 1996, in response to the resident landowners of seven groundwater conservation districts, the West Texas Weather Modification Association was formed for the purpose of providing weather modification (cloud seeding) for rainfall and recharge enhancement throughout the geographical region of its members. The target area of the Association includes all of seven counties and part of an 8th for a total area of over 5.8 million acres or 9,000 square miles of West Central Texas.

Current membership includes:

City of San Angelo	Crockett Co GCD	Irion County WCD
Plateau UWC & SD	Santa Rita UWCD	Sterling County UWCD
	Sutton County UWCD	

Recognizing the importance of rainfall in the region, this Association was formed to provide benefits from enhanced rainfall which includes a reduction of groundwater withdrawals, increase in runoff, increase in agricultural productivity with the resulting economic impact for the region, provide additional recharge, and increase spring flow. These benefits are not only realized within the region

but also downwind and down stream of the target area.

### Regional Water Planning

The District has been active in the Region F, Regional Water Planning Group meetings to provide input in developing and adopting the 2001, 2006, 2011 and 2016 Regional plans. As the Regional Planning Group moves toward adopting future Regional Plans the District will continue to participate in the planning process.

### Groundwater Management Area

Groundwater Management Area 7 covers all or part of thirty-three counties and includes twenty-one groundwater conservation districts. These GCD's manage groundwater resources at the local level in all or part of twenty-four counties within GMA 7 and surrounding areas. The District continues to actively participate in meetings and discussions to determine a feasible future desired condition of the aquifers within the management area and district.

## **Groundwater Resources**

### **Edwards-Trinity (Plateau) Aquifer**

Edwards-Trinity (Plateau) Aquifer is a major aquifer extending across much of the southwestern part of the state. The water-bearing units are composed predominantly of limestone and dolomite of the Edwards Group and sands of the Trinity Group. Although maximum saturated thickness of the aquifer is greater than 800 feet, freshwater saturated thickness averages 433 feet. Water quality ranges from fresh to slightly saline, with total dissolved solids ranging from 100 to 3,000 milligrams per liter, and water is characterized as hard within the Edwards Group. Water typically increases in salinity to the west within the Trinity Group. Elevated levels of fluoride in excess of primary drinking water standards occur within Glasscock and Irion counties. Springs occur along the northern, eastern, and southern margins of the aquifer primarily near the bases of the Edwards and Trinity groups where exposed at the surface. San Felipe Springs is the largest exposed spring along the southern margin. Of groundwater pumped from this aquifer, more than two-thirds is used for irrigation, with the remainder used for municipal and livestock supplies. Water levels have remained relatively stable because recharge has generally kept pace with the relatively low amounts of pumping over the extent of the aquifer.<sup>2</sup>

### **Dockum Aquifer**

The Dockum Aquifer is a minor aquifer found in the northwest part of the state. It is defined stratigraphically by the Dockum Group and includes, from oldest to youngest, the Santa Rosa Formation, the Tecovas Formation, the Trujillo Sandstone, and the Cooper Canyon Formation. The

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<sup>2</sup> Texas Water Development Board, Report 380, Aquifers of Texas

Dockum Group consists of gravel, sandstone, siltstone, mudstone, shale, and conglomerate. Groundwater located in the sandstone and conglomerate units is recoverable, the highest yields coming from the coarsest grained deposits located at the middle and base of the group. Typically, the water-bearing sandstones are locally referred to as the Santa Rosa Aquifer. The water quality in the aquifer is generally poor—with freshwater in outcrop areas in the east and brine in the western subsurface portions of the aquifer—and the water is very hard. Naturally occurring radioactivity from uranium present within the aquifer has resulted in gross alpha radiation in excess of the state’s primary drinking water standard. Radium-226 and -228 also occur in amounts above acceptable standards. Groundwater from the aquifer is used for irrigation, municipal water supply, and oil field waterflooding operations, particularly in the southern High Plains. Water level declines and rises have occurred in different areas of the aquifer.<sup>3</sup>

### **Lipan Aquifer**

The Lipan Aquifer is a minor aquifer found in parts of Coke, Concho, Glasscock, Irion, Runnels, Schleicher, Sterling, and Tom Green counties in west-central Texas. The aquifer includes water-bearing alluvium and the updip portions of older, underlying strata. The alluvium includes as much as 125 feet of saturated sediments of the Quaternary Leona Formation. These deposits consist mostly of gravels and conglomerates cemented with sandy lime and layers of clay. The formation generally fines upward with conglomerates existing mainly in locations of thicker alluvium. The underlying strata include the San Angelo Sandstone of the Pease River Group and the Choza Formation, Bullwagon Dolomite, Vale Formation, Standpipe Limestone, and Arroyo Formation of the Clear Fork Group. These units are predominantly limestones and shales. Groundwater in the alluvial deposits and the upper parts of the older rocks is hydraulically connected, and most wells in the area are completed in both units. Groundwater flow in the Lipan Aquifer does not appear to be structurally controlled. Higher production wells appear to correspond to alluvial deposits overlying the Choza, Bullwagon, and Vale formations. In these areas, thick alluvial deposits with conglomerates lie near the contact with the Permian. Groundwater in the alluvium ranges from fresh to slightly saline, containing between 350 and 3,000 milligrams per liter of total dissolved solids, and is very hard. Water in the underlying parts of the Choza Formation and Bullwagon Dolomite tends to be moderately saline with total dissolved solids in excess of 3,000 milligrams per liter. The aquifer is primarily used for irrigation but also supports livestock and municipal, domestic, and manufacturing uses. Because of drought and heavy irrigation pumping in the late 1990s, water levels decreased significantly in some areas, and the aquifer could not be pumped through the entire irrigation season. In other areas, however, the aquifer could be pumped, but only at a reduced rate.<sup>4</sup>

### **Technical District Information Required by Texas Administrative Code**

Estimate of modeled available groundwater in District based on desired future conditions. Texas Water Code § 36.001 defines modeled available groundwater as “the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired

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<sup>3</sup> Ibid

<sup>4</sup> Ibid

future condition established under Section 36.108.”

The joint planning process set forth in Texas Water Code § 36.108 must be collectively conducted by all groundwater conservation districts within the same GMA. The District is a member of GMA 7. GMA 7 declared the Dockum and Lipan Aquifers as not relevant for regional planning purposes in the Irion County Water Conservation District on September 22, 2016 and adopted DFCs for the Edwards/Trinity (Plateau) Aquifer on March 22, 2018. The adopted DFCs were forwarded to the TWDB for development of the MAG calculations. The submittal package for the DFCs can be found here: [http://www.twdb.texas.gov/groundwater/management\\_areas/DFC.asp](http://www.twdb.texas.gov/groundwater/management_areas/DFC.asp). \*

A summary of the desired future conditions and the modeled available groundwater are summarized below.

Edwards/Trinity (Plateau) Aquifer: An average drawdown of 10 feet for the Edwards-Trinity (Plateau) aquifer, except for the Kinney County GCD, based on the GMA 7 Technical Memorandum 18-01.

Dockum Aquifer: Not relevant for joint planning purposes within the boundaries of Irion County Water Conservation District.

Lipan Aquifer: Not relevant for joint planning purposes within the boundaries of Irion County Water Conservation District.

Estimated Modeled Available Groundwater in ac/ft for the Edwards/Trinity (Plateau) Aquifer by county from GAM Run 10-043 MAG (Version 2).\*

County	Year					
	2010	2020	2030	2040	2050	2060
Irion	2,293	2,293	2,293	2,293	2,293	2,293
Tom Green	426	426	426	426	426	426

\* Information will be amended when new information is available later in 2018

**Modeled Available Groundwater in the District.**

Please refer to Appendix A

**Amount of Groundwater being Used within the District on an Annual Basis**

Please refer to Appendix B

**Annual Amount of Recharge from Precipitation to the Groundwater Resources within the District**

Please refer to Appendix C

**Annual Volume of Water that Discharges from the Aquifer to Springs and Surface Water Bodies**

Please Refer to Appendix C

**Estimate of the Annual Volume of Flow into the District, out of the District and Between Aquifers in the District**

Please refer to Appendix C

**Projected Surface Water Supplies within the District**

Please refer to Appendix B

**Projected Total Demand for Water within the District**

Projected water demands exceed projected available groundwater for mining in Irion. Please refer to Appendix B

**Water Supply Needs**

Projected supply needs exceed the projected demands for Irrigation and Mining in Irion County. The portion of Tom Green County within the district has sufficient supply to meet demands.

Please refer to Appendix B

**Water Management Strategies**

The district continues to encourage conservation, reuse and weather modification to meet the projected strategies in the TWDB 2017 State Water Plan. Please refer to Appendix B

## **Actions, Procedures, Performance and Avoidance for Plan Implementation**

The District will implement and utilize the provisions of this plan as a guide for determining the direction and/or priority for District activities. Operations of the District and all agreements entered into by the District will be consistent with the provisions of this plan.

The District has adopted rules for the management of groundwater resources and will amend those rules as necessary pursuant to TWC Chapter 36 and the provisions of this plan. The promulgation of the rules will be based on the best technical evidence available. Current rules are available at <http://irionwcd.org/ICWCDRules.pdf>.

The District shall treat all residents with equality. Residents may apply to the District for discretion in enforcement of the rules on grounds of adverse economic effect or unique local character. In granting discretion to any rule, the Board shall consider the potential for adverse effect on adjacent landowners. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board. The District will seek cooperation in the implementation of this plan and the management of groundwater supplies within the District.

## **Methodology for Tracking Progress**

The methodology that the District will use to track the progress in achieving the management goals will be as follows: the District holds a regular monthly Board Meeting for the purpose of conducting District business. Each month the Managers Report will reflect meetings attended, water samples collected and analyzed, water levels monitored, fluid injection permit applications, reports on any school or civic group programs, resulting action regarding potential contamination or remediation of actual contamination, and other matters of district importance.

## **Goals, Management Objectives and Performance Standards**

### **Goal 1.0 - §36.1071(a)(1) Providing the Efficient Use of Groundwater**

#### 1.1. Management Objective

The District will maintain the monitor well network and measure water levels in selected wells.

#### 1.1a. Performance Standard

Number of water levels measured.

### **Goal 2.0 - §36.1071(a)(2) Controlling and Preventing Waste of Groundwater**

#### 2.1. Management Objective

The District will register wells drilled in the district.

#### 2.1a. Performance Standard

Number of wells registered.

### **Goal 3.0 - §36.1071(a)(6) Addressing Drought Conditions**

#### 3.1. Management Objective

The District will monitor the NOAA Climate Prediction Center and the TWDB drought page, <http://www.cpc.ncep.noaa.gov/>, and report quarterly to the board.

#### 3.1a. Performance Standard

Number of times index is reported.

#### 3.2. Management Objective

The District will maintain the rainfall monitor network.

#### 3.2a. Performance Standard

Number of times rainfall network is monitored.

### **Goal 4.0 - §36.1071(a)(7) Addressing Conservation and Precipitation Enhancement**

#### 4.1 Management Objective - Conservation

The District will continue to be a source for available informational materials and programs to improve public awareness of efficient use, wasteful practices and conservation measures including the water conservation best management practices guide presented by the Water Conservation Advisory Council: <http://www.savetexaswater.org/bmp/>.

#### 4.1a. Performance Standard

Number of informational materials and programs provided.

#### 4.2 Management Objective - Precipitation Enhancement



The District will participate in the West Texas Weather Modification Association.

4.2a. Performance Standard  
Number of meetings attended.

**Goal 5.0 - §36.1071(a)(8) Addressing in a Quantitative Manner the Desired Future Conditions of the Groundwater Resources**

5.1 Management Objective

The District will monitor water levels in the monitor water network.

5.1a. Performance Standard  
Number of water levels measured.

**Management Goals Determined Not-Applicable**

**Goal 6.0 - §36.1071(a)(3) Controlling and Preventing Subsidence**

The rigid geologic framework of the region precludes significant subsidence from occurring. This management goal is not applicable to the operations of the District.

**Goal 7.0 - §36.1071(a)(4) Addressing Conjunctive Surface Water Management Issues**

There are no surface water management entities within the District. This management goal is not applicable to the operations of the District.

**Goal 8.0 - §36.1071(a)(5) Addressing Natural Resource Issues**

The District has no documented occurrence of endangered or threatened species dependent upon groundwater. This management goal is not applicable to the operations of the District.

**Goal 9.0 - §36.1071(a)(7) Addressing Recharge Enhancement**

The diverse topography, and limited knowledge of any specific recharge sites makes any type of recharge enhancement project economically unfeasible. This management goal is not applicable to the operation of the District.

**Goal 10.0 - §36.1071(a)(7) Addressing Rainwater Harvesting**

The semiarid nature of the area within the District makes the cost of rainwater harvesting projects economically unfeasible. Educational material and programs on rainwater harvesting are provided by the Texas Agrilife Extension Service. This management goal is not applicable to the operations of the District.

**Goal 11.0 - §36.1071(a)(7) Addressing Brush Control**

The District recognizes the benefits of brush control through increased spring flows and the enhancement of native turf which limits runoff. However, most brush control projects within the District are carried out and funded through the Natural Resources Conservation Service (NRCS) and ample educational material and programs on brush control are provided by the Texas Agrilife Extension Service. This management goal is not applicable to the operations of the District.

**Appendix A** - GAM Run 10-043 MAG (Version 2)

**Appendix B** - Estimated Historical Groundwater Use and 2017 State Water Plan Datasets: Irion County Water Conservation District

**Appendix C** - GAM Run 12-017: Irion County Water Conservation District Management Plan

**Appendix D** - District Rules

**Appendix E** - Resolution Adopting the Management Plan

**Appendix F** - Evidence of Notice and Hearing