

# ANNUAL REPORT 2018

LONE STAR GROUNDWATER CONSERVATION DISTRICT



# Table of Contents

DISTRICT INFORMATION .....	3
MANAGEMENT .....	4
BOARD OF DIRECTORS.....	5
Committee Assignments .....	5
MANAGEMENT GOALS.....	7
OBJECTIVES and PERFORMANCE STANDARDS .....	7
Goal 1: Addressing the Desired Future Conditions Adopted by the District Under Texas Water Code Section 36.108 .....	7
Goal 2: Providing the Most Efficient Use of Groundwater .....	11
Goal 3: Controlling and Preventing Waste of Groundwater .....	15
Goal 4: Controlling and Preventing Subsidence .....	17
Goal 5: Addressing Conjunctive Surface Water Management Issues.....	20
Goal 6: Addressing Natural Resource Issues .....	21
Goal 7: Addressing Drought Conditions .....	22
Goal 8: Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, or Brush Control Where Appropriate and Cost Effective .....	24
GROUNDWATER MANAGEMENT AREA 14.....	9
PUBLIC OUTREACH .....	13-14
FINANCIAL SUMMARY .....	27

## CREATION

In 2001, the 77th Texas Legislature, through House Bill 2362, authorized the creation of the Lone Star Groundwater Conservation District (LSGCD). Montgomery County voters then confirmed the District's creation on November 6, 2001, with 73.85 percent of the vote.

Since its creation, LSGCD has carried out its statutorily-mandated functions to conserve and protect groundwater resources in Montgomery County, and has developed a system to ensure that the groundwater supply in Montgomery County will remain a sustainable resource for years to come.

## MISSION

The Lone Star Groundwater Conservation District is committed to managing and protecting the groundwater resources of Montgomery County and to working with others to ensure a sustainable, adequate, high quality and cost-effective supply of water.

LSGCD's regulatory system was developed through a public process and allows flexibility among water users in how they go about achieving compliance with LSGCD's rules and groundwater reduction requirements.

LSGCD 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 Montgomery County. The preservation of this most valuable resource can be managed in a prudent and cost-effective manner through conservation, education, management, and permitting.

## LOCATION & EXTENT

The Lone Star Groundwater Conservation District is located in Montgomery County, in southeastern Texas. Its boundaries are coterminous with the boundaries of Montgomery County, Texas. The District is bordered by Walker County to the north, San Jacinto and Liberty Counties to the east, Harris County to the south, and Waller and Grimes Counties to the west.

Peach Creek is the boundary with San Jacinto County, and Spring Creek forms most of the boundary with Harris County. LSGCD comprises an area of approximately 1,090 square miles.



### DISTRICT OFFICE

655 Conroe Park North Drive  
Conroe, Texas 77303  
(p) 936-494-3436  
(f) 936-494-3438

[www.LoneStarGCD.org](http://www.LoneStarGCD.org)



## KATHY TURNER JONES

### General Manager

**K**athy Turner Jones is a native Texan, having lived the majority of her life in the Lubbock area before moving to Montgomery County. Ms. Jones earned a Bachelor of Arts and Sciences in Business with a Finance Minor from the University of the Southwest in Hobbs, New Mexico, graduating Summa Cum Laude. She recently completed a Master of Science at Texas A&M University in the Water Management and Hydrological Science Program.

Bringing twelve years of experience in groundwater management, Ms. Jones was named General Manager of the Lone Star Groundwater Conservation District in 2002. There, she has led, and continues to lead, the District in its ongoing mission to conserve, protect, and preserve the groundwater resources of Montgomery County—one of the fastest-growing counties in the nation—currently touting a population of about a half a million residents. Under her

direction, the District established offices in Conroe, developed a core staff, created a well-permitting and registration system, while continually motivating public interest in good groundwater management practices. Ms. Jones has spearheaded many data-driven initiatives over the last decade, increasing the available hydrological research relevant to the area. These initiatives have also included advancements for engineering planning, water usage and water supply analysis, and appropriate, cost-effective regulatory policies.

Ms. Jones serves on several committees, including: Member on Region H Water Planning Group; Chair of GMA 14 Joint Planning Group; Member on Texas Groundwater Protection Committee. She is also an appointment member on the Trinity and San Jacinto and Galveston Bay Basin and Bay Area Stakeholder Committee. Ms. Jones serves as a Trustee for the Texas Water Conservation Association Risk Management Fund and as an Executive Board Member for the Texas Water Conservation Association. She additionally served as president of the Texas Alliance of Groundwater Districts for two terms.



## SAMANTHA REITER

### Assistant General Manager / Permitting Director

**S**amantha Reiter was born and raised in Round Rock, Texas. She moved to Montgomery County in 2010 and began her career with Lone Star Groundwater Conservation District. Ms. Reiter earned both an associate degree from Blinn College in Bryan and a Bachelor of Arts degree from Texas A&M University. Ms. Reiter has held a variety of positions with the District, getting her start in 2010 as the Executive Administrative Assistant to the General Manager and worked her way up to Permitting Director in 2012. Ms.

Reiter was recently promoted to Assistant General Manager in July 2017. In addition to her duties as Assistant GM, Ms. Reiter continues to manage the permitting department and oversees the District's GIS and online permitting database. She is also the District's Public Information Officer. Ms. Reiter prides herself on being well versed on the District's rules and regulations as well as staying in tune with legislative changes to groundwater laws in Texas. She is a graduate of Leadership Montgomery County (Class of 2015) and is also involved with the Montgomery County Fair & Rodeo.



**Rick Moffatt**  
President

*Represents MUDs East of Interstate 45 | Term Expires Jan. 31, 2019*



**James M. Stinson, PE**  
Vice President

*Represents Woodlands Joint Powers Agency | Term Expires Jan. 31, 2019*



**Gregg Hope**  
Secretary

*Represents Montgomery County | Term Expires Jan. 31 2019*



**W.B. Wood**  
Treasurer

*Represents Soil & Water Conservation District | Term Expires Jan. 31 2019*



**John D. Bleyl, PE**  
Member

*Represents City of Conroe | Term Expires Jan. 31, 2021*



**M. Scott Weisinger, PG**  
Member

*Represents all cities except Conroe | Term Expires Jan. 31, 2021*



**Jace Houston**  
Member

*Represents San Jacinto River Authority | Term Expires Jan. 31, 2021*



**Roy McCoy, Jr.**  
Member

*Represents MUDs West of Interstate 45 | Term Expires Jan. 31, 2019*



**Webb Melder**  
Member

*Represents Montgomery County | Term Expires Jan. 31, 2021*

The Lone Star Groundwater Conservation District was created to develop, promote, and implement water conservation, augmentation, and management strategies to protect groundwater resources for the benefit of the citizens, economy, and environment of Montgomery County, Texas. To fulfill this directive, the Board of Directors adopted rules on August 26, 2002, to regulate the drilling and operation of water wells in Montgomery County and to set fees for the production of groundwater.

The Board of Directors of the Lone Star Groundwater Conservation District represent the various water interests of Montgomery County. The Board meets monthly at the District offices to dispense with District business including the approval of well permits, decisions on rules and by-laws, and progress reports on District committees.

## Committee Assignments

### Budget & Finance

- Billy Wood, Chair
- Gregg Hope
- Jim Stinson
- Webb Melder

### Policy & Personnel

- Jace Houston, Chair
- John Bleyl
- Rick Moffatt
- Jim Stinson

### Rules & By-Laws

- Jim Stinson, Chair
- Scott Weisinger
- Billy Wood
- Rick Moffatt

### Water Awareness & Conservation

- Billy Wood, Chair
- Scott Weisinger
- Webb Melder
- Roy McCoy

### Findings & Review

- Rick Moffatt, Chair
- Gregg Hope
- John Bleyl
- Jace Houston

### Executive Committee

- Rick Moffatt, Chair
- Billy Wood
- Jim Stinson
- Gregg Hope

### Professional Services Committee

- Jace Houston, Chair
- John Bleyl
- Gregg Hope
- Scott Weisinger

In 2017, during the 85th Session of the Texas Legislature, House Bill 1982 was authored by Representative Will Metcalf and sponsored by Senator Brandon Creighton to amend Lone Star Groundwater Conservation District's enabling legislation. The amendment changed the existing enabling legislation from an appointed nine-person board of directors to a seven-member elected board. The elected board would be

comprised of: one elected member from each county commissioner's precinct (four total); one elected at-large member by county-wide vote; one elected member by City of Conroe voters; and one elected member by voters of The Woodlands Township. HB 1982 also amended the legislation to prohibit a director from serving more than three full terms and became effective with the November 6, 2018 General Election.

## NOVEMBER 2018

### *ELECTED DISTRICT BOARD OF DIRECTORS:*

#### **Stuart Traylor, Place 1**

- Term expires 12/01/20
- Voting Jurisdiction: County Precinct #1

#### **Jon Paul Bouché, Place 3**

- Term expires 12/01/22
- Voting Jurisdiction: County Precinct #3

#### **Harry Hardman, Place 5**

- Term expires 12/01/20
- Voting Jurisdiction: County At-Large

#### **Larry A. Rogers, Place 7**

- Term expires 12/01/22
- Voting Jurisdiction: The Woodlands Township

#### **Jim Spigener, Place 2**

- Term expires 12/01/22
- Voting Jurisdiction: County Precinct #2

#### **Jonathan Prykryl, Place 4**

- Term expires 12/01/22
- Voting Jurisdiction: County Precinct #4

#### **Webb Melder, Place 6**

- Term expires 12/01/20
- Voting Jurisdiction: Conroe

The newly elected Board of Directors were sworn in on November 16, 2018 following a Special Board Meeting whereby the election was canvassed, and Certificates of Elections were signed and distributed. The elected Board of Directors held their first meeting immediately following the Special meeting and acted to appoint Director Webb Melder as Board President; Director Harry Hardman as Board Vice President; Director Stuart Traylor as Board Secretary; and Director Jim Spigener as Board Treasurer.

## SUCCESSFUL ACHIEVEMENT OF 2018 MANAGEMENT GOALS

The 75th Texas Legislature in 1997 enacted Senate Bill 1 (SB1) to establish a comprehensive statewide water planning process. In particular, SB1 contained provisions that required groundwater conservation districts to prepare management plans that identify the water supply resources and water demands, which will shape the decisions of each district. SB1 designed the management plans to include management goals for each district to manage and conserve the groundwater resources within their boundaries.

Each year, the District is charged with providing evidence of the District's progress in achieving the management goals set forth in the District's Groundwater Management Plan. The evidence of the District's progress toward each goal is included in this Annual Report and made available to the public after adoption by the board of directors. This report is intended to fulfill the requirement of the District's Groundwater Management Plan of complying with the achievement of management goals as outlined herein.

## OBJECTIVES AND PERFORMANCE STANDARDS

### *GOAL 1: ADDRESSING THE DESIRED FUTURE CONDITIONS ADOPTED BY THE DISTRICT UNDER TEXAS WATER CODE SECTION 36.108*

The District seeks to protect the Gulf Coast Aquifer, the economy and environment of Montgomery County, and private property rights for today's constituents and for future generations. Therefore, the umbrella goal for the District, to which all other goals in this management plan are linked, is to manage the groundwater resources so that, in the near future, the amount of groundwater produced from the Gulf Coast Aquifer is no more than the average annual effective recharge to the Gulf Coast Aquifer System. Only upon achievement of this equilibrium will the water resources for Montgomery County be managed on a truly sustainable basis.

In order to achieve sustainability in the use of the Gulf Coast Aquifer in Montgomery County, the District has adopted Phase II (B) of the District Regulatory Plan (DRP). The DRP Phase II (B) is designed to provide the actual regulatory requirements for achieving a long-term sustainable rate of groundwater production within Montgomery County—beginning with an initial groundwater reduction and conversion effort that is required to be met by 2016. As part of those requirements, Phase II (B) requires each Large-Volume Groundwater User (those using 10 million gallons per year and above) ("LVGU") in the District to submit a Groundwater Reduction Plan ("GRP"), either

individually or jointly with other LVGUs. It also establishes regulatory milestones designed to allow for the initial phase of conversion from groundwater to an alternative water source, generally consistent with the underlying conversion assumptions set out in Phases I and II (A) of the DRP.

The primary purpose of a District Management Plan is to develop goals, management objectives, and performance standards that, when successfully implemented, will work together to achieve the adopted Desired Future Conditions ("DFCs") for a district. In this management plan, the District's second management plan update, Goals Two through Eight directly and/or indirectly support Goal One.

## OBJECTIVE 1.1

Soon after creation, the District committed to managing water in the Gulf Coast Aquifer on a sustainable basis, and it remains equally committed to this management principle today.

This commitment is reflected in this updated District Management Plan. The sustainable yield of the Gulf Coast Aquifer is thus an important regulatory marker for the District.

The District's permitting program allows the District to track water use and water levels in the Gulf Coast Aquifer. It also provides for the major funding source for the operations of the District, allowing it to continue to monitor the Gulf Coast Aquifer, to routinely participate in the development of the ever improving science of the Gulf Coast Aquifer, both specific to Montgomery County and as necessary on a regional basis, to introduce new technologies to acquire data, and to educate the public about water conservation and the need for alternative water supplies.

It is the objective of the District to provide a permitting process that is straightforward, transparent, and easy for the permit-holder to access through the Internet. The District Board

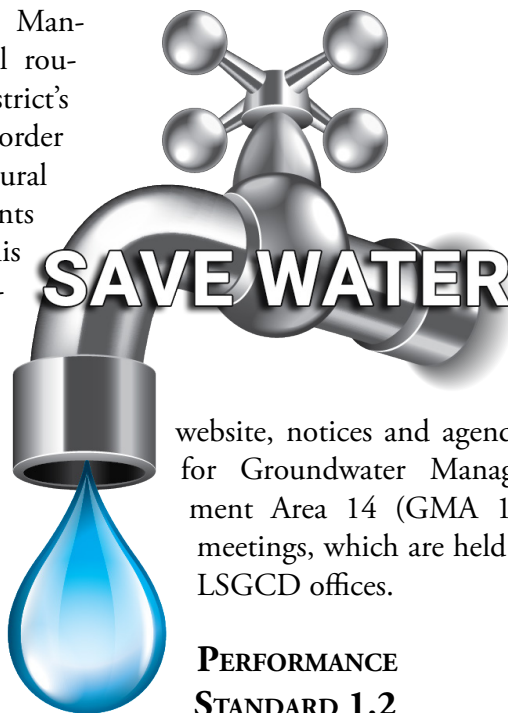
of Directors, General Manager, and legal counsel routinely review the District's permitting process in order to identify any procedural changes or amendments necessary to meet this objective. All substantive changes to the District's permitting process will be communicated through the District's website throughout any rulemaking process and will be summarized in the Annual Report submitted by the General Manager to the Board of Directors of the District.

### PERFORMANCE STANDARD 1.1

Draft rules, public meeting and hearing announcements, and available supporting materials will be included prior to rulemaking activities by the District on the District's website at [lonestargcd.org](http://lonestargcd.org).

### STATUS

All postings, notices, and meeting announcements were placed on the District's website. The District also posts on its



website, notices and agendas for Groundwater Management Area 14 (GMA 14) meetings, which are held at LSGCD offices.

### PERFORMANCE STANDARD 1.2

A summary of any amendments to District rules that are adopted throughout the calendar year will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

In order to allow time for the multi-phased regulatory plan, finalized in 2015, to run its course, the board determined that no rule amendments were necessary in the years that followed.

---

*continued on page 10*





The process for joint-planning by Groundwater Conservation Districts (GCDs) in Groundwater Management Areas (GMAs) was originally established by House Bill 1763 in 2005 and substantially amended by Senate Bill 660 in 2011. One of the primary objectives of GMAs is to determine “desired future conditions” (DFCs) for relevant aquifers located within each GMA. Desired future conditions are defined as the desired, quantified condition of groundwater resources (such as water levels, spring flows, or volumes) within a GMA at one or more specified future times as defined by participating GCDs within a GMA as part of the joint-planning process. There are 16 GMAs in Texas, and Montgomery County is in GMA 14. In September 2018, Southeast Texas GCD’s General Manager, John Martin, was appointed to serve as Chair of GMA 14 for the next planning cycle. There are five GCDs in GMA 14 representing 13 of the 21 counties in GMA 14. Three other counties are represented by subsidence districts; five counties are not represented by any type of district. GMAs are currently in the third-round of the joint-planning process, which runs from 2016-2021, with final adoption to occur by January 2022.

---

## MILE MARKERS

---

### January 24, 2018

- GMA 14 representatives authorized posting a request for qualifications for professional services to support the development of desired future conditions during the third round of joint-planning (2016-2021). The RFQ was released on February 6th with a deadline for responses of February 26th.

### February 26, 2018

- Legal counsel for Lone Star GCD requested that GMA 14 District Representatives formally consider approving another request for amended DFCs by asking that GMA 14 take action to consider the DFC request referred to as “Run D” of Task 3 of the Lone Star GCD Strategic Water Resources Planning Study that was previously approved for formal consideration by GMA 14 on December 8, 2017, as an amendment to the DFCs previously adopted for the second cycle of joint planning (2010-2016) in order to wrap up the DFC appeal in which Lone Star GCD had been involved.

### March 27, 2018

- GMA 14 took up consideration of Lone Star GCD’s request to consider the Run D DFC changes only as amendments to the second-cycle of DFCs as requested by plaintiffs in Lone Star GCDs litigation. It was relayed to GMA 14 members that District counsel(s) had received comments from the plaintiff’s attorneys that their clients would not appeal the DFCs if adopted as laid out in the resolution presented and Lone Star GCD’s Board of Directors

would offer to cover the technical consultants’ costs to expedite the process to adopt the DFC changes. Unfortunately, the other GMA 14 members had concerns over the potential declines that may result from Run D and sought additional information on the possible impacts to their counties before approving. The vote to approve the resolution failed on a 2-3 vote. GMA 14 went on to approve another motion, amending the action it previously took on December 8, 2017, to approve formal consideration of Lone Star’s Run D request as both (1) an amendment to the second-cycle of DFCs; and (2) as DFCs for the third-cycle.

### April 26, 2018

- Presentations were received from LRE Water, LLC regarding evaluation of subsidence vulnerability due to groundwater pumping; and Bluebonnet GCD on GAM simulations of alternative conceptual combinations of adopted DFC and Run D.

### May 30, 2018

- GMA 14 acted to approve the scope of work and contract with INTERA Incorporated for professional services for the development of desired future conditions during the current joint-planning effort in GMA 14 as required by Texas Water Code

---

*continued on page 10*

## July 25, 2018

- GMA 14-member districts and participants received a presentation from Region H Water Planning Group's consultants regarding the Region H Planning Group MAG Peak Factors. There was discussion regarding moving the locations of GMA 14 meetings and sharing the administrative duties and responsibilities. Action was taken to approve the Interlocal Agreement with updated signature pages. Action was also taken to select Harris-Galveston Subsidence District as the contracting entity responsible for entering into a contractual agreement with the consulting engineer in accordance with the approved scope of work, on behalf of GMA 14.

## September 26, 2018

- Action was taken by GMA 14 representatives appointing John Martin, Southeast Texas GCD to serve as Chair for the next joint planning cycle, and designating Zach Holland, Bluebonnet GCD to serve as Secretary. Action was also taken to designate GMA 14 representatives and alternates to Regional Water Planning Groups G, H & I. GMA received a presentation from INTERA regarding recent research and subsidence in the Region. Discussion was had and action was taken to approve the MAG Peak Factor recommendations for Region H Planning Group.

*cont'd from page 8*

In 2018, the board expressed a desire to review and potentially adopt water well spacing rules for the Gulf Coast and Catahoula Aquifer formations. The Rules and Bylaws committee had previously investigated this option in 2013 with consultants hired from INTERA. In March 2018, the Rules and Bylaws committee

reconvened with INTERA to reopen the option of well spacing parameters. The committee reviewed the pros and cons of well spacing and various well spacing scenarios which would ensure no unreasonable impact on neighboring wells, including but not limited to tract size, correlative rights, vertical spacing and/or the requirement of a hydrogeologic study based on the

well producing capacity. The committee agreed that with the upcoming changes to the board they would take the data and recommendations they came up with and provide it to the incoming board in the form of a memo, allowing the new board to do with it as they see fit.



**SAVE  
WATER**

## GOAL 2: PROVIDING THE MOST EFFICIENT USE OF GROUNDWATER

Since the District’s creation in 2001, the District has operated on the core principle (or goal) that groundwater should be used as efficiently as possible for beneficial purposes. In order to achieve this goal, the District maintains a qualified staff to assist water users in protecting, preserving, and conserving groundwater resources.

The board of directors has in the past and continues today to base its decisions on the

best data available to treat all water users as equitably as possible. Once data is collected, the District utilizes a wide variety of forums to provide important information to water users throughout the District so that sound decisions regarding the efficient use of groundwater can be made. The following management objectives and performance standards have been developed and adopted to ensure the efficient use of groundwater.

### OBJECTIVE 2.1

Each year, the District will require all new exempt or permitted wells that are constructed within the boundaries of the District to be registered or permitted with the District in accordance with the District Rules.

### PERFORMANCE STANDARD 2.1

The number of exempt wells registered and non-exempt wells permitted by the District for the year will be incorporated into the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

To demonstrate completion of Performance Standard 2.1, the number of exempt and permitted (non-exempt) wells registered or permitted by the District for 2018 is provided in Table 1.

**TABLE 1: NUMBER OF EXEMPT AND PERMITTED WELLS REGISTERED OR PERMITTED BY THE DISTRICT FOR 2018**

Number of Exempt Wells Registered.....	418
Number of Non-Exempt Wells Permitted.....	70
Number of Non-Exempt Catahoula Wells Permitted.....	1
<b>TOTAL .....</b>	<b>489</b>

**TABLE 2: NUMBER AND TYPE OF APPLICATIONS FOR THE PERMITTED USE OF GROUNDWATER RECEIVED IN 2018**

Amendment to an Existing Operating Permit or Historical Use Permit Application* .....	107
New Operating Permits** .....	55
Amendment to an Existing Alternative Water Source Permit*.....	6
New Alternative Water Source Permit** .....	0
<b>TOTAL.....</b>	<b>168</b>

*\*Applications for Permit Amendments may not reference a specific well*

*\*\*Applications for new operating permits may include more than one well*

**OBJECTIVE 2.2**

The District will work to ensure the efficient use of groundwater by maintaining qualified staff and technical consultants necessary to execute and maintain the District’s well registration and permitting system. This effort includes the timely processing and technical reviews of permit applications. Each year, the District will regulate the production of groundwater by maintaining a system of permitting the use and production of groundwater within the boundaries of the District in accordance with the District Rules.

**PERFORMANCE STANDARD 2.2**

Each year the District will accept, process, and review applications for the permitted use of groundwater in the District in accordance with the permitting process established by District Rules. The number and type of applications made for the permitted use of groundwater in the District and the number and type of permits issued by the District will be included in the Annual Report submitted by the general manager to the board of directors of the District.

**TABLE 3: NUMBER OF OPERATING PERMITS OR PERMIT AMENDMENTS ISSUED AND ADMINISTRATIVE DISPOSITION OF APPLICATIONS/PERMITS MADE BY THE DISTRICT IN 2018**

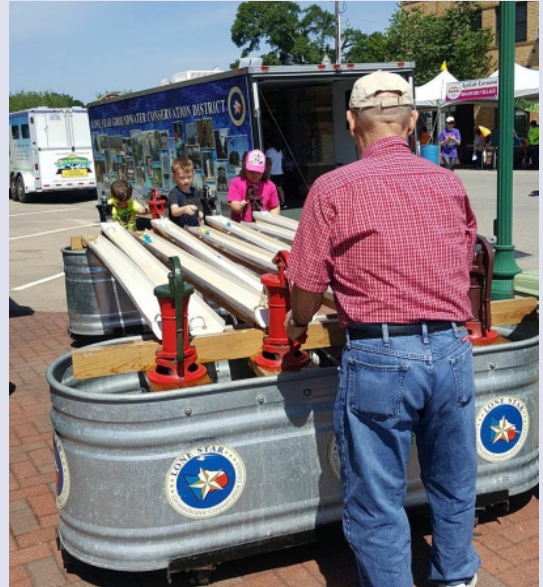
Applications Approved as Submitted.....	153
Applications Approved as Amended .....	14
Applications or Permits Expired Due to inaction by Applicant or Permittee.....	0
Applications Approved w/ Conditions .....	1
Applications Denied.....	0
<b>TOTAL .....</b>	<b>168</b>

**TABLE 4: PRIMARY USE OF WATER ON PERMITS APPROVED IN 2018**

Industrial .....	22
Irrigation.....	27
Irrigation (Agriculture) .....	1
Public Supply/Commercial .....	66
Public Water Supply (PWS) .....	52
Other .....	0
<b>TOTAL.....</b>	<b>168</b>

**STATUS**

The number and type of applications referred to in Performance Standard 2.2 are included in Table 2 (previous page), Table 3, and Table 4.



Public outreach is critical to encouraging conservation, and although it's impossible to verify the number of gallons saved due to these activities, the District is able to report that, collectively, for all speaking engagements, tours, and events staff directly interacted with thousands of people in Montgomery County. Below is a summary of public interaction opportunities in which staff was involved:

## SPEAKING ENGAGEMENTS:

- Conroe Lion's Club
- Magnolia Rotary Presentation
- Montgomery Lion's Club
- 7th Annual Gulf Coast Water Conservation Symposium
- Local Working Group/Conservation Planning Meeting

## EVENTS & EDUCATIONAL OUTREACH:

- Parmley Elementary Mobile Lab Visit
- Vogel Intermediate Mobile Lab visit
- Kings Manor Elementary Mobile Lab visit
- Covenant Christian School Mobile Lab visit
- Patterson Elementary Mobile Lab visit
- Little Beakers Mobile Lab visit
- Primrose School College Park Mobile Lab visit
- Texas Wildlife & Woodlands Expo
- Scout Fair Mobile Lab visit
- Montgomery County Fair Association's Kids Day
- Conroe Kidzfest
- Earth Day Rain Harvesting Demos at St. Anthony of Padua Catholic Church
- Rainwater Harvesting Class at Texas A&M AgriLife Extension in Conroe
- Stewart Creek Elementary Mobile Lab visit
- Wildwood Christian Academy Mobile Lab visit
- SHSU Charter School Mobile Lab visit
- Texas 4-H Water Ambassadors Program sponsor
- Lone Star College Discovery Camp
- Knox Junior High Mobile Lab visit



Kids Day at Montgomery County Fair, 2018



4H Water Ambassadors, 2018



Demonstrating how aquifers work at Little Beakers in The Woodlands during National Groundwater Awareness Week

## *GOAL 3: CONTROLLING AND PREVENTING WASTE OF GROUNDWATER*

As with Goal 2, the District also constantly strives to prevent the waste of water resources in Montgomery County. The prevention of waste of groundwater is one of the core responsibilities for groundwater conservation districts, dating back to the original legislation authorizing the creation of groundwater conservation districts in 1949 (House Bill 162). The District works to control and prevent the waste of groundwater through the adopted District Rules and Regulatory Plan.

To this end, the District has developed standard usage numbers for the majority of use categories represented by District permits. Each request for a new permit or a permit amendment is scrutinized based on these standard usage factors. For wells providing make-up water to impoundments, the District maintains records of the amount of evaporation measured by the San Jacinto River Authority

at Lake Conroe. Permit amendments are only allowed to use the measured evaporation rate plus 10 percent for losses through the bottom and sides of the impoundment. Similarly, the District maintains records of evapotranspiration rates to guide permit amendment requests for irrigation water. Standards are also applied to single and multi-family residential usage as well as commercial usage. Requests for water in excess of the standards for these latter uses must provide additional justification for these requests.

As a practical matter, it is sometimes difficult to differentiate Goal 3 from Goal 2. For example, certain objectives such as Objective 2.1 and Objective 2.2 could also be viewed as strategies to prevent and control the waste of groundwater, in addition to the stated goal of providing the most efficient use of groundwater.

### **OBJECTIVE 3.1**

In order to increase public awareness of the need to control and prevent the waste of groundwater in Montgomery County, the District operates a waste prevention outreach strategy. This outreach strategy currently focuses on enhancing the use of the District’s website to provide resources applicable to the prevention of waste of groundwater. The District website provides a routinely updated link containing a Best Management Practices Guide

(published by the Texas Water Advisory Council in partnership with the TWDB). The District will work to identify outreach opportunities with regional and local water providers so as to increase public awareness for the prevention of groundwater waste.

### **PERFORMANCE**

#### **STANDARD 3.1**

The District provides and will routinely update the link on the District’s website to Best Management Practices, which includes

helpful tips to control and prevent the waste of groundwater.

### **STATUS**

The District maintains a link on its website to the most recent version of the Best Management Practices Guide by the Water Conservation Advisory Council.

Additional helpful links on conservation are also available, including Best Management Practice mini-guides specific to Agriculture, Commercial and Institutional, Industrial, Municipal, and Wholesale.

# Objective 3

## OBJECTIVE 3.2

Each year, the District will make an evaluation of the District rules to determine whether any amendments are recommended to decrease the amount of waste of groundwater within the District.

### PERFORMANCE STANDARD 3.2

The District will include a discussion of the annual evaluation of the District Rules and the determination of whether any amendments to the rules are recommended to prevent the waste of groundwater in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

The board and staff of the District continued discussions and evaluation of possible amendments to the District Rules and District Regulatory Plan that will promote the beneficial use and the avoidance of waste of groundwater. The Rules and Bylaws Committee members provided a memo to the incoming board of directors with a recommendation to consider well spacing and back up data from the studies/evaluations that were performed during their consideration of well spacing.

## OBJECTIVE 3.3

Each year, the District will apply a water use fee structure to the permitted use of groundwater in the District to encourage the elimination and reduction of waste of groundwater.

### PERFORMANCE STANDARD 3.3

Each year, with the exception of wells exempt from permitting, the District will apply a water use fee to the permitted use of groundwater in the District pursuant to District Rules. The amount of fees generated by the water use fee structure and the amount of water used for each type of permitted use of groundwater will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

See tables 5 and 6.

**TABLE 5: THE AMOUNT OF WATER USE FEES GENERATED BY THE DISTRICT IN 2018**

Water Use Type	Permitted Amount	Fee Rate	Fee Amount
*HUP / Operating Permits	31,024,750,614 gallons	\$0.105/1,000 gallons	\$3,257,598.81
Water Subject to Transportation Fee	22,566,200 gallons	\$0.0525/1,000 gallons	\$1,184.73
AG Permits/Applications	525,049,288 gallons	\$1.00 per acre foot	\$1,611.32
Catahoula AWS Production Permits	2,773,640,000 gallons	\$0.06/1,000 gallons	\$166,418.40
<b>Total</b>	<b>34,346,006,102 gallons</b>		<b>\$3,426,813.26</b>

\*May include water transported out of the District but not subject to transportation

**TABLE 6: AMOUNT OF WATER REPORTED TO DISTRICT AS PUMPED FOR EACH TYPE OF PERMITTED GROUNDWATER USE**

Commercial .....	67,896,704	Public Supply (PWS).....	17,135,901,828
Industrial.....	464,772,632	*AWS-CRAF.....	1,596,724,000
Irrigation.....	562,705,799	<b>**Total .....</b>	<b>20,033,544,828</b>
Irrigation (Agriculture).....	119,555,539	<b>Grand Total<sup>†</sup>.....</b>	<b>18,436,820,828</b>
Public Supply .....	85,988,326		

\*AWS-Catahoula Restricted Aquifer Formation | \*\*Data received as of March 20, 2019. The reported pumping for 2018 is incomplete due to incomplete reporting by a small number of permittees | † Less AWS Pumping



## GOAL 4: CONTROLLING AND PREVENTING SUBSIDENCE

**S**ubsidence is a geologic term used to describe the sinking of the land surface. Subsidence may occur as a result of natural causes or from man-induced or anthropogenic causes. Subsidence, especially in low lying coastal areas may cause significant damage due to flooding and also structural damage to roads and buildings.

Subsidence in the Gulf Coast region has been caused by removal of oil and gas minerals as well as groundwater from the subsurface. Subsidence may also result from the removal of other minerals in the subsurface such as salt and sulfur. This is because these fluids are pressurized and, therefore, when naturally occurring, act to hold up the loose-

ly consolidated sedimentary particles in the subsurface (clays, silts, and sands). Due to the inelastic nature of the sediments, in particular the clays, in areas where subsidence occurs, the subsidence is permanent. Flooding resulting from subsidence in the Harris/Galveston area has resulted in major losses to land and property over the past 50 plus years. The District, in cooperation with the Harris-Galveston Subsidence District, maintains a network of eight subsidence monitor stations to continually measure subsidence. To date, minor subsidence of approximately 0.5 foot has been measured at monitoring stations located in the southern portion of the District.

.....

### OBJECTIVE 4.1

Each year, the District will hold a joint conference with the Harris-Galveston Subsidence District and the Fort Bend Subsidence District focused on sharing information regarding subsidence and the control and prevention of subsidence through the regulation of groundwater production.

### PERFORMANCE

#### STANDARD 4.1

Each year, a summary of the joint conference on subsidence issues will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

On August 21, 2018, District staff met with Mike Turco and Robert Thompson, representing the Harris-Galveston and Fort Bend Subsidence Districts. The primary focus of discussion was HGSD's ongoing research into the potential of tapping brackish water resources for municipal supply. Van Kelley, with Intera, led a presentation highlighting the results of this research. Mr. Kelley reported that the study successfully developed a conceptual model for studying compaction in the brackish portions of the Jasper Aquifer. The research also provided a basis to inform the potential regulation of brack-

ish groundwater development in the Jasper Aquifer and means to communicate relative risk of such development within HGSD.

### OBJECTIVE 4.2

The District is now participating with the Harris-Galveston Subsidence District in the collection of subsidence data from dedicated stations located in the District. Data from these subsidence monitor stations will be discussed during the joint conference described in Objective 4.1 above.

### PERFORMANCE

#### STANDARD 4.2

---

*continued on page 18*

*cont'd from page 17*

Results from the subsidence monitor stations can be found on the District's website and will be included in the Annual Report submitted by the general manager to the board of directors of the District.

## STATUS

In 2018, the District continued to collect data from the eight stations of the subsidence monitoring system. Units 12 and 13 have been in place since 2001, and are located in areas of significant groundwater pumpage and/or growth (The Woodlands and Kingwood). The data collected from these two units indicate a continuing linear decline in land surface elevation. The remaining six units were strategically placed throughout the county in 2011. In 2016, the District acquired an additional Trimble data modem. This has resulted in the doubling of the amount of data collected over the time period. In addition to



maintaining data collected from the District's units, staff also monitors a CORS (Continuously Operating Reference Station) located near the intersection of Highway 3083 and Highway 1484, on the north side of Conroe. This station is sponsored and maintained by TxDOT and the National Geodetic Survey. The data from this site also shows a continued decline in surface elevation. The results of the data collected to date from all stations, in the form of easy-to-read graphs via Google Earth,

are readily available for viewing by the public on the District's website. Above is a reproduction of the monitoring station located on the TxDOT site. In addition, there is a detailed article on the subject of subsidence on the District's website.

## LINKS:

- Lone Star GCD's PAM units:  
[www.lonestargcd.org/subsidence](http://www.lonestargcd.org/subsidence)
- Harris-Galveston Subsidence District  
[www.hgsubsidence.org](http://www.hgsubsidence.org)



# WATER SAVING TIPS



## TURN OFF THE TAP WHILE BRUSHING YOUR TEETH

Use a cup instead, saves a couple of water per year.



## TAKE A 5 MINUTES SHOWER INSTEAD OF 8 MINUTES

Cut down the number of showers and turn it off when using soap and shampoo, saves a couple of water per year.



## SCRAPE FOOD RESIDUE OFF PLATES

Use brush first instead of rinsing them with water. Soak washing before the food dries on the dishes.



## TAKE A TWO-BASIN APPROACH WHEN WASHING DISHES

Use one for soaking and scrubbing dirty dishes with dish soap and use for rinsing. Saves a amount of water per year.



## SOAK AND WASH YOUR FRUITS AND VEGETABLES IN A BOWL / CONTAINER

Instead of running water from the tap.



## DO NOT USE RUNNING WATER TO THAW FOOD

Defrost food overnight in the refrigerator or by using the defrost setting on your microwave.



## INSTALL WATER SAVING DEVICES

Flow restrictor flush system for your toilet bowl. Avoid flushing the toilet unnecessarily.



## GO TO A CARWASH THAT USES A WATER-RECYCLING PROGRAM

An efficient green car wash that saves 90 - 95% on water and sewer discharge (1).



## OR USE A PAIL OF WATER TO WASH THE CAR YOURSELF

Instead of a hose. Even better, wash it on the lawn, and you will water your lawn at the same time.



## USE THE TRASH BIN

Do not use the toilet bowl to dispose tissues, towels and other such items.



## USE WATER TO WASH OFF THE SOAP WHEN WASHING HANDS

There is no need to pre-rinse or running the water when soaping your hands. Saves a gal per day.



## COLLECT USED / "OLD" WATER

From washing hands, vegetables, fruits, rice) with a bucket beneath the tap. It can be used again for watering plants or for flushing the toilet.



## DIRECT THE WATER DRAIN LINE FROM THE AIR CONDITIONER

to a flower bed, tree base or your lawn.



## CONSIDER SETTING UP A GREYWATER SYSTEM

It allows you to re-use the water from your sinks, lavatory, machine and dishwasher for watering plants and flushing toilets.



## CHECK AND REPAIR YOUR LEAKING TAPS OR SHOWERHEADS

A drop per second could add up to tons of liters in no time.



## HARVEST YOUR RAINWATER

Place rain barrels beneath your downspouts. Rainwater can be used to flush your toilet, wash your car and water the plants during dry season.



## WATER YOUR PLANTS IN THE MORNING OR LATE EVENING

to minimize evaporation. You will use less water when you water them at the most favorable of times.



## USE YOUR LEFTOVER ICE CUBES / WATER FROM A DRINK

to water a plant instead of pouring down the sink.



## ACCUMULATE A FULL LOAD BEFORE WASHING CLOTHES

For hand wash, use water sparingly.



## REPORT PIPE BREAKS / LEAKS / DAMAGES

and water leaks at once. This ensures our fire protection, pointing water quality at risk, raises the probability of increased water bills and the need for water use restrictions.



## USE A MOP WHEN CLEANING FLOORS

Do not use a hose or pour water over the floor for mopping. Ask for mop or no-rinse mopping liquid.



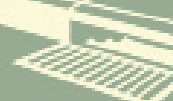
## BUYING GROCERIES FROM A LOCAL FARMER'S MARKET

supports local farmers, encourages local and regional food systems to grow and helps reduce water footprint.



## KEEP TRACK OF YOUR WATER USAGE

every month and try to reduce it month to month.



## ALL DRAINS LEAD TO RIVERS WITHOUT ANY PRIOR TREATMENT

Do make sure nothing else except wastewater is going into your drain.



## PACK YOUR OWN DRINKING BOTTLE

When traveling, avoid buying bottled water. It will save you money and water (and energy) because it takes a gal of water to produce a 1/2 bottle of water.

## *GOAL 5: ADDRESSING CONJUNCTIVE SURFACE WATER MANAGEMENT ISSUES*

As demands for water supplies continue to increase, the importance of addressing groundwater and surface water management issues conjunctively will continue to increase. From its inception, the District has worked with public water suppliers, other stakeholders, and the sole surface water management entity in the District, the San Jacinto River Authority, to conduct studies and evaluate options regarding the conjunctive use and availability of

groundwater and surface water resources in the District.

These stakeholders have representation on the District's board of directors, which has helped to engender and ensure ongoing communication and coordination between the entities. This coordination eventually led to the development and adoption of the DRP, which encourages water users in the District to develop surface water supplies and other alternative water supplies through its requirements to

reduce groundwater production and develop detailed plans identifying future water demands and supplies to meet those demands. In addition, through the District's designated representative(s), the District actively participates in a number of planning forums including the regional water planning process. It is through this commitment to participation in a broad mix of water-related forums that pertinent issues related to conjunctive surface water management issues will be addressed.

### **OBJECTIVE 5.1**

Each year, the District's designated representative will participate in the regional planning process by attending at least 75 percent of the Region H – Regional Water Planning Group meetings in order to encourage the development of surface water supplies to meet the needs of water user groups in the District.

### **PERFORMANCE STANDARD 5.1**

The participation and attendance of the District's designated representative at each Region H Regional Water Planning Group will be noted in the Annual Report submitted by the general manager to the board of directors of the District.

### **STATUS**

The General Manager, as in previous years, represented Groundwater Management Area 14 as a voting member of the Region H – Regional Water Planning Group. Gary Ashmore, General Manager of the Lower Trinity Groundwater Conservation District, served as Ms. Jones' Alternate. The District's representatives participated in the regional planning process by attending 75 percent of the Region H meetings. In addition, the General Manager con-

tinued to serve on Region H's Groundwater Supply Committee. Participation on this committee and attendance at the meetings provides the District with the opportunity to provide valuable input regarding the role of groundwater in overall regional planning and to encourage the development of surface water supplies to help meet the needs of water user groups in the District.

REGION H WATER PLANNING GROUP ATTENDANCE
<b><u>April 4, 2018</u></b> Kathy Turner Jones
<b><u>June 6, 2018</u></b> Kathy Turner Jones
<b><u>August 1, 2018</u></b> Gary Ashmore
<b><u>December 31, 2018</u></b> Kathy Turner Jones

## GOAL 6: ADDRESSING NATURAL RESOURCE ISSUES

The District understands the important nexus between water resources and natural resources. The exploration and production of natural resources such as oil and gas in Montgomery County clearly illustrate this nexus.

These activities, along with related issues

such as waste disposal utilizing underground injection wells clearly represent potential management issues for the District. Improperly plugged oil and gas wells may provide a conduit for various hydrocarbon and drilling fluids to potentially migrate and contaminate groundwater resources in the District.

### OBJECTIVE 6.1

In order to monitor, as appropriate, waste injection activities associated with the exploration and production of oil and gas in Montgomery County, the District will monitor permit applications and permit amendment applications for Class II injection wells filed with the Railroad Commission of Texas and Class I and Class V injection well permit applications and permit amendment applications filed with the Texas Commission on Environmental Quality. District staff will review these notices and brief the Board of Directors as appropriate. A summary of injection well permit activity and any actions taken by the District in response will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### PERFORMANCE

#### STANDARD 6.1

Beginning with the 2014 Annual Report, a summary of injection well permit activity at the Railroad Commission of Texas and the Texas Commission on Environmental Quality along with any actions taken by the District in response will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

On September 6, 2017, the District received a copy of an application to amend an existing injection well's permit which was filed by Denbury Onshore with the Railroad Commission of Texas (RRC). The District's legal counsel identified several areas of concern.

As requested by the District, Denbury completed a radioactive tracer (RAT) survey and annulus pressure tests. The RAT survey tracks injectate down the wellbore to determine whether there is any movement of injectate above the perforations outside the casing due to inadequate cement squeeze.

The test results indicated that there is currently no noticeable leak in the casing, tubing, or packer of the well. Thus, the annulus monitoring system appears to be providing the continuous monitoring on these three well components to detect any leaks in these components.

Based on the results provided and Phil Grant's review and recommendation, the District withdrew its protest of the permit amendment on January 18, 2018.



## GOAL 7: ADDRESSING DROUGHT CONDITIONS

### OBJECTIVE 7.1

Recurring drought conditions that climaxed in 2011 continue to serve as a reminder of how dependent we are on precipitation. Droughts occur and reoccur in the area, as do cycles of above average precipitation. A well-informed public can best respond to developing drought conditions by adopting best management practices appropriate for drought conditions.

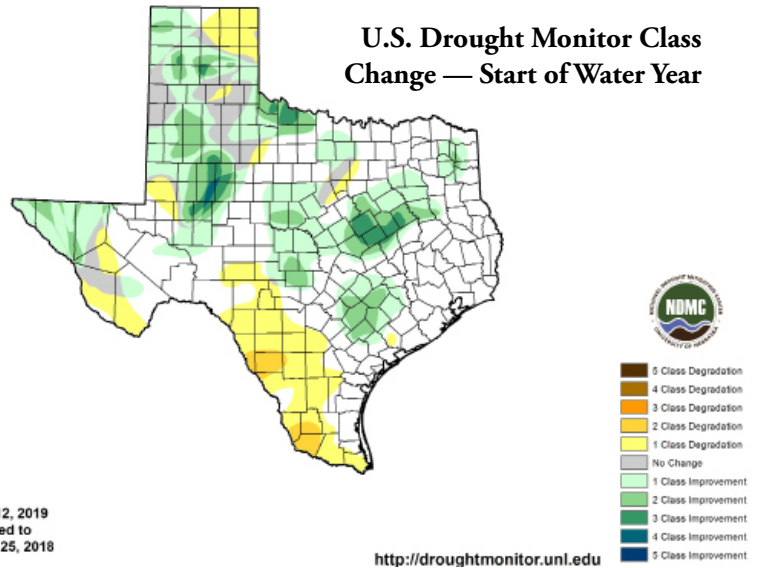
### PERFORMANCE

#### STANDARD 7.1

An important objective of the District is to provide ongoing and relevant drought-related meteorological information. Beginning in 2014, the District will make available through the District’s website easily accessible drought information with an emphasis on developing droughts and on any current drought conditions. At least one of the following links will be provided: updates to the Palmer Drought Severity Index (“PDSI”) map for the region, the Drought Preparedness Council Situation Report, and the TWDB Drought Page.

### STATUS

Links to the Palmer Drought Severity Index maps and situation reports can be found on the District website.

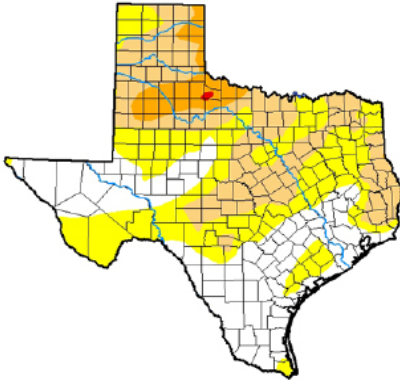


### LOCAL PRECIPITATION

According to precipitation data collected from the weather station located at the Conroe-North Houston Regional Airport (station ID# USW00053902), 2018’s annual rainfall total equaled 60.27 inches, topping even 2017’s total precipitation (58.85 inches).

Six months of year saw monthly rainfall totals greater than 5 inches – February, March, July, September, October and December. While September was recorded the wettest month of the year, with 9.26 inches of rainfall, just days prior in August, we experienced the driest month of the year, receiving only 1.87 inches of rain.





**January 2, 2018**  
(Released Thursday, Jan. 4, 2018)  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	33.37	66.63	33.56	5.94	0.11	0.00
<b>Last Week</b> 12-26-2017	37.16	62.84	32.93	2.90	0.11	0.00
<b>3 Months Ago</b> 10-03-2017	86.76	13.24	2.20	0.00	0.00	0.00
<b>Start of Calendar Year</b> 01-02-2018	33.37	66.63	33.56	5.94	0.11	0.00
<b>Start of Water Year</b> 09-26-2017	70.54	29.46	4.17	0.04	0.00	0.00
<b>One Year Ago</b> 01-03-2017	81.50	18.50	0.28	1.97	0.04	0.00

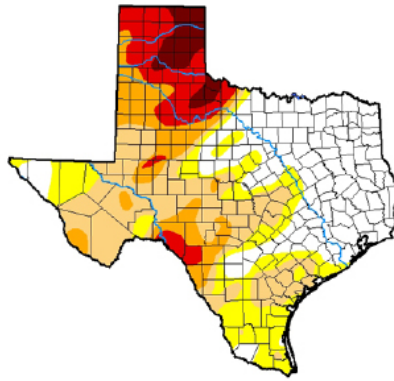
Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Eric Luebben  
U.S. Department of Agriculture



**May 1, 2018**  
(Released Thursday, May. 3, 2018)  
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	33.60	66.40	49.36	25.50	13.94	4.31
<b>Last Week</b> 04-24-2018	33.36	66.64	53.23	26.26	14.54	3.88
<b>3 Months Ago</b> 01-30-2018	13.27	86.73	56.47	21.98	7.30	0.00
<b>Start of Calendar Year</b> 01-02-2018	33.37	66.63	33.56	5.94	0.11	0.00
<b>Start of Water Year</b> 09-26-2017	70.54	29.46	4.17	0.04	0.00	0.00
<b>One Year Ago</b> 05-03-2017	91.38	8.62	1.44	0.00	0.00	0.00

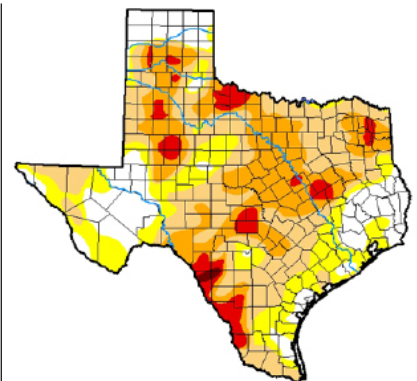
Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Simeral  
Western Regional Climate Center



**August 28, 2018**  
(Released Thursday, Aug. 30, 2018)  
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	18.56	81.44	62.34	30.69	6.78	0.30
<b>Last Week</b> 08-21-2018	18.99	81.01	59.88	28.00	5.22	0.30
<b>3 Months Ago</b> 05-28-2018	31.26	68.74	40.06	21.93	7.82	1.17
<b>Start of Calendar Year</b> 01-02-2018	33.37	66.63	33.56	5.94	0.11	0.00
<b>Start of Water Year</b> 09-26-2017	70.54	29.46	4.17	0.04	0.00	0.00
<b>One Year Ago</b> 08-29-2017	06.14	3.86	0.87	0.00	0.00	0.00

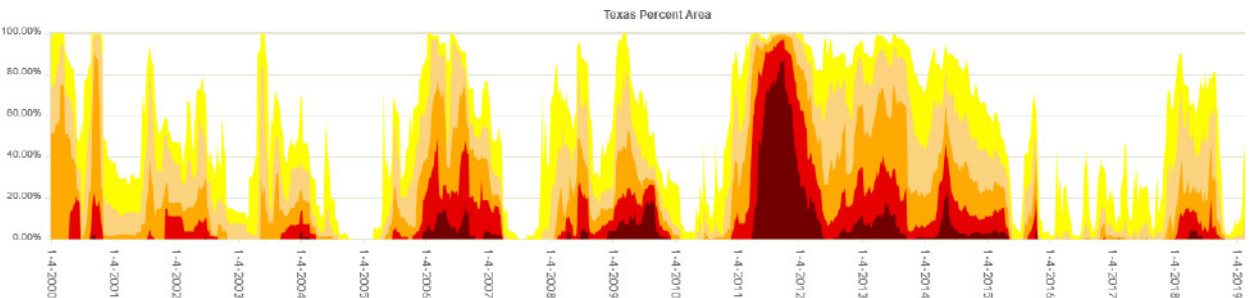
Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Jessica Blunden  
NCEI/NOAA



**GOAL 8: ADDRESSING CONSERVATION, RECHARGE ENHANCEMENT, RAINWATER HARVESTING, PRECIPITATION ENHANCEMENT, OR BRUSH CONTROL WHERE APPROPRIATE AND COST EFFECTIVE**

Conservation and rainwater harvesting have been determined to be appropriate goals for the District. As with Goals 2 and 3, the successful implementation of an effective water conservation program is a cornerstone to the efforts of the District. As part of this effort, the District is sponsoring and participating in water conservation programs such as the Gulf Coast/ Montgomery County Water Efficiency Network, Water IQ, Water-Use it Wisely, and the Home Water Works. A visit to the District's headquarters is all that is required to realize the commitment of the District to rainwater harvest-

ing. The entire comprehensive water conservation demonstration facility was designed as a demonstration to the citizens of Montgomery County of the positive benefits of rainwater harvesting in reducing water consumption from the Gulf Coast Aquifer. The design and subsequent construction of the various rainwater harvesting and water conservation techniques integrated into the new District headquarters have not only caught the attention of local residents, but recently, the District was awarded the 2012 Texas Rain Catcher Award from the Texas Water Development Board for the innovation demonstrated by the de-

sign of the new comprehensive water conservation demonstration facility.

After review by the board of directors, the general manager, and the District's technical consultants, it has been determined that recharge enhancement, precipitation enhancement, and brush control are not appropriate groundwater management strategies for the District. This evaluation is based on costs of operating and maintaining these programs, lack of neighboring programs in which to participate, and probable lack of effectiveness of these programs, due to the climate, hydrogeology, and physiography of the District.

**GULF COAST/MONTGOMERY COUNTY WATER EFFICIENCY NETWORK - 2018 MEETING SUMMARY**

**January 25, 2018:** Lisa Gonzalez, Houston Advanced Research Center & Paula Paciorek, Galveston Bay Foundation - "Infrastructure Resilience Needs a Modern Touch"

**February 22, 2018:** Charles Yost - "Rainfall Analysis: The Next Generation"

**March 22, 2018:** 7th Annual Gulf Coast Water Conservation Symposium - "Conservation's Potential and Promise in Changing Times"

**April 26, 2018:** Mark Bowen, Nature's Way Resources - "Watersmart Landscaping with Native Plants"

**May 24, 2018:** Jason Afnowicz, Freese and Nichols, Inc. - "Regional Water Planning: What Is It & Why Is It Important To Me?"

**July 26, 2018:** Michael Niebuhr, Galveston Bay Foundation - "Consider the Oyster"

**August 30, 2018:** Bob Dailey, Woodlands Joint Powers Agency - "Plant Native --- Get Rebates --- Save Water"

**September 27, 2018:** T'Noya Thompson, Galveston Bay Foundation - "Galveston Bay Report Card: 'How'd We Do Last Year?'"

**October 25, 2018:** Christina M. Hughes, Walter P. Moore - "Reduce, Reuse, Recycle: Water Mapping for Master Planned Developments"

**November 29, 2018:** Dr. Ken Kramer - "The 86th Texas Legislative Session Water Issues - A Preview of What's to Come"



## OBJECTIVE 8.1

The District seeks to promote water conservation through an active water conservation awareness program. As part of this program, the District will maintain links to recognized water conservation awareness programs such as the Gulf Coast/Montgomery County Water Efficiency Network, Water IQ, Water-Use it Wisely, and the Home Water Works programs on the District's website.

### PERFORMANCE

#### STANDARD 8.1

Links to at least one of the water conservation awareness programs such as the Gulf Coast/Montgomery County Water Efficiency Network, Water IQ, Water-Use it Wisely, and the Home Water Works programs will be provided on the District's website and noted in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

The Lone Star GCD website contains valuable conservation links as well as references to outside expert resources. Internally, there is a "Consumer Tips" and "Resources" page, which can be accessed through the "Programs & Education" page. This page contains practical informa-

tion on ways to conserve water at home, both indoors and out. Also, on the "Resources" page, there are links to outside resources, including the Texas AgriLife Earth Kind Plant Selector (native plant resource), Gulf Coast/Montgomery County Water Efficiency Network, Water IQ, Water-Use It Wisely and the Home Water Works website. Yet again, the Gulf Coast/Montgomery County Water Efficiency Network continued to be one of the District's significant conservation/outreach efforts. This group of professionals from throughout the region meets once each month to share ideas and hear from a speaker regarding a conservation-related topic. All presentations are made available on the District's website, and the sessions themselves are livestreamed so that they can be viewed by those who cannot attend the meeting. These are made available via the District's Facebook page. A listing of speakers and topics covered in 2018 can be examined on page 24.

## OBJECTIVE 8.2

Educational materials specific to rainwater harvesting have been developed to highlight the various water conservation techniques that are incorporated into the design of the District's headquarters. This information will be available at the main entrance to the Dis-

trict's headquarters for visitors to take and review for potential use in homes and businesses in Montgomery County.

### PERFORMANCE

#### STANDARD 8.2

Information on the District's headquarters and rainwater harvesting capabilities will be made available during business hours for use by visitors to the facilities. A summary of this educational opportunity will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

The Lone Star GCD facilities serve as real-life examples of conservation at work. The general public is welcome for a visit during business hours. Upon arrival, visitors will see the arroyo (dry river bed) as they approach the lobby. The purpose of this feature is to convey any parking lot rainwater runoff into a 15,000 gallon-capacity underground tank. The majority of the roof downspouts are directed into four stand-alone, 2,500-gallon above-ground cisterns. The collected rainwater is used to irrigate the District's landscaping, which features native plants and grasses.

This award-winning system also has corresponding educa-

*continued from page 25*

tional materials framed inside the District lobby, which tells the story and shows construction photos. This enables visitors to see the underground tanks which provides perspective on how much rainwater is being utilized.

Visitors to District offices do not go away empty-handed. There is an abundance of educational material about conservation, water supply, and the purpose of the District. For those interested in installing a rainwater harvesting system at their home or business, there is a rain harvesting manual available on CD as well as on LS-GCD-branded USB flash drives, which describe all types of systems, ranging from small home systems to more elaborate ones.

An additional 500-gallon rainwater harvester was added in 2017, on the backside of the District's building, to expand the building's total rainwater harvesting capacity.

### **OBJECTIVE 8.3**

The District has recently added an important new tool at its comprehensive water conservation demonstration facility that will collect weather data 24/7 in collaboration with Texas A&M Agrilife Extension experts. The objective of installing this new equipment is to generate an Evapotranspiration ("ET") number to help residents use their irrigation systems more

efficiently by knowing the ideal amount of water needed to sustain a healthy lawn. The District will be rolling out the information part of the new program to enable commercial and residential "users" to regulate their irrigation system controllers so that they deliver only the amount of water necessary. Current measurements of ET will be maintained on the District's website.

### **PERFORMANCE**

#### **STANDARD 8.3**

Current measurements of ET will continue to be maintained on the District's website throughout the active growing season each year and noted in the Annual Report submitted by the general manager to the board of directors of the District.

### **STATUS**

In 2018, Lone Star GCD continued to monitor weather conditions on a daily basis and post weekly landscape watering advisories on its website under the heading, "Watering Recommendations." Each week, during the irrigation season, working in conjunction with Texas A&M/AgriLife staff, the District compiles evaporation and transpiration information based on relative humidity, temperature, wind speed, and radiation levels as measured by the weather station located at its facilities. The water losses calculated are then compared to the

amount of rainfall for the same period to determine how much water should be applied to make up the difference and maintain a healthy lawn while using as little water as possible. To account for the significant variations in the amount of rainfall that occur across an area as large as Montgomery County, rainfall amounts for the previous seven days are obtained from rain gauges located throughout the county.

In 2017, three additional gauges were added to the District's weekly survey, bringing the number of gauges to thirteen. If the amount of rain in any one gauge area equals or exceeds the calculated loss for the week, the District will recommend that no water be applied for the following week. In addition to housing this information on the District's website, individuals are able to sign up to receive the watering recommendations by email each week.

The District continued publishing an interactive mapping system of the rain gauges on its website. In addition to being able to determine the amount of water that should be applied in the next week on the chart described, the public can go to the gauge on the map that's closest to their house or business. Clicking on that gauge reveals the maximum number of inches of water that needs to be applied during the next seven days.

\$2.45M

**2018  
Total  
Income**

\$1.96M

**2018  
Total  
Expense**

## FINANCIAL SUMMARY<sup>1</sup>

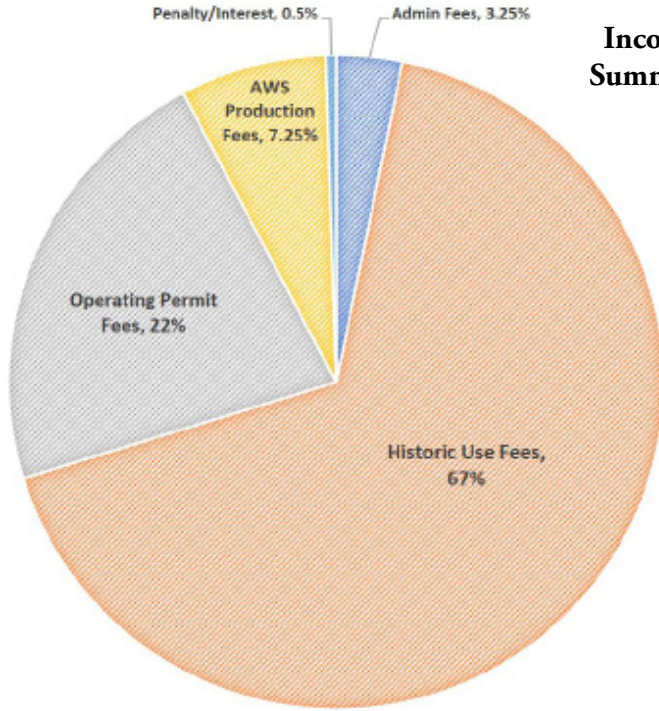
For the calendar year ending December 31, 2018, the District's total assets increased by \$295,096 and total current and non-current liabilities decreased by \$195,221. Net position increased by \$490,318.

The increase in total assets is attributable to the settlement of a lawsuit. Total expenses for 2018 were \$880,524 less than in 2017. Total revenue for 2018 was \$688,235 greater than in 2017. The increase in revenue is attributable to an increase in water use fees from seven-and-a-half cents per 1,000 gallons to ten-and-a-half cents per 1,000 gallons, excluding alternative water source wells.

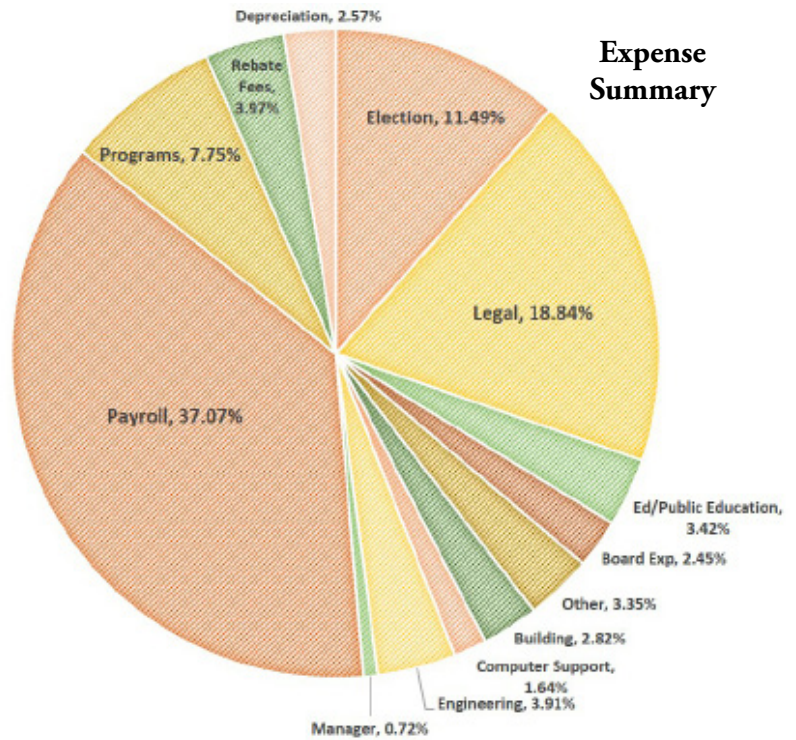
Net position of the District increased 50 percent from the prior year.

<sup>1</sup>These amounts are per the unaudited financial statements for the year ended December 31, 2018.

## Income Summary



## Expense Summary





**Lone Star Groundwater  
Conservation District**

655 Conroe Park North Drive

Conroe, Texas 77303

Phone: 936.494.3436

Fax: 936.494.3438

[www.LonestarGCD.com](http://www.LonestarGCD.com)

