



# 2015 ANNUAL REPORT



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## 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 expended considerable resources to develop a system to ensure that the groundwater supply in Montgomery County will remain a sustainable resource for years to come.

## LONE STAR GROUNDWATER CONSERVATION DISTRICT'S 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 AND 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

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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 is currently completing course work toward a Master of Science at Texas A&M University in the Water Management and Hydrologic 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 hydrologic 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.

## **Paul R. Nelson, Assistant General Manager**



**P**aul Nelson, former Planning and GIS Coordinator with the North Harris County Regional Water Authority, joined the Lone Star staff as the Assistant General Manager in May of 2011. Mr. Nelson comes to the District with an extensive background in the areas of public works administration, water conservation, and long-range water planning.

He is an alternate member of the Region H Water Planning Group, and currently serves on the Trinity and San Jacinto and Galveston Bay Basin and Bay Area Stakeholder Committee created by Senate Bill 3 during the 80th Legislative Session

to look at environmental flow issues in each river basin. In addition, Mr. Nelson is a member of the working committees of several statewide water-related organizations, including the Texas Water Conservation Association.

He holds a Bachelor of Science Degree in Biology from Lamar University in Beaumont. He has lived in Montgomery County for over 30 years. Mr. Nelson's activities include performing, reviewing, or coordinating efforts of consultants on technical studies pertinent to the determination of the effectiveness of the District's regulatory plan as it relates to the District's overall mission, managing and reporting on progress of consultant activities, assisting in presentations and communications with public water supply entities, and assisting the General Manager interfacing with federal, state and local agencies engaged in the groundwater industry in the state.



**Richard J. Tramm**  
President

*Represents Montgomery County | Term Expires Jan. 31, 2017*



**Sam W. Baker**  
Vice President

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



**Rick Moffatt**  
Secretary

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



**James M. Stinson, PE**  
Treasurer

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



**John D. Bleyl, PE**  
Member

*Represents City of Conroe | Term Expires Jan. 31, 2017*



**M. Scott Weisinger, PG**  
Member

*Represents all cities except Conroe | Term Expires Jan. 31, 2017*



**Jace Houston**  
Member

*Represents San Jacinto River Authority | Term Expires Jan. 31, 2017*



**Roy McCoy, Jr.**  
Member

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



**W.B. Wood**  
Member

*Represents Soil & Water Conservation District | Term Expires Jan. 31, 2017*

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.

#### **Findings & Review**

-Richard Tramm, Chair  
-Rick Moffatt  
-John Bleyl  
-Jace Houston

## **Committee Assignments**

#### **Budget & Finance**

-Jim Stinson, Chair  
-Richard Tramm  
-Roy McCoy  
-John Bleyl

#### **Rules & By-Laws**

-Richard Tramm, Chair  
-Scott Weisinger  
-Billy Wood  
-Jim Stinson

#### **Executive Committee**

-Richard Tramm, Chair  
-Sam Baker  
-Rick Moffatt  
-Jim Stinson

#### **Policy & Personnel**

-Sam Baker, Chair  
-John Bleyl  
-Rick Moffatt  
-Jace Houston

#### **Water Awareness & Conservation**

-Billy Wood, Chair  
-Scott Weisinger  
-Rick Moffatt  
-Roy McCoy

#### **Professional Services Committee**

-Rick Moffatt, Chair  
-John Bleyl  
-Jim Stinson  
-Scott Weisinger

**T**hroughout 2015, the growth forecasts of prior years were evident—everywhere.

A quick trip on the newly-opened 242 flyover shows as much. To the West, Texas Children’s Hospital The Woodlands steadily inched skyward. Methodist The Woodlands Hospital mirrored the same to the East.

In The Woodlands, with developments like Hughes Landing on the rise, approximately 1.4 million square feet of Class A office space has either already hit the market—or will be coming online soon. Near Conroe, the area that was formerly Camp Strake is beginning its transformation into the 2,046-acre master-planned community of Grand Central Park. At the county’s southern border, Grand Parkway, eventually set to create a third loop around Houston, neared the finish line to a 2016 opening of segments F-1 and F-2, connecting Interstate 45 all the way to US 290. Meanwhile, the Exxon Mobil campus, just south of the county’s border, continued to work toward the completion of its 242-acre site.

The word “growth” hardly seems to do any of it justice—it’s a complete makeover of the area.

Fortunately, throughout Montgomery County, our communities are filled with great citizens who, rightfully, expect greatness from local leadership—including groundwater management.



**Photo by Ted Washington**  
Pictured is a segment of the recently developed Hughes Landing in The Woodlands—one of several areas of growth within Montgomery County.

The District’s board of directors approved a number of amendments to its rules and regulatory plan in 2015 in an effort to best serve the public’s interest. Through rigorous examination, the Rules and Bylaw Committee brought forth effective recommendations to the board. Additionally, a Stakeholder Advisory Committee was created in 2015 to obtain further feedback and refinement of potential rule changes. The committee was formed with representatives from cities, municipal utility districts, and local industry.

In July of 2015, the board approved a rule amendment primarily affecting the transferability of permits and the amount of authorized production for new Large-Volume Groundwater Users (LVGUs) in 2016. There is also a provision for additional interim production authoriza-

tion within the amendments.

One of the newly-approved amendments to the District Regulatory Plan (DRP) authorizes the transfer of permits between LVGUs, new LVGUs and Small-Volume Groundwater Users (SVGUs); permit transfers between LVGUs and SVGUs were previously prohibited. As the 2016 conversion date approaches, this change enables LVGUs and new LVGUs to acquire additional permitted authorization from other permit holders in the District in order to meet their water needs post-2016. Another amendment allows a new LVGU to produce up to 10 million gallons per year. This benefits not only new LVGUs, but also other joint Groundwater Reduction Plan (GRP) participants, freeing up previously-reserved water within a GRP for other conversion needs.

The District’s board approved

an additional interim production authorization in light of an ongoing strategic planning study being conducted by the District. This study is assessing water levels in the Gulf Coast Aquifer before the 2016 initial groundwater reduction and conversion, how the aquifer responds to the 2016 reduction in pumping, and opportunities for the development of additional groundwater supplies from the aquifer in the future. The study, expected to be completed by the end of 2016, will provide results that will lead to a recommendation as to future production limits. For this reason, the District is allowing existing or new LVGUs to obtain a permit or permit amendment for authorization to produce Gulf Coast Aquifer groundwater to meet increases in their post-2016 water demand during the period of January 1, 2017 through December 31, 2019, for an amount necessary to meet increases in the user's water demand after the user demonstrates they achieved their initial conversion obligation.

In December of 2015, the board approved a number of other changes including: a rule authoriz-

ing the creation of temporary permits for water wells used to supply water to construction projects or to supply water for the drilling of permanent wells; a rule amendment which eliminates certain provisions that prohibited the utilization of groundwater produced from the Gulf Coast Aquifer in counties immediately adjacent to Montgomery County as an acceptable alternative water source to comply with the LSGCD's regulatory system; and a rule amendment which creates a variance process in which a landowner may petition LSGCD for additional groundwater production authorization over and above that allowed under the District Regulatory Plan in situations where the landowner feels that the pumping limits imposed by the regulations impede his or her ability to obtain a fair share of the common groundwater resources in the aquifers underlying Montgomery County.

A synopsis of 2015's District rules and regulatory plan changes can be found in Objective 1.

The accomplishments of 2015 are largely the result of well-focused collaboration. Many voices from a variety of back-

grounds took a hard look at an increasingly complex problem—in an area booming with growth, with a weakening groundwater resource—what are the logical, necessary steps?

In a broader scope, regional collaboration has also been fruitful. Throughout 2015, Groundwater Management Area 14 worked diligently toward determining Desired Future Conditions, also known as DFCs. DFCs 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. A list of 2015 GMA 14 mile markers can be found on page 10.

A 90-day public comment period for proposed DFCs began on July 6 through October 3, 2015. During the public comment period, each GCD made available in the GCD office a copy of the proposed DFCs and all supporting materials.

At the start of 2016, District Representatives began reviewing a draft DFCs Explanatory Report. Upon a two-thirds vote of all GCDs in GMA 14, the DFCs will be adopted.

Overall, 2015 was an impressive, and even historic, year for groundwater management. District staff looks forward to an even more impressive and more historic year in 2016.

#### LEGAL MATTERS

In August of 2015, the City of Conroe, and eight private investor-owned utilities, filed a lawsuit against the District, challenging the District's authority and methodologies in its regulatory role. The District's prime directive to conserve, protect, and enhance groundwater resources on behalf of her citizens remains unchanged and undaunted.

## SUCCESSFUL ACHIEVEMENT OF 2015 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*

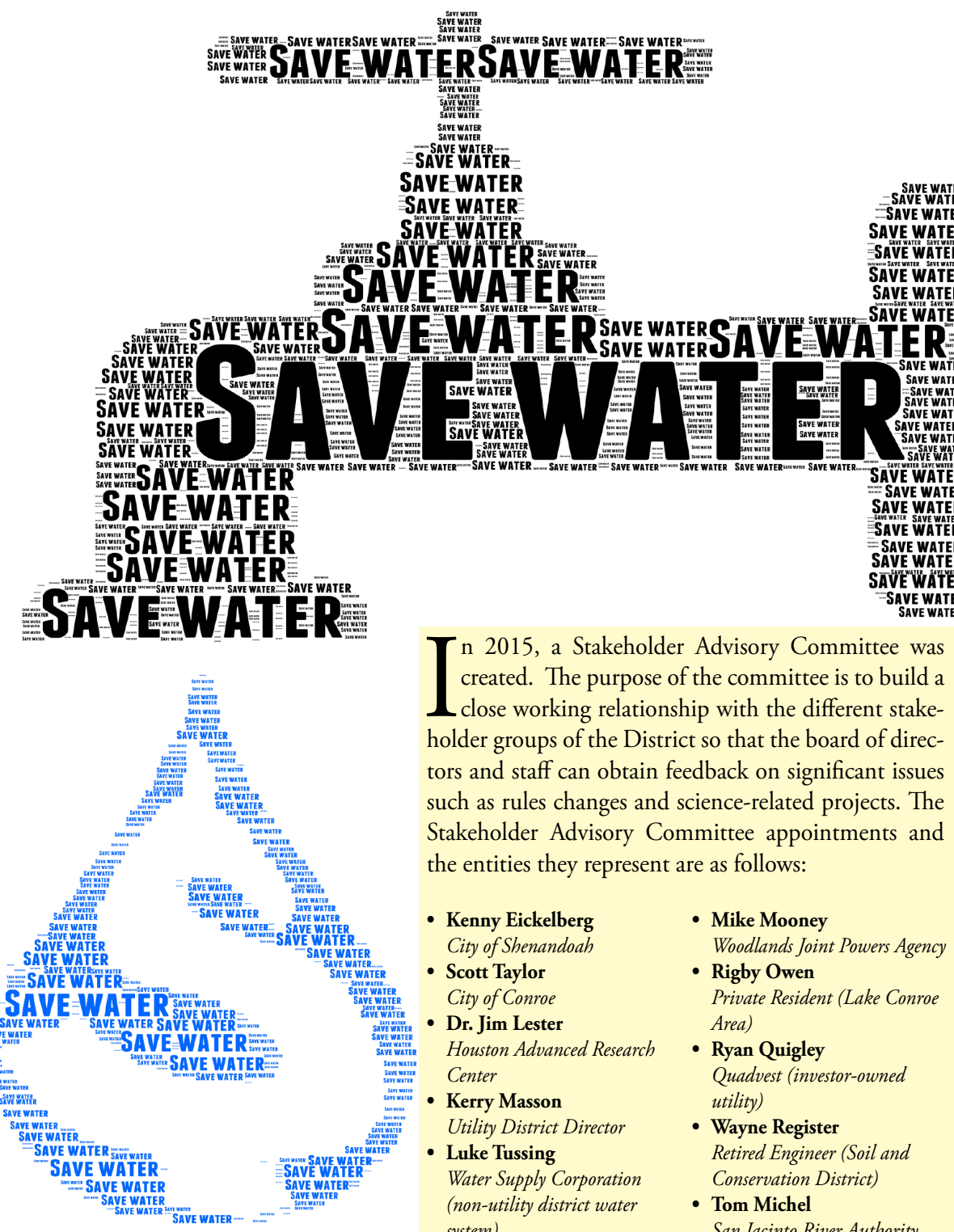
The District seeks to protect the Gulf Coast Aquifer, the economy and environment of Montgomery County, and private property rights for today’s constituents and for future generations. Therefore, the umbrella goal for the District, to which all other goals in this management plan are linked, is to manage 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.





In 2015, a Stakeholder Advisory Committee was created. The purpose of the committee is to build a close working relationship with the different stakeholder groups of the District so that the board of directors and staff can obtain feedback on significant issues such as rules changes and science-related projects. The Stakeholder Advisory Committee appointments and the entities they represent are as follows:

- **Kenny Eickelberg**  
*City of Shenandoah*
- **Mike Mooney**  
*Woodlands Joint Powers Agency*
- **Scott Taylor**  
*City of Conroe*
- **Rigby Owen**  
*Private Resident (Lake Conroe Area)*
- **Dr. Jim Lester**  
*Houston Advanced Research Center*
- **Ryan Quigley**  
*Quadvest (investor-owned utility)*
- **Kerry Masson**  
*Utility District Director*
- **Wayne Register**  
*Retired Engineer (Soil and Conservation District)*
- **Luke Tussing**  
*Water Supply Corporation (non-utility district water system)*
- **Tom Michel**  
*San Jacinto River Authority*

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 with-

in 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. Currently, Lone Star

GCD’s General Manager, Kathy Turner Jones, serves as the GMA 14 chairman. 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. The current, five-year joint-planning cycle will be concluded in early 2016.

## 2015 MILE MARKERS

### May 27, 2015

- Consideration and approval of DFC option resulting from HAGM Run #2 as a candidate for adoption as a proposed DFC to be further reviewed in consideration of the nine statutory factors listed in Texas Water Code Section 36.108(1-9) and in accordance with Section 3.04 of the administrative procedures adopted by GMA 14.

### June 24, 2015

- Consideration and approval of DFC option resulting from HAGM Run #2 for the Gulf Coast Aquifer System and from published TWDB GAM Runs for other relevant aquifers in GMA 14 as the proposed DFCs in accordance with Texas Water Code Section 36.108 (d) and (d-2) and in accordance with Section 3.05 of the administrative procedures adopted by GMA 14.

### July 2, 2015

- Information considered by GMA 14 throughout current round of joint planning was distributed and made available to GCDs in GMA 14 and on the Lone Star GCD webpage for public review.

### July 6—October 3, 2015

- The 90-day public comment period for proposed DFCs occurred. Each GCD held a public hearing on the proposed DFCs relevant to the individual GCD in accordance with requirements included in Texas Water Code Section 36.108 (d-2). During the public comment period, each GCD made available in the GCD office a copy of the proposed DFCs and all supporting materials such as documentation of factors considered under Texas Water Code Section 36.108 (d) and the groundwater availability model results.

### October 4, 2015

- After public hearing, each GCD compiled a summary of relevant comments received along with suggested revisions to proposed DFCs and basis for the revisions.

### October 28, 2015

- GMA 14 meeting for District Representatives to consider summary reports submitted by each of the GCDs in GMA 14 and consider any proposals for alternative DFCs. After agreement to a few editorial and non-substantive revisions, GMA 14 District Representatives directed contracted consultants to prepare a draft Explanatory Report for review and comment by the GMA 14 District Representatives.

### January 2, 2016

- Draft Explanatory Report provided to GMA 14 District Representatives for review and comment. This review process, as of February 1, 2016, is ongoing.

### Remaining Efforts

- In accordance with the requirements of Chapter 551, Government Code, desired future conditions shall be adopted by two-thirds vote of all GCDs in GMA 14.
- After submission of adopted DFCs, the TWDB will review for administrative completeness and then conduct execution of the Northern Gulf Coast GAM to calculate estimates of modeled available groundwater for GMA 14. This process at the TWDB may take from six to eight months.
- In accordance with Texas Water Code Section 36.108 (d-4), as soon as possible after a GCD receives the adopted final DFC resolution and explanatory report, the GCD shall adopt the DFCs in the resolution and explanatory report that apply to the GCD.

**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**

Four new rules were approved by the board on July 14, 2015 and three new rules approved by the board on December 8, 2015 following drafting processes that took place throughout the year.

All postings, notices, meeting announcements and draft rules were placed on the District's website. District staff also wrote and distributed press releases on the topic, resulting in media coverage and meeting attendance by interested parties. 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**

The District's board of directors approved a number of amendments to its rules and regulatory plan at its July 2015 and December 2015 board meeting.

**JULY 2015**

The approved rule amendments at the July board meeting, primarily affecting the transferability of permits and the amount of authorized production for new Large-Volume Groundwater Users (LVGUs) in 2016. A provision for additional interim production authorization was also created.

One of the approved amendments to the District Regulatory Plan (DRP) authorizes the transfer of permits between Large-Volume Groundwater Users, new LVGUs and Small-Volume Groundwater Users (SVGUs); permit transfers between LVGUs and SVGUs were previously prohibited. As the 2016 conversion date approaches, this change is key,

*continued on page 12*

*continued from page 11*

because it enables LVGUs and new LVGUs to acquire additional permitted authorization from other permit holders in the District in order to meet their respective water needs post-2016.

The second new amendment allows a new LVGU to produce up to 10 million gallons per year. This benefits not only new LVGUs, but also other joint Groundwater Reduction Plan participants, freeing up previously-reserved water within a GRP for other conversion needs.

The third change involves clarifying some of the permitting procedures between the District and the participants in a joint GRP. This places the joint GRP sponsor as responsible for informing the District of each participant's expected groundwater production annually; the joint GRP sponsor also is responsible for paying water use fees and other fees for all participants.

The fourth change allows an additional interim production authorization in light of an ongoing strategic planning study being conducted by the District. This study is assessing the following: water levels in the Gulf Coast Aquifer before the 2016 initial groundwater reduction and conversion; how the aquifer responds to the 2016 reduction in pumping;

and opportunities for the development of additional groundwater supplies from the aquifer in the future.

The study, expected to be completed by mid-2017, will provide results that will lead to a recommendation as to future production limits. For this reason, the District is allowing existing or new LVGUs to obtain a permit or permit amendment for authorization to produce Gulf Coast Aquifer groundwater to meet increases in their post-2016 water demand during the period of January 1, 2017 through December 31, 2019, for an amount necessary to meet increases in the user's water demand after the user demonstrates they achieved their initial conversion obligation.

## **DECEMBER 2015**

The December 2015 approved amendments primarily address three areas of groundwater management.

The first rule amendment authorizes the creation of temporary permits for water wells used to supply water to construction projects or to supply water for the drilling of permanent wells. It also establishes the requirements related to obtaining such permits, including an obligation for the well driller who obtains such a temporary permit to plug the well upon completion of the project in order to protect groundwater

quality in Montgomery County.

The second rule amendment eliminates certain provisions that prohibited the utilization of groundwater produced from the Gulf Coast Aquifer in counties immediately adjacent to Montgomery County as an acceptable alternative water source to comply with the LSGCD's regulatory system.

The third rule amendment creates a variance process in which a landowner may petition LSGCD for additional groundwater production authorization over and above that allowed under the District Regulatory Plan in situations where the landowner feels that the pumping limits imposed by the regulations impede his or her ability to obtain a fair share of the common groundwater resources in the aquifers underlying Montgomery County, based upon the particular facts and circumstances related to the individual landowner.

The criteria approved by the board of directors for considering and acting on such a variance application were taken directly from the laws governing groundwater management as established recently by the Texas Supreme Court and the Texas Legislature.

All three amendments were supported by the Stakeholder Advisory Committee which was specifically set up to assist the board during review processes.

**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 2015 is provided in Table 1.

<b>TABLE 1: NUMBER OF EXEMPT AND PERMITTED WELLS REGISTERED OR PERMITTED BY THE DISTRICT FOR 2015</b>	
Number of Exempt Wells Registered .....	488
Number of Non-Exempt Wells Permitted.....	45
Number of Non-Exempt Catahoula Wells Permitted.....	2
<b>TOTAL.....</b>	<b>535</b>

<b>TABLE 2: NUMBER AND TYPE OF APPLICATIONS FOR THE PERMITTED USE OF GROUNDWATER RECEIVED IN 2015</b>	
Amendment to an Existing Operating Permit or Historical Use Permit Application* .....	103
New Operating Permits** .....	37
<b>TOTAL.....</b>	<b>140</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 2015**

Applications Approved as Submitted.....	118
Applications Approved as Amended .....	19
Applications or Permits Expired Due to inaction by Applicant or Permittee .....	0
Applications Approved w/ Conditions .....	3
Applications Denied.....	0
<b>TOTAL.....</b>	<b>140</b>

**TABLE 4: PRIMARY USE OF WATER ON PERMITS APPROVED IN 2015**

Industrial .....	10
Irrigation.....	20
Irrigation (Agriculture) .....	0
Public Supply/Commercial .....	48
Public Water Supply (PWS) .....	61
Other .....	1
<b>TOTAL.....</b>	<b>140</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

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:

- Annual Gulf Coast Water Conservation Symposium
- Lone Star College Continuing Education
- Greater East Montgomery County Chamber of Commerce
- Woodlands Township Water Conservation Symposium
- East 1488 Community Association
- City of Oak Ridge North

### EVENTS:

- Woodlands and Wildlife Expo
- Montgomery County Water Symposium
- Woodlands Water Fest
- Texas Sawmill Festival
- Leadership Montgomery County Texas Water Development Board Raincatcher Award presentation
- Conroe KidzFest
- Woodlands WaterFest

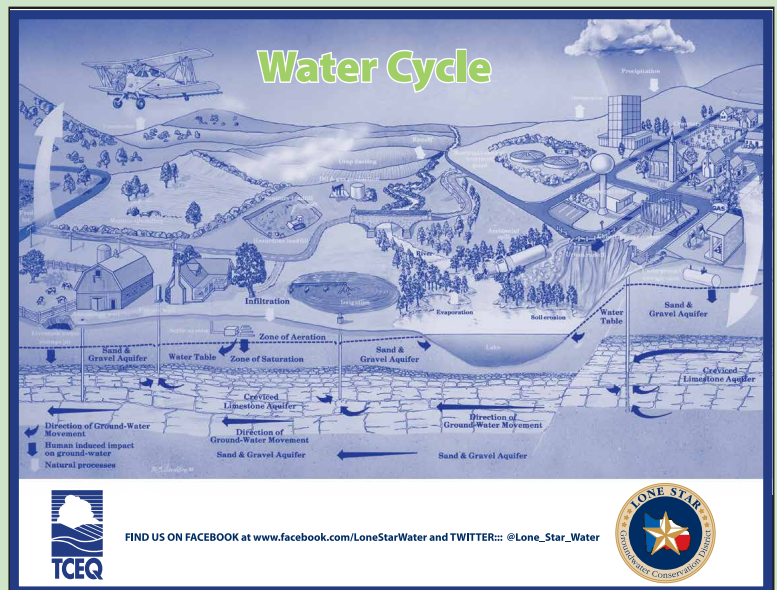
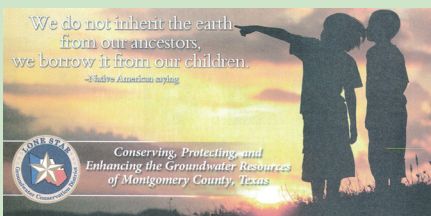
### EDUCATION OUTREACH:

Teaching the youth good water conservation habits is key to protecting the future levels of groundwater. Not only are they more open to the idea of saving water, they also carry conservation messages back into their homes and teach their parents.

In 2015, the District provided students, in area public school districts, book covers that conveyed various conservation messages.

### ADDITIONAL OUTREACH ACTIVITIES

- Distributed billing inserts with water conservation tips.
- Authored monthly column in Dock Line magazine.
- Distributed timely press releases to area media outlets.
- Communicated informational and educational material via social media.



FIND US ON FACEBOOK at [www.facebook.com/LoneStarWater](http://www.facebook.com/LoneStarWater) and TWITTER: @Lone\_Star\_Water



**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 contain-

ing 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 has maintained a link on its website to the most recent version of the Best Management Practices Guide by the Texas Water Advisory Council.

Additional helpful links on conservation best practices are also available.



## PUBLIC OUTREACH



The District's community outreach efforts throughout 2015 continued to engage children and adults throughout the area.



Leadership Montgomery County's 2014 class receives the Texas Water Development Board's Texas Rain Catcher Award.



## 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 Rules and Bylaw Committee met throughout 2015 to discuss and prepare recommendations for the Board regarding appropriate additions and updates to the District’s rules. Meeting dates included:

- January 28, 2015
- February 5, 2015
- April 9, 2015
- September 29, 2015
- October 22, 2015

The committee tabled proposed rules regarding well location, tract size, and well spacing. Other items the committee discussed over the course of the year included: Permitting requirements related to the transferability of Total Qualifying

## DISTRICT RULES TIMELINE

- October 14, 2014.....Rulemaking Hearing**
  - Hearing received continuance to November 11, 2014. Public had until October 21, 2014 to provide additional comments.
- November 11, 2014 .....Regular Board Meeting**
  - *Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014* — Legal Counsel updates; public comment received; hearing received continuance to December 9, 2014.
- November 18, 2014 ..... Public Workshop**
  - Public workshop on proposed amendments to district rules and district regulatory plan.
- December 9, 2014.....Regular Board Meeting**
  - *Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014* — Legal Counsel updates; public comment received; hearing received continuance to January 13, 2015.
- January 13, 2015 .....Regular Board Meeting**
  - *Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014* — Legal Counsel updates; public comment received; hearing received continuance.
- January 28, 2015 ..... Public Workshop**
  - Public workshop on proposed amendments to district rules and district regulatory plan.
- April 14, 2015.....Regular Board Meeting**
  - *Rules Development and Bylaws Committee report* — Board unanimously voted to permanently table proposed rules relating to well spacing and tract size.

Demand (TQD); the ability a petition process; allowing groundwater retrieved from outside Montgomery County to be used to meet Groundwater Reduction Plan (GRP) requirements.

**DISTRICT RULES TIMELINE — CONTINUED**

**May 12, 2015 ..... Notice of Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014**

- Board unanimously voted to delay a vote on proposed amendments to the District Rules and Phase II(B) of the District Regulatory Plan until a proposed advisory committee had had an opportunity to meet, discuss items presented. Board unanimously voted to continue hearing on June 9, 2015.

**June 9, 2015 ..... Notice of Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014**

- Legal Counsel updates; public comment received; Hearing received continuance to July 14, 2015.

**July 14, 2015..... Notice of Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014**

- Legal Counsel updates; public comment received; Motion passed to approve amendments to District Rules and Phase II(B) of the District Regulatory Plan.

**November 10, 2015 .....Regular Board Meeting**

- *Rules Development and Bylaws Committee report* — The committee recommended proposed amendments to District Rules and District Regulatory Plan.

**December 8, 2015..... Rulemaking Hearing**

- Legal Counsel updates; public comment received; Motion passed to approve amendments to District Rules and Phase II(B) of the District Regulatory Plan.

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

Commercial .....	65,836,325
Industrial.....	438,546,351
Irrigation.....	781,359,117
Irrigation (Agriculture).....	127,912,950
Public Supply .....	467,832,045
Public Supply (PWS).....	20,154,913,252
*AWS-CRAF.....	1,182,948,000
<b>**Total .....</b>	<b>23,219,348,040</b>
<b>Grand Total†.....</b>	<b>22,036,400,040</b>

† Less AWS Pumping

\* AWS-Catahoula Restricted Aquifer Formation

\*\*Data received as of March 23, 2016. The reported pumping for 2015 is incomplete due to incomplete reporting by a small number of permittees

**TABLE 5: THE AMOUNT OF WATER USE FEES GENERATED BY THE DISTRICT IN 2015**

<b>Water Use Type</b>	<b>Permitted Amount</b>	<b>Fee Rate</b>	<b>Fee Amount</b>
*HUP / Operating Permits	30,728,108,728 gallons	\$0.06/1000 gallons	\$1,843,686.29
Water Subject to Transportation Fee	20,258,730 gallons	\$0.09/1000 gallons	\$1,823.29
AG Permits/Applications	541,624,488 gallons	\$1.00 per acre foot	\$1,662.18
Catahoula AWS Production Permits	2,317,740,000 gallons	\$0.06/1000 gallons	\$139,064.40
<b>Total</b>	<b>33,607,731,946 gallons</b>		<b>\$1,986,236.39</b>

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

## GOAL 4: CONTROLLING AND PREVENTING SUBSIDENCE

Subsidence 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

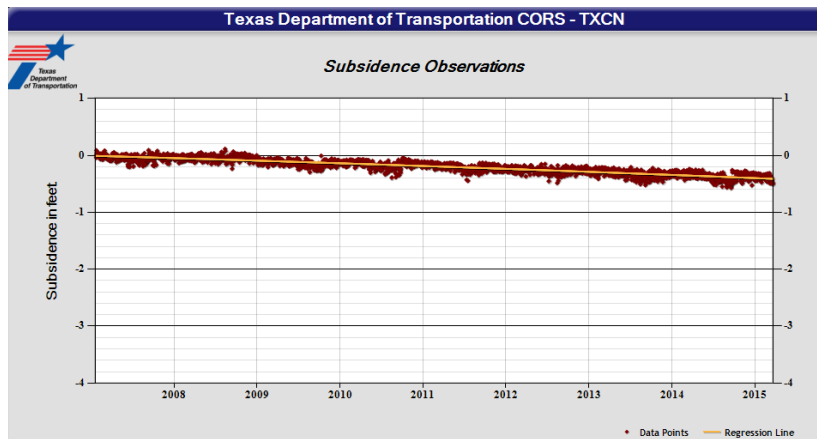
Each year, a summary of the joint conference on subsidence issues will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

On December 3, 2015, Kathy Turner Jones, General Manager and

Paul R. Nelson, Assistant General Manager, met with Mike Turco, General Manager of the Harris-Galveston Subsidence Districts, Robert Thompson, General Manager of the Ft. Bend Subsidence District and Deputy General Manager for Permitting and Water Conservation for the Harris-Galveston Subsidence District, and Kevin Ebrum Deputy General Manager for Compliance and Enforcement for the Harris-Galveston Subsidence District, to discuss and share information relative to subsidence and the prevention of same in Montgomery County. During that meeting, the group reviewed the data charts produced using data collected at the eight subsidence monitoring units located throughout the county and maintained by LSGCD staff. Charts displaying cumulative data for all units placed in 2011 are now accessible on the web pages of both the subsidence districts and LSGCD. Data for the two other units is also

*continued on page 21*



*continued from page 20*

available on the web site. These units have been in place and monitoring land level changes for more than thirteen years. All of these graphs are available for viewing by anyone with access to the Internet and Google Earth. In addition to reviewing the data collected by the monitors, the group discussed the continued funding of the data evaluation by a third party (that is neither Lone Star, nor the subsidence districts) and the possibility of locating additional monitoring stations in Montgomery County. The positive effects of converting to surface water on the rate of subsidence in Harris and Galveston Counties was also discussed.

.....

**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**

Results from the subsidence monitor stations will be noted in the summary of the joint conference on subsidence described in Performance Standard 4.1 and included in the Annual Report submitted by the General Manager to the Board of Directors of the District.



**FALLING INTO THE WELL:  
A SUBSIDING TRUTH**

*By: James Ridgway, Jr. | Education / Public Awareness Coordinator | Lone Star Groundwater Conservation District*

**The story of Thales**

About 2,600 years ago, there was a man named Thales and, so the stories say—he was quite the dreamer.  
 In one account, the ancient Greek went wandering about, his eyes lost in the night sky, and while he contemplated all that brilliant starry firmament above, he fell into a well.  
 A nearby observer, likely wearing a wide grin, casually pointed out that Thales would be wiser, and drier, if he simply paid a little more attention to where he was walking. It's not a bad point, but it's also not the whole story.  
 Thales wasn't just another philosopher with his head in the clouds. He was a scientist, and a pretty good one at that. He was a big-picture kind of guy, even if that meant stumbling into the occasional well.  
 In another story, he proved as much when he used his knowledge of the

**very slowly.**

Land subsidence is the sinking of the land surface, caused by compressing the many layers of clay and sand beneath the surface. In the greater Houston area, land subsidence is caused primarily by the withdrawal of groundwater. When we pump large amounts of groundwater from the aquifers beneath us, we pull water out of the many layers of clay and sand, which causes them to compact. Some natural land subsidence occurs over long periods of time, due to natural settling, but the amount of natural subsidence doesn't compare to the subsidence rates caused by people.  
 The United States Geological Survey's website notes that "subsidence is a global problem and, in the United States, more than 17,000 square miles in 45 States, an area roughly the size of New Hampshire and Vermont com-

**STATUS**

The group agreed that the data gathered by the units to date are consistent with what we expected to see based on their location. Units 12 and 13 have been in place for over 13 years, and are located in areas of significant pumpage and/or growth (Woodlands and Kingwood). The data collected over that time demonstrate a linear decline in land surface over the 13-year period.

Six additional units were placed strategically throughout the county in 2011. It was the consensus of the group that the data collected by the units thus far has proved very useful and that the monitoring for changes in surface elevation should continue on the established schedule. The possible expansion of the subsidence moni-

toring network was also discussed. The group recommended that, due to significant increases in population and water demands, expanding coverage should be considered.

Subsidence data are readily available for viewing by the public on the District's website. On page 20 is a reproduction of the data collected for the TxDOT site. In addition, there is also a detailed article on subsidence on the District's website. District staff also authored an educational article about subsidence in December for Dock Lines Magazine.

**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)

## *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 coordina-

tion 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 is a voting member of the Region H Planning Group, representing Groundwater Management Area 14. The Assistant General Manager serves as the General Manager’s Alternate. Each year, the District’s representatives participate in the regional planning process by attending all Region H Planning Group meetings and by serving on committees of the Group. Attendance at these meetings and participation on the committees provides the opportunity to provide valuable input regarding groundwater’s role in overall regional planning. In 2014, Region H adopted the final 2016 Regional Water Plan and approved forwarding the document to the

Texas Water Development Board (the “Board”). The Group also approved the list of prioritized projects from the 2016 Regional Water Plan for submittal to the Board.

A record of attendance of District Representatives at each Region H Water Planning Group is noted below:

- **February 4, 2015**  
Kathy Turner Jones,  
Paul R. Nelson
- **March 11, 2015**  
Paul R. Nelson
- **April 8, 2015**  
Kathy Turner Jones
- **October 7, 2015**  
Kathy Turner Jones,  
Paul R. Nelson
- **November 4, 2015**  
Kathy Turner Jones  
Paul R. Nelson

**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.

tion on Environmental Quality and the Railroad Commission of Texas. Two injection well applications were filed during 2015. The first was filed by Denbury Onshore on August 3. This application was protested by the District due to groundwater concerns and the potential for contamination. Negotiations were initiated by District staff and Denbury's application was withdrawn in September. The second application was filed by Wheeler Operating Company. The District again protested and began negotiations with the applicant. In October, the application was withdrawn.

Also in 2015, the District completed the construction of a baseline of water quality data derived from testing done by the Texas Commission on Environmental Quality. A table of key water quality information was then developed, allowing the District to track selected parameters that will provide an early warning of possible contamination.

**STATUS**

During 2015 the District continued to track permit applications/permit amendment applications for injection wells filed with the Texas Commis-



## 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.

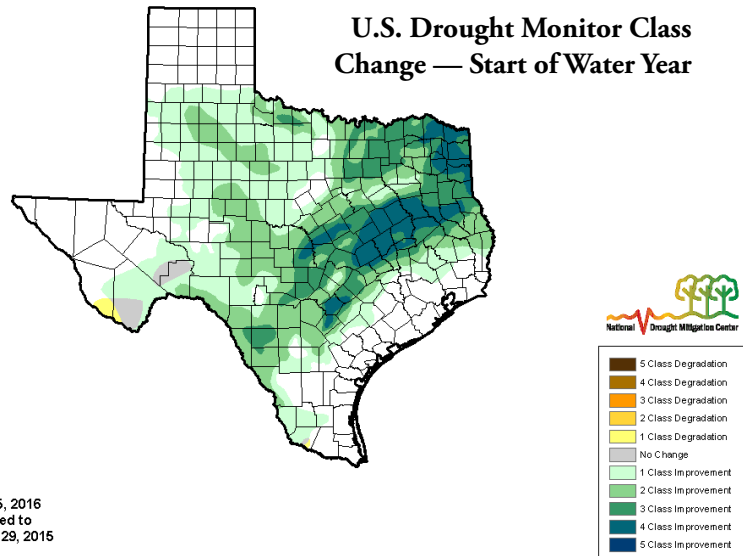
### PERFORMANCE

#### 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), 2015's annual rainfall total equaled 52.34 inches. Based on its historic data going back to 1998, the station's average annual rainfall total equals 40.32 inches.

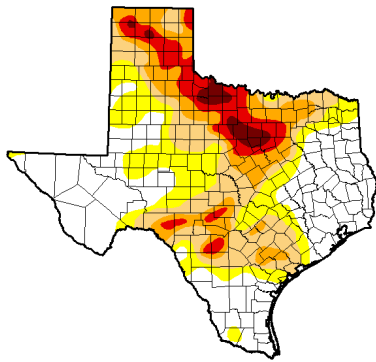
Half of the year—January, February, June, July, September, and November—were under their respective monthly averages while the other half—March, April, May, August, October, and December—

exceeded their respective monthly averages.

In May, the station recorded 14.55 inches of rainfall, nearly doubling the previous May record set back in 2004. It also became the third wettest month in the station's history after November 2004's record of 14.61 inches and October 2006's record of 22.06 inches.

February was the driest month of 2015 at .75 inches of rainfall, about two inches shy of its historic monthly average. August was the second driest month of the year at 1.44 inches and September the third driest at 1.78 inches.



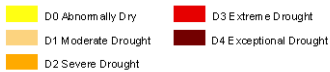


**January 6, 2015**  
(Released Thursday, Jan. 8, 2015)  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

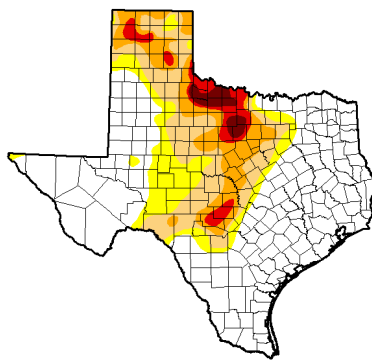
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	38.95	61.05	41.81	24.07	10.72	2.47
<b>Last Week</b> 12/02/2014	34.37	65.63	44.68	25.73	11.70	3.17
<b>3 Months Ago</b> 10/7/2014	29.64	70.36	49.29	29.49	11.78	2.88
<b>Start of Calendar Year</b> 12/01/2014	34.37	65.63	44.68	25.73	11.70	3.17
<b>Start of Water Year</b> 9/01/2014	28.92	71.08	48.95	29.54	11.26	2.69
<b>One Year Ago</b> 1/7/2014	28.13	71.87	43.89	20.84	5.82	0.79

Intensity



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

**Author:**  
Brad Rippey  
U.S. Department of Agriculture



**May 5, 2015**  
(Released Thursday, May. 7, 2015)  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

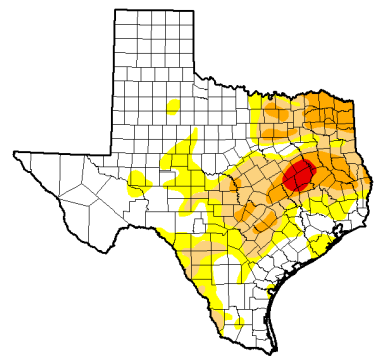
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	59.68	40.32	29.55	15.50	5.48	1.86
<b>Last Week</b> 4/28/2015	58.89	41.11	30.71	15.83	5.57	2.02
<b>3 Months Ago</b> 2/9/2015	43.52	56.48	38.57	22.76	11.24	2.82
<b>Start of Calendar Year</b> 12/01/2014	34.37	65.63	44.68	25.73	11.70	3.17
<b>Start of Water Year</b> 9/01/2014	28.92	71.08	48.95	29.54	11.26	2.69
<b>One Year Ago</b> 5/9/2014	5.11	94.89	83.35	65.13	46.17	21.28

Intensity



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

**Author:**  
Mark Svoboda  
National Drought Mitigation Center



**September 1, 2015**  
(Released Thursday, Sep. 3, 2015)  
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	58.06	41.94	24.76	9.99	1.32	0.00
<b>Last Week</b> 8/25/2015	59.34	40.66	23.52	6.37	0.00	0.00
<b>3 Months Ago</b> 6/2/2015	90.82	9.18	0.64	0.00	0.00	0.00
<b>Start of Calendar Year</b> 12/01/2014	34.37	65.63	44.68	25.73	11.70	3.17
<b>Start of Water Year</b> 9/01/2014	28.92	71.08	48.95	29.54	11.26	2.69
<b>One Year Ago</b> 9/2/2014	13.26	86.74	61.39	37.92	16.18	2.76

Intensity

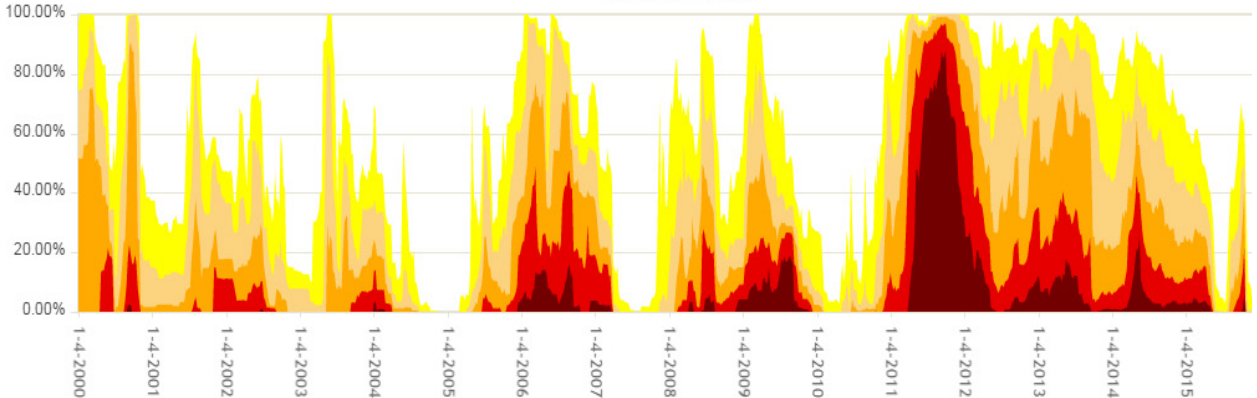


The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

**Author:**  
Anthony Artusa  
NOAA/NWS/NCEP/CPC



Texas Percent Area



*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, Serve Water On Request Only, and the Home Water Works.

A visit to the District’s new headquarters is all that is required to realize the commitment of the District to rainwater harvesting. 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 design 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.



### 2015 WATER EFFICIENCY NETWORK PRESENTATIONS

**January 2015:** Presentation on Developing the Region H 2016 Regional Water Plan—by Judge Mark Evans.

**March 2015:** Presentation on Water Conservation by the Yard—Sierra Club/National Wildlife Federation.

**April 2015:** Presentation titled, “Whiskey’s for drinkin’ ... Water’s for fightin’”—by Gene Fisseler, NRG.

**August 2015:** Presentation on Maintaining

flow to the end of the pipe—Dr. Emily Seldomridge.

**September 2015:** Presentation on 2016 Region H Initially Prepared Regional Water Plan—Jason Afinowicz.

**October 2015:** Presentation on Springwoods Village—Andres Salazar.

**November 2015:** Meeting Water Planning Goals with New Data on Urban Conservation Programs—Katie Anderson.

**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, Serve Water On Request Only, 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,

Serve Water On Request Only, 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 conservation page displayed prominently on the site's main menu, which contains practical information on ways to conserve water at home, both indoors and out. Also on this page, there are links to outside resources, including the Texas AgriLife Earth Kind Plant Selector (na-

tive plant resource), Gulf Coast/Water Efficiency Network, Water IQ, Serve Water on Request Campaign and the Home Water Works website. Many of these resources, in addition to others, are also located on the "Links" page for easy use.

One of the District's significant conservation efforts is the Gulf Coast/Montgomery County Water Efficiency Network. 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. Topics covered in 2015 can be examined on page 28.

On May 22, 2015, LSGCD's Assistant General Manager Paul R. Nelson received the North Houston Association's Compass Award for his long-standing support of the Association and its programs. NHA recognized Nelson for forming the Gulf Coast/Montgomery County Water Efficiency Network. He has served on the Association's environment committee, providing reports and updates on the issue of water supply and quality, as well as speaking about the topic at a variety of NHA membership events.



**Pictured, center, Paul R. Nelson receives the North Houston Association's Compass Award**

## 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 new District headquarters. This information will be available at the main entrance to the District 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 new 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 educational 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, which describes all types of systems, ranging from small home systems to more elaborate ones.

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## 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.

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*continued on page 29*

*continued from page 28*

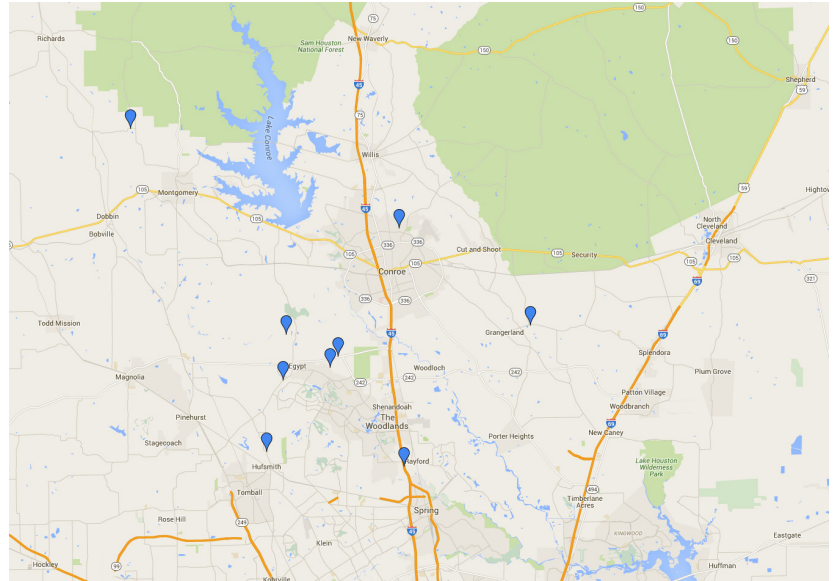
## PERFORMANCE

### 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 2015, 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, working in conjunction with Texas A&M AgriLife staff, the District compiles evaporation and transpiration information based on relative humidity, temperature, wind speed and radiations 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 eight gauges located throughout the county. 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.

Also in 2015, the District added an interactive mapping system of the rain gages to its website. In addition to being able to determine the amount of water that should be applied in the next week on a chart, the public can now 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.

To provide an even greater range of rain data coverage, the District funded the purchase and installation of an additional rain gauge on the east side of the county in 2015. Also in 2015, personnel representing several water agencies and municipal utility districts contacted Lone Star to inquire about the District's processes and equipment. It is recommended that the District work with these agencies in 2016 to increase the geographic coverage of the system, providing the public with an expanded network of rain data and watering information.



How Much You Should Water This Week? >

## FINANCIAL SUMMARY

For the fiscal year ending December 31, 2015, the District's total assets decreased by \$613,345 and total current and non-current liabilities decreased by \$704,367. Net position increased by \$91,022.

The decrease in assets and liabilities is attributable, respectively, to a decrease in accounts receivable and deferred revenue at year-end December 31, 2015. The decrease in accounts receivable, as well as the corresponding decrease in deferred revenue, is attributable to the implementation of DRP Phase II(B) requirements, which require Large-Volume Groundwater Users (LVGU) to reduce their annual groundwater production to 70 percent of their total qualifying demand.

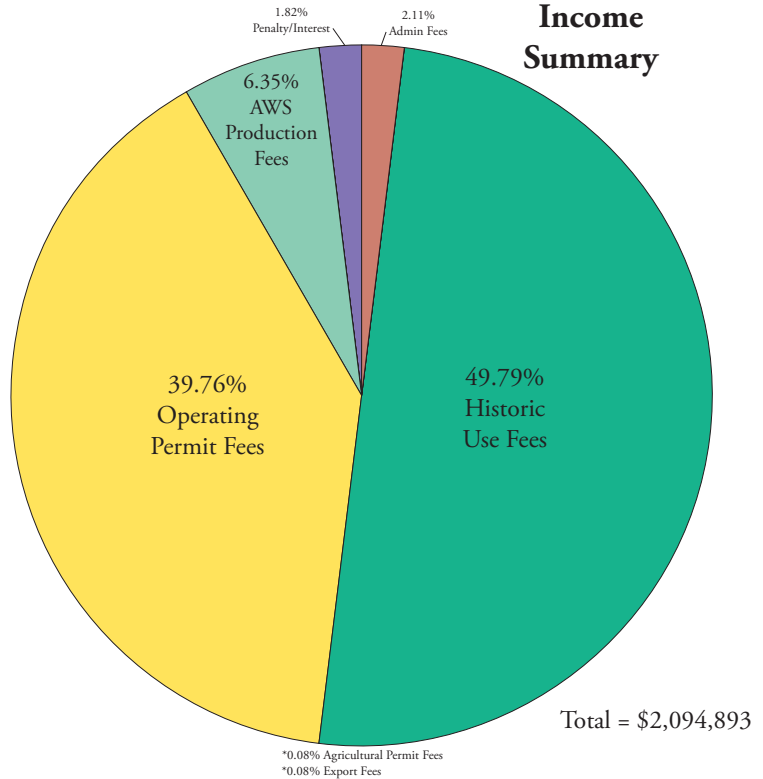
During the year, the District had expenses that were \$100,883 more than the prior year. This was primarily due to legal and engineering consulting fees.

Total revenues in the current year were \$56,824 more than in 2014, largely attributable to an increased amount of operating permit fees. Because the District's water use fee remained steady in 2015, the higher revenue directly relates to the amount of groundwater permitted.

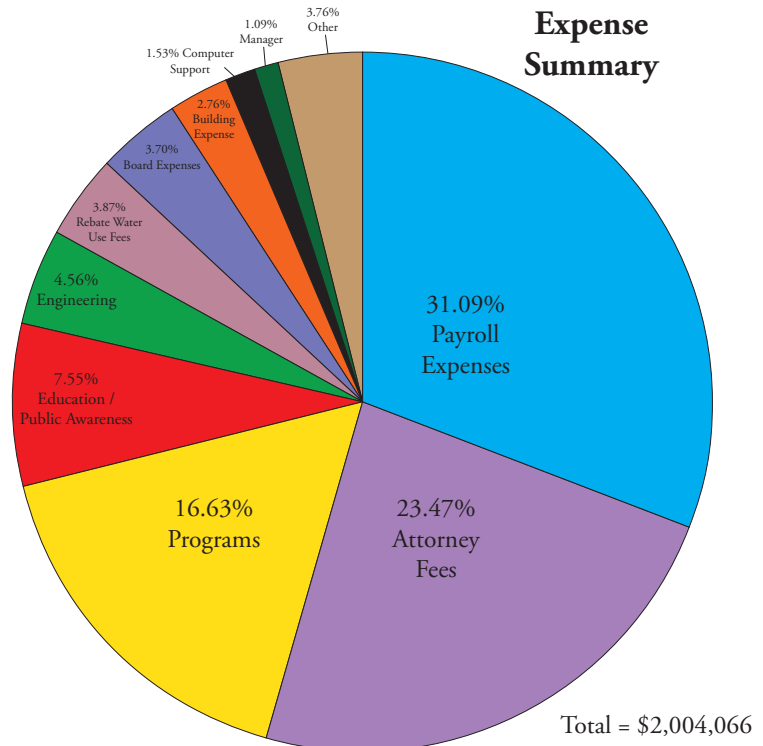
Total net position of the District increased by 3 percent over the year prior.

These amounts are per the unaudited financial statements; the annual audit has not been completed prior to creation of this report.

## Income Summary



## Expense Summary



# WATER CONSERVATION



## DON'T LEAVE THE TAP RUNNING NEEDLESSLY

Turn off your sink faucet while washing hands, brushing teeth and scrubbing dishes and pots



## USE DUAL FLUSH TOILET

Don't flush it more than necessary

## STOP LEAKY TOILET AND DRIPPING FAUCETS

A faucet that drips at the rate of one drop per second will waste 2,700 gallons per year



## EATING LOCAL ORGANIC FOOD AND LESS MEAT

Some foods require a lot more water to produce especially foods with carbon footprint

## CHOOSE AND USE YOUR APPLIANCES WISELY

Use energy efficient appliances



## REDUCING FLOWS OF WATER

Use high efficiency faucet aerator and low flow shower head

## SET UP A RAIN BARREL

Rain barrel collects rain water from eaves to water your garden



**Lone Star Groundwater Conservation District**

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