



2016

ANNUAL
REPORT

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CREATION



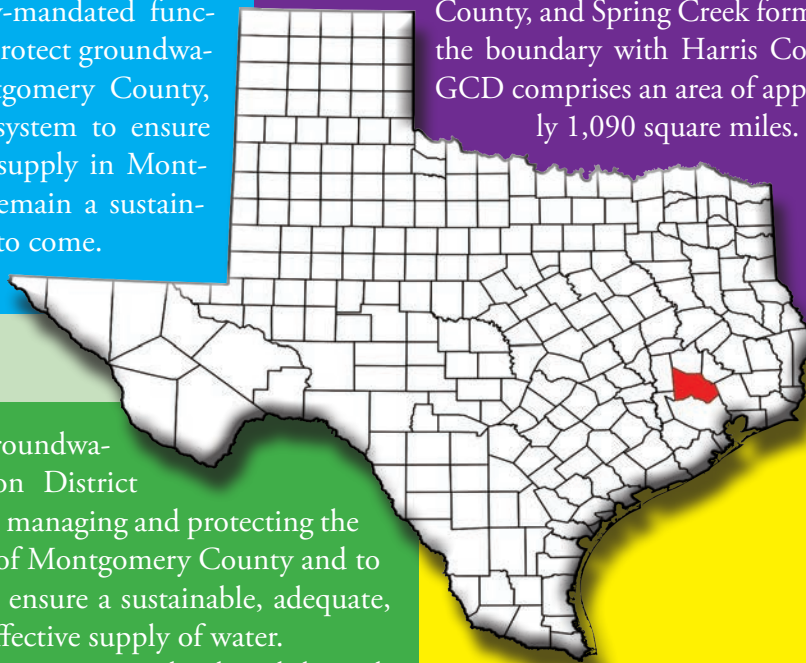
In 2001, the 77th Texas Legislature, through House Bill 2362, authorized the creation of the Lone Star Groundwater Conservation District (LSGCD). Montgomery County voters then confirmed the District's creation on November 6, 2001, with 73.85 percent of the vote.

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

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.



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.

DISTRICT OFFICE

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 Conroe, Texas 77303
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www.LoneStarGCD.org





KATHY TURNER JONES

General Manager

Kathy 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

Paul R. 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



James M. Stinson, PE
Vice President

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



Rick Moffatt
Secretary

Represents MUDs East of Interstate 45 | 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, 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



Gregg Hope
Member

Represents Montgomery County | Term Expires Jan. 31, 2019

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
-Jim Stinson
-Gregg Hope
-Roy McCoy

Policy & Personnel

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

Rules & By-Laws

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

Water Awareness & Conservation

-Billy Wood, Chair
-Scott Weisinger
-Rick Moffatt
-Gregg Hope

Findings & Review

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

Executive Committee

-Richard Tramm, Chair
-Jim Stinson
-Billy Wood
-Rick Moffatt

Professional Services Committee

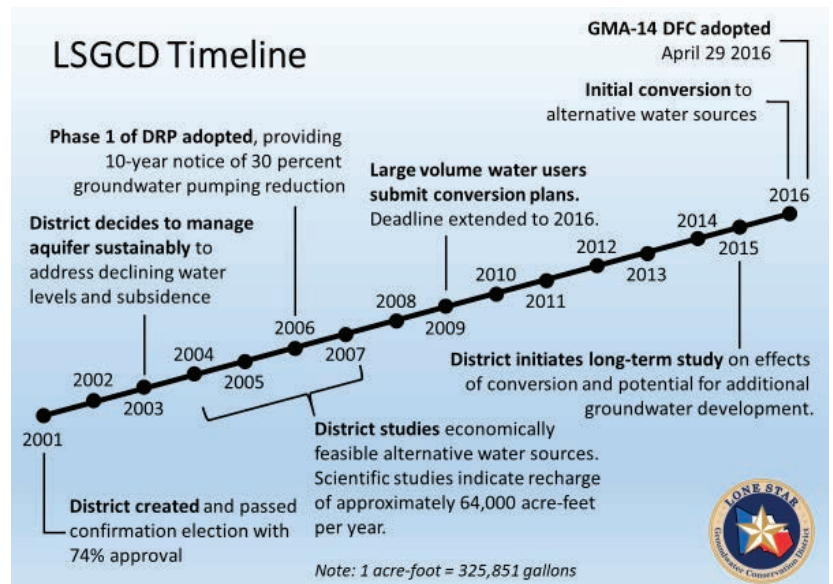
-Rick Moffatt, Chair
-John Bleyl
-Jim Stinson
-Scott Weisinger

While Lone Star Groundwater Conservation District's sixteen-year lifespan has been full of notable achievements, 2016 ushered in an entirely unique chapter to that history. It also marked the first year in Montgomery County's 179-year history in which, despite ongoing exponential area growth, groundwater production was significantly reduced.

Of course, this was not a random occurrence; it was the culmination of a vast and more than decade-long concerted effort to step closer to obtaining a truly sustainable level of Montgomery County groundwater production for today's citizens—and of equal importance—all those potential citizens tomorrow may bring.

At the core of such potential, as history has always shown, is accessible and affordable fresh water. It is the ultimate foundation on which communities need to thrive.

Ten years earlier, in 2006, the District formally adopted Phase I of what is a multi-phased regulatory plan designed to require a comprehensive conversion from groundwater to Alternative Water Sources. The ultimate aim will be to reduce the total annual groundwater production within Montgomery County to a level that does not exceed, on average, the sustainable yield of the Gulf Coast Aquifer.



That decade of planning matured into District policy and at the beginning of 2016, required each Large-Volume Groundwater User (LVGU) to reduce its annual groundwater production by implementing water conservation measures and/or using an Alternative Water Source.

Now that a calendar year has come and gone with these regulations in place, an unprecedented data set accumulates. It is the kind of data which invites a level of scientific inquiry into Montgomery County's hydrology never previously possible. While one year of data focusing on the effects of reduced groundwater pumpage is still a limited scope in the grand scheme, it, nonetheless, allows for a critical glimpse at the basic, underlying questions so many citizens and their respective leaders seek to answer more empirically—*How much groundwater can economi-*

cally be withdrawn while ensuring the aquifers remain a sustainable resource? To what degree can a collective county-wide effort to reduce groundwater usage contribute to the recharge, and overall health, of the county's locally tapped aquifers? These questions are as interesting as they are complicated. Still, ongoing studies spearheaded by the District are making progress.

For instance, the District's Strategic Plan Study, specifically aimed at expanding scientific understanding of available groundwater resources in Montgomery County, is nearing its completion. The study is made up of three separate tasks which each build upon the other: Task 1—Groundwater Production and Water-level Monitoring Program Assessment; Task 2—Total Estimated Recoverable Storage and Implications of Groundwater Management;

and Task 3—Future Groundwater Availability. At the December 2016 Regular Board Meeting, the board officially accepted the Technical Memorandum marking the completion of the second of these tasks.

Meanwhile, on April 29, 2016, in accordance with the requirements of Chapter 551, Government Code, Groundwater Management Area 14 (GMA 14)—which LSGCD is a member of—adopted its latest Desired Future Conditions (DFCs). Desired future conditions are defined in the Texas Administrative Code as “the desired, quantified condition of groundwater resources (such as water levels, spring flows, or volumes) within a management area at one or more specified future times as defined by participating groundwater conservation districts within a groundwater management area as part of the joint planning process.” The DFC adoption process takes place every five years.

On July 12, 2016, the Texas Water Development Board (TWDB) determined GMA 14’s Explanatory Report on its recently adopted DFCs administratively complete. The following month, on August 9, 2016, the LSGCD board officially adopted the DFCs for Gulf Coast Aquifers that apply to LSGCD. Lastly, on December 15, 2016, TWDB completed the execution of the Northern Gulf Coast

Groundwater Availability Model to calculate estimates of modeled available groundwater for GMA 14.

Progress, however, is not without its obstacles; it often requires an uphill trek to reach the momentum on the other side’s slope. 2016 presented some particularly challenging obstacles in the form of defensive legal obligations.

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. Since then, the city of Conroe has abandoned sixteen of its eighteen original lawsuit claims against the District. A ruling from the Ninth District Court of Appeals in Beaumont, in early 2017, removed one of the two remaining original claims. While the District certainly recognizes the legal successes thus far achieved, and appreciates the judicial rulings substantiating many of the District’s original claims to its regulatory authority, the litigation costs accruing—on both sides—make it difficult to envision a conclusion to this matter which Montgomery County’s citizens, collectively, could call a victory.

Moreover, around mid-2016, shortly after Lone Star officially adopted the DFCs for Gulf Coast Aquifers that apply to LSGCD, the City of Conroe,

along with the City of Magnolia and a private investor-owned utility, initiated a petition with the State Office of Administrative Hearings regarding the reasonableness of the DFCs. This petition adds further weight to what is already a heavy and unnecessary legal albatross.

This petition also emerges amid the District’s completion of the Strategic Plan Study, which, as mentioned earlier, is nearing its end. It’s important to note that the District’s financial investment in the Strategic Plan Study emerged, in part, at the request of the City of Conroe. Potentially, its scientific findings may support changes to the District’s DFCs. Furthermore, the District has committed, on public record, to amend the DFCs should the science support it.

The forces of these currents are clearly working against one another. While the District’s responsibility to conserve, protect, and enhance groundwater resources on behalf of her citizens remains unchanged, these encumbrances have, ultimately, weakened the pursuit of that mission.

Overall, 2016 was an eventful year. Much was accomplished. And while much of that progress took a steep, uphill climb to achieve, the District is that much closer to reaching its next summit. Beyond that—momentum is waiting.

SUCCESSFUL ACHIEVEMENT OF 2016 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
- **Scott Taylor**
City of Conroe
- **Dr. Jim Lester**
Houston Advanced Research Center
- **Kerry Masson**
Utility District Director
- **Luke Tussing**
Water Supply Corporation (non-utility district water system)
- **Mike Mooney**
Woodlands Joint Powers Agency
- **Rigby Owen**
Private Resident (Lake Conroe Area)
- **Ryan Quigley**
Quadvest (investor-owned utility)
- **Wayne Register**
Retired Engineer (Soil and Conservation District)
- **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.

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.

April 29, 2016

- In accordance with the requirements of Chapter 551, Government Code, desired future conditions were adopted by two-thirds vote of all GCDs in GMA 14.

July 12, 2016

- TWDB determines explanatory report and other materials submitted administratively complete.

August 9, 2016

- LSGCD board adopts DFCs for Gulf Coast Aquifer that apply to LSGCD.

December 15, 2016

- TWDB completes execution of the Northern Gulf Coast GAM to calculate estimates of modeled available groundwater for GMA 14.

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.

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

Following a multi-year planning process which led up to a number of formal rule changes in 2015, the board determined that no rule amendments were necessary in 2016.

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 2016 is provided in Table 1.

TABLE 1: NUMBER OF EXEMPT AND PERMITTED WELLS REGISTERED OR PERMITTED BY THE DISTRICT FOR 2016

Number of Exempt Wells Registered.....	498
Number of Non-Exempt Wells Permitted.....	56
Number of Non-Exempt Catahoula Wells Permitted.....	1
TOTAL.....	555

TABLE 2: NUMBER AND TYPE OF APPLICATIONS FOR THE PERMITTED USE OF GROUNDWATER RECEIVED IN 2016

Amendment to an Existing Operating Permit or Historical Use Permit Application*	85
New Operating Permits**.....	40
Amendment to an Existing Alternative Water Source Permit*.....	2
New Alternative Water Source Permit**.....	1
TOTAL.....	128

**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 2016

Applications Approved as Submitted.....	106
Applications Approved as Amended	22
Applications or Permits Expired Due to inaction by Applicant or Permittee.....	0
Applications Approved w/ Conditions	0
Applications Denied.....	0
TOTAL	128

TABLE 4: PRIMARY USE OF WATER ON PERMITS APPROVED IN 2016

Industrial	6
Irrigation.....	18
Irrigation (Agriculture)	1
Public Supply/Commercial	57
Public Water Supply (PWS)	46
Other	0
TOTAL.....	128

STATUS

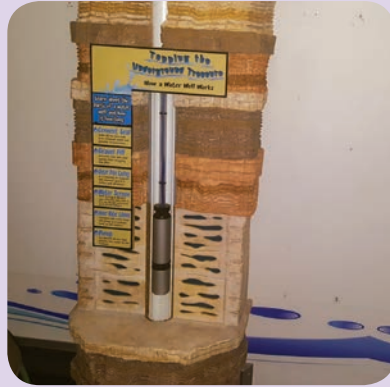
The number and type of applications referred to in Performance Standard 2.2 are included in Table 2 (previous page), Table 3, and Table 4.

MOBILE LAB & 2016 UPGRADES

BEFORE



AFTER



The District added two exhibits to its Mobile Lab to better optimize space while enhancing the overall educational experience. Pictured, left, is the new water well exhibit. Below, is the new indoor conservation exhibit. Based off previous outreach history, these exhibits will reach thousands every year.

BEFORE



AFTER



MOBILE LAB OUTREACH



2016 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:

- SWIFT Funding Workshop, Focus on Water Conservation
- Leadership Montgomery County Infrastructure Day
- Lone Star College - Tomball Campus
- Annual Gulf Coast Water Conservation Symposium
- Texas Patriots PAC
- North Houston Association, Environment Committee
- Bentwater Civic Center Townhall
- Point Aquarius Women's Club
- HARC-sponsored Sustainability Seminar on Direct Reuse
- Rice University - Engineering Design project proposal
- SWIFT Funding Seminar
- East 1488 Community Association, Magnolia
- Montgomery County Soil and Water Conservation Association
- Realtor Group regarding Section 5.009, Texas Property Code
- Houston's Consulting Engineering Council

EVENTS & EDUCATIONAL OUTREACH:

- Texas Wildlife and Woodlands Expo
- Montgomery County Water Symposium
- Montgomery County Fair Kids Day
- Earth Day Rain Harvesting Demos at Conroe & Woodlands Home Depots
- Montgomery Intermediate Mobile Lab visit
- Minecraft Water Challenge
- New Caney ISD Elementary Extravaganza
- Woodlands Landscaping Solutions
- Splendora Jr. High School Mobile Lab visit



Paul Nelson speaks at Leadership Montgomery's Infrastructure Day.



James Ridgway, Jr. addresses contestants at the Minecraft Water Challenge winner event.



James Ridgway, Jr. presents at a Lone Star College Environmental Science class.



James Ridgway, Jr. discusses local water issues with Point Aquarius Women's Club.



Paul Nelson introduces speaker panel at Gulf Coast Water Conservation Symposium.

2016 MINECRAFT WATER CHALLENGE



The District hosted a new kind of contest in 2016—the Minecraft Water Challenge. The educationally-focused undertaking was unveiled over the summer and invited Montgomery County area students, from 1st through 12th grade, to research their respective local water resources and, through a series of objectives, depict these within the video game, Minecraft, via an uploaded YouTube video. Entries came in from every school district in the county. There were submissions from private schools and home schools as well. The Microsoft Store located in The Woodlands Mall partnered with the District to host a Winner Announcement event which served as a platform to publicly celebrate the many hours of hard work invested by the contestants.



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



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

In 2016, the board informally reviewed potential rule changes; however, having just adopted numerous, widely workshopped rule changes the year prior, the board determined that no rule amendments were necessary in 2016.

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.
- 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.

DISTRICT RULES TIMELINE — CONTINUED

- 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 5: THE AMOUNT OF WATER USE FEES GENERATED BY THE DISTRICT IN 2016

Water Use Type	Permitted Amount	Fee Rate	Fee Amount
*HUP / Operating Permits	30,760,667,335 gallons	\$0.06/1,000 gallons	\$1,845,640.04
Water Subject to Transportation Fee	87,488,020 gallons	\$0.09/1,000 gallons	\$7,873.92
AG Permits/Applications	541,624,488 gallons	\$1.00 per acre foot	\$1,662.18
Catahoula AWS Production Permits	2,633,740,000 gallons	\$0.06/1,000 gallons	\$158,024.40
Total	34,023,519,843 gallons		\$2,013,200.55

*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	62,126,235	Public Supply (PWS).....	15,717,581,942
Industrial.....	389,964,734	*AWS-CRAF.....	1,424,910,000
Irrigation.....	630,055,107	**Total	18,455,909,039
Irrigation (Agriculture).....	130,893,495	†	
Public Supply	100,377,526	Grand Total.....	17,030,999,039

* AWS-Catahoula Restricted Aquifer Formation | **Data received as of March 21, 2017. The reported pumping for 2016 is incomplete due to incomplete reporting by a small number of permittees | † Less AWS Pumping

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 loosely 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 November 16, 2016, District staff met with Mike Turco, representing both the Harris-Galveston Subsidence District and the Ft. Bend Subsidence District, to discuss issues and share information related to the detection and prevention of subsidence in Montgomery County. The continued funding of third party evaluation of data collected at the PAM/subsidence monitoring sites was discussed. Data processing, publishing, and archiving of all data is now carried out by the University of Houston, with Dr. Guoquan Wang leading that effort. The importance of continuing to monitor such data throughout the greater Houston/Montgomery County region was again stressed. The possibility of providing additional stations in Montgomery County was

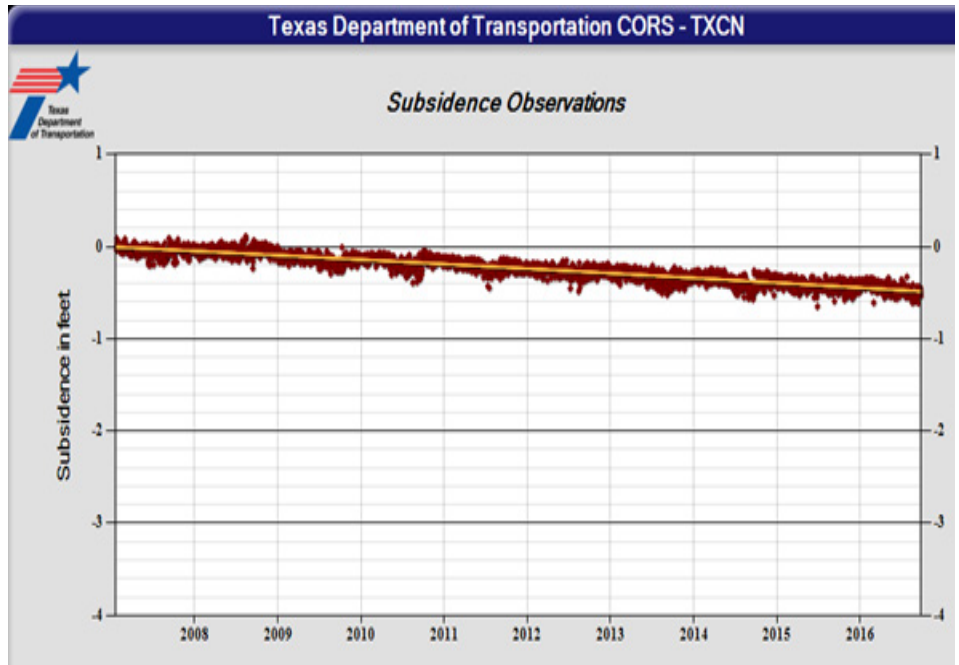
discussed and it was agreed that District staff would coordinate with HGSD staff to determine the most appropriate locations for additional monitors based on projected population growth and water use trends. The positive effects on subsidence brought about by the conversion to surface water was also considered. The operation and maintenance of the PAM/subsidence monitoring equipment was also discussed, focusing on the importance of reliable batteries and solar panels in maintaining maximum data collection and quality.

During the meeting, the graphs produced using the data collected at the eight subsidence monitoring stations were reviewed. Charts displaying cumulative data for all units (6) placed in 2011

continued on page 21

cont'd from page 20

continue to be available for viewing on the web sites for both the subsidence districts and Lone Star GCD. Data charts for these stations and the two stations placed in 2001 can be viewed by anyone with access to the Internet and Google Earth. In 2016, the District secured a second Trimble unit, used to collect and download data, thereby doubling the volume of information secured during the ensuing period.



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.

STATUS

In 2016, 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
- *Harris-Galveston Subsidence District*
www.hgssubsidence.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 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, again in 2016, represented Ground-

water Management Area 14 as a voting member of the Region H – Regional Water Planning Group. The Assistant General Manager continued to serve as the General Manager's Alternate. In 2016, the District's representatives participated in the regional planning process by attending all Region H meetings. In addition, the General Manager continued 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. In late 2015,

the Regional Planning Group approved the final 2016 Regional Water Plan and forwarded it to the Texas Water Development Board. Much of the activities of the Planning Group in 2016 were focused on preparing the scheduling and milestones for preparation of the 2021 Region H Regional Water Plan. The group also approved the submittal of an application to the Texas Water Development Board for funding to complete the fifth round of regional planning.

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

REGION H WATER PLANNING GROUP ATTENDANCE	
February 3, 2016 Kathy Turner Jones, Paul R. Nelson	August 3, 2016 Kathy Turner Jones, Paul R. Nelson
May 4, 2016 Kathy Turner Jones, Paul R. Nelson	November 2, 2016 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.

STATUS

While no applications for permitting of injection wells within Montgomery County were filed with the Texas Railroad Commission or the Texas Commission on Environmental Quality, the District continued to monitor carefully for such activity and took action with regard to the continuing efforts of TexCom to permit a Class I Waste Injection Well near Conroe. On February 17, 2016, the District filed an amicus brief with Travis County's 345th District court in an effort to overturn a decision which would allow TexCom Gulf Disposal, LLC, to operate a Class I Waste Injection Well(s) in Montgomery County. As of the end of 2016, that case is still in the courts.

In 2015, the District completed the construction of a baseline of water quality data derived from the testing of public supply water wells performed at the behest of the Texas Commission on Environmental Quality. Several sentinel wells were chosen for monitoring based on their spatial location and the aquifer in which they were drilled. A table of key water quality parameters was also developed, allowing the District to track those that would provide an early warning of possible contamination of the aquifer. In 2016, the District again accessed the water quality data files on record with the state and updated the data for each of the sentinel wells with the most recent water quality data available. The District will continue to update the water quality data on an annual basis. Also in 2016, the District created files on its GIS system, locating the sentinel wells geographically and creating data storage fields. This new feature will allow staff to quickly review sentinel well data and determine if there are any trends in quality that might cause concern.

GOAL 7: ADDRESSING DROUGHT CONDITIONS**OBJECTIVE 7.1**

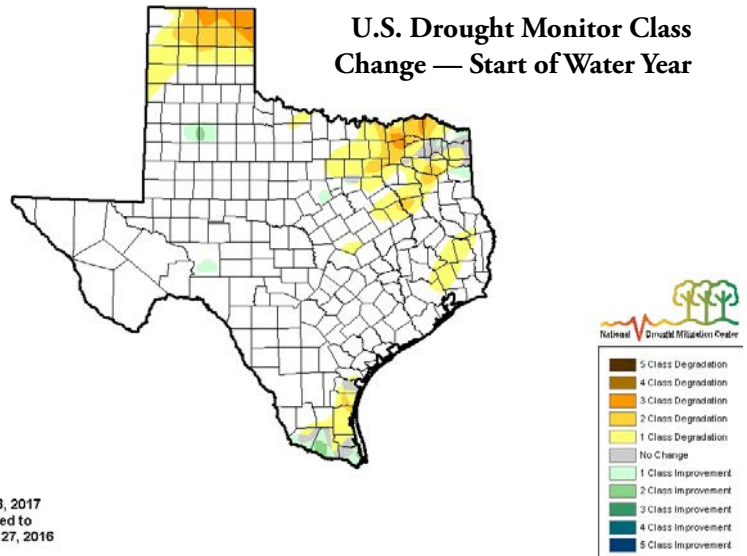
Recurring drought conditions that climaxed in 2011 continue to serve as a reminder of how dependent we are on precipitation. Droughts occur and reoccur in the area, as do cycles of above average precipitation. A well-informed public can best respond to developing drought conditions by adopting best management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

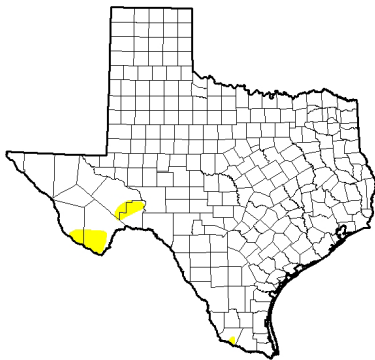
According to precipitation data collected from the weather station located at the Conroe-North Houston Regional Airport (station ID # USW00053902), 2016's annual rainfall total, the second-highest annual record in the station's history, equaled 60.93 inches. 2004 holds the current record at 63.34 inches. 2006 holds third place at 54.67 inches. Based on the station's historic data going back to 1998, the station's average annual rainfall total equals 41.68 inches.

Half of the year—Jan-

uary, February, July, September, October, and November—were under their respective monthly averages while the other half—March, April, May, June, August, and December—exceeded their respective monthly averages.

In April, the station established a new record at 12.55 inches of rainfall, several inches higher than the previous 2009 record of 7.56 inches. April was also the wettest month of 2016.

October was the driest month of 2016 at .09 inches of rainfall. It was also the third driest month recorded in the station's history.



January 5, 2016
(Released Thursday, Jan. 7, 2016)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	98.31	1.69	0.00	0.00	0.00	0.00
Last Week 12/29/2015	95.48	4.52	0.00	0.00	0.00	0.00
3 Months Ago 10/6/2015	29.70	70.30	48.43	24.66	10.17	0.00
Start of Calendar Year 12/29/2015	95.48	4.52	0.00	0.00	0.00	0.00
Start of Water Year 9/29/2015	34.51	65.49	38.32	17.55	6.27	0.00
One Year Ago 1/6/2015	38.95	61.05	41.81	24.07	10.72	2.47

Intensity:



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

Author:
Brian Fuchs
National Drought Mitigation Center



May 3, 2016
(Released Thursday, May. 5, 2016)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

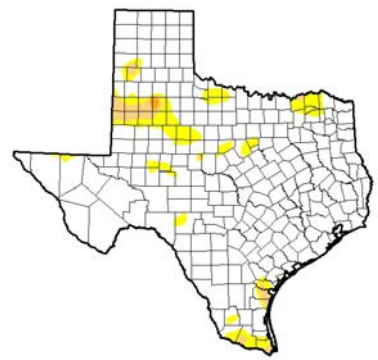
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	89.33	10.67	1.08	0.00	0.00	0.00
Last Week 4/26/2016	86.91	13.09	2.28	0.27	0.00	0.00
3 Months Ago 2/2/2016	97.66	2.34	0.00	0.00	0.00	0.00
Start of Calendar Year 12/29/2015	95.48	4.52	0.00	0.00	0.00	0.00
Start of Water Year 9/29/2015	34.51	65.49	38.32	17.55	6.27	0.00
One Year Ago 5/9/2015	59.68	40.32	29.55	15.50	5.48	1.88

Intensity:



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

Author:
Brian Fuchs
National Drought Mitigation Center

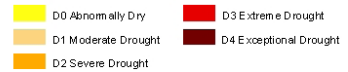


August 30, 2016
(Released Thursday, Sep. 1, 2016)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

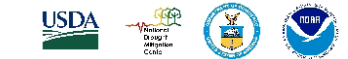
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	89.86	10.14	2.43	0.16	0.00	0.00
Last Week 8/23/2016	85.07	14.93	3.91	0.74	0.00	0.00
3 Months Ago 5/31/2016	98.62	1.38	0.00	0.00	0.00	0.00
Start of Calendar Year 12/29/2015	95.48	4.52	0.00	0.00	0.00	0.00
Start of Water Year 9/29/2015	34.51	65.49	38.32	17.55	6.27	0.00
One Year Ago 8/6/2015	58.06	41.94	24.76	9.99	1.32	0.00

Intensity:

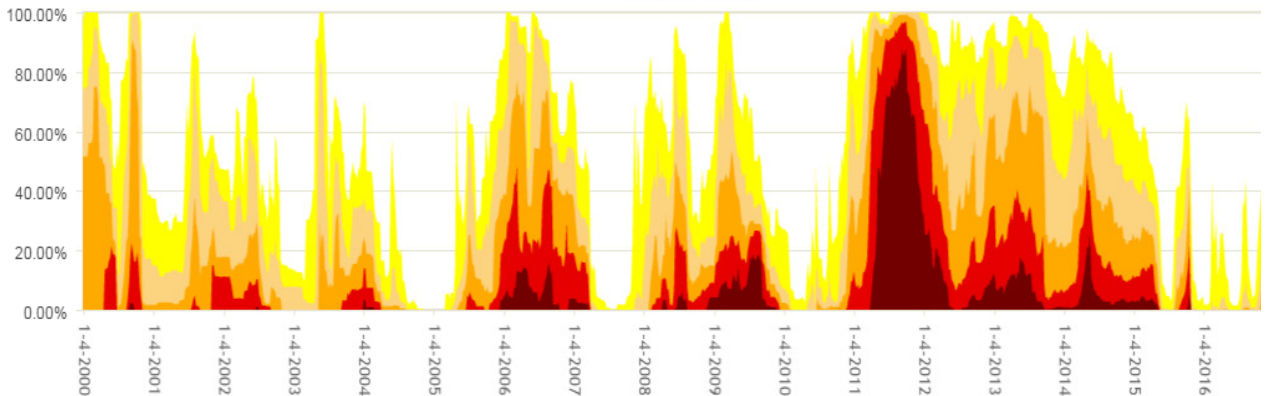


The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Chris Fenimore
NCE/INSD/NOAA



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 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.

2016 WATER EFFICIENCY NETWORK PRESENTATIONS

January 2016: "Larry's Tool Box: 15% Saves \$400 Million"—Lindsay Kovar (Brown and Gay Engineers).

February 2016: "Galveston Bay Foundation's Conservation Efforts"—Paula Pachiorek.

March 2016: "Irrigation: Conserve-Protect"—Doug Goodwin.

April 2016: "Wetland Loss in the Lower Galveston Bay Watershed: Causes and Concern"—Dr. Erin Kinney, HARC.

May 2016: "Advancements in Irrigation Control Technology"—Leslie Keen, John O'Donnell.

June 2016: "Power of Data & Customer Engagement"—Michelle Camp, WaterWise.

July 2016: "Texas Water Wise Program"—Drew Talley, Resource Action Programs.

August 2016: "Update on Region H"—Jason Afnowicz, P.E., Freese and Nichols Regional Water Solutions.

September 2016: "Infrastructure Project Financing"—Scott Galaway, TWBD

October 2016: "The San Antonio Story"—Karen Guz, Outreach with SAW.

November 2016: Telephone Workshop for Planning 2017 Regional Conservation Symposium.

Copies of these presentations can be found on the District's website at LoneStarGCD.org

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 (native 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.

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 now being live-streamed so that they can be viewed by those who cannot attend the meeting. These are made available via the District's social media outlets. A listing of speakers and topics covered in 2016 can be examined on page 26.

Again in 2016, the Water Efficiency Network sponsored and assisted in the planning of the annual Gulf Coast Water Conservation Symposium, held in Houston. More than 100 were in attendance and speakers from around the nation were brought in to give presentations on topics ranging from "getting the word out" via commercials to creating an area-specific water budget using GIS maps and Evapotranspiration (ET) data.



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. Meanwhile, the District made progress toward the realization of its Water Smart Master Plan—a complete summary is available on page 30. The project seeks to transform the grounds of the District’s headquarters into a design performance laboratory and interactive landscape for testing Low Impact Development strategies (LID). The District hosted multiple workshops with area stakeholders in 2016. The input gathered is helping the District define the ultimate vision for this project as well as the production of a LID Vision document as a resource for the public.

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

continued on page 30

 How Much You Should Water This Week? >	
Conroe North (LSGCD location)	0.0 inches
Lake Conroe Area (West)	0.0 inches
Honea-Egypt Road Area	0.0 inches
Caney Creek Area	0.0 inches
I-45 @ Rayford-Sawdust Road	0.0 inches
Spring Creek @ Kuykendahl	0.0 inches
FM 1488 @ Highway 242	0.0 inches
FM 2978 @ Woodlands Pkwy	0.0 inches
I-45 @ Long Street	0.0 inches
Highway 105 @ FM 1486	0.0 inches

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



The Water Smart Master Plan is an ambitious initiative to provide forward-thinking development guidance and real-time data to property owners, developers, builders, and homeowners looking to save money and resources.

The project is seeking to transform the grounds of the Lone Star Groundwater Conservation District offices in Conroe into a dynamic design performance laboratory and interactive landscape for testing Low Impact Development (LID) strategies. For the last 30 years, LID has struck a balance between the conservation of water resources and the economics of successful development in communities throughout Texas. However, there is currently no accessible source for practical and implementable LID standards tailored for Montgomery County.

A primary goal of the project is to provide a dedicated site for monitoring and sharing performance metrics and cost data. Such data will minimize development risk in regard to implementing Low Impact Development practices. A diverse cross section of Montgomery County design and development professionals have a vested interest in shaping the research, methodologies, implementation, policy, and subsequent monitoring of this performance laboratory.

Over the latter half of 2016, the District hosted a series of development workshops to define the vision for the Water Smart Master Plan as well as work toward producing a LID Vision document which will not only guide the future Master Plan but also serve as a practical resource for Montgomery County development.



Keiji Asakura, right, Principal Designer with Asakura Robinson, participates in spirited discussions during a LID workshop on September 8, 2016.



Eric Leshinsky, center-right, Senior Associate with Asakura Robinson, leads a workshop group discussing the Water Smart Master Plan on September 8, 2016.



LSGCD Director Rick Moffatt, left, listens to Fred LeBlanc, center, Environmental Manager with The Woodlands Development Company, and Mark Mooney, County Engineer for Montgomery County.

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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

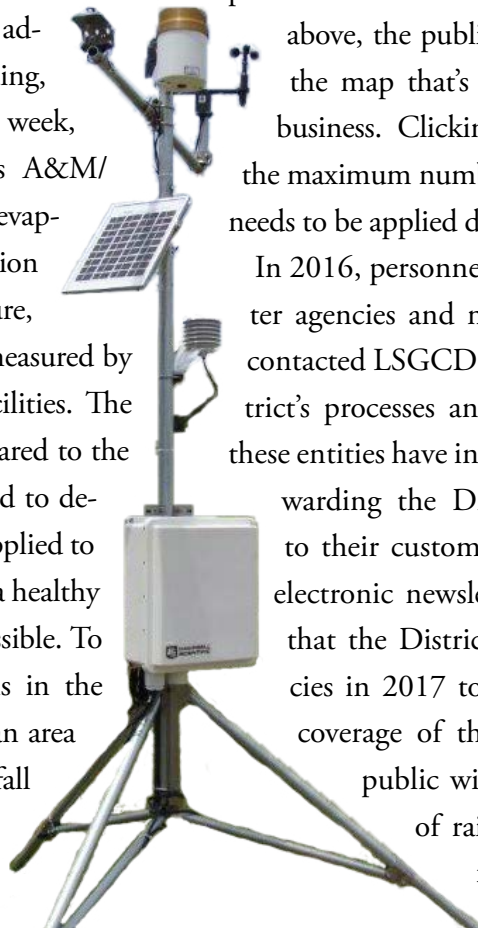
In 2016, Lone Star GCD continued to monitor weather conditions on a daily basis and post weekly landscape watering advisories on its website under the heading, "Watering Recommendations." Each week, working in conjunction with Texas A&M/AgriLife staff, the District compiles evaporation and transpiration 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 rain gauges located throughout the county. In 2016,

two additional gauges were added to the District's weekly survey, bringing the number of gauges to ten. It is anticipated that two more will be added in 2017. 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, the watering recommendations are sent out by email to water providers and permit holders each week.

Also in 2016, 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

above, 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.

In 2016, personnel representing several water agencies and municipal utility districts contacted LSGCD to inquire about the District's processes and equipment. Several of these entities have initiated the practice of forwarding the District's recommendation to their customers via email, website or electronic newsletter. It is recommended that the District work with these agencies in 2017 to increase the geographic coverage of the system, providing the public with an expanded network of rain data and watering information.





FINANCIAL SUMMARY¹

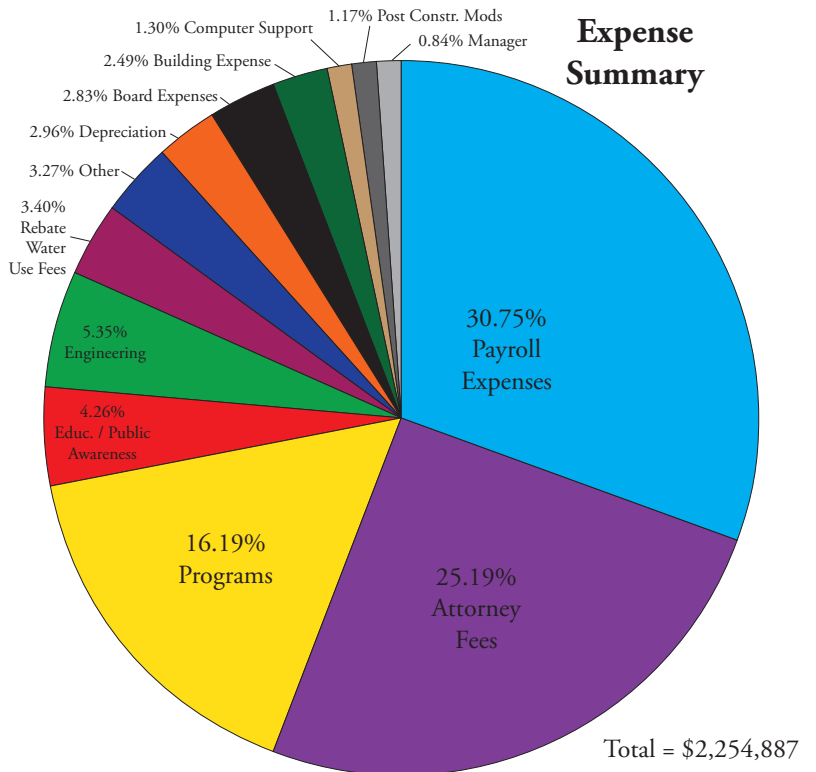
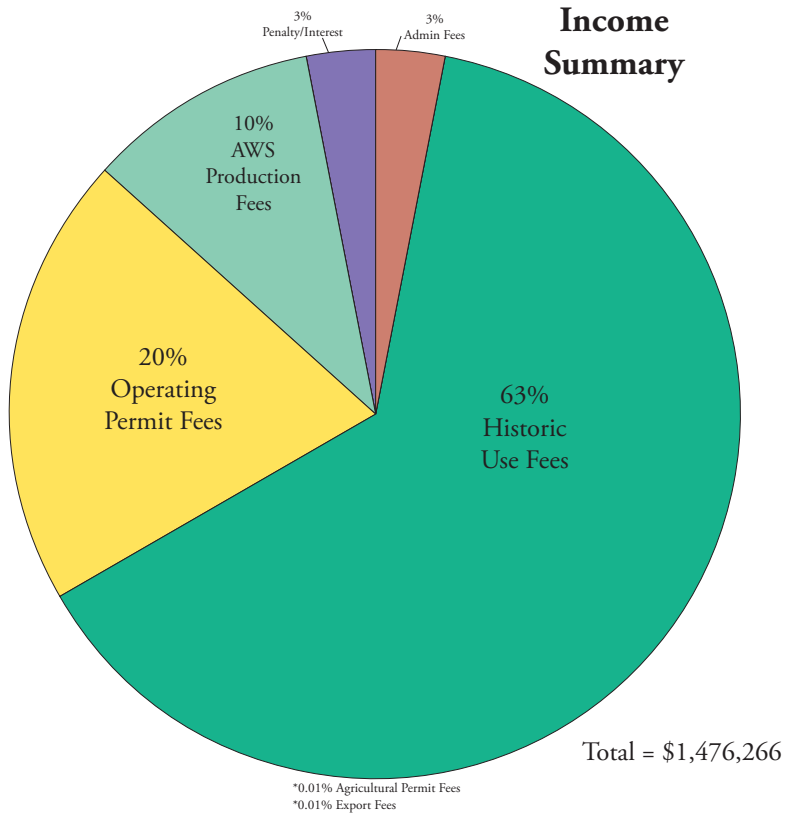
For the calendar year ending December 31, 2016, the District's total assets decreased by \$677,018 and total current and non-current liabilities increased by \$144,446. Net position decreased by \$821,464.

The decrease in total assets is attributable to using cash reserves in defense of a lawsuit. The District spent \$568,053 in legal fees for the year.

Total expenses for 2016 were \$93,951 greater than in 2015. Total revenue for 2016 was \$618,628 less than in 2015. The decrease in revenue is attributable to implementation of District Regulatory Plan (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. Implementation of these requirements greatly reduced the fees the District collected.

Net position of the District decreased 28 percent from the prior year.

¹These amounts are per the unaudited financial statements for the year ended December 31, 2016; the annual audit has not been completed prior to creation of this report.





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