Volume 14, Issue 1
Fall 2021

The SETGCD Well Monitor

3rd Cycle Desired Future Conditions Nearly Complete

The third round of the Desired Future Conditions ("DFCs") planning process is nearly complete. The DFCs are a requirement of Section 36.108 of the Texas Water Code which requires the groundwater conservation districts (Members) within a Groundwater Management Area ("GMA") to set a quantifiable condition of the aquifer for some point in the future (the future point is typically 50 — 60 years out). The DFCs are based on a five year planning cycle and once the DFCs are adopted the process starts all over. This allows for changes in the DFCs if needed or desired by the GMA Members.

The current round of DFC planning requires that the GMA Members adopt DFCs no later than January 5, 2022. At this point, GMA 14 Members have approved "Proposed DFCs" and are on track to formally adopt the DFCs by way of a resolution at the next GMA 14 meeting.

If you recall from past newsletters (past news letters can be found on the District's website at: https://setgcd.org/newsletters/), this round of DFC planning has had its

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District Considers First Fee Increase Since Its Creation

The Southeast Texas Groundwater Conservation District was officially created by Senate Bill 1888 in 2003. The District was created and set up in such a way as to not allow for it to become another overbearing regulatory agency. In doing so, the District was set up to be funded by production fees based on the volume of water used from "non-exempt" wells. These wells are typically larger volume commercial wells and DO NOT include domestic wells, agricultural, or livestock wells capable of producing less than 69 gallons per minute.

There are approximately 100 groundwater districts in the state and two-thirds of them are funded directly by property taxes. One of the steps taken to assure that the District doesn't become one of the aforementioned "overbearing regulatory agencies" was to specifically limit it from collecting property taxes.

Production fees are based on increments of 1,000 gallons of water pumped from the non-exempt wells. Some examples of current production fees for nearby districts are: the Pinewoods GCD (Angelina and Nacogdoches Counties) 2.5¢ per 1,000 gallons; Lower Trinity GCD (Polk and San Jacinto Counties) 4¢ per 1,000 gallons; Bluebonnet GCD (Austin, Grimes, Waller, and Walker counties) is also 4.5¢ per 1,000 gallons; and the Lone Star GCD (Montgomery County) 8.5¢ per 1,000 gallons. Additionally, it's not uncommon for districts to have production fees of 10¢ per 1,000 gallons, and there are several districts with production fees at 17¢ per 1,000 gallons.

Here is where bragging about the Southeast Texas GCD becomes very easy. The production fee since the District was created in 2003 has been and is currently 0.007 cents per 1,000 gallons. That is less than a penny per 1,000 gallons, meaning that the next closest production fee in the area is over 350% more than the Southeast Texas GCD's fee. And in case you didn't notice, 3 of the 4 districts mentioned above only

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Inside this issue

Did You Know?

Did you know that you can bend a stream of water with static electricity? Water is a "polar molecule" and will react to the static charge.

Paying for bottled water? Did you know that 25% of bottled water comes from municipal water supplies—the same stuff that comes out of your kitchen faucet, and costs on average less than half a cent per gallon.

New Board Member—Thomas Hawthorne

Mr. Thomas Hawthorne has been appointed by the Newton County Commissioner's Court to fill the position previously held by Mr. Greg Wobbe. Mr. Hawthorne was born and raised in the Liberty community north of Newton, TX. He is married to his wife, Mattie (29 years), and has three daughters and one granddaughter. Mr. Hawthorne is an active member of his community. He serves his church, Liberty Baptist Church, as a deacon, trustee, and Sunday school teacher. He has also served as a Newton ISD Board Trustee for 16 years, has served on a USDA Committee for 15 years, as well as serving as a member of the Newton County Appraisal Review Board. Mr. Hawthorne retired from TXDOT after 25 years, serving most of those years as Maintenance Supervisor. His last 4 years as Supervisor garnered a #1 rating for Newton County roads as well as being #1 in safety.

The Newton County Commissioner's Court has appointed Thomas to the Board to represent forestry and agricultural groundwater users within Newton County.

Continued From Page 1—Consideration of Fee Increase

encompass 1 or 2 counties. The Southeast Texas GCD encompasses four counties (Jasper, Newton, Hardin, and Tyler), nearly 3,700 square miles.

Why is the District considering a fee increase at this time you may ask? There are many reasons. The first is the most obvious, in that while the District has managed to get by for 18 years without a fee increase, most of the District's expenses have increased over the past 18 years. Over the past five years the District's budgets have been so tight they have been adopted with the expectation of going into the "red" and requiring the use of reserve funds. Fortunately, the District has been able to keep expense down and only went into the "red" two of those five years.

Additionally, when the District was created there were fewer legislatively mandated issues that had to be addressed each year. For example, it wasn't until 2007 that the Desired Future Conditions (DFC) process came into being. The DFC process is very expensive due to the necessity of hiring hydrogeologic consultants to assist the Groundwater Management Area Members through all of the legislatively required elements that must be met prior to adopting a DFC. Although the cost is shared among the GMA Members, it still amounts to tens of thousands of dollars for each groundwater district every time a new DFC cycle starts. The current round cost the GMA 14 Members $235,000.

Revenue is also needed for purchasing monitoring equipment. Most costs associated with monitoring groundwater levels/conditions is nominal; however, one element of monitoring groundwater conditions is monitoring for subsidence. Although subsidence is not a significant issue in our District currently, setting up data collection sites is important because subsidence is often an extremely slow occurrence and data collection points are needed well in advance to identify trends. Subsidence monitoring stations can be very expensive depending on the type, ranging from $15K per site to well over a million dollars. For our purposes the more economical sites, CORS (continuously operating reference station), can be installed for $15k—$20k per site. Fortunately, not many sites are necessary in our District at this time and costs may be shared among other agencies.

The Southeast Texas GCD is also one of the few groundwater districts in the state (possibly the only multi-county district) that has only 1 full time employee. With more and more responsibilities to manage, a second employee may be needed at some point in the future.

These are just a few of the reasons why an increase in fees is being considered. Now, how big of an increase is being considered? The increase will not exceed 0.003 cents per 1,000 gallons. That would increase the current rate of 0.007 cents per 1,000 gallons to 1 cent per 1,000 gallons. Still below any other GCD in the state.

The majority of non-exempt permit holders in the district are public water suppliers. Since it is possible they might pass along the expense directly to the homeowner you might be interested to know what that cost might be. Based on an average of 6,000 gallons per month (72,000 gallons for the year), the cost increase would be less than a 25¢ for the entire year.

Since the production fee is directly tied to the District Rules, a public hearing will be required prior to any change in the fee. This will likely occur sometime in the 1st quarter of 2022.

We hope that you can support the District should it increase the fee as we strive to use the revenues wisely, sparingly, and only as needed.

3rd Planning Cycle DFCs Nearly Complete

Continued from page 1—3rd Planning Cycle Nearly Complete

share of hurdles to overcome and it appears that the GMA 14 Members have found a DFC that all five GMA 14 Members are expected to approve. Four of the five GMA 14 Members have already formally done so by approving changes to the Proposed DFCs that were requested by the Lone Star Groundwater Conservation District (LSGCD) as well as approving the resolution that, when adopted, will finalize the DFCs for this round of planning. This was done at the October 5, 2021 GMA 14 meeting. The Southeast Texas Groundwater Conservation District (SETGCD) representative abstained from the vote. This was done to allow for the SETGCD Board of Directors to consider the requested changes and discuss whether or not to support the changes being requested by LSGCD.

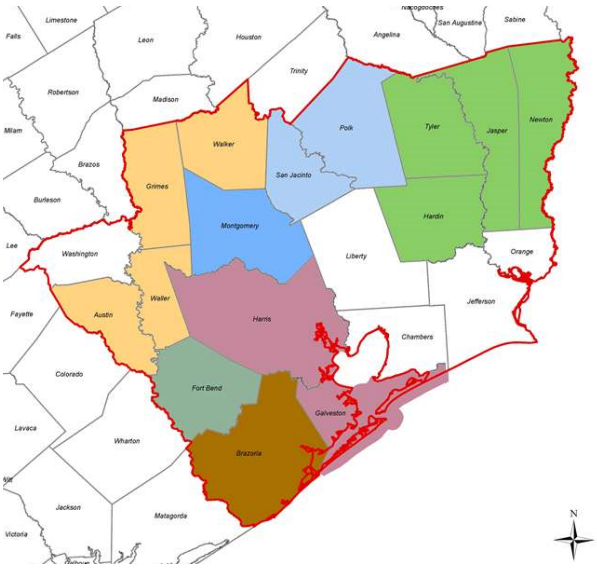
The Southeast Texas Groundwater Conservation District did discuss the requested changes at its October 14, 2021 meeting and after a lengthy discussion voted to approve the requested changes and to support the other four GMA 14 Members in approving the DFCs.

The DFCs are stated differently this round compared to previous DFC cycles. In the past the DFCs were simply stated as drawdown measurements (i.e. not to exceed 40 feet of drawdown after 60 years). The current round of DFCs approached the process a little differently than in the past in an effort to adopt a DFC that could be applied the same across the entire GMA. It was also done to alleviate an issue that arose in the last DFC cycle whereas some people believed that the DFCs had simply been reversed engineered. Due to these two issues a multiple metric approach was taken. The two main metrics that were utilized in developing the DFCs and the Groundwater Availability Model (GAM) were a remaining amount of available drawdown in existing wells, and a not to exceed additional amount of subsidence. The GMA 14 Members reviewed data from nearly 20 different model runs utilizing different combinations of the two metrics.

In the end, the DFCs to be adopted are as follows:

> *In each county in Groundwater Management Area 14, no less than 70 percent median available drawdown remaining in 2080 or no more than an average of 1.0 addition foot of subsidence between 2009 and 2080.*

Although these DFCs are stated quite differently than they have been in the past they essentially do not change much for our District. The volume of water the GAM predicts that can be pumped each year to safely meet the DFC is only slightly different, allowing for approximately 8,000 acre feet more per year and the expected changes in drawdowns are very nominal as



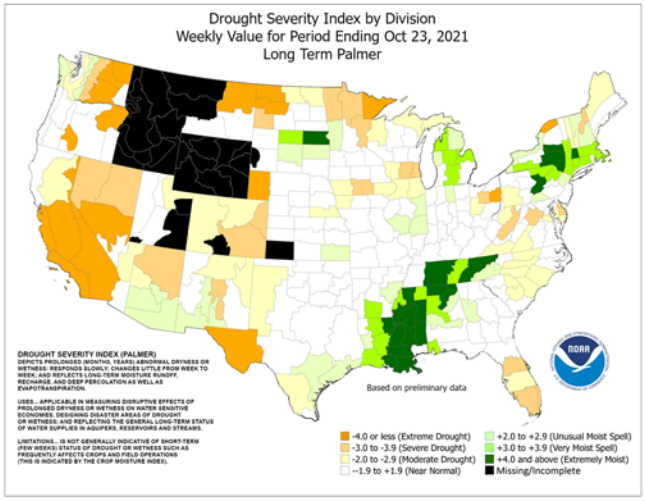
well. As for the subsidence metric within our District, the model predicts an average of 0.25 feet of additional subsidence for the four counties of our District between 2009 and 2080. The 0.25 feet is very minimal over a 71 year period and it is likely to be less or nonexistent due to the fact that the GAM utilizes an annual amount of groundwater that is over 100% more than what is actually being used. This was done to allow for growth and show worst case scenario results for our District should we have a major increase in groundwater use. So, unless the Districts see and incredibly large increase in groundwater use, the subsidence that the model predicts is very unlikely to occur.

On January 5, 2022 the GMA 14 Members are scheduled to meet and take official action to adopt the resolution adopting the DFCs for GMA 14. After this occurs the resolution and the Explanatory Report (a detailed report of all items reviewed and discussed during the 5 year cycle documenting the decision made by the GMA Members) will be submitted to the Texas Water Development Board (TWDB) for review and approval.

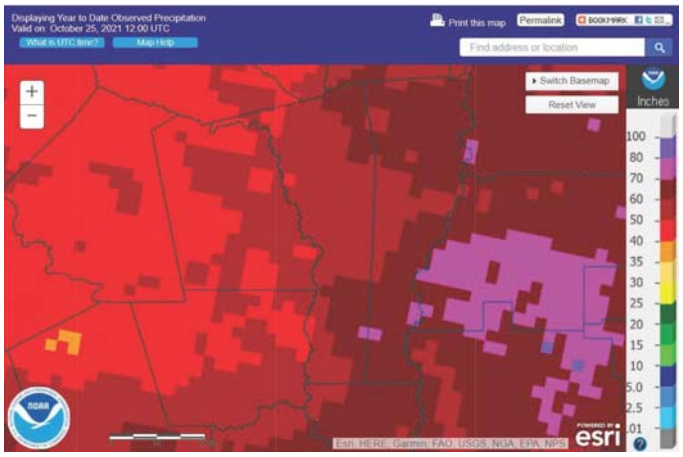
After approval by the TWDB there are still a couple of administrative steps that will need to be taken to bring the 3rd round to a close. After the TWDB approves the DFC and runs a groundwater availability model of their own based on the information provided in the Explantatory Report, a MAG (Managed Available Groundwater) model is provided to the Members and each groundwater conservation district must then officially adopt the DFCs relevant to their district. The last step is to update and revise their management plans to specifically address the relevant DFCs. Of course, this is assuming that the DFCs are not appealed!

DROUGHT CONDITIONS

As you can see from the October 23, 2021 U.S. Palmer Drought Severity Index, some areas of Texas have been experiencing some drought conditions through the summer, although a good portion of the state is currently near normal (including all of east Texas); however, far West Texas is experiencing some "extreme" drought conditions.



The NOAA October 25, 2021 Year to Date Observed Precipitation Map (below) indicates that most of our District has received near average rainfall so far this year with most of Newton County surpassing its annual rainfall average. The majority of the District has already received between 40—70 inches for the year (with two months remaining).

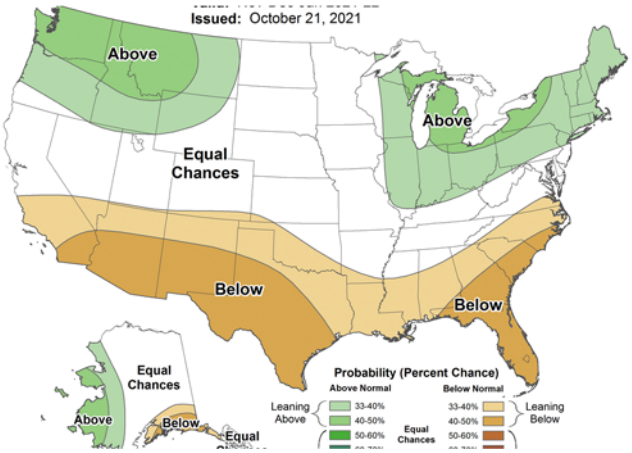


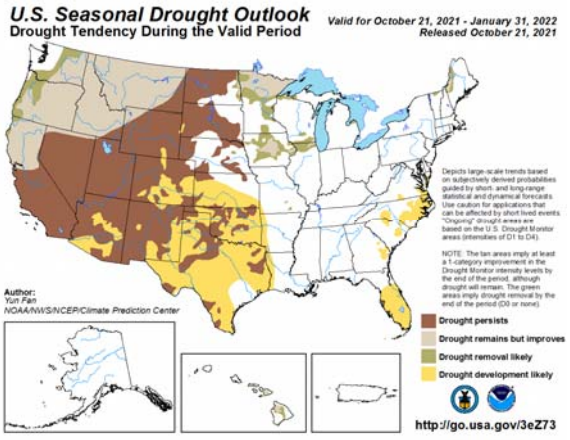
The average amount of precipitation for our District is between 52 and 54 inches for a year.

The NOAA Last 365 Day Observered Precipition Map (not shown) indicates that we are quite a bit above average if we take into account a full year from October 25, 2021. The Majority of the District has received between 60 and 80 inches of precipitation since October 25, 2020.

U.S. SEASONAL DROUGHT OUTLOOK

The U.S. Seasonal Drought Outlook map, valid October 21, 2021 — January 31, 2021, indicates that drought conditions within the District are likely to develop over the next 3 month period. The 90 day Precipitation Probability map, dated October 21, 2021 appears to lend credence to the Drought Outlook in that it indicates that the entirety of the state is expected to see below normal chances of precipitation for the next three months map





CONSERVATION CORNER

Groundwater Waste Reduction—Water Footprint

You're Using More Water Than You Think

What is your water footprint? When it comes to water use and conservation, we typically think of the water we directly use in our daily life: bathing, laundry, dishes, toilets, etc. Your water footprint isn't just the water we use directly, but the combination of that along with the water we use indirectly. Indirect use includes the amount of water needed to produce everyday items such as food, clothing, gas, electricity, and even the packaging these items come in.

As for the direct use, most of us use between 50 to 100 gallons of water each day, every single day. That's between 18,000 - 36,000 gallons each year per person. Here are some estimates of normal daily use: 20 gallons for shower; 50 – 75 gallons for a bath; 1.5 – 3 gallons each time we flush a toilet; 4 – 5 gallons for a dishwasher cycle; 15 – 45 gallons to wash a load of clothes.

Now, lets talk about some indirect usage. How often do you purchase a soda, sports drink, or bottle of water? That bottle containing the beverage you purchased likely took about 1.5 gallons of water to produce. That's typically 3 – 5 times more than what the bottle actually contains.

When taking into consideration indirect water use in food production, the amount of water used to grow the item and the amount of water used in processing it is included. Any idea how much water is needed to create 1 cup of coffee? 37 gallons of water are needed to grow and process the coffee beans for that 1 cup of coffee. An almond needs 1.1 gallons of water per almond, or approximately 1,900 gallons per pound. A cheese sandwich adds up to about 35 gallons of water. That includes the water required to grow wheat and to make the cheese.

What wasn't included in that cheese sandwich was the amount of water needed to create the energy to cook the sandwich. Most energies also take quite a bit of water to create and make available for use. It is such a complex and dynamic process that it has its own term: the "water/energy nexus". It is estimated that 45% of water used in the United States is related to thermoelectric power generation. Each type of thermoelectric energy has different water demands associated with it. Another type of energy is gasoline. An average tank of gasoline needs 18 – 45 gallons of water for processing.

We mentioned that the average person uses between 18,000 - 36,000 gallons of water each year, direct use. Overall, it is a fraction of our total water footprint. It is estimated that the average per-person's water footprint in Japan is over 303,000 gallons per year. Think that is a lot? Here in the United States it is estimated to be 660,430 gallons per year, per person.

How can we reduce water waste and shrink our water footprint? First, be water wise at home:

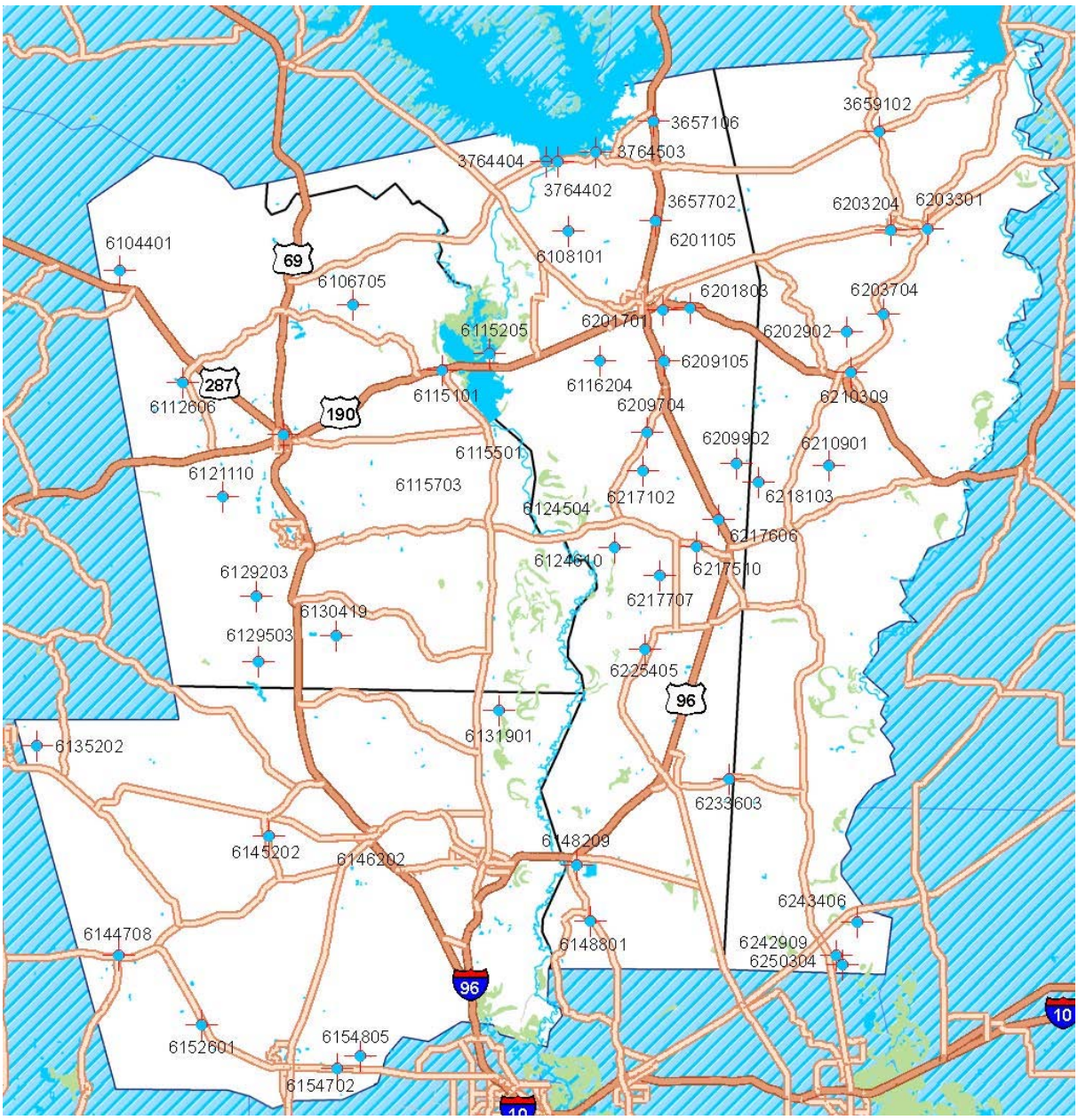
- Take shorter showers;
- Run full loads in the dishwasher and clothes washer;
- Fix leaking faucets and toilets immediately;
- Do not let the water run while brushing your teeth;
- Only water the lawn when absolutely necessary and do it by hand, not with sprinklers (you will cut the amount of water used in half).

Reducing our indirect use isn't quite as easy, but by being aware of our indirect water usage we can try to reduce our water use footprint even more. Ways to reduce your indirect water footprint:

- Replace appliances with high efficiency models when possible;
- Use a cold water detergent for the laundry to cut down on hot water use;
- Recycling a single plastic bottle and newspaper can save as much as 5 gallons;
- Eat less beef, swap coffee for tea (37 gallons for a cup of coffee - only 8 gallons for tea), cut down on sugars, and eat less processed food;
- When not needed, turn off lights and tvs;
- Consider solar and wind options for your electric needs.

Follow these tips for water conservation and you'll make your home a water conscience house. Form more information on calculating your water footprint visit https://www.h2ouse.net/water-footprint-calculator/.

Static Water Level Observation Well Locations & State ID



What Is A Static Water Level?

The Static Water Level is the distance from the surface of the ground down to the water table when a well is not being pumped. This is sometimes called the resting water level. For example, a static water level reading of –25 feet means that the distance from the ground down to the water table is 25 feet.

In the data on the following page is a column indicating the amount of static water level change from the previous year. If the number is positive, it means that the water level has dropped in that particular well. If the change is a negative number, as most of them are, it means that the water level is higher than the previous year. Typically large drops or rises are indicative of shallow wells that are susceptible and reactive to wet and dry periods. Conversely, deep wells are very stable and often show little change in static water level, even after long periods of drought or periods of excessive precipitation.

STATIC WATER LEVEL READINGS

State Wel ID	County	Date Drilled	Well Depth	Early W.L. Reading / Year *		May-09	Spring 2020	Spring 2021		1 year change
6131901	Hardin	1940	53	-38.79	1942	-25.35	-32.28	-4.92		-27.36
6135202	Hardin	2003	363	-64	2003		-55.92	-56.52		0.60
6144708	Hardin	1957	72	-24.12	1942	-24.21	-24.72	-25.05		0.33
6145202	Hardin	2009	220	-12	2009		-7.05	-6.72		-0.33
6152601	Hardin	1948	764	-21	1948	-29.67	-20.14	-21.54		1.40
6154702	Hardin	1951	1027	-23.94	1966	-25.2	-26.57	-26.45		-0.12
6154805	Hardin	1998	618	-60	1998		-26.5	-25.72		-0.78
3657106	Jasper	1938	20	-8.7	1997	-4.69	-5.10	-2.90		-2.20
3657702	Jasper	1994	378	-117.7	1997	-117.61	-114.18	-115.10		0.92
3764402	Jasper	1962	300	-114.3	-114	-113.27	-108.72	-109.40		0.68
3764404	Jasper	1982	260	-66	1982	-46.83	-44.90	-45.98		1.08
3764503	Jasper	1981	260	-33.2	1997	-32.33	-30.85	-31.47		0.62
6108101	Jasper	1958	47	-42.5	1963	-40.82	-39.10	-37.08		-2.02
6115205	Jasper	1984	442	39.96	1984	28.18	39.96	39.96		0.00
6116204	Jasper	1965	220	-51.7	1997	-51.61	-50.65	-50.20		-0.45
6124610	Jasper	1998	200	-33.16	2008	-30.59	-31.09	-29.79		-1.30
6148209	Jasper	1947	1295	-66.79	1956	-177.09	-191.48	-198.12		6.64
6148221	Jasper	pre 1956	671	-22.47	1956	-28.92	-27.64	-28.22		0.58
6148801	Jasper	1903	1084	-6.85	1960	-5.38	-6.67	-5.85		-0.82
6201701	Jasper	1963	1004	-67.25	1971	-93.42	-84.70			
6201803	Jasper	1995	884	-85.1	1997	-85.54	-81.25	-81.40		0.15
6209105	Jasper	1967	15	-4.15	1997	-1.38	-3.43	-0.63		-2.80
6209704	Jasper	1952	40	-35.84	1997	-34.4	-33.89	-34.40		0.51
6209902	Jasper	pre 1997	40	22.8	1997	-16.13	-18.00	-16.52		-1.48
6217102	Jasper	1950	80	-54.85	1997	-80.00	-54.70	-54.47		-0.23
6217510	Jasper	pre 1997	140	-15.9	1997	-14.7	-14.06	-12.80		-1.26
6217606	Jasper	1964	70	-7.8	1997	-1.09	-2.45	-1.25		-1.20
6217707	Jasper	1950	28	-9.35	1997	-4.15	-6.55	-3.37		-3.18
6225405	Jasper	1983	120	-58	1997	-57.5	-54.96	-54.70		-0.26
6233603	Jasper	1940	18	-14.7	1997	-10.92	-10.63	-10.25		-0.38
3659102	Newton	2000	170	-98.76	2009		-88.64	-89.77		1.13
6202902	Newton	pre 1999	24	-13.03	1999	-11.65	-10.33	-7.25		-3.08
6203204	Newton	1979	645	-65.4	1994	-68.15	-65.35	-65.30		-0.05
6203301	Newton	1964	1050	-38.75	1992	-45.42	-36.67	-36.82		0.15
6203704	Newton	1989	640	-169	1989	-172.78	-171.00	-170.78		-0.22
6210309	Newton	1964	1218	-61.38	1993	-65.93	-64.61	-62.75		-1.86
6210901	Newton	1951	300	-13.68	1964	-16.48	-15.42	-14.28		-1.14
6218103	Newton	1980	208	-32.3	1992	-33.99	-34.43	-33.50		-0.93
6242909	Newton	1981	590	-39.15	1992	-36.03	-35.65	-35.32		-0.33
6243406	Newton	1981	598	-30	1981	-26.29	-24.66	-23.70		-0.96
6250304	Newton	1983	420	-40	1989	-35.58	-35.15	-35.13		-0.02
6104401	Tyler	1935	860	-169.39	1960	-168.71	-164.32	-164.30		-0.02
6106705	Tyler	1984	288	-145	1984		-145.85	-147.00		1.15
6112606	Tyler	1960	250	-121.64	1964		-122.81	-122.80		-0.01
6113802	Tyler	1951	582	-155	1953	-174.13	-163.53	-162.94		-0.59
6115101	Tyler	1964	68	-31.66	1964	-33.09	-32.32	-32.23		-0.09
6121110	Tyler	pre 1971	18	-13.4	1971	-3.96	-3.52	-4.89		1.37
6129203	Tyler	pre 1953	30	-22.73	1953	-15.38	-19.97	-18.95		-1.02
6129503	Tyler	2008	250	-20	2008		-18.97	-19.69		0.72
6130419	Tyler	pre 1965	22	-13.01	1965	-3.62	-6.48	-4.20		-2.28
6129804	Tyler		580				-29.45	-27.15		-2.30

Water Facts

- Sound moves through air at about 760 miles per hour. Because water is much denser sounds moves through water at 3,500 miles per hour.
- In an average gallon of ocean water there is about 1 cup of salt. The Atlantic is a bit saltier than the Pacific, however, Don Juan Pond in Antarctica is 18 times saltier than average ocean water.
- We all know that when water freezes it becomes less dense and floats. If it didn't, it would sink and it would be possible for entire bodies of water to freeze solid.
- Did you know there is no consensus as to why ice has a thin layer of liquid on top of it making it slippery.
- An inch of water covering 1 acre weighs 113 tons.
- All other molecules similar to water are a gas at room temperature. Water is "sticky" so it holds together better.

CALENDAR OF EVENTS

November 11, 2021	Veterans' Day — District office closed Board meeting
November 25 & 26, 2021	Thanksgiving Break—District office closed
December 9, 2021	SETGCD—Regular monthly
December 24 & 27, 2021	Christmas Break—District office closed.
January 1, 2022	New Years Day—District office closed
January 5, 2022	GMA 14 Meeting - (Friendswood, TX)
January 13, 2022	SETGCD—Regular meeting of the Board
January 17, 2022	Martin Luther King Jr. Day— District office closed
February 10, 2022	SETGCD—Regular meeting of the Board
February 21, 2022	Presidents Day—District office closed
March 10, 2022	SETGCD—Regular meeting of the Board

"Anyone who can solve the problem of water will be worthy of two Nobel Prizes, one for Peace and one for Science."
-John F. Kennedy

Southeast Texas Groundwater
Conservation District

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PLEASE
PLACE
STAMP
HERE

«Mr#/Mrs/Ms#» «First» «Last»
«Water System»
«Street»
«City», «State» «ZIP»