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DAM REHABILITATION PROGRESS: FUTURE PROJECTS ON THE HORIZON

The **Site 2 State Upgrade Project** occurring at “Lake Kyle Park” is located in Hays County just East of Interstate 35 in the City of Kyle off of Lehman Road. This dam is listed as “high-hazard” by the Texas Commission on Environmental Quality (TCEQ). This designation is based on the potential for loss of life and/or property, should the dam fail. The Natural Resource Conservation Service’s (NRCS) original design for this site planned for a 50-year life span. Fortunately, the site has continued to function beyond this time frame. The state upgrade project was started in November 2021 at a cost of \$8.2 million dollars and has a projected completion date of February 2023.

The design of this dam incorporates a roller compacted concrete spillway (RCC) in the center of the dam. A new riser will be installed with a larger diameter principal spillway pipe. The designs also include an added rock rip rap face to prevent future wave action erosion from taking place during severe storm events.

The new design allows for the dam’s life to be greatly extended and withstand considerably more severe weather.

Funding for this project was received from The Texas State Soil and Water Conservation Board (TSSWCB) along with a District match of 1.75%.



The crew is working on finishing the concrete on the inlet structure at Site 2.

The **Site 10 Rehabilitation Project** is a lake located in Hays County near the City of Buda, which is directly south of Austin. This dam is also listed as “high-hazard” by the TCEQ and suffered wave action erosion on the face from Hurricane Harvey. The structural integrity was not compromised, but the dam has reached its 50-year lifespan. The rehabilitation project was started in August 2021 at a cost of \$4.9 million dollars and has a projected completion date of July 2023. The design of this site will include an RCC spillway, larger principal spillway pipe, new riser and will decommission the existing auxiliary spillway. The funding for this project is provided by both state (TSSWCB) and federal (NRCS) partners. The District is also responsible for its match of 1.75%.

DAM REHABILITATION PROGRESS: FUTURE PROJECTS ON THE HORIZON (CONTINUED)

The **Site 21 Rehabilitation project** is located in Caldwell County off Highway 183 and FM 1184. This lake, much like the other two projects, is listed as “high-hazard” by the TCEQ and had significant damage from Hurricane Harvey as well. The structural integrity was not compromised but the dam has reached its 50-year lifespan. The rehabilitation project was started in April 2022 at a cost of \$11.9 million dollars and has a projected completion date of December 2024. The design of this site will include an RCC spillway, larger principal spillway pipe, new riser and will decommission the existing auxiliary spillway. The funding for this project is provided by both state (TSSWCB) and federal partners (NRCS). The District will still be responsible for its match of 1.75%.

WATER CONSERVATION TIP

Have you ever considered rainwater harvesting as an option for your home’s source of water? Would rainwater harvesting be a good source of water for livestock?

Let’s begin with a brief description of what rainwater harvesting is:

Rainwater harvesting is the capture, diversion, and storage of rainwater for use in homes, landscaping, and other purposes.

Next, how is rainwater harvested?

Water is collected by a system of gutters added onto existing roofs of homes, barns or other covered areas and then diverted to storage tanks.



Rainwater Storage Tanks.



Construction of the coffer dam has been completed on Site 21. Now they can make the V-cut where the RCC will be installed.

How much water can be collected from rainwater harvesting?

Each square foot of a collection surface footprint generates about 0.6 gallons of water from every 1” rain event. So during a 1 inch rain, a 1500-square foot house could accumulate 900 gallons of water! With rainwater harvesting, there are many design ideas that need to be considered for your specific application. For example, some items such as gutter size, gutter placement, water tank size, water tank location and, of course, what kind of water treatment system will be needed. More information can be found on this subject on the Texas Water Development Board website.

PCCD WELCOMES NEW STAFF MEMBER



Robert Barron is new to the district, a native Texan, has lived in Bastrop County since 1999. Robert graduated from Texas A&M University Corpus Christi with a Bachelor of Science degree in University Studies with an emphasis in Geographic Information Science. With over 15 years of experience in GIS and natural resources, we welcome Robert to the team.

Alan and Robert share duties from field work, IT technologies, and GIS to name a few. Combining their education, life skills and experience makes this team an asset for managing the district's water resources, dams, and the agriculture landscapes. They enjoy working with landowners and the residents who share the areas around Plum Creek.

PCCD WELCOMES NEW SECRETARY

NORA LOPEZ-CASTILLO

Nora Lopez-Castillo has lived in Lockhart for the past 26 years with her husband. She has a Bachelor of Science degree in Health Information Management from Texas State University. Nora's hobbies include working on her 118-year-old Victorian home, shopping for antiques, and reading suspense/mystery novels.

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THE PCCD WEBISTE!!**



DESALINATION OF GROUNDWATER

BY

WILLIAM FEATHERGAIL WILSON PG 21

How much groundwater do we have left under the surface of the ground in the PCCD and Texas?

A huge amount but most of it is not fresh water that can be consumed by humans nor livestock. Humans can only exist on water that contains less than about 1500 parts of dissolved solids per million parts of water. In other words, fresh water.

Ground water exists down to about 5 miles below the surface of the Earth before it is recirculated to the ocean basins. Fresh water beneath the PCCD exists to about 900 feet until it becomes too saline to consume.

All groundwater is contained in fractures and very small spaces between sand grains and limestones and is chemically bound to some clays. In some rare places it also exists in cavernous spaces near the surface. The great bulk of groundwater exists as saline or salt water below the surface. This water is still producible and can be converted to fresh water through a process known as desalination.

Desalination requires pumping the saline water through a system of special filters encased in pipes which are about 5 to 6 inches in diameter and about 5 to 10 feet long and the process is known as reverse osmosis. A new added and developing technology is Zero Liquid Discharge Reverse Osmosis or ZLD desalination.

The oil industry in Texas is huge as we all know. When oil and gas is produced from depths below the freshwater zones an enormous amount of saline water is produced with it and must be disposed of in saltwater injection wells or SWD wells. There are approximately 300,000 active SWD wells in Texas. About 93 of these wells have been drilled in Caldwell County alone. Each injection well pumps approximately 10,000 to 20,000 barrels of saline water into each one of these SWD wells on a daily basis.

There is movement afoot to treat this enormous amount of daily injection water with ZLD Desalination equipment to create fresh water for municipal and irrigation use and sell the leftover salt and/or derive certain elements and minerals from the salt.

One of the very useful elements is Lithium which is used to manufacture rechargeable batteries for automobiles and trucks. Lithium by itself is worth about \$1800 per ounce and it is rapidly rising. This is also the average price of gold.

The ZLD Desalination process ends up with a pile of salt and fresh water.

The oil fields in the southern half of Caldwell County were discovered in the late 1920s and early 1930s. They are still producing small amounts of oil each day and large amounts of salt water from the Edwards Group of limestone and dolomites. The salt water is transported to the SWD wells and injected back into the lower Edwards Group. This enormous volume of water could serve almost all of the future needs of fresh water for Caldwell and surrounding Counties as well as the rapidly growing IH-35 corridor from San Antonio to Austin.

In addition, the northern half of Caldwell County is underlain by the saline portion of the Edwards Group that is capable of producing large volumes of saline water at relatively shallow depths that could be desalinated with the ZLD process. The term "shallow" refers to depths of approximately 1500 to 3000 feet.

The Edwards Water Authority controls the saline Edward's water west of Hwy 183 and the rest of the county being controlled by PCCD, Gonzales County Underground Water Conservation District and Barton Springs Edwards Aquifer Conservation District.

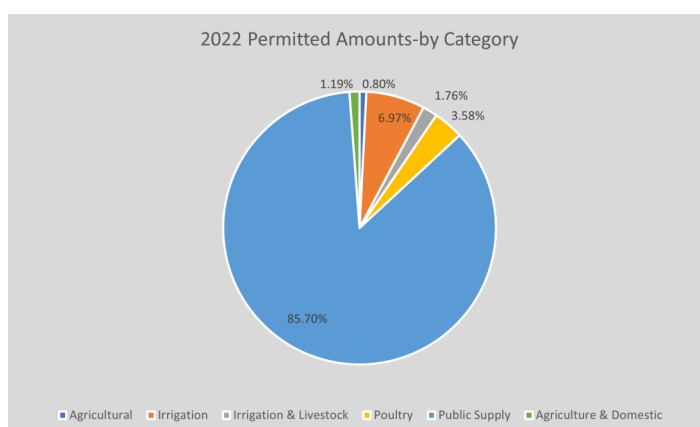
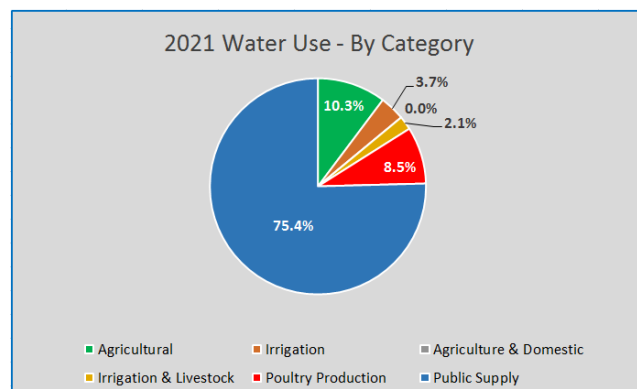
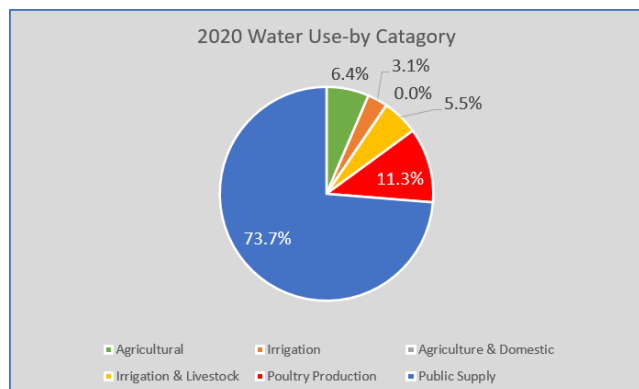
The potential for Edwards saline desalination extends across Atascosa to Lee Counties. A large carbonate platform was laid down parallel to the IH-35 corridor during the Lower Cretaceous Era about 100 million years ago and later extensively faulted.

The salinity of this enormous volume of water ranges from about 20,000 parts per million to about 30,000 parts per million. Sea water averages about 35,000 parts per million.

PCCD is now in the process of reviewing the Edwards saline zone as a new desalination aquifer for the area.

2022 PCCD GROUNDWATER USE

PCCD permittees reported using 1511.44 acre-feet of groundwater in 2021. This is 8.6% of the total permitted 17,504 acre-feet. (Several non-public supply permittees failed to report usage.) The first two graphs below compare water usage-by category in the last two years. The lower graph shows the permitted water amounts-by category for 2022. For more information, request a copy of PCCD's *2021 Water Use Report*.



WATER LEVELS

The table below shows water levels for 7 wells measured between January 1, 2021, and November 21, 2022, along with the corresponding lowest recorded water levels. If you are interested in finding out the water level in your well and how it compares to other wells in the area, contact us to schedule a time to measure your well. Complete water level data can be found on our website at www.pccd.org

| Well | 2021 Levels | 2022 Levels | Lowest Recorded Level |
|--------------|-------------|-------------|-----------------------|
| Kosarek | -47.5 | -50.85 | - 50.8 |
| Steinhardt | -20.85 | -21.34 | - 22.8 |
| Lipscomb | -88.55 | -96.11 | - 93.9 |
| Lockhart #8 | -75.95 | -84 | - 108.0 |
| McCormick #2 | -65.7 | -67.13 | - 71.0 |
| McCormick #1 | -69.9 | -70.53 | - 71.8 |
| Collier | -65.65 | -70.6 | - 70.6 |

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The Plum Creek Conservation District's Newsletter is available via email. If you or someone you know would like to receive our Newsletter via email rather than US Mail then contact our office at (512) 398-2383.

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