Largest Free-Flowing Well Killed – R.I.P. Catfish Farm Well

By KEVIN MORRISON, P.G., San Antonio Water System
AND BILL STEIN, P.G., WSP, USA, Inc.

The infamous Catfish Farm Well located south of San Antonio was plugged in early December 2018. The well was initially drilled in 1990 and owned by Ronnie Pucek of Living Waters LTD. The well was constructed by Glasscock Drilling of Hondo, Texas with 30-inch diameter steel casing installed to a depth of 1,585 feet and completed open-hole into the Edwards Aquifer to a total depth of 1,670 feet below land surface. In March of 1991, the well was measured by the U.S. Geological Survey to be flowing over 37,000 gallons per minute (gpm) under artesian conditions. The well was considered to be the “largest free-flowing well in the world.” If allowed to flow nonstop, the well could discharge over 50 million gallons per day or equal to about a quarter of the total pumping for the City of San Antonio. Photo one depicts the catfish holding tanks and photos two and three (on page 10) show the well in the early 90s.

Editor’s Note:
Excerpt from Bruce Selcraig’s article in the San Antonio Express News, December 2018. “Among thickets of prickly pear and pecan trees 20 miles south of downtown, a bizarre chapter in Texas water law involving a catfish farm and its infamously abundant well finally is being capped — literally. In 1991, the owner, Ronnie Pucek, brought national attention to the region’s groundwater politics... when he fed his Living Waters Artesian Springs Catfish Farm with some 45 million gallons a day from the Edwards Aquifer. The gusher was deemed the world’s largest artesian well — the water pushed to the surface by gravity-induced pressure — and yielded enough water to serve a town of 250,000, or nearly a fourth of San Antonio’s population at the time. A decade of litigation led to an eventual $30 million buyout of Pucek and his partners.”

This article explores the technical components of the catfish farm well and the process of plugging it.

The 2019 TGWA Annual Convention attracted hundreds of water well drillers, groundwater professionals, and manufacturers and suppliers during the four-day event that took place on January 22-25 in San Marcos, Texas.

This year, the Ground Water Science (GWS) division hosted its first ever Geoscience Seminar moderated by GWS board member Steven Bond, on January 22. More than 50 attendees listened in on the presentations, all relating to the Trinity Aquifer formation. The full convention started the following day.

Convention-goers traveled from all parts of Texas and from across the nation. Many water well drillers earned their continuing education class hours. TGWA offered 10 different classes with subject matter ranging from the national electric code to geophysical logging.

Please see Convention Recap, page 6
Greetings everyone! Hope each of you is doing well. First of all, I want to say how excited I am for this new opportunity. I am so looking forward to working with our amazing staff and learning the what I call “political” side of our organization. I have been a part of the water well industry for almost 50 years. The well drilling/pump installation part I know, but this will be a learning experience for me.

As we just wrapped up the 2019 convention, I hope each of you that attended had a good time, and I hope you are already planning on attending the 2020 convention in Frisco. San Marcos has been good to us as we have been there quite a few years, but I am very excited about moving to a new venue for next year. It’s always refreshing to see something new…right? This year’s convention was a huge success, and I want to thank each of you that donate your time to our association. To each of you that work the auction every year, we could not do it without you. To each of you who donate items, we could not do it without you either. We also appreciate the support of all of our vendors. So many people work so hard. I want to thank outgoing president David Rumbelow for his two years of service. Job well done, David! I’m sure I will have a few questions for you along the

Looking Ahead

As I sit down to write this letter, so many thoughts begin to run through my mind: where to start; finding something meaningful; how thankful and blessed I am; all the people that have influenced me, so many memories and reflections. As I go through all these thoughts I am taken back to my initial introduction to the water well industry. How a simple conversation and statement would still be with me today and with every passing day, week, and year continues to resonate.

The conversation was with a retired industry staple that was a consultant for the company that I was with at the time. We spoke of the industry, the great people associated with it, areas to focus, the dynamics of relationships, and the need for balance and my simple mind tried to absorb all the insight and wisdom being relayed to me. It was as we were finishing up that he made the statement which has stayed with me through the years. He said “Young man, you know - once you get freshwater in your blood, you can never get it out! Welcome to the industry.” I must admit that at the time I was thinking yeah, yeah, nice sales pitch, we will see.

From there I continued to learn the business, meeting many great “salt of the Earth” contractors, manufacturers, and suppliers
The Worth of Water and Friendship

“You know what’s down in the well by what comes up in the bucket,” my daddy used to tell me when I wore little girl bows in my hair, and though I always nodded in agreement, I didn’t know it would take becoming a water well wife before I’d fully grasp the depth of this wise expression. We know a person’s true character by their words and actions, and those two things combined tell us the true measure of the man.

Hello, my name is Julie Pyburn, and I am honored to serve as this year’s President of the TGWA Women’s Division. I’m thrilled to invest in our association alongside our board president, and my friend, Terry Lowe. The Pyburn family has known Terry over thirty years, and though he may not recall, he helped transport me to the ER at our Lubbock convention when my eardrum burst many moons ago. It was one of my first TGWA conventions as a brand-new water well wife, circa 1988. I learned something about Terry which I already knew well about my husband, Mike Pyburn - TGWA people make things happen, help one another, and get things accomplished. Thirty years have blown off the calendar since I witnessed the depth of Terry Lowe’s character and friendship at that convention - the proof was in the bucket.

During the past three decades, I have had the privilege of getting to know quite a few TGWA men and women and witness their “go-the-extra-mile” character by the bucketful! Harvey hit our family home and business with gusto in 2017, and our water well friends were among the first to call willing to lend a hand. My sweet mom, for whom I care, bravely continues her battle with cancer; I can scarcely recall a week absent of a text or call from a fellow water well wife to see how she’s doing - and none have ever met my precious mom. Those are buckets full of good water - the kind of water that refreshes the soul. I’ve never known of an association where competitors are genuine friends, give advice to the business down the road - freely and with good intent, and work together for the common good, but I see these traits overflowing in TGWA. There’s not a bucket big enough to contain them! It’s exciting!

These are a just a few of the reasons I am proud to be a part of TGWA and am looking forward to serving such an important and valuable industry in the great state of Texas. Like my daddy said, “You know what’s down in the well by what comes up in the bucket,” and when considering livelihoods centered around groundwater and the faithful bonds of camaraderie in TGWA, I have pulled up the proverbial bucket and discovered the worth of water and friendship...they’re simply priceless.

Many well-wishes

From Julie Pyburn
PRESIDENT
The TGWA Groundwater Science Board hosted its first Geoscience Seminar: Trinity Aquifer on January 22.

More than 50 people attended the day long seminar.

Ronald Fieseler, P.G., with Blanco-Pedernales GCD speaks about geophysical water well logging.

Kaveh Khorzad, P.G., with Wet Rock Groundwater Services catches up with Edward Miller of Geo Cam, Inc.

The crowd asked many questions throughout the day.

Al Broun, P.G., with Hays Trinity GCD discusses core samples in the Middle Trinity, Hays County.

Brian Hunt, P.G., and Ron Green, Ph.D., P.G., catch up during a break.

Steven Bond, P.G., with Bond Geological Services chats with attendees.

Brian Smith, P.G., with BSEACD discusses characterization of Trinity Aquifers using Westbay Wells.

Bill Stein, P.G., with WSP, USA discusses Upper Trinity Well fields in Comal County.

Ian Jones, Ph.D., P.G., with the Texas Water Development Board covers the Trinity Aquifer GAM.
Hundreds from the groundwater industry attended TGWA’s 72nd Annual Convention in San Marcos. Catching up with old friends and colleagues, enjoying the trade show, celebrating another successful scholarship auction, and introducing new board members are just a few of the highlights from this year’s convention.
On Wednesday, 20 participants braved the cold and wet conditions at the TGWA Golf Tournament. Congratulations to the first place team of Blake Sargent, Mike Melancon, Jason Yonce, and Grant Dickerson.

The GWS board re-elected Bill Stein and Pat Goodson to the board. Pat was also elected to the Secretary/Treasurer position. Rusty Tarver is the new GWS president.

One of the many highlights of the convention is always the scholarship fund auction. Handmade quilts, tote bags, jewelry, a fire pit, and a fishing trip to Little Bethel were just a few of the items auctioned off this year. Proceeds from the auction totaled more than $55,000. All proceeds will go to the newly created TGWA Scholarship Foundation, which is now its own 501(c)(3) and a separate entity from TGWA with a separate board. There are currently 21 students on scholarship. More information on the 2019 scholarship applications and requirements will be available on the TGWA website.

The following morning, the M&S and C&D boards convened. During the M&S board meeting, Rodney Ball passed the presidential torch to Robert “Bob” Hill, Andrew Bettle filled the Vice President position, and Judy Herndon filled the Secretary-Treasurer position.

Don J. Childers and James “Jim” Jackson were both re-elected to serve additional three-year terms. Robert Dilldine with Austin Pump & Supply replaced Robert Lasater on the board. Lacee Nivens of Rex McFadden Co., Inc. and Eli Rodriguez of Preferred Pump & Equipment filled vacant board positions on the M&S board.

The C&D board discussed activities on the water well drillers advisory council and re-elected Patrick Casarez, Don McElroy, Ken D. Grant, Ty Raymond and Bill Stoner. Jerry Browning stepped down from the board, but his son Jaythan took his seat. National Ground Water Association (NGWA) Past President, David Henrich, also stopped by the board meeting. Terry Lowe is the new C&D President, William McPike is President-Elect, John Julian is Vice President, and Roger Russell is Secretary-Treasurer.

Later in the day, TGWA celebrated award winners during the luncheon, which was sponsored by Franklin Electric and Preferred Pump & Equipment. Congratulations to all our award winners!

The bowling tournament was the best way to round out the convention before a Friday morning of C.E. classes. About 30 people participated in the 9-pin bowling game at the Freiheit Bowling Club.

Overall, the 2019 TGWA Annual Convention was fun and successful. Thank you to everyone who attended. We look forward to seeing you again next year!
way. As I wrap up my first column of the year, I hope each of you has a prosperous year. Most of all, be safe out there. I look forward to meeting and talking to each of you.

Terry Lowe

Hill, continued from page 2

associated with water wells. With each conversation, new introduction, job that came along and challenge faced, I began to realize that this is truly a great industry. People are always willing to help, provide advice and give guidance. One day, a year or so ago while driving to the next sales call, reflecting on the industry, my job, and the people that I had met and called now called friends, I realized how correct those words had been! Freshwater was in my blood and there was no way I could imagine wanting to be part of any other industry. I am blessed to still be able to call him and speak to him on occasion, as I am blessed to be part of this incredible industry.

I am extremely honored and happy to serve you and the TGWA in 2019 as the M&S President. To steal a few words from this year’s Contractor President, Terry Lowe, “I cannot promise to be the best President, but I can promise you that I will be the best President that I can.”

I am looking forward to working with everyone this year and wish all a safe and prosperous 2019.

Robert Hill

Tarver, continued from page 2

in this issue of the Fountainhead (page 8) for more information about this excellent seminar.

GWS Division members are participating on several other TGWA committees that have been formed to address some special issues and challenges related to the Texas groundwater industry and to TGWA membership. These issues include but are not limited to; continuing education, evolving policy regarding commingling waters, the TGWA scholarship fund, and the CE classes for the 2020 Annual Convention and Trade Show in Frisco. We are looking forward to a great year working on these issues and more.

Robert Tarver

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First Geoscience Seminar on The Trinity Aquifer in Central Texas

By STEVEN BOND, Bond Geological Services

The Ground Water Science Division of TGWA hosted the first seminar devoted to the geology and hydrology of a Texas aquifer. The topic was the Trinity Aquifer in Central Texas. The seminar had more than 50 attendees from a variety of professions including geologists, engineers, drillers, and even an attorney. The success of the seminar was a result of the speakers that presented their experiences working on and studying the Trinity Aquifer.

Ron Fieseler from the Blanco-Pedernales Groundwater Conservation District led off the seminar with an introduction to geophysical logging for water wells. Ron provided numerous examples of geophysical logs completed in the Trinity in Blanco and Hays Counties. He showed that the signatures on the logs could be correlated to specific formations in the Trinity Aquifer Group.

Kaveh Khorzad, owner of Wet Rock Groundwater Services, presented well construction and completion techniques that he has documented in the Trinity Aquifer. Kaveh discussed open-hole and cased completions, and the difficulties in completing wells in the Lower Trinity Aquifer. He also showed that acid stimulation using hydrochloric acid in a well can increase production in a well, and the problems associated with re-developing the well after acidizing.

Al Broun and Jeff Watson from the Hays Trinity Groundwater Conservation District presented results from core samples collected at four locations in Hays County and results from dye tracing in Onion Creek. We usually have only drill cuttings to describe the lithology at a well location. Al was able to show cores in the Lower Glen Rose Formation through the Cow Creek Limestone and provide in-depth lithologic descriptions and interpretations of depositional environments. Jeff followed up with the results of dye traces in the Onion Creek area, indicating recharge to the Upper Glen Rose from the creek.

Bill Stein, of WSP, USA, presented examples of water production from the Upper Trinity Aquifer (Upper Glen Rose Formation) in Comal County. The water supply to the city of New Braunfels has been historically from the Edwards Aquifer. Since production amounts in the Edwards is limited, the city needed a dependable supply from the Trinity Aquifer. Most production in the Trinity Aquifer is from the Middle Trinity, but Bill showed that the Upper Trinity in this area is capable of supporting additional production for the city.

Brian Hunt and Brian Smith of the Barton Springs/Edwards Aquifer Conservation District presented characterization of the Trinity Aquifer using Westbay Wells. Brian Hunt explained how one well using the Westbay method can successfully sample multiple zones within an aquifer, and potentially, multiple aquifers. Rather than drilling numerous wells targeting different saturated zones, one well can accomplish the same thing. Brian Smith presented water quality data from the Westbay wells that demonstrates different water quality within the Middle Trinity Aquifer zone.

The seminar closed with presentations from Ian Jones, Texas Water Development Board, and Ron Green from Southwest Research Institute. Ian explained how the present groundwater flow model for the Trinity Aquifer in Central Texas developed for TWDB was constructed and the results that the model has shown. Ron described the on-going efforts to up-grade and expand the Trinity model for Central Texas. Both Ian and Ron discussed the value of the groundwater flow model, and the limitations inherent in models. The result of their continuing efforts provide more understanding of the Trinity Aquifer.

Those attending voiced enjoyment and appreciation for the information presented at the seminar, which was also a financial success. We hope to be able to host similar seminars on aquifers in Texas in conjunction with the TGWA annual convention. The 2020 convention will be held in Frisco, Texas. Look for a class on the North Texas portion of the Trinity Aquifer there.

STEVEN BOND has worked for more than 40 years in the geological sciences and has a broad range of experience in the discipline. His background extends from mineral exploration and development both on- and off-shore, to groundwater evaluation and development for potable water supplies, and for environmental applications. Steven can be reached by email at sbondgeo@gmail.com
This is an exciting time for TGWA. Our “new” 501(c)(3) Scholarship Foundation is up and running. It was 33 years ago that my oldest daughter received a scholarship from TGWA when she started college. It was modest, but appreciated. Now, after more than 30 years of granting scholarships to so many of our students, new things are on the horizon. With our new Foundation established, we are much better organized than ever before and our scholarship fund is growing. Our Foundation Board of Directors is dedicated to prudent management of funds and even better scholarships are projected for future applicants. Take a look at our new Scholarship Foundation web page on the TGWA site to see pictures of the current recipients as well as the organizational documents and other information and know that you are sharing in all this by being a member of TGWA. Your unselfish support of our Foundation and TGWA makes it all possible. When capable people and willingness to serve come together, great things happen.

One more thing, I can’t thank our staff enough for all the planning and hard work they put into this effort. They’re the best!

Pete Brien
President, TGWA Scholarship Fund

Current Students on Scholarship
Olivia Allen - Oklahoma City University
Andrea Bettle - University of Texas El Paso
Aaron Brison - The University of Texas at Tyler
Fernando Carrizales - Lone Star College
Jessica Carrizales - Sam Houston State University
Carly Carter - West Texas A&M University
Hector Bustos Escudero - Prairie View A&M University
Carson Folmar - Texas A&M University - Commerce
Cooper Gamblin - Oklahoma State University
Hayden Gilmore - Palomar College
Payten Gilmore - Black Hills State University
Tansley Gilmore - Redlands Community College
Kameron Goolsby - The University of South Alabama
Kennedy Guerra - Abilene Christian University
Carson Hicks - Texas A&M University - Commerce
Abigale Hill - Texas Tech University
Catherine Hoelscher - Baylor University
Brittany Hogle - Lone Star College
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The well was only utilized for one season of growing catfish before the owners found themselves in litigation. Under the Rule of Capture, well owners in the State of Texas are entitled to as much water as they wish without waste. In 1993, two years after the well was constructed and in response to the US District Judge ruling in the Endangered Species lawsuit, the Legislature created the Edwards Aquifer Authority (EAA) to help manage the aquifer.

San Antonio Water System (SAWS) purchased the property, well and water rights for about $30 million in three transactions between 2000 and 2003. In 2006, SAWS converted the well to a monitor well with a continuous water level recorder, which also prevented the well from being used for production. SAWS later sold the surface property to San Antonio River Authority in 2013, keeping a small easement around the well for access. The water rights associated with the well were retained and are currently still utilized by SAWS.

SAWS contracted Weisinger Inc. of Willis, Texas to plug the flowing well. In December of 2018, crews added heavy drilling mud to “kill” the artesian pressure of the well. Photo four shows the equipment utilized during the well plugging process. The well showed 42 pounds per square inch (psi) of pressure, which is equivalent to a water level of about 97 feet above ground surface.

Approximately 800 barrels (1 barrel = 42 gallons) of bentonite/barite slurry mud was mixed at about 10 pounds per gallon and injected into the well from the surface, which caused the well to stop flowing. Afterward, approximately 630 cubic feet (21 super sacks) of three quarter inch washed limestone gravel was added through 6-inch drill pipe into the open-hole section of the well, which included a large cavern located just below the bottom of the casing. Subsequently, a slurry of 4,780 sacks of Class A cement containing 6-percent bentonite mixed at 13.7 pounds per gallon was injected under positive pressure to fill the well casing from the top of the Edwards Aquifer all the way back up to the surface. The casing was cut-off below land surface, capped and the ground leveled over the top of the remnants of the well, thus permanently plugging and ending the story of the ill-famed well.
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A Day in the Life of Juan Acevedo: Our Intern
by JUAN ACEVEDO, TGWA Intern

Howdy!

I am excited to be writing this column as the newest member of the Texas Ground Water Association. I have always had a passion for learning about the Earth’s resources and being able to protect them by integrating policy measures based on scientific research. I graduated from Texas A&M University with a Bachelor of Science in Geophysics. Throughout my undergraduate career I undertook several research projects of different aspects: from studying foraminifera populations in the Eagle Ford Shale to analyzing the movements of sand dunes in the North Polar region of Mars.

My main influence in studying geosciences are my parents who are both geologists for the oil and gas industry. Ever since I can remember, all of our family trips had some sort of geological significance, and my fascination for this field skyrocketed during my undergraduate career. Now you may ask yourself “What does this all have to do with the TGWA”? One day as I was sitting in one of my hydrogeology classes I learned that the Earth’s water resources are being depleted at an alarming rate. The more I thought about this, the more I started to realize this was not the only problem human activity has caused on the planet. Carbon Dioxide levels are higher than they have been in over 800,000 years. Seismicity rates have increased by almost 100 times in areas close to oil and gas production. The list goes on. Currently, there are policy features in place that try to mitigate these externalities, however, many of them are not based on scientific facts. It was then that I decided I should use my knowledge of geosciences and my passion for protecting water resources to try and make a difference. There is a missing link between policy making and scientific knowledge in policy making today, and my main priority is to bridge that gap. Currently, I am in my second semester of graduate school in the Energy and Earth Resources program at the University of Texas at Austin. For my master’s thesis I am analyzing saltwater disposal practices in the Texas Panhandle region as a part of the TexNet – CISR Seismic Monitoring Program based at UT’s Bureau of Economic Geology. During the 84th and 85th legislative sessions, the Texas Legislature tasked the BEG to better understand, locate, and determine the origins of earthquakes, if caused by human activity, and help prevent them from happening in the future. The opportunity to work for TGWA and TWCA came to me through my master’s program advisor Dr. Michael Young, from the BEG, who put me in touch with Mrs. Stacey Steinbach, Assistant General Manager of TGWA / TWCA. Stacey was immensely welcoming to provide me the opportunity of being the first ever TGWA / TWCA intern, and I am grateful to be in this position. I would like to use this opportunity as intern to help out with any TGWA requirements and better understand the legislative process in order to merge it to my current work as a graduate student.

As a TGWA intern, I helped with the Texas Ground Water Association’s Annual Convention in San Marcos, Texas. My main duty was to aid in registration efforts of all attendees for this convention. This convention was my first experience behind-the-scenes. I had previously been an attendee in conferences such as AAPG, SEG and AGU, however, this experience really helped me appreciate all the work that is done by the staff and members running the conferences, and how vital this work is for everything to run smoothly. I have also taken great pleasure in attending the TWCA Annual Convention at the Lost Pines Resort in Bastrop, Texas. This conference was similar, yet, very different than the Texas Ground Water Association’s convention. It was similar in my duties as an intern, where I helped at the registration desk and assisted in any other necessary duties to ensure things were running smoothly. However, it was different in the sense that I was more actively attending the speaker events as well as being present during the awards ceremony. Seeing the entire TWCA and TGWA communities come together was an extremely touching experience. It was an honor to be present among such dedicated people who have dedicated their careers to a similar cause, water. Whether it was policy-makers, lawyers, or even private consultants, I was taken back with how welcoming everyone was of me and how highly they all spoke of the associations. It became very clear that these associations truly care about conserving our most precious resource. I am grateful for the opportunity to be working alongside TGWA and TWCA and getting first-hand experience with policy measures that aim to protect such a valuable resource. I hope that in the future I can bring my scientific background and my interest in policy together, and there is no better way to start off than with the Texas Ground Water Association and the Texas Water Conservation Association.

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The Texas Alliance of Groundwater Districts (TAGD) works to promote and support sound management of groundwater based on local conditions and good science. TAGD provides educational and technical assistance to member districts and the public, serves as a resource on groundwater issues with state officials, assists members in keeping current with state law, and is a central point of contact for information on groundwater issues and practices. TAGD members represent 86 local groundwater conservation districts in Texas and 41 groundwater-related consulting firms, law firms, and other businesses. For the past eight years, TAGD has hosted the Texas Groundwater Summit. The Texas Groundwater Summit is one of Texas’ premiere annual groundwater events, bringing together a diverse group of groundwater professionals over three days to discuss emerging trends and new research. The event provides a mix of expert presentations on all areas of groundwater management, as well as networking opportunities for the groundwater community. We expect to have more than two dozen exhibitors and 350 groundwater industry leaders, community stakeholders, agency representatives, and elected officials in attendance. TAGD would like to offer TGWA members a discounted rate to attend the conference. Early bird rates end April 30.

Registration may be made at www.texasgroundwater.org

Discounted Groundwater Summit Registration Rate for TGWA Members

What’s next?

Upcoming Events

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