

Petition Challenges Water Plan to Allow for More Groundwater Pumping Than is Available in the Hill Country

by David Baker

The Wimberley Valley Watershed Association has filed a petition appealing the 30' Desired Future Condition (DFC) drawdown set by Groundwater Management Area 9 (GMA-9) for the Trinity Group Aquifers in Hays County, and is calling for the Hays Trinity Groundwater Conservation District (HTGCD) and GMA-9 to determine the 30' DFC as unreasonable and unsustainable.

The purpose of the appeal is to request action from the Texas Water Development Board to determine a realistic DFC for groundwater sustainability in the Texas Hill Country. The 30-foot average drawdown for the Trinity Aquifer, as adopted by GMA-9 on July 26, 2010, and as it applies to the Trinity Aquifer in the HTGCD, allows a drawdown that will deplete the aquifer. Concern that the proposed 30' DFC mandate will negatively impact private well owners, landowners, aquatic habitats and businesses dependent on spring and base flows in rivers in the Hill Country is widespread.

John Ashworth, the geologist who wrote the TDWR Report 273 Ground-Water Availability of the Lower Cretaceous Formations in the Hill Country of South-Central Texas, states, "The Hill Country of Central Texas with its underlying Trinity Aquifer is a prime example of an area undergoing water supply management consideration. In some areas, withdrawals of groundwater from the Trinity have advanced beyond sustainable limits and are resulting in expanding mining of the resource."

The filed appeal states that the proposed DFC of a 30-foot average drawdown would allow more pumping in Hays County than the TWDB-approved management plan's available groundwater. Recent experience shows that current pumping by itself may be

unsustainable, as evidenced by the unavailability of water in wells and springs during drought conditions in 2009. During 2009, forty-two existing and operating groundwater wells in the Hays Trinity Groundwater Conservation District (HTGCD) were reported dry or had to lower pumps due to declining water levels. The Blanco River, Jacob's Well, Onion Creek, and many other perennial springs and rivers in the Hill Country went dry.

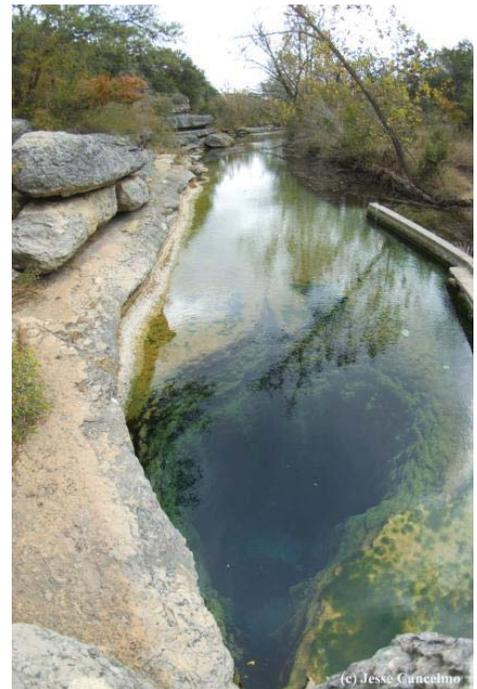


Photo by Jesse Cancelmo

Jacob's Well is a prime example of how current pumping levels are already stressing the limits of water availability in the Trinity Aquifer. During the height of the 2008-2009 drought, daily mean flow at Jacob's Well essentially stopped for 167 days (6 months). Before 2000, the spring had never stopped flowing in recorded history. The 2009 cessation of flow occurred with only an approximate 2- to 3-ft drawdown upgradient of the spring, much less than the 19 ft average drawdown allowed in the proposed DFC.

Marcus Gary, a hydrogeologist specializing in karst aquifers, expresses his concern regarding the de-

gree of groundwater extraction planned for the area included in Texas's Groundwater Management Area 9 (GMA-9). He states, "In my opinion, this mining of the Trinity Aquifer will have many negative consequences, including numerous domestic and public water wells becoming unusable, significant loss of direct contribution to the Edwards Aquifer through cross-formational flow, elimination of all base flow to surface streams in the Edwards Aquifer Contribution Zone, and cessation of all natural groundwater discharge features, including Jacob's Well north of Wimberley."

Geological data on the base flow in springs and rivers documents the critical nature of maintaining habitat, ensuring good water quality, sustaining property values along streams, sustaining businesses involved in recreation and tourism, and ensuring the long-term provision of water from the rock matrix that makes up an aquifer. The depletion of springs and rivers also jeopardizes the substantial public and private investment in river parks and nature preserves, such as Jacob's Well Natural Area and Blue Hole Regional Park. Investments in these two parks alone total over \$11 million to date.

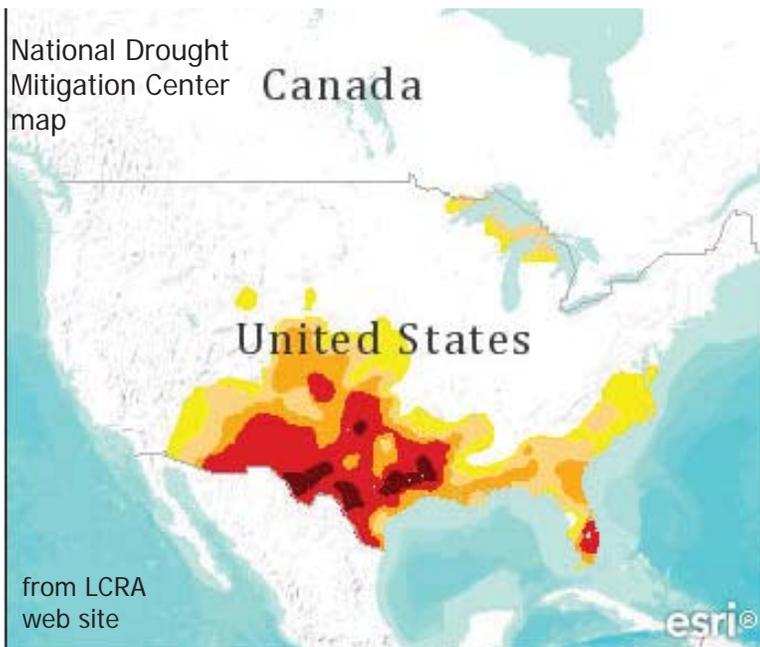
Conservation and protection of groundwater to balance multiple and competing uses is the primary purpose of groundwater conservation districts. Both the HTGCD and Regions K and L Water Planning Groups have formally adopted management goals to

ensure the long-term sustainability of aquifers and to prevent aquifer mining. The proposed DFC directly contradicts the stated goals of these groups, since it will allow permits to be issued for high quantities of groundwater that further deplete the Trinity Aquifer.

Rene Barker, a hydrogeologist with experience in karst hydrology and groundwater modeling, indicated in his support for the DFC Petition, "I am concerned that the computer-simulated, time-averaged water-level decline that was used to formulate the DFC (allowing for an additional 30 feet of regionalized decline) will significantly impact the production and reliability of individual groundwater wells. It is highly likely that this DFC will result in untold numbers of dry wells and significant periods of zero springflow, not only from relatively large springs such as Jacob's Well, but also from a multitude of backyard springs and shallow seeps." His testimony concludes that the DFC is inconsistent with sound water-resource management policy.

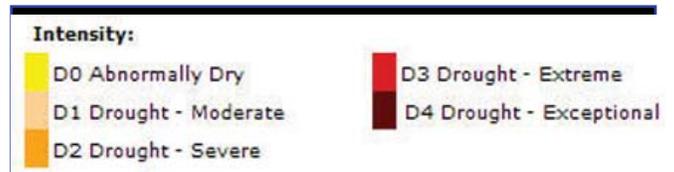
Jack Hollon, President of WVWA, expresses further concern, "In summary, a 30-ft average drawdown of the Trinity Aquifer in GMA-9 would lead to a major degradation of economic, ecological, and quality of life conditions across the Texas Hill Country." To view and download the full DFC petition and supporting technical documents go to www.jacobswellspring.org and www.hillcountryalliance.org.

Current drought conditions highlighted on web, in papers



Ashton Price of the Austin American-Statesman wrote an article about the current drought. See "Flow into Colorado lower than drought-of-record period, LCRA says" at www.statesman.com/news/local/flow-into-colorado-lower-than-drought-of-record-1421772.html.

The Lower Colorado River Authority (LCRA) says on their web site (www.lcra.org): "The flow of water from streams and creeks into the Colorado River over the past six months is worse than any similar period during the worst-ever drought."



Gregg Tatum, Dive Master – Jacob’s Well Science Dive Team

by Louis Parks, JWNA Volunteer

A late spring Saturday morning at Jacob’s Well. It is already warm here in central Texas, but perfect.

Granted, considering the latest drought, perfection should include dark rain clouds, but it’s hard to deny the rugged beauty of the well’s rocky surroundings as they warm in bright sunlight from a wide, blue Wimberley sky.

It is what lies below, not above, Jacob’s Well that lures diver Gregg Tatum this morning. Gregg is about to descend for his, oh, something like 100th dive into the cold, clear water of this natural treasure.



Photo by Jesse Cancelmo

“The curiosity is so intense, like a magnet,” says Gregg, a tall, lean Austin biologist with an easy-going manner and confident voice, “The first thing you notice when you go to Jacob’s is just how stunningly beautiful the setting is. The rock cliffs and the creek and that yawning hole of water. It just draws me in. What’s down in there? The farther I go, the more I want to see.”

Suited up in several thousand dollars worth of specialized cave diving equipment, Gregg, co-director of the Jacob’s Well Exploration Project (JWEP), is already waist deep in water. He’s standing on the well’s lip, where aquifer flow becomes the water of Cypress Creek, life blood of Wimberley. Just behind him, as he checks his gear one more time, looms that huge, compelling, descending rock funnel that has tempted

countless swimmers to jump in – many from the accommodating rock ledges -- probably since the first Native Americans discovered this spot.

It has also lured many divers, some to their doom. With a treacherously unstable gravel slope at the bottom of the entry shaft, a tight restriction (small opening) into the main conduits, an enticing but fraudulent exit chimney that can deceive divers desperately seeking the way out, and long passages so narrow that divers can easily touch walls, ceiling and floor, this is a dangerous maze where only experienced, cave-trained divers should venture. As recently as

1979, two divers failed to find their way out.

“We hope that’s the last time,” Gregg says. “Recreational divers want to find out what’s down there. That’s a really poor idea. Recreational divers do not have the extensive training or specialized equipment to deal with an overhead environment, like a cave.”

Gregg and his dive companions for today – David Moore, a new member of the JWEP dive team, and Jesse Cancelmo, a professional dive photographer – have extensive dive experience as well as specialty certifications necessary for cave diving. Gregg, with 30 years of diving, has 11 certifications.

Today, Cancelmo is shooting for Texas Parks and Wildlife. After the photos, shot in the entry shaft cavern, Gregg and Moore will do what they usually do in Jacob’s Well: work on expanding the scientific and practical knowledge of the well and the aquifer. And maybe some housekeeping. That will mean going past the initial restriction between entry cavern and cave, and working as much as 137 feet deep in one of the cave’s two main conduits.

The JWEP 8-member team members are all volunteers working at their own expense. Many are also with the older Goodenough Springs (deep cave) Exploration Project. JWEP is one of three dive teams authorized to enter the well; one team does research on the cave’s biology, another is doing high-definition video of the site. The JWEP team is surveying and mapping the entire accessible cave, a slow, painstaking

ing process that will take hundreds of dives to complete.

"Its most important use is for land-use planning. You can't preserve what you don't know about," Gregg says. "You have to characterize what's there in order to preserve it. You need baseline information and the most basic information is: Where is the cave? Where does it go? What water quality is in the cave?"

Major survey excursions are big projects. A survey team will consist of two people, but there are also support divers who take some of the mountain of equipment and deposit it at various locations throughout the cave. "It's similar to mountaineering, where you move gear from a base camp to the summit," Gregg says.

"Cave diving is very gear-intensive. For our rigs this weekend, we'll have five tanks, five regulators, three lights. We carry multiple everything. We have redundancy."

For the long dives, up to five hours under water and underground, the divers breathe a very specific "tri-mix" of oxygen, nitrogen and helium, to offset the effects of the nitrogen, which can cause the bends in divers.

"We start decompression gasses (when they get back to a depth of) 70 feet and switch from our tri-mix to 50 percent oxygen," Gregg says. From 70 feet, they have to ascend at 10-foot increments, stopping to decompress for longer times at each stop. "The

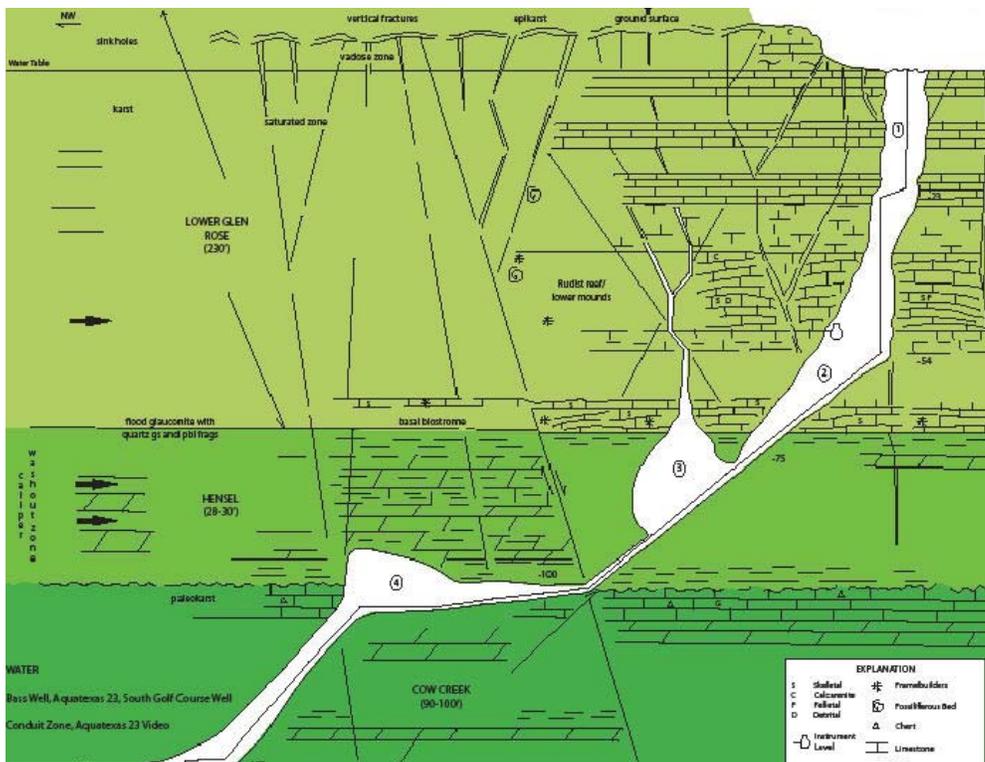
longer you are in the cave, the more decompression time you have. At 20 feet, we switch to pure (100 percent) oxygen. That (wait at 20 feet) can be well over an hour. We'll exchange messages on our underwater notebooks or look for coins and trinkets people throw in the well. Anything to pass the time."

The team also assists the other teams, works on cave equipment maintenance, and even hauls out the large amount of junk (towels, bottles, even a tricycle) visitors continue to drop into the well.

Being submerged for several hours, especially if the well has a flow, is exhausting, but it has compensation.



Gregg Tatum, suited up for dive



"You burn a lot of calories, from both swimming and from the thermal regulation, just trying to stay warm," Gregg says. (The water is a constant 68 degrees in the well, very cold even in their special suits.) "But, it is exhilarating because you've done a highly technical dive and managed all the risks appropriately."

Profile of Jacob's Well to depth of 140 ft. from surface

Restoration Rangers weed, move rocks, build baffles

The work crew that meets every other Friday calls itself the "Restoration Rangers," and restoring the natural area is exactly what they do as they range around the property.

In April, this work included weeding various sections of Camp Jacob and clearing unwanted plants on the granite path to the well. They dismantled fire rings to discourage potential fire builders, tackled Johnson Grass and Golden Bamboo down by the creek, and placed rocks as baffles to prevent gully washers when Wimberley again experiences a heavy rain. After removing a bucket of beer cans in a treehouse, they dismantled the three-tier hangout, which required the removal of some ring shank nails.

On the April 2 workday, 16 people from this year's Master Naturalist class, as well as members of the MN Training Committee, joined the work crew. They tackled invasives on the new tract of the property, cut down the Chinaberry tree and went after intrusive Poverty Weed.

A brand new Ranger joined the group on April 15. Erich lives near the well and visits it almost daily for a dip. The group assumed he was a young fellow but maybe he has found rejuvenating power in the waters! He did not hesitate to take on the challenge of fighting invasives and fit right in with the Rangers.



David Wolmer, member of the 2011 Hays County Master Naturalists training class, brought his loppers to help the work crew on April 2.



Notes on Reality

by Jack Hollon, WVWA President

A primary job of leadership for any group or organization is to set priorities, to use scarce human and money resources to reach desired goals. The last thing we need is to spend time and money going down "rabbit trails" that do not advance the mission.

This principal was illustrated clearly at the April 21 meeting on Hays County Parks and Open Space in Dripping Springs. Citizens there were offering ideas to guide County planning for Parks and Open Space, and at one point, in discussing water resources and land conservation, the word "sustainable" was used by someone. This drew a sharp objection from a resident who declared the whole concept of sustainability to be a devious plot, hatched at the United Nations, to take control of our lives.

After a sort of stunned silence, I raised my hand and offered a different view: Based on several decades of study of natural resource and conservation issues, I have found the idea of sustainability to be a kind of common sense marker to guide long term thinking and planning, absolutely no connection to the UN. Rather, I should think, a connection to our grandchildren. Wisely, the moderator moved us back to our agenda.

I risk giving a paranoid thought air time to emphasize the importance of identifying reality and using our energy to solve real problems. We have a critical need to manage limited groundwater wisely. Maintaining the aquifer's ability to supply our wells and the base flow to area streams is a goal of the highest priority, both to our quality of life and to our economy. We need HaysTrinity Groundwater Conservation District directors who understand this.

Over-pumping (all wells) and over-permitting (non-exempt wells) – basically writing more checks on our water account than deposits (recharge) will stand – these are the real problems to address. This non-partisan, non-ideological effort must be based on the best historical data and research science available. "Meters on domestic wells" and "high taxes" are rabbit trail issues, used to stir emotions and fears.

So let us stay tuned to reality, focus on how we can utilize conservative management, rainwater harvesting, natural home landscapes, and land use that maximizes recharge to keep the wells we need pumping and the water in Cypress Creek clean, clear, and flowing.

David Baker receives the Texas Environmental Excellence Award

David Baker has been recognized by the Texas Commission on Environmental Quality for his leadership in conservation of the well-loved natural landmark known as Jacob's Well. He is the state winner in the Individual category for their 2011 Texas Environmental Excellence Awards.

The Texas Environmental Excellence Awards celebrate the bold efforts of citizens, communities, businesses, and organizations to preserve and protect the Texas environment.

Although Jacob's Well flowed freely during the 1950's drought-of-record, it tragically stopped for the first time in the summer of 2000. With a predicted local growth rate of 419% by 2050, impending legislation allowing for a 30-foot drawdown of the Trinity Aquifer, and a newly permitted golf course development, the spring is in extreme peril. "Water from Jacob's Well is being mined at rates that can't be sustained. Land protection, water conservation, and sustainable water policy have all become imperative to the future of Jacob's Well, and for all of our states water resources," states Baker. His vision and level of commitment to saving Jacob's Well are extraordinary. If David Baker didn't exist, Jacob's Well would have gone the way of the other 63 historically significant springs in Texas – that is, "altogether failed." (Larry McKinney, The State of the Springs, TPWD Magazines, July 2008)

Jacob's Well emerges from one of the longest underground caves in Texas and is the sole source of the Cypress Creek that flows through Wimberley. Historically, the spring gushed up several feet high, and was the life-blood to indigenous peoples. It powered the original Wimberley-Winters Mill that fueled the town. Currently, the well is the home of rare aquatic species and a source of water for local wildlife. To the community, it is a natural heritage site of magnificent proportions -- a gathering site for weddings, memorials, countless hours of enjoyment, and moments of introspection. Time spent at Jacob's Well has been transformative in many people's lives.

David and his family purchased the land around the well, which included two rock houses and a portion of Jacob's Well, in the 1980's. David's son was nine months old when they moved to the property, and coincidentally named Jacob. His daughter Jessie was born and raised in the little rock house above the spring. The family opened the Dancing Waters Inn to

share David's artwork and the beauty of the spring with the public. "I knew something had to be done to insure that Jessie and Jake's children and grandchildren would still be able to enjoy swimming in the crystal clear spring water of Jacob's Well," David says.

Evidence showed that the spring had been flowing for thousands of years, but as aquifer pumping became more expansive, pollution and bacterial levels continued to rise. The great spring was becoming severely degraded. This being too painful to watch, David set out on a journey not only filled with great joy and reward, but also heartbreak, stress, and sleepless nights.



In 1996 he partnered with landowners and community leaders to form the non-profit Wimberley Valley Watershed Association. Their first task was a successful effort to stop the local utility company from discharging sewage into Cypress Creek. The second was to negotiate with the 120 landowners and raise the funds necessary to purchase the 46 acres surrounding the well. Handed difficult negotiations, lawsuits, and funding challenges, Baker held onto the vision of a clean, clear, and flowing Jacob's Well.

With the help of Hays County Commissioners and The Nature Conservancy, David and the WVWA next purchased the neighboring 50 acres. This not only protected the sensitive recharge area, but also halted the development of 65 condos and a hotel. As part of the effort to consolidate the property into a single preserve, David made the difficult choice to give ownership of the home that he had built to the WVWA.

Besides being a visionary, David is exceptionally collaborative with dozens of partner organizations, resource agencies and local stakeholder groups, believing that the management of water and land is best handled by engaging with the local community.

Currently, he is the Vice-President of the Hays Trinity Groundwater Conservation District, and serves as Vice President of the Hill Country Alliance. He

leads the WVWA in developing expansive research programs, and is working to develop a Watershed Protection Plan for Cypress Creek. Throughout, he has been a strong advocate for community education, conservation incentives, and sustainable water management policies – an extremely challenging task for an already over appropriated aquifer in one of the fastest growing counties in Texas.

David has been instrumental in developing outreach programs such as weekly public tours of the well, school programs, and community events. He initiated a volunteer program to support these efforts, which has attracted a group of inspiring and dedicated individuals and organizations that help deliver the message of conservation.

Jacob's Well has stopped flowing three times in the last decade, making his work undeniably critical. Often working under enormous pressure, David has devoted himself to bringing together contentious factions across the region to plan for aquifer management solutions that balance the impacts of growth. "Even though the future of water and the aquifer feels tenuous at best, the reality of diminished spring flows is indisputable." David says, "When I sit down to negotiate with those who have opposing viewpoints, I feel that the wisdom of our shared humanity will ultimately lead us to cooperate and work together, hopefully before the well runs dry."

In the face of seemingly impossible tasks, his dedication and commitment to connect to a higher purpose remains clear. The future of water in this state still remains a question but one thing is certain: David Baker will be remembered as hero for generations to come, and today he has earned deep gratitude from the people of Texas.

Jacob's Well Frog Walk **Saturday, May 7, 7:30-9:30 p.m.** **Speaker: Lee Ann Linam**

Amphibians around the world are disappearing, but Texas Amphibian Watch is checking to make sure that doesn't happen in Texas. Join TPWD biologist Lee Ann Linam for an introduction to the frogs and toads of the Wimberley area, and find out how you can become a "citizen herpetologist."

A brief Powerpoint presentation will be followed by a hike to Cypress Creek to listen for the calls of local amphibians. No reservations are needed.

Welcome to New Jacobs Well Volunteers!

A thunderous applause to our new **Spring 2011 JWNA graduates**. Some of you newbies have already jumped in to volunteer. Please welcome:

Alicia Nelson	Gerin Hood	Nancy Russell
Barbara Rosen	Helen Bowie	Robert Carrie
Dave Cadriel	Helen Foster	Sarah Ryan
Dell Hood	Jeri Porter	Shelly Buse
Don Wallace	Larry Foster	
Evan Kornacki	Leigh Sebera	

Volunteer Meg Inglis has almost finished taking our 5 different plant lists (some of them handwritten) and compiling them into an Excel spreadsheet. We will soon be able to reorganize or add to the list as needed. The Wildflower Center has generously offered to house it for us, and we will have a link on the website to access it.



Ray Franklin talks about native grasses with the Spring training group.



Jane Dunham and Jeri Porter share a laugh over the destructive power of cow poop, demonstrated on the watershed model.

Hays County Water Issues Alert

by David H. Glenn

Many water related issues are currently in the air, but unfortunately none of them are producing much rain. It's only a month until the Hays Trinity Groundwater Conservation District (HTGCD) holds a May 14th election to select two board members. District 2 represents the east side of Dripping Springs and unincorporated northeastern Hays County. District 4 represents the contiguous Woodcreek, Woodcreek North, and unincorporated western Hays County area. Water issues are crucial to these areas and the candidates have opposing views on addressing them. I urge you to become informed about the issues and candidates and vote. The outcome of this election may greatly impact you personally for years to come.

In Austin, many water issues are again bubbling on the stove in the current 2011 legislative session. One of these is proposed "vested groundwater rights" legislation dealing with many complex and divisive issues of groundwater ownership and pumping. It is being rushed through the Senate and the House. The proposed legislation is bad public policy due to unintended consequences. There has been little opportunity for public input or even for legislators to fully grasp its meaning and its possible long-term unintended consequences. These consequences would have a detrimental outcome on current regional water planning and GCD management processes. The legislation could promote many lawsuits that would clog our court system for years to come and that would impair and intimidate locally elected GCD's. Groundwater Conservation Districts are the Texas Legislature's preferred method of local groundwater management.

Recently in Hays County, many citizens were upset when the HTGCD Board failed to either consider constituents concerns or follow its own rules and issued premature and excessive water permits. For over 5 years a state-wide mandated "Desired Future Condition/Managed Available Groundwater" process has been underway that is expected to be completed within the next month. The District decided to jump the gun and issue premature water permits not waiting for the final MAG authorization. Ten western Hays County residents and one water conservation organization stepped forward, expressing their concerns in writing and requesting a contested hearing. The requestors believe excessive amounts of water were permitted prematurely with a loosely

written permit filled with loopholes. Their requests were quashed when the Board voted 3-1 on procedural grounds that protests of the premature water permit were "not timely filed."

The LCRA says 2011 is expected to be drier than normal due to a very strong La Nina weather pattern. While many western Hays County residents are wisely pursuing ways to conserve and protect their groundwater, but finding themselves in what the latest U.S. Drought Monitor considers D3 Extreme Drought conditions, HTGCD is ignoring common sense protests to grant questionable and excessive permits to commercial interests.

The Wimberley Valley Watershed Association (WVWA) has prepared a formal petition appealing the so called "Desired Future Condition" (30' average drawdown) adopted by GMA-9 in 2010. This expansive document was presented to the HTGCD Board in March and will be presented to the Texas Water Development Board in April.

In summary, we all need to remain vigilant about local and regional water issues. Local organizations focusing on water issues are the Hill Country Alliance, LCRA, River Systems Institute at Texas State University, Citizens Alliance for Responsible Development (CARD), Wimberley Valley Watershed Association, and Hays Trinity Aquifer Volunteer Advisory Group (VAG). Living on the edge of the desert, with continual threat of drought, makes water a precious commodity and a critical resource. Water is life!



Jeff Vasgaard enjoys showing the features of Jacob's Well to visitors and trainees.

Jacob's Well Elementary Students Visit Jacob's Well Natural Area

by Barbara Atwell
Education and Outreach Coordinator, JWNA

Our namesake school started their adventure with a pre-visit in the 5th grade classrooms. The students viewed a slide show of Jacob's Well, including maps, an elevation of the cave and underwater photos, and began a conversation as to why the spring is stressed.

The 150 students visited over a 2-day period, spending time at 3 stations, spread out around the site, which addressed non-point source pollution and how aquifers recharge, the limited availability of fresh water and how to conserve that water, how to test for water quality, and favorite stories about the famous spring.



One of the stations was under a huge and beautiful oak tree, from which an occasional bug fell. This instigated discussion about how they felt about bugs, and led to the realization that they were the guests, albeit giant ones, in the bugs' world.

Linda Lang tackled non-point source pollution with the watershed model. Cypress Creek suffers from an overload of pet fecal coliform -- an average size dog dropping contains 3 billion fecal coliform bacteria. Linda unabashedly taught the kids how to clean up after their dog by using a short, fat stick and a plastic bag. One student volunteered to do the demonstration for the group himself. He skillfully pretended to

be out on a walk, tossed out the stick and jumped to pick up the "waste" with his plastic bag.

The kids sat on the weir at Jacob's Well to listen to Deb Bradshaw telling stories about the spring, describing events such as the flood which floated a



Deb Bradshaw shares stories with JWE students.

sheriff's car down the creek while its lights were on. She told them about the years of Native American presence, and about scuba diving. One would never have guessed that Deb had returned from a trip to Africa the day before. She jumped right in to engage the elementary school kids. Sitting on the rocks across on the high side of the well, she commented that in her jet-lagged state, she might be falling in and to be sure and get her back out.

Jeff Vasgaard was seen wearing a pile of hats at one point, and eating lunch with his grandson who is a 5th grader at the school. Jeff taught the group about how much fresh water we have to use, along with how much water use is hidden -- such as the 2900 gallons of water used to make a pair of blue jeans.

New volunteer Don Wallace had the kids calling him "Pawpaw" and was seen "struggling" with 3 kids who were all trying to take him down at once in an arm wrestling match. At his station, Don got them to put on their thinking caps -- and sunglasses -- to add up how many gallons of water they used in a day. Don led stimulating conversations about water conservation with humor, and at times, courage -- especially with suggestions such as "don't shower at all" and "pick a tree" as ways to save water. Cinde Thomas-Jimenez, the Education Coordinator for the Guadalupe Blanco River Authority traveled all the way from

Seguin to participate the first day, and added her extensive teaching experience to the activity.



Linda Lang tackles non-point source pollution.

The Stream Team, headed by Jennifer R. Mandel Buratti, engaged the students in making scientific calculations to unravel a hypothetical fish kill. They measured water clarity, temperature, conductivity, and

observed the flow rate. Margaret Baker helped the team's new crew to get their feet off the ground.

Bob Mobley, Mark Chonko, and staff Chrystal Kubala served as trail guides and the support team.

Jacob's Well web site:
www.jacobswellspring.org

Hays County Master Naturalist Ray Franklin mesmerized the classes as usual with his rainfall demonstration, revealing the value of those long-rooted grasses.

Shelly Buse dropped in to help with at the end of the visit with a rowdy and very loud game called "Crows and Owls," a tag game that tested the students on their new found watershed knowledge. The vocal level during these games was impressive.

After the kids left, the volunteers fell towards their cars mumbling something about imminent naps, but with a smile on their faces -- knowing that they had just given their volunteer time to make a major impact on protecting water for future generations.



A member of the Stream Team talks about water usage.

JWNA Current Calendar - Spring/Summer 2011

(Does not include public tours, each Saturday at 10:00 a.m.)

To volunteer at these events, e-mail Barbara Attwell: battwell@earthlink.net.

Volunteer and Advanced Training Opportunities

May (TBA)	Jacob's Well Elementary 2nd grade water cycle activity (at the school)
May 7	Frog Walk with Lee Ann Linam (7:30pm - 9:30 pm)
May 14	Canyon Gorge trip
June 11	CAMN (Austin's Capital Area Master Naturalists) Tour
June 14	Austin Nature Center Science Camps: "Wilderness Wise - Conservation and Leave No Trace"
June 22	Austin Nature Center Science Camps: "Caves and Life Underground"
July 4	Wimberley Parade
July 15	Austin Nature Center Science Camps -- "Science Safari - General Science, Anything Goes"
July 28	Austin Nature Center Science Camps -- "Water Conservation and Aquifers"
August 9	Austin Nature Center Science Camps -- "Caves and Aquifers"



Lee Ann Linam will guide the Frog Walk on May 14