


More Groundwater Availability Models

Work has recently begun for modeling the Edwards-Trinity (High Plains) (ET-HP) aquifer and the Dockum Group. These two minor aquifers are both found within the South Plains UWCD, and are both buried below the Ogallala. The ET-HP lies directly below the Ogallala, and in some parts of the District, it is hydrologically connected to the Ogallala. The Dockum group underlies the ET-HP, and is isolated from both Ogallala and ET-HP sediments by interbedded layers of clay.

Currently, contractors are developing conceptual models of these minor aquifers. During the month of July stakeholder meetings were held for both projects. At these meetings, there are opportunities for interested parties to both hear model progress and provide comments regarding model assumptions. The SPUWCD staff attended both meetings. Although there are not many wells here that are completed within these minor aquifers, available data will be forwarded to the contractors for review and possible inclusion as model datasets are formed. Project completion is scheduled for July 2008, with the final reports being delivered during September 2008. 

SOUTH PLAINS GROUNDWATER NEWS is published by the SOUTH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT, PO Box 986, 802 Tahoka Road, Brownfield, TX 79316. Directors: Dan Day, Doyle Moss, Scott Hamm, Matt Hogue, Larry Yowell; General Manager: Jason Coleman; Administrative Assistant: Lindy Harris. Subscriptions are free upon request.

Phone: (806) 637-7467

FAX: (806) 637-4364

E-mail: spuwcd@spuwcd.org

Web Address: www.spuwcd.org

Calendar of Events

Sept. 4	Labor Day Office Closed
Sept. 5	Board Meeting 8:30 am District office
Sept. 21	Terry County Farm Tour
Oct. 3	Board Meeting 8:30 am District office
Nov. 7	Board Meeting 8:30 am District office
Nov. 7	Election Day

Don't Forget to Vote

GROUNDWATER SOUTH PLAINS NEWS

AUGUST 2006

VOLUME 13, NUMBER 4

FOCUS ON DROUGHT CONDITIONS

From January 1, 2006 through July 31, 2006, the National Weather Service has reported 5.01 inches of precipitation in Brownfield. The Weather Service data for Brownfield dates to 1916, and the long term average for the January-July period is 10.04 inches. During the same period last year, the total was 17.16 inches. Data from the District's network of 33 rain gages indicates a range of 1.77 to 6.36 inches this year. Dry conditions have affected all of the South Plains region, as well as most areas in Texas.

The effects of drought here are readily seen in agricultural fields. The vast majority of dryland crops have been failed, and irrigated crops are still showing signs of heat stress. Other effects of drought may include the following: increased public awareness of water supplies, declining surface water availability, change in use of water, and changes in water policy. These effects may vary across the State, but ultimately influence most of us. A more detailed discussion of these drought-induced effects follows.

Certainly the limited rainfall has increased regional awareness of the importance of both groundwater and surface water, as well as a recognition of declining supplies. A number of news stories addressing this topic have appeared this year, since most communities within the region depend on groundwater for municipal supply. The agricultural sector, too, has experienced enormous hardship as producers have struggled with little or no rainfall. Groundwater conservation districts (gcds) frequently administer public education programs that address questions of supplies, demands, and conservation. These programs are frequently offered, but may be especially helpful when public awareness peaks, mainly during times of drought. Different sources of supply may also influence the level of public awareness. For example, a person may readily observe declining lake levels as evidenced by receding water lines and the presence of rocks and stumps once hidden beneath the surface. Perhaps this scenario gives one a greater sense of urgency regarding conservation, or at the very least, some idea of the available supply. Conversely, groundwater may not be visibly surveyed or quantified at the surface in like manner. Aquifers are buried sediments containing a volume of water that may not be as easily quantifiable as a lake. GCDs and other agencies make surveys of groundwater conditions and availability, often using water level measurements as indicators of increasing or decreasing storage. Educating groundwater users may sometimes pose greater challenges due to the "hidden" nature of this resource compared to surface water.

Secondly, drought often causes a decline in surface water availability. Low flows in streams and rivers are often attributable to lack of precipitation. Decreased reservoir capacities currently affecting the region include Lake Meredith, Lake Mackenzie and White River Lake. Locally, the City of Brownfield is a member of the Canadian River Municipal Water Authority (CRMWA). Historically, CRMWA members received an allocation of surface water from Lake Meredith in the Texas Panhandle. Due to water quality issues and declining lake levels, the surface supply has been augmented using groundwater since 2002. This groundwater is produced from the Ogallala Aquifer in Roberts County, and for 2006 will comprise about half of the total CRMWA supply. Consequently, even CRMWA member cities are increasingly dependent on groundwater. Across Texas, groundwater is often explored as an alternative supply when surface water supplies decrease.

Drought..continued on page 2



SOUTH PLAINS UNDERGROUND WATER
CONSERVATION DISTRICT
PO BOX 986
BROWNFIELD, TX 79316

ADDRESS SERVICE REQUESTED



In this issue...

- Focus on Drought Conditions
- Local Groundwater Research
- District Begins Joint Planning Process
- More Groundwater Availability Models
- District Offers Landscape Irrigation Gages

BULK RATE
U.S. POSTAGE
PAID
PERMIT NO. 986
BROWNFIELD, TX


District Begins Joint Planning Process

During 2005, the Texas Legislature enacted legislation requiring groundwater conservation districts within a groundwater management area (GMA) to jointly plan for a desired future condition of the applicable aquifers. GMA #2 encompasses the South Plains UWCD, as well as six other districts.

GMA #2 members have now met twice and discussed several issues, including delineation of aquifer subdivisions and differing uses and supplies of groundwater across the management area.


District staff are currently accumulating data concerning usage and supplies so the Board may examine the current conditions while planning for the desired future conditions.

GMA #2 members believe that this process may take several years for completion due to the complexity of the aquifer systems in certain areas, as well as the diversity of needs and supplies. Additionally, the completion of the Edwards-Trinity (High Plains) Groundwater Availability Model is necessary for more accurate planning and goal-setting. This GAM is scheduled for completion during 2008.

As the Board continues this process and considers desired future conditions, additional information will be included in the *South Plains Groundwater News*. 

District Offers Landscape Irrigation Gages

Earlier this summer, the District placed 500 landscape irrigation gages at the city offices in Meadow, Wellman and Brownfield. Also distributed were pamphlets containing conservation tips for homeowners, including irrigation recommendations for lawns, trees and ornamentals.

Due to the success of this initial offering, the District has purchased another 500 gages which will be offered at additional locations this summer. These locations include Texas Cooperative Extension-Terry County, Farm Service Agency, Sundown State Bank, American State Bank, First National Bank, Brownfield Chamber of Commerce and the District office. Contact the District office if you have any questions concerning the availability of these gages. 



Drought... from page 1

As groundwater is explored for public water supplies, one result may be the change of existing use for certain well owners. Typically, the value of water is considered highest when used for human consumption. Consequently, a well owner may obtain a higher rate of return when the resource is marketed for this purpose, instead of agricultural, stock raising, or commercial uses. Challenges that are incurred here frequently involve the absence of adequate infrastructure (i.e. piping) for delivering the water where it is needed. However, where the need is great, such expense may be a necessary burden for acquiring sufficient supplies. A prime example of changing use is evident in Roberts County, northeast of Amarillo. Recently, landowners there have marketed groundwater to CRMWA and likely obtained a greater return than by using the water for stock raising or agricultural purposes. The cost of developing the well fields and delivery system is quite large, but the need of CRMWA member cities has justified the investment. Other areas of Texas are experiencing similar scenarios as this. Where a willing buyer and seller arrange such transactions, groundwater marketing may afford landowners a competing market. Although such opportunities do not currently prevail locally, future conditions might change this. Even rural communities could extend such opportunities, although the return will probably be lower than the previous example, based on smaller budgets.

Lastly, the sum of all previous points is often fully realized with changes in water policy. Policy changes are adopted through legislation, which is then written as law. Laws affecting groundwater conservation districts are routinely changed, it seems. Since 1997, the Texas Legisla-

Drought...Continued on page 3

Local Groundwater Research

The District Board maintains a progressive, supportive position regarding pertinent research projects here. Some of these projects are administered by Federal agencies (i.e. USGS), some by State agencies (TWDB, TCEQ) and some locally, by District staff. Periodic updates from such projects are provided in the *News*.

During the past year, several new projects have begun, and further progress has occurred with existing research. The following summary provides some detail regarding these projects.

Flow Meter Program

Since 2002, the District has obtained water usage from approximately 50 center pivot irrigation systems. The operators of these sys-

tems have cooperated with District staff and reported monthly water usage for various crops. In turn, District staff prepare a report for each cooperator containing an analysis and summary of total water use. The data obtained from this study is extremely important when estimating total irrigation water usage as well as aquifer recharge.


Irrigated Area Evaluation

Recently, District staff completed a study of usage, storage and recharge within irrigated areas. Approximately 165,000 acres are irrigated here each year. The time period evaluated during this study includes the years 1985-2006. The unique aspect of this study pertains to the blanking, or exclusion, of usage, storage and recharge outside irrigated areas. Consequently, the comparison of dryland, CRP and native pasture to irrigated lands was analyzed.

Irrigation Water Use Efficiency

The initial effort of this study was conducted earlier this year. District staff are incorporating water use data and corresponding crop yields to gain a better perspective of the return per unit of water pumped. The goal of this project includes the development of a reliable set of values for expected crop yields given a particular irrigation application amount.

Arsenic Occurrence

The Texas Commission on Environmental Quality (TCEQ) funded a study here involving the occurrence of arsenic in groundwater. The Bureau of Economic Geology (BEG) was contractor for the TCEQ and performed the investigative work, which involved the sampling and analysis of soil cores at depths approaching 35 feet. The sampling sites included two irrigated farms, one dryland farm, and a playa lake. 

Drought...from page 2

ture has considered three omnibus water bills which contained many provisions addressing groundwater management. Of these bills, two were adopted by the Legislature. The third bill, filed last session, expired on the House calendar before it was considered for approval. However, a section of the bill affecting groundwater management was enacted as law (see related article on Joint Planning). Planning for desired future conditions of aquifers is now required among gcds within a groundwater management area (GMA). Groundwater management is becoming more complex due to the growing Texas population, competing users, and a variety of other dynamic factors, including drought. As stated previously, drought compounds the issue as surface water supplies decline. However, existing reservoir capacities at "normal" levels may not provide an adequate supply for Texas' growing population. The current State Water Plan indicates that groundwater will be used quite extensively for meeting future water needs in Texas. This creates additional challenges for groundwater districts as aquifers are explored and developed at rates that exceed historical levels. The effects of such exploration and development may be surmised using modeling data, but may not be fully quantified until actual aquifer response is measured. This scenario indicates the difficulty which may arise when addressing the desired future conditions of aquifers. It is expected that the Legislature will modify the policy concerning desired future conditions during the 2007 session.

The various effects of drought presented here are but a few of the consequences observed during times of dry weather. Education and conservation should be a part of our daily routine, not just during times of drought. If you need additional information, or would like to schedule an educational program, contact the District. 