

Reminder for Irrigated Landowners

An IRS engineer will visit the District in December and review information for the cost-in-water depletion program. This program allows irrigated landowners to receive a tax benefit due to declining groundwater levels. This program is specific to the High Plains landowners using groundwater from the Ogallala formation.

Each year, the IRS must review and approve land sales data that establishes the cost of water. Also, the District's water table decline map must meet IRS guidelines.

Since 1999, approximately 700 landowner requests have been fulfilled. Eligible properties are those which have been acquired since 1979. Those who have previously requested this information will soon receive a reorder form.

If you would like additional information or have any questions, call or come by the office. 

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

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Calendar of Events

November 26-27 Thanksgiving
Holiday
Office Closed

December 2 Board Meeting
8:30 am
District Office

December 24-25 Christmas
Holiday
Office Closed

Looking Ahead to 2010

January 1 New Year's
Holiday
Office Closed

January 5 Board Meeting
8:30 am
District Office

February 2 Board Meeting
8:30 am
District Office

February 10 South Plains Ag
Conference and
Trade Show

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GROUNDWATER SOUTH PLAINS NEWS

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

ADDRESS SERVICE REQUESTED



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GROUNDWATER SOUTH PLAINS NEWS

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SAVE ENERGY = SAVE WATER

For some time now, a lot of research has been conducted that examines alternatives to fossil fuels. In part, this has occurred due to higher fuel and energy prices during the past several years. This has also occurred because of projections that future demand outweighs the supply of our current resources, spurring the need for alternative energy and fuel sources. Some of the commonly mentioned alternatives include solar, wind, and biofuels. A good bit of information concerning these alternatives has provided a basis for determining whether or not they really are feasible, and under what circumstances or limitations they should be considered. Of particular interest is how the availability of water affects the feasibility of both current and planned energy projects. For this discussion, there are two areas of interest. First is an overview of the energy and water relationship. Secondly, it is important that energy projects be paired with areas that possess sufficient water resources.

It is probably safe to say that, as Americans, we assume that the lights will come on when we flip a switch, and that water will flow when we turn on the faucet. However, most of us probably have little appreciation or understanding of the supply and production of water and electricity. A sizable portion of the electricity generated in Texas comes from thermoelectric power plants. These plants may use coal, natural gas, or nuclear reactors to heat water and produce steam. Steam generation is necessary for powering turbines that are connected to generators. Some of the steam then condenses and may be used again. However, not all of the water is recovered, so a makeup supply is necessary. Demand projections from the 2007 Texas State Water Plan show 755,170 ac-ft of water is needed for steam-electric generation for the year 2010. That number grows to 1,533,556 ac-ft in the year 2060. So, one of the key relationships with energy and water involves the use of water for steam production at thermoelectric power plants.

Now, not only is water used for production of electricity, some electricity is used for the production and treatment of both source water and wastewater. When source water is pumped from a river, lake, or underground, some energy input is required. One area of intense energy input includes the treatment of source water using desalination. Desalination is required for brackish groundwater or sea water. As existing source water supplies decline, desalinating brackish water may be required as communities seek additional sources of water. Once water is used within a municipality, it is then discharged as wastewater. This often requires a treatment process that includes separation, filtration, mixing and/or purification before wastewater may be discharged to a river, or surface applied. These processes all involve the use of electricity. Hence, the production of source water and the treatment of wastewater both require energy input. This is a rather simple overview of the whole matter involving water and production of electricity. However, one other critical point must be included here. That point concerns the potential growth in demand and decline in available water for the future. Data from the 2007 State Water Plan indicates that our state population will be about 46 million in 2060, compared to almost 23 million today. More people require more energy, and more water. For this reason, and others, a lot of research has been conducted that pertains to alternative sources or production of energy, fuels

(Energy/Water...continued on page 2)

(Energy/Water...continued from page 1) and water.

In the previous discussion, the primary focus was the water/energy relationship in Texas. Specifically, in that overview we noted the use of water for electric power generation. In reality, there are much broader issues involving energy and water. For instance, a certain amount of water is used when mining, exploring for, and refining fossil fuels. The amount of water necessary for such activities is pretty well documented though, since the practices involving fossil fuels are well established. However, for this exercise, we will broaden the discussion some so that newer or popular alternative energy sources might be understood. Take, for example, the production of ethanol from grain. Theoretically, the production of ethanol serves as an additive, and maybe a substitute to/for gasoline which is a derivative of fossil fuel. While this concept has positive merits, there are some issues concerning water that must be considered. One such issue concerns the amount of water needed at the plant where the process occurs. Another issue involves a look at the water requirements off-site that may be associated with the irrigation and production of the grain crops. For some areas, this may present a drastic shift from current water use patterns, while in other areas it may not. A recent study conducted by the Region O Water Planning Group illustrates this process. Specifically, the task involved the estimate of facility water use for the production of ethanol from grain, as well as an estimate of any different water use resulting from additional irrigation of grain crops.

Another interesting example of alternative energy/water conflicts is happening in the desert southwest. Here, there is some interest in development of solar power. In this context, solar power refers to the use of solar radiation for heating water and producing steam in thermoelectric plants. Again, we see that the alternative permits the omission of fossil fuel, but still requires water for steam generation. At this time, though, there is a real question of whether there is an adequate supply of water near the areas where solar power is available. In other words, the desert areas are wide open and suitable for installing solar panels, but deserts are not suitable for water supply. A real challenge exists where these conflicts arise.

Also of interest is the technology related to hydrogen fuel cells. This alternative energy source has received some attention from news sources, particularly as it relates to automobiles. Hydrogen is quite plentiful, but does not exist on earth as a gas. Consequently, it must be produced by separating it from other elements where it is stored as compounds. Currently, the two most common methods for producing hydrogen are steam reforming and electrolysis. Methane gas is a compound containing hydrogen (CH₄). Steam reforming is the process of separating hydrogen from carbon atoms in methane gas, which is a fossil fuel. So, if the goal for hydrogen fuel cells is linked to decreased use of fossil fuel, steam reforming may not be a good option. Electrolysis is a process that separates hydrogen from oxygen using the compound H₂O (water). Again, we find that energy and water are very closely related. Is there a ready supply of water

available for creating hydrogen fuel cells using electrolysis? Does it make sense to use a resource that is necessary for our existence to fuel automobiles?

These scenarios are but a few of many that occur whenever one examines water/energy relationships. Understand that not only are new sources of energy dependent on water; current methods of generating electricity and fuels also require water. There are certainly some processes for production of fuels and electricity that require more water than others. The important thing is pairing the appropriate process with the available water supply in a wise manner.

Although rather brief, we have discussed the current relationship concerning water and energy. Particular emphasis was given to the discussion of water in thermoelectric power generation plants. Secondly, although there are alternatives to fossil fuels, the dependence on water must not be excluded from any alternative energy/fuel discussion. Some alternative energy proposals affect this region particularly, such as ethanol production. Access to water may very well preclude the development of energy alternatives within certain areas. Lastly, due to the water/energy relationship, we may confidently state that conserving energy also conserves water. 🇺🇸



The Board of Directors and staff of the South Plains UWCD wish you a happy and safe holiday season. May the Lord bring you adequate rain, abundant crops, and peace in the coming year.

GMA #2 UPDATE

The most recent GMA #2 meeting was held August 20th at the Martin County Library in Stanton. So far, meetings of GMA #2 have been held in Brownfield, Lamesa, Lubbock, Plains, Seminole and Stanton. Part of the goal while scheduling GMA #2 meetings includes having them at different locations of the area to provide shorter driving distances for those attending. That way, there is not one particular individual or group that always has the greatest driving distance.

The most interesting event of the August 20th meeting was the discussion conducted by the High Plains UWCD concerning their recent adoption of a 50/50 Desired Future Condition (DFC) for that district. As High Plains representatives stated, the 50/50 goal means that at least 50 percent of the saturated thickness of the Ogallala Aquifer today will still be available in 50 years. The High Plains UWCD concluded their presentation by asking that the other districts in GMA #2 consider whether the 50/50 DFC is appropriate for the rest of the management area.

At this time, the TWDB is performing a model run that illustrates the effects of a 50/50 DFC. It is likely that this model run will be completed before the end of the year. Afterward, another GMA #2 meeting will be scheduled so that members may consider the results and discuss them.

Meeting announcements are available at the GMA #2 web site www.gma2.org. Also included at the web site are minutes of meetings, links to GAM results, and other resources. Additionally, regular open meetings of the South Plains UWCD Board of Directors include discussion pertaining to the process of adopting goals for relevant aquifers. 🇺🇸

2010 Calendars Nearing Completion



Year 2010 calendars are being printed at the District office. These include water conservation artwork from 4th and 5th grade students at Brownfield, Meadow and Wellman schools. The students' conservation messages are illustrated using original ideas that stemmed from water conservation education. This is the third year that the District has conducted this program. The calendars are available free of charge by contacting the District office. 🇺🇸

Kids & Kows & More

Area fourth graders recently attended the 7th annual Kids & Kows & More program, sponsored by the Terry County AgriLife Extension and the Southwest Dairy Farmers. About forty students and teachers from Wellman-Union I.S.D. and Meadow I.S.D. attended this year's event.

The Kids & Kows & More program lets 4th graders experience the world of agriculture up close. The events are designed to let kids learn about some of the different types of agriculture in their area. The program offers great activities and presentations that teach children the importance of conservation and agriculture in their lives. Presenters and topics for this year's event included: Southwest Dairy Farmers (mobile dairy exhibit), Meadow Coop Gin (cotton ginning), Texas AgriLife Extension (cheese-making), Texas Farm Bureau (cattle industry), NRCS (soil erosion), and the South Plains UWCD (rainwater harvesting).

Crystal Hogue presented the topic of rainwater harvesting. Hogue explained the rain harvesting process and she and the students discussed ways that the rainwater could be used in their homes and at their schools. The students then painted two rain barrels in their school's colors. The barrels were donated to Meadow I.S.D. and Wellman-Union I.S.D. so the two classes may apply what they learned about rainwater harvesting at their schools.

After students returned to their classrooms they began working on the Kids & Kows & More poster and paragraph contest. The fourth graders from each school were asked to write a paragraph and create a poster illustrating their favorite learning experience at the event. The entries are submitted to the NRCS office for judging. There will be a first and second place winner at each school with a first place prize of a \$100 savings bond and a second place prize of a \$50 savings bond.

To view pictures from the Kids & Kows & More event or to learn more about our education program, visit our web site or blog at:

- www.savingh2o.org
- www.savingh2oblogspot.com 🇺🇸

EVERY RAINDROP COUNTS