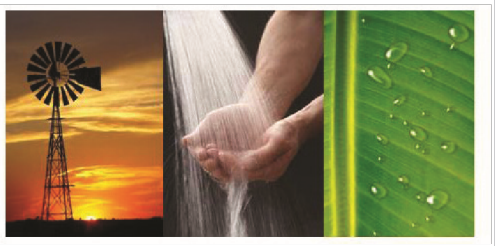
North Plains Water News



A Publication of the NORTH PLAINS GROUNDWATER CONSERVATION DISTRICT

VOLUME 66, NO. 2 SPRING 2021

Master Irrigator Eclipses 100 Graduates

In April, North Plains GCD completed the fifth year of the award-winning Master Irrigator program. The 2021 class consisted of 19 producers from the eight-county service area, representing over 70,775 acres of irrigated agricultural land. To date, 109 irrigators representing about 30 percent of the district's irrigated acres have completed the irrigation efficiency curriculum.

The Master Irrigator program trains irrigators within the district to be better stewards of their groundwater resources. They learn about ways to increase water efficiency, while maintaining or increasing their yields. Participants met at the Moore County Community Building for four consecutive Wednesdays to receive 24 hours of intensive irrigation education from experts in agronomy and irrigation. This is what one member of the 2021 class had to say about the Master Irrigator program, "Thank you – I should have taken this years ago—Excellent!" – Larry Schniederjan. Another 2021 graduate said he was looking forward to passing the information on, "As a farm manager, I believe there were a number of items in this program that I will share with our tenants and fellow managers" – Paul A. Burgener.

North Plains GCD Assistant General Manager, Kirk Welch, welcomed attendees to the first session before Steve Amosson, PhD., kicked- off the training with an explanation of the economics of the day's featured practice. Each session started with Amosson's economic breakdown. The first session of Master Irrigator 2021 covered soil health, irrigation water quality, fertility management, plant stress, and cover crops, as well as the economics of soil health and residue management. Additional presenters included Mike Peterson, Orthman Manufacturing; Fred Vocasek, Servi-Tech; Dave Reinart, Better Harvest; and Katie Lewis PhD., Texas Tech/Texas A&M AgriLife Research. Each instructional day ended with a producer panel, where local farmers discussed their experience with some of the strategies addressed by the speakers. The session one panel included area producers Ronald Meyer, Casey Kimbrell and John Reznik.

2021 Master Irrigator Graduates in Photo (front row, l to r) Brad Lubbers, Paul Burgener, Tom Davis, Rustin Russell, Nathan "Gator" Arp, Gary Brorman, (second row, l to r) Cari Beauchamp, Coury Tucker, Amanda Davis, Cameron Betzen, Kevin McGarraugh, Laney Miller, Dennis Coker, (top row, l to r) Gene Bain, Brian Davis, Donta Norman, George Wall, Bryce Betzen, Charles Russell, Larry Schneiderjan

(continued on page 2)

District Receives 2021 Blue Legacy Award for Agricultural

The North Plains Groundwater Conservation District's Master Irrigator Program was selected by the Texas Water Conservation Advisory Council (Council) to receive one of six Blue Legacy Awards presented in 2021 to entities in the agricultural and municipal categories. The awards were presented virtually during the Texas Water 2021 conference. This is the third Blue Legacy Award presented for a district run or sponsored project.

The Master Irrigator Program just completed its fifth year of training irrigators in the Northern Texas Panhandle in the latest technologies and practices for using irrigation water more efficiently. The program has more that 100 graduates over the last five years, influencing over 300,000 acres, about 30-percent of the irrigated land in the district. The program received the Texas Environmental Excellence Award in 2018, the state's highest conservation award.

"General Manager, Steve Walthour and Board Member, Harold Grall, accepted the Blue Legacy Award from the Texas Water Development Board on behalf of the North Plains Groundwater Conservation District's Master Irrigator Program."

Another Blue Legacy Award in Agriculture was awarded to the Amarillo Water Management Team for advancing center pivot irrigation technology and partnering with producers to maximize water efficiency.

The Blue Legacy Awards are a biennial award program that recognizes the outstanding water conservation efforts and successes of entities and individuals. The Council is pleased to recognize innovators across Texas who champion preserving the state's most precious resource, water.

For the Municipal Blue Legacy Awards, three awards were given based on retail population. The <10,000 population awardee was the City of Horseshoe Bay for its utilization of Advanced Metering Infrastructure technology to bring a greater awareness of water usage to its customers. In the 10,000 to 50,000 population, Brushy Creek Municipal Utility District was recognized for its efforts to minimize water loss through a robust leak detection and fire hydrant replacement program. McAllen Public Utilities was named the awardee in the 100,000 to 500,000 population category for utilizing reclaimed water for non-potable uses in the institutional sector and residential irrigation.

Finally, the Tarrant Regional Water District was named the award recipient in the River Authority or Water District category of the Municipal Blue Legacy Awards for promoting water conservation through its education and outreach programs, including printed materials, partnerships with local irrigators, and transition to virtual formats to maintain engagement with its local community.

The Water Conservation Advisory Council congratulates these award recipients for their continued efforts in advancing water conservation. Awardee profiles, photos, and a link to the award presentation held in partnership with the Texas Section of the American Water Works Association will be posted on the Council's website, www.savetexaswater.org.

Information for this article was provided courtesy of the Texas Water Conservation Advisory Council. To learn more about the 2021 Blue Legacy Awards, visit www.savetexaswater.org or contact Josh Sendejar, Council Support Staff, at Josh.Sendejar@twdb.texas.gov or (512) 936-0825.

Wrong Roads and Rearview Mirrors

Sometimes the view through the windshield is obscured by the brightness of the sun, climbing water streaks from a rainstorm, or the engulfing billows of a fog. You know exactly where you want to go, but the road is very difficult to find. In these moments, the rearward facing perspective provided by an array of mirrors can keep you on the unclear path moving forward.

Nicholas Kenny, PE
Agricultural Engineer

A complementary parable wisely states, "There are times when the only way to get from A to C, is by way of B." The implication is that in addition to looking rearward, occasionally the quickest way to know you are on the right path with some certainty is to first go a shorter distance down a wrong road.

At the North Plains Water Conservation Center (WCC), our unique contribution is in vetting new strategies and ideas that can secure the water and economic resources of the Texas North Plains. We do this by driving into the unclear path and taking snapshots in the mirror to stitch together a clear view of our forward progress. Our goal is to merge proven practices into production at the speed of farming. So how far have we come?

Over the last three seasons, we have verified that with proper strategies, we can produce 240-bushel corn (and more) reliably on 4 GPM / acre water under LEPA pivots and subsurface drip (SDI). It was not many years ago that this production was not even attempted without double the irrigation capacity. 300-bushel dryland corn would be better, but this is real evidence that our efforts on corn varieties, planting dates, fertility, irrigation management, and tillage practices are moving the region in the correct direction, and quickly.

We have defined strategies to drive SDI corn yields higher than LEPA yields. An argument against SDI has historically been, "SDI just can't yield like a pivot." And now we know it can be done with a substantial water reduction using scalable irrigation management techniques. Irrigation consistency and frequency are the strengths of an SDI system and they conveniently lead to the best yields in corn. What we did not realize was that in addition to the marginal water savings from peak efficiency, we were able to pause irrigations for small summer rainfall events, an opportunity that we were never able to realize with a pivot. In 2020, we were able to turn the 4 GPM / acre system off for 22 individual days in the middle of the season, a reduction of over 4.5-inches compared to capacity. Our next SDI roadblock is optimizing planting conditions and overcoming inconsistent germination.

In cotton, we have consistently found that higher populations are favorable in the North Plains for multiple reasons. However, more exciting revelations are unfolding in the background. We have witnessed three consecutive years of cool weather in early May. This combined with low cold germ ratings on early cotton varieties, have impacted our stands substantially. In 2021, we planted cotton after the cool snap, anticipating that a more uniform stand will allow us to be more consistent and reliable in boll maturity, spraying timing, harvest timing, etc. This may be a wrong road, but all mirrors reflect that first and second position bolls, harvested at full maturity, is the ticket for good cotton in the North Plains. This strategy is an enormous distance from where we were 15 years ago when we were applying 20" of irrigation to yield 2 bales of immature cotton.

High plant populations allowed for favorable cotton yield in 2020 despite the cool snap in May.

(continued on page 4)

Master Irrigator

(continued from page 1)

Irrigation scheduling was the topic of the second session. Following Amosson's economic perspective, Jourdan Bell PhD., Texas A&M AgriLife Extension Service; David Sloane PhD., GroGuru; and Jeff Miller, Forefront Agronomy gave presentations on optimizing irrigation timing, and Keith Sides, United States Department of Agriculture - Natural Resources Conservation Service explained funding opportunities for assistance with conservation practices. Local farmers and district board members Justin Crownover and Zac Yoder served on the days panel, sharing how they use irrigation scheduling in their own operations.

Session three focused on center pivot systems including pivot management, remote control and monitoring, variable rate irrigation, and Genset. Presenters included Leon New, retired agricultural engineer; Nich Kenny, NPK Ag; Joe O'Brien, Reinke Manufacturing Co.; Jeff Burton, Crop X; and Sara Flohr, Conservis. District board president, Bob Zimmer; board member, Harold Grall and area growers, Justin Garrett and Stan Spain discussed their farming operations as part of the session three panel.

Finally, session four explored systems and special topics. Amosson started off the presentations with his crop profitability analyzer, breaking down the projected profitability of the region's most popular crops. Then participants heard about subsurface drip irrigation, remote sensing, drones, and variable frequency drives. Presenters for the final session included Jeff Childs, Yaskawa America Inc.; John Gibson, Crop Quest; Bryce Howard, farmer using drones; Jerry Funck, Professional Water Management Associates; and Nich Kenny, NPK Ag. The grower panel for Session Four included Bryce Howard, John Engelbrecht and McLain Pool.

Following the Session Four presentations the Master Irrigator Class of 2021 accepted their certificates of completion at a graduation ceremony. Texas Water Development Board (TWDB) Director, Brooke Paup congratulated the Class of 2021 for their achievement via Zoom. Paup has since been named chair of the TWDB by Governor Greg Abbott.

Thanks to grants provided by the TWDB, the graduates now have access to cost-share funds to assist with the deployment of conservation practices on their own farms. Master Irrigator instructors and industry partners will provide technical support to extend the learning to the field and enhance the opportunity for success. "I recommend the Master Irrigator Program to any progressive person interested in improving their farming practices and increasing their profitability, all while improving their soil health and conserving our natural resources and precious irrigation water!" – Charles Russell, 2021 Master Irrigator Graduate.

District Receives Texas Water Development Board Grant to Continue Master Irrigator Program

Last month, the Texas Water Development Board (TWDB) approved $1,118,954 in grants through its Agricultural Water Conservation Grants Program. The program offers grant funding to state agencies and political subdivisions for activities that further water conservation in the state.

North Plains GCD received $250,000 to continue the Master Irrigator program. The educational program offers intensive training to teach farmers about technologies and practices that can make them more efficient with their irrigation. The goal is conserving groundwater while producing profitable crops. Over 100 irrigators with influence over approximately 300,000 acres of irrigated land have completed the Master Irrigator program.

Other grant recipients are Texas Tech University, Santa Cruz Irrigation District No. 15, Menard County Water Control and Improvement District No. 1, Edwards Aquifer Authority, Middle Pecos Groundwater Conservation District, and Gateway Groundwater Conservation District.

These grants will support the implementation of conservation strategies outlined in the regional and state water plans and promote innovation and water conservation in agricultural irrigation throughout the state.

Visit the TWDB Agricultural Water Conservation webpage to learn more about the Agriculture Water Conservation Grants Program and read success stories and examples of previously funded projects.

Information for this story provided courtesy of the Texas Water Development Board.

Grower Day 2021

This Spring the district presented a Grower Information Day to share results from the demonstrations at the North Plains Water Conservation Center at Etter, TX. Nich Kenny and Jourdan Bell PhD. shared findings related to cotton varieties, cover crops and irrigation in cotton and corn rotations, while the day was capped-off with a Cotton Grower Panel including from left to right Mark Howard (Hartley Cty. Director), Keith Watson and Justin Garrett.

The Ins and Outs of Flow Meters

By: Dakota Young, District Natural Resource Specialist

You may ask yourself, "How does a flow meter even work? or "What kind of flow meter should I use?" Do not worry. We have some possible solutions. A water flow meter works by measuring the amount of water that passes though the flow meter. Typically, mechanical meters measure the speed of the water flowing through the discharge pipe, which causes a turbine to spin, resulting in an observable flow rate on the meter face. The volumetric flow rate of the water is proportional to the speed of the rotation. Other flow meters use ultrasonic, magnetic and vortex flow to measure the water being produced at a well.

The type of flow meter to use depends upon the application:

Mechanical type flow meters- may clog up when high amounts of debris are present or not work at low flows. They are very easy to install and replace.

Electromagnetic flow meters- cannot work on pure or deionized water since there are no ions to measure. These meters are very accurate for use on our groundwater.

Insertion vortex meters- work well on very large pipes since they can be inserted into the flow of the unit through the wall. They can be very expensive.

Ultrasonic meters- can measure water or other liquid flow from outside of the pipe by shooting pulses of sound through the pipe walls. These meters are not applicable if there is lots of moving equipment on the unit or mass vibration is present. They also can be very expensive.

There are a few issues we look for during district flow meter inspections. Once you have your meter installed according to manufactures specifications you must ensure the serial number is visible. In addition, the meter must indicate the direction of the flow, be reasonably resistant to outdoor elements, continuously update and show a reading in real time, be operable without recalibration and be accurate, and read to the nearest 0.1. You must ensure the meter units and multiplier are displayed on the equipment and that the totalizer is sufficient for a years' use without cycling past zero. The multiplier will allow the meter to read large amounts with fewer digits. (See chart below) All other rules and regulations can be found in the district rule book in Chapter 5. Please call the district at (806)-935-6401 with any further questions you may have about flow meters.

Well Capacity (GPM)	Well Classification	Minimum Totalizer Capacity in Gallons	Minimum Totalizer Capacity in Acre-feet	Minimum Totalizer Capacity in Acre-inches
18-100	A	8 digits (includes multiplier)	3 digits before decimal	4 digits before decimal
101-400	B	9 digits (includes mutlipler)	3 digits before	4 digits before decimal
401-800	C	9 digits (includes mutlipler)	4 digits before decimal	5 digits before decimal
801-1800	D	9 digits (includes mutlipler)	4 digits before decimal	5 digits before decimal

Preventive Maintenance on Low Pressure Drains

By: Lewis Orthman, Compliance Officer

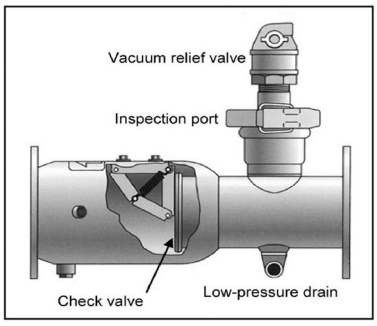
With the irrigation season upon us, it is critical that Low Pressure Drains (LPD's) are functioning properly. The (LPD) is located on a well's check valve or chemigation valve. Observations and the various compliance inspections conducted by the district field staff pay particular attention to this required piece of well equipment, since it prevents pollutants from running back into the aquifer. One of the main items we find on inspections being out of compliance will be a nonfunctional LPD or no LPD at all. We have been asked on several occasions what is an LPD? The LPD comes into play when the well is being operated and chemical fertilizers or other foreign substances are being injected into the water system via chemigation valve or downstream of the installed check valve. If the well is shut down for maintenance, or it shuts down from mechanical failure, the LPD automatically dumps any water from the internal piping that may have passed by the check valve's sealing surface, so no contaminated water back flow ends up in the well casing.

During the irrigation season, a lot of dirt or sand debris that is picked up from the water source gets carried up into the check valve and will collect in the LPD causing it to leak. The fixes we see when conducting inspections include the LPD being capped off, totally removed, plugged, or a valve placed on it to shut it off. See the following pictures for some of these noncompliant fixes:

Noncompliant fixes outlined by the circles (left to right): LPD is Capped Off, LPD is missing and Plugged Off, LPD is Closed Off with a valve.

One way to keep the LPD from leaking is conducting some preventive maintenance within the check valve prior to operating. First, open the check valve via the inspection port or vacuum relief valve and clear all sand and debris that may collect in the bottom or fitting area where the LPD connects. Next, remove the LPD from the check valve and clean out or blow out any small debris lodged inside the valve. To save time, you may choose to have several of these LPD's in supply where they can be changed out more quickly. While you have the check valve open inspect the check valve flapper assembly to ensure it is operating properly, and the closing mechanism is working correctly. Finally, ensure the vacuum relief valve is connected to the inspection port of the check valve, free of any debris and operating correctly.

Along with what has been addressed in the preceding paragraphs, please refer to the NPGCD Rules covering this equipment, that must be on all irrigation wells in order to be in compliance when groundwater is being produced. You will want to note in the Rule 4.5, Subsection 1.F.1-3 below about the installation and inspection criteria followed specifically for the LPD's. So, if the check valve is partially buried from all the blowing dirt and debris that is normal in the district, the LPD is basically rendered nonfunctional since it cannot vent off as designed. These rules are also posted on district website and can be downloaded for your convenience. Feel free to contact the district office with any questions at 806-935-6401.



Save Paper and Water by Choosing our E-Newsletter

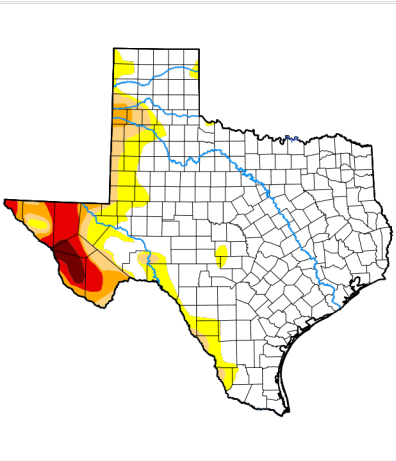
North Plains GCD now offers our district newsletter by email. If you would like us to send you a digital copy of the newsletter, you can go online at www.northplainsgcd.org/sign-e-news/ and fill out the form, or just email info@northplainsgcd.org. You can also go online to download previous newsletters, and find us on Facebook, Twitter and Instagram.

Curtis Schwertner, conducts a Soil Lab with local 4th grade students as port of the District's water conservation outreach program. Students learn about the components of soil, the soil cycle, porosity and permeability.

NORTH PLAINS GROUNDWATER CONSERVATION DISTRICT
BOX 795
DUMAS, TEXAS 79029

PRESORTED
STANDARD
U.S. POSTAGE PAID
LUBBOCK, TX
PERMIT NO. 324
RETURN SERVICE REQUESTED

U.S. Drought Monitor
Texas



June 15, 2021
(Released Thursday, Jun. 17, 2021)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	78.04	21.96	12.44	7.64	4.47	1.16
Last Week 06-08-2021	77.24	22.76	12.57	7.71	4.47	1.16
3 Months Ago 03-16-2021	9.44	90.56	68.40	37.10	18.41	6.24
Start of Calendar Year 12-29-2020	8.80	91.20	81.11	50.33	30.09	13.03
Start of Water Year 09-29-2020	57.35	42.65	31.96	20.91	12.02	3.29
One Year Ago 06-16-2020	45.87	54.13	27.23	11.08	1.39	0.00

Intensity:
None
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
Curtis Riganti
National Drought Mitigation Center

droughtmonitor.unl.edu

Wrong Roads and Review Mirrors

(continued from page 2)

We also have a two-year closed loop on soil water extraction patterns in a corn and cotton rotation. These findings have not re-mapped the relationship between corn and cotton but have verified the fact that cotton aggressively mines water and fertilizer that corn leaves behind. In 2020, the pivot cotton extracted 100% of the plant available water from 8 ft. deep in the soil profile. We have also found it impossible to refill the corn profile with off-season precipitation for two consecutive seasons, necessitating limited pre-water to reach the critical management point. Cotton growth is controlled very reliably with this strategy, but the irrigation of the subsequent corn crop must be attended to with early diligence in a more intensive manner than with a grain-on-grain rotation.

In research and demonstration, it is of immense value to "fail" on the smaller scale so that full-scale operations are not subjected to the negative consequences of high-risk endeavors. Nothing ventured is nothing gained, and we need to drive through the brakes of historical constraints, which requires taking risks. We do not have the time to survey the road completely and we certainly don't have the resources to go many miles down a wrong road. The WCC is perfectly positioned to absorb the risk and share the information with our growers.

Currently, we are looking through the windshield with some uncertainty, but also with excellent confirmation that we are on the right path by regularly referencing where we have been, and occasionally going a short distance down a wrong road.