

**Nebraska's NRDs . . .**  
**Protecting Lives, Protecting**  
**Property, Protecting the Future.**

IN THE LOUP is a publication of the Lower Loup Natural Resources District. It is published quarterly by the LLNRD and is distributed to the residents of the 16 counties that make up the District. IN THE LOUP is edited by Alan J. Bartels, Information & Education Coordinator.

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well before being pumped to Christopher's Cove, a groundwater recharge lake on the east side of Columbus.

While developing the plan, the LLNRD took the lead role in a partnership between the City of Columbus, Platte County, the Christopher's Cove Homeowners' Association, and agricultural processor Archer Daniels Midland.

Test pumping began in June 2022. The Columbus Area Recharge Project went online in July. Data collected from LLNRD monitoring wells showed an obvious groundwater increase while the project was pumping. The project demonstrates varying interests coming together, under NRD leadership, to benefit all.



**The main pump station for the Columbus Area Recharge Project is located on Eighth Street in Columbus.**



# LLNRD Using Infrared Imaging to Monitor Irrigation

The Lower Loup Natural Resources District is utilizing high-resolution aerial infrared imaging to monitor and enforce irrigation within the district. The infrared images in use were collected between August 5th and August 30th and display the active chlorophyll content of vegetation. With the unusually dry weather in summer 2022, irrigated acres show bright red on the image, while dormant or non-irrigated acres display almost no red. These images of irrigated acres can then be compared to maps of certified acres for each plot to determine if any groundwater or surface water irrigation violation has occurred, if there has been a field boundary revision, or if the drawing of the field boundary was inaccurate and needs redrawn. If it is determined that a violation has occurred,

the landowner will be notified of the infraction and presented a map of the violation area for reference. The Lower Loup NRD will then work with landowners to bring their irrigated acres back into compliance.

Overall effectiveness of irrigation can also be assessed, such as areas where endgun overthrow is a problem, and where water is not making it across fields supplied with gravity irrigation. With half-meter resolution, District personnel can look at measuring pivot lengths and locating pivot tire tracks within a specific field.

This type of imagery has been collected by the Lower Loup NRD since the irrigated acres moratorium in 2008 and, according to Assistant General Manager Tylr Naprstek, having the ability to switch between standard imagery and infrared allows for a variety of purposes for the LLNRD. This imagery can be used to create detailed maps of specific areas within the district as well as on current construction projects, past flooding impacts, and recreation area use.



**Infrared technology shows fields that were irrigated.**

Since 2011, the LLNRD Board of Directors has laid out a comprehensive policy regarding the irrigation of non-certified acres. Upon a first offense, the violator would be required to set aside two times the number of acres in violation for one year or for multiple years with Board approval. This means that these acres shall not be irrigated.

Upon a second offense, the violator would be considered in violation of a cease-and-desist order and would either have a stricter penalty of four times the acres in violation being set aside, or the matter would be taken up in district court.

Upon a third offense, the irrigation well(s) on the property would be declared illegal and restrictions such as removal of certified acres, modification of well use, abandonment of wells, or metering and restricting amounts of water use shall be enforced.

Naprstek reminds producers to double check the amount of irrigation rights they have and ensure that, when they change irrigation methods or update their pivot system, that they stay within the boundaries of irrigation allotted.

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# Lower Loup NRD Board of Directors Approves Drought Management Plan

The Lower Loup NRD Board of Directors approved a Drought Management Plan at its November 2022 meeting.



The Lower Loup NRD's early efforts to develop a drought management plan included seeking input from water users from a variety of occupations and backgrounds. Stakeholder meetings in 2021 and 2022 included surface and groundwater irrigators, ranchers, city administrators, educators, hydropower professionals, and representatives from other governing entities. Coincidentally meeting during actual drought

conditions, the group took part in a five-year drought scenario used to gauge drought impacts to communities and individuals. The group discussed voluntary measures, as well regulations that could be enacted if needed in the event of extreme drought. They then developed a drought response protocol. Drought zones based on soil type, rainfall, aquifer thickness, stream depletion factor, and irrigation requirements were discussed.

At the Lower Loup NRD's Water Resources Committee's November 2022 meeting, Assistant General Manager Tylr Naprstek showed how the plan subdivided the District's 10 Quantity Management Areas into 20 smaller management zones. Classifications of management for each

drought management zone include the thresholds, "Watch," "Moderate," "Severe," "and Extreme," all based on static water level readings taken over the previous 25 years.

The committee voted to recommend tentative approval of the plan to the LLNRD Board of Directors. At the November Board of Directors meeting, discussion included that the plan can be revisited, and that a public hearing would be required before any rules could officially be put into place. The LLNRD Board of Directors voted to approve the Drought Management Plan as presented, with all directors present voting yes.

The Lower Loup NRD's Drought Management Plan is available for viewing at [www.llnrd.org](http://www.llnrd.org).

## Rule Changes Approved

Based on input from staff and the public, the Lower Loup NRD Board of Directors recently voted to implement several Groundwater Management Area rule changes.

The Board voted to streamline the LLNRD process for enforcing irrigation violations and the issuing of cease-and-desist orders. The process will begin with staff investigating complaints. A warning can be sent if violations are found. If that doesn't resolve the issue, the manager can then issue a notice of intent to issue a cease-and-desist order. If necessary, the next step to resolve the issue includes the Board holding a hearing and deciding whether to issue a cease-and-desist order or to pursue court action. Repeat violators could be subject to Board assessed penalties or further court actions.

In its definition of commercial nitrogen

fertilizer, the Board changed the maximum amount of nitrogen that can be applied before it is considered nitrogen fertilizer from 20 pounds to 40 pounds.

The Board also voted to simplify the District's Groundwater Management Areas structure by eliminating the Phase III designation. Previous Phase III requirements will be added to existing requirements for Phase II, which will kick in when samples show a median nitrate level of 6.6 ppm or higher for four consecutive years. Instead of one 3' soil sample per 80 acres, the sampling requirement for fields in Phase II will now apply to one such sample for every 40 acres. A requirement for Nitrate Vulnerability Modeling will also be added, and highly vulnerable fields will also require a Nitrogen Management Plan.

Other changes include that all newly constructed wells in the district will require a flow meter – this includes new, replacement, and supplemental wells. Flow meters will also be required to be added to water supplies used in variances.

Transfers of irrigated acres, and actual transfers of groundwater, are being re-worded in the rules to clarify the difference.

Finally, after a series of public information meetings, and a public hearing, the LLNRD Board of Directors voted to not implement a ban on fall application of commercial nitrogen fertilizer on irrigated land district-wide. Instead, at its Feb. 23, 2023, meeting, the Board of Directors voted to revisit the issue in February 2024. Approved rule changes go into effect on April 15, 2023.

## A Message From The Manager

Welcome to the latest issue of "In The Loup."

Developing recreational facilities is among the Lower Loup NRD's statutory responsibilities, and two of Nebraska's best recreation areas are in our district. Davis Creek Recreation Area is a popular recreation destination south of North Loup in Valley and Greeley counties.

Two modern RV campgrounds are equipped with 30/50-amp electric hookups and a picnic table and fire ring at each site. Amenities include a shower house, playgrounds, wi-fi, and an RV dump. Half of the sites are available first-come, first-served. The others can be reserved through [reserveamerica.com](http://reserveamerica.com). The \$25 per night camping fee will increase to \$30 in 2024. There is no charge for tent camping at Davis Creek Recreation Area.

South of Bartlett in Wheeler County, Pibel

Lake Recreation Area offers primitive camping at no charge. The 24-acre lake experienced a fish kill last summer, but ice fishermen have since reported good catches. The scenic and shady area includes two handicap accessible fishing piers, a footbridge, playground, boat launch, and vault toilets.

The Lower Loup NRD manages these recreation areas, and our staff is sprucing up both after what seemed like a long winter.

In addition to our technicians collecting spring static water level measurements, conducting flow meter inspections, tree planting, and other field activities, spring is also a busy time for our Information & Education department.

This includes school field trips and water festivals, preparation for Range and Land Judging competitions, Nebraska Envirothon, and other educational



**LLNRD General Manager  
Russell Callan**

camp and events. The LLNRD offers scholarships for students and teachers to attend such activities.

The LLNRD Board of Directors recently designated this assistance program as the Larry Schultz Outdoor Education Memorial Scholarship. Larry was our Information & Education Coordinator for more than 20 years until his passing in August 2022. Through this scholarship program, Larry's dedication to teaching youth about our precious natural resources will continue.

## Columbus Area Recharge Project Now Online

From 2010 to 2014, routine water sampling by Lower Loup NRD technicians revealed falling water levels in some municipal, commercial, and



**Discing the Lost Creek channel allows for groundwater infiltration.**

irrigation wells near Columbus. The groundwater loss was due, in part, to flood control efforts to divert Lost Creek around the community. The successful flood control project kept basements dry and allowed for development, while natural groundwater recharge dwindled.

Charged with protecting water quantity within its district, the Lower Loup NRD would have been within its regulatory authority to restrict area water use. Instead, the agency used scientific research to create a plan to make

fair use of the area's abundant aquatic resources. "We opted to develop a project to move water around while allowing water users to keep doing what they are doing," said Lower Loup NRD General Manager Russell Callan.

The plan was created around the concept of intercepting water from the Loup Power District's tailrace canal, when needed. At that point, the water has already served its beneficial use and is directed to the Platte River.

The LLNRD's Columbus Area Recharge Project takes a small portion of that water and pumps it to an outlet structure along Eighth Street where it empties into the Lost Creek channel. Rising groundwater infiltrates the channel and an adjacent shallow

*(story continued on back page)*