LOWER LOUP
NATURAL RESOURCES DISTRICT

2024

LOWER PLATTE RIVER BASIN COALITION ANNUAL REPORT

March 1, 2025

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CERTIFIED IRRIGATED ACRES

The Lower Loup Natural Resources District (LLNRD or District) began the process of irrigated acres certification in 2006, and it was completed January 1, 2008. The District required that both groundwater, surface and comingled water irrigated acres be certified through its processes. The acres to be certified must be capable of receiving groundwater and/or surface water through irrigation works, mechanisms or facilities at the time. The certification must include a completed District certification form, an assessor document with a raised seal, and FSA aerial photo with irrigated fields delineated. A Geographic Information System (GIS) dataset of the field boundary was created using GIS software to allow accounting and compliance reviews.

After January 1, 2008, to certify a property as being irrigated, a landowner must show proof of irrigation at least 2 out of the 10 years for the period from 1997 – January 1, 2008. Certification is constantly tracked through GIS, and field boundary adjustments take place as needed. Additionally, the entire District is flown and imaged for active chlorophyll measurements recorded through infrared photography. Irrigation totals are measured and policed to prevent deviation from the original certification by NRD staff. The 4-band imagery is collected in August into early September to ensure crop maturity and further differentiate those areas impacted by irrigation.

Detailed data regarding amount and water source of certified irrigated acres in the period between January 1, 2018, and December 31, 2024, can be found in **TABLE 1. Certified Acres** below. The LLNRD GIS has been synched with its data management system to allow for more accurate drawings and better database access through the District program. This process assists with identification of duplicates and erroneously drawn fields and allows staff to regularly "clean" the database.

***TABLE 1.* CERTIFIED ACRES 2018 THROUGH 2024**

Year	Total Acres Certified	Acres of Groundwater	Acres of Surface Water	Acres of Co-Mingled
2024	**1,233,421.6**	**1,035,534**	**155,144.2**	**42,743.4**
2023	1,232,274.9	1,034,032.0	154,804.3	43,438.6
2022	1,230,788.6	1,032,302.9	155,013.9	43,471.8
2021	1,226,619.1	1,028,003.6	154,568.29	44,047.21
2020	1,225,343.3	1,025,409.78	154,023.50	45,910.02
2019	1,222,623.19	1,021,728.46	153,680.81	47,213.92
2018	1,220,592.42	1,018,792.98	153,789.92	48,009.51

MUNICIPAL AND INDUSTRIAL GROUNDWATER USE

The LLNRD is in the ninth year of collecting municipal water use data. Developing and maintaining a comprehensive inventory of the location and source of the District's current and future water supplies, water uses, and outflows was Objective 1.1 of the Integrated Management Plan developed by the NRD and the Nebraska Department of Natural Resources. To collect this data, a Municipal Accounting Form was developed and sent to the water operators of each community.

All 43 public water supplies have sent in their water accounting information for 2024. Each year, the NRD calculates the daily use per person. This year, overall use was 252 gallons per capita, per day. This number was down slightly from last year's average of 258 gallons per capita, per day. The Village of Ericson reported that their village had increased usage this past year due to fires and more cattle going through at the Ericson Livestock Market. This is the reason for the high usage of 678 gallons per capita, per day, which was reported. The 2020 Census provided the population numbers for each community.

To comply with the implementation of *Rule 15, Commercial or Industrial Use and Accounting* that was adopted into the LLNRD's Groundwater Management Area Rules & Regulations, 2024 usage information was sought from owners/operators that had registered commercial/industrial wells. This includes high-capacity livestock wells (pump 50 gallons per minute or more). The LLNRD is in its sixth year collecting this type of well use information. This year, the NRD received 57 reports from both commercial and livestock facilities.

The NRD is developing a database of all permitted Confined Animal Feeding Operations (CAFO). Data collected will include head numbers, or capacity that each facility is allowed. This will provide the NRD with an estimated water usage, per facility, District-wide. GIS will be utilized to display NRD drought zones and where large CAFOs are located within these areas.

TABLE 2: **2024 WELL USAGE (IN GALLONS) FOR LLNRD COMMUNITIES**

City Name	Annual Water Pumped	Population	Gal/per capita/per day	Connections
City of Albion	135,751,374	1699	218.9	850
City of Broken Bow	353,650,971	3506	276.4	1750
City of Burwell	75,000,000	1087	189.0	620
City of Columbus	2,159,423,688	24028	246.2	9504
City of Fullerton	90,400,000	1244	199.1	700
City of Genoa	43,850,000	894	134.4	475
City of Loup City	96,600,000	1053	251.3	600
City of Ord	417,793,000	2367	483.6	1334
City of Ravenna	140,000,000	1441	266.2	640
City of Saint Edward	62,403,660	725	235.8	330
City of Saint Paul	131,961,100	2416	149.6	1019
City of Sargent	37,629,000	500	206.2	392
Village of Ansley	41,412,300	459	247.2	265
Village of Anselmo	14,328,700	104	377.5	100
Village of Arcadia	50,294,400	283	486.9	205

City Name	Annual Water Pumped	Population	Gal/per capita/per day	Connections
Village of Arnold	76,210,000	592	352.7	395
Village of Ashton	9,200,000	198	127.3	115
Village of Belgrade	15,000,000	103	399.0	82
Village of Boelus	12,138,000	181	183.7	110
Village of Cairo	73,623,000	822	245.4	365
Village of Callaway	82,371,042	563	400.8	318
Village of Cedar Rapids	28,754,000	382	206.2	265
Village of Comstock	8,255,000	68	332.6	61
Village of Dannebrog	10,075,800	273	101.1	154
Village of Duncan	18,490,000	392	129.2	172
Village of Elba	7,673,500	192	109.5	125
Village of Ericson	22,049,900	89	678.8	32
Village of Farwell	14,569,800	138	289.3	60
Village of Greeley	38,392,692	402	261.7	243
Village of Litchfield	26,986,000	220	336.1	160
Village of Mason City	19,897,500	151	361.0	115
Village of Merna	26,190,000	345	208.0	205
Village of Monroe	27,001,000	296	249.9	139
Village of North Loup*				
Village of Palmer	22,758,000	439	142.0	242
Village of Petersburg	30,355,000	332	250.5	210
Village of Pleasanton	26,999,000	361	204.9	188
Village of Primrose	5,713,000	55	284.6	43
Village of Rockville	3,110,700	89	95.8	48
Village of Scotia	29,655,200	301	269.9	150
Village of Spalding	14,071,475	408	94.5	289
Village of Wolbach	46,780,000	224	572.2	190

*City of Ord provides water for the Village of North Loup and GreenAmerica Biofuels Ethanol Plant
Population numbers were updated by the 2020 Census

TABLE 3: **AVERAGE USAGE NUMBERS CALCULATED FOR ALL LLNRD COMMUNITIES**

Lower Loup Natural Resources District	
Year	**Gallons/per capita/per day**
2016	265.0
2017	260.1
2018	230.3
2019	211.8
2020	252.6

2021	263.5
2022	260.3
2023	258.5
2024	252.2
9 Year Average	**250.5**

NEW GROUNDWATER CONSUMPTIVE USE – WELL CONSTRUCTION PERMITS GRANTED

The LLNRD established a well moratorium in 2007. Before this date, all high-capacity wells (greater than 50 gallons per minute) were required to be permitted via a certified well permit issued by the LLNRD as dictated by the Groundwater Management Plan. New well permits are still required for all high-capacity wells and may still be issued for supplemental and replacement wells. Any new high-capacity irrigation well must be previously approved through the variance process (see "Variance" portion of this report). LLNRD has approved 72 well permits in 2024 for varied uses as reported in the table below.

LLNRD affirms that any new water well or replacement well that is constructed after May 09, 2016, may be subject to additional restrictions as the Board of Directors deems reasonable and necessary considering hydrologic conditions within the District.

In accordance with District Rule 6.H, a permit to Construct a Water Well issued by the District shall specify all regulations and controls relevant to the construction or utilization of the water well or replacement well. As of April 15, 2023, all new wells requiring a permit shall have a flow meter, approved by the District, installed and operational prior to operation of the well.

TABLE 4: **APPROVED GROUNDWATER WELL PERMITS IN THE LLNRD IN 2024**

Groundwater Well Permit Types	Number of Permits	Average Pump Capacity (gpm)
Domestic	1	140.0
Livestock	0	0.0
Commercial	1	100.0
Industrial	0	0.0
Other	1	
Irrigation (Total)	**69**	**706.4**
(Irrigation) Transfer	9	733.0
(Irrigation) Supplemental	13	600.0
(Irrigation) Well Agreement	5	820.0
(Irrigation) New Acres	3	683.0
(Irrigation) Replacement	39	833.0
Total	**72**	**511.0**

APPROVED WATER TRANSFERS

The LLNRD Rules and Regulations allow any person to transfer groundwater irrigation rights from one location to another if the acres are certified by the District. Transfers can only occur downstream or to the adjacent section and cannot have a net increase impact on any stream based on the most recent stream depletion factor from the best groundwater model available. Acre transfers are only allowed to occur once per year. The deadline for application for transfer is March 1 of each year. In 2024, the LLNRD approved 56 ***Agreements to Transfer Certified Irrigated Acres & Right to Use Groundwater***. There were no denials of any transfer requests. See the summary in Table 5 below. Transfer agreements are classified both by landowners who are moving their

irrigated acre rights (off) and those that are receiving the rights in another location (in). Wells resulting from an approved transfer may not be reflected in the "Well Permit Granted" table under the current year.

TABLE 5: **APPROVED CERTIFIED IRRIGATED ACRES TRANSFERS IN THE LLNRD IN 2024**

County	# of Agreements Receiving Landowners	# of Agreements Transferring Landowners	Acres Transferred in	# New wells resulting from Transfer	Acres Transferred off	Avg Transferred In SDF	Avg Transferred Off SDF
Boone	11	5	416.7	3	142.5	.44	.62
Buffalo	8	7	165.9	1	116.2	.57	.75
Custer	12	11	159.41	1	205.61	.42	.47
Garfield	2	12	45.0	1	576.88	.40	.41
Greeley	4	0	157.58	1	0	.47	0
Howard	5	5	46.3	1	49.2	.53	.51
Rock	5	9	15.0	0	252.2	.21	.34
Sherman	5	1	256.2	2	19.0	.16	.19
Valley	1	2	77.6	0	14.5	.44	.68
Wheeler	3	4	47.0	0	54.0	.41	.58
Total	**56**	**56**	**1,386.69**	**10**	**1430.09**	**.41**	**.51**

WATER BANKING

The LLNRD requires that all transfers result in no new net increase in depletions to any stream utilizing the most current stream depletion number extracted from each section. The section number is averaged by the best available groundwater/surface water model for use by LLNRD. The 2024 section-assigned stream depletion factor (SDF) was utilized using the USGS Elkhorn-Loup Model (ELM) in its Phase 3 capacity. Any transferring of irrigated acre rights from a low to a higher SDF requires an offset. Acres transferred from a higher SDF to a lower SDF are only allowed at a 1:1 ratio, with the LLNRD banking the remaining difference. As a result of the 56 transfers that took place in 2024, the LLNRD has banked a total of **566.73** groundwater-irrigated acres. Additional information regarding the ELM project can be found here:

https://pubs.er.usgs.gov/publication/sir20185106

TABLE 6: **LLNRD TOTAL BANKED ACRES REPORTED**

Lower Loup Natural Resources District	
Year	Irrigated Acres
2016 (34)	638.06
2017 (34)	223.92
2018 (48)	346.35
2019 (31)	133.97
2020 (22)	141.88
2021 (47)	1,294.7
2022 (75)	723.39
2023 (67)	448.72
2024 (56)	566.73

9 Year Total	**4,517.72**

EXPEDITED VARIANCES

The LLNRD Board of Directors has designated a set of conditions under which specific requests for a variance may be approved by methods other than the Variance Committee process. An expedited variance is a variance that meets LLNRD Board pre-approved conditions and as such does not need to be reviewed by the NRD Variance Committee. These expedited variances all have a Supplemental Well Agreement. There were no denials to any expedited variance requests. In 2024, there were a total of 12 expedited variances (Table 7) that were approved through NRD processes. Supplemental wells have a requirement of historical use prior to 2006.

***TABLE 7:* APPROVED EXPEDITED VARIANCES IN 2024 IN THE LLNRD**

County	# of Supplemental Well Agreements	Permit Approved	Approved agreement, but waiting on a Permit
Custer	2	2	0
Greeley	2	2	0
Howard	2	2	0
Nance	1	2	1
Platte	1	2	0
Sherman	1	0	1
Total	12	10	2

NRD MANAGEMENT: WELL AGREEMENTS

In 2024, there were 3 well agreements approved. These well agreements were granted based on the stipulation that the landowner relinquish all or part of the existing surface water right held through the Department of Natural Resources processes. There were no denials of any variances with a well agreement request. The 2024 Variances include all surface water relinquishments and added groundwater depletions due to decisions recommended by the NRD Variance Committee.

***TABLE 8:* APPROVED WELL AGREEMENTS IN THE LLNRD IN 2024**

County	# of Well Agreements	SW Agreed upon to be Relinquished: full or partial	Permit Approved	SW Right Relinquishment Date
Garfield	1	A-10811 & A-10386 (Full)	1	4/2/24
Loup	1	A-2263ER (Full)	1	3/4/24
Platte	1	A-11293 (Partial)	1	9/25/24
Total	3		3	

SURFACE WATER ALLOCATION CONVERSION TO GROUNDWATER USE

As surface water rights are either converted to groundwater acres or completely retired, the LLNRD has initiated a tracking mechanism that incorporates the basin-wide depletion accounting and its effect on the available acre-feet of depletions. According to the LLNRD and consultants who developed the tracking mechanism for depletions, an overall credit can be claimed to the affected basin for the unused depletions and applied to the existing allowable acre-foot depletion balance if proper procedures are met. These procedures are enacted when surface water rights are fully relinquished and converted to groundwater acres, if those surface water

rights are located along stream reaches impacted by baseflow and are not associated with irrigation district water rights. Credit is being claimed by the LLNRD for these surface water retirements. Appropriate credit is determined by subtracting the difference of the full depletion amount of the surface water right from the groundwater impacts using stream depletion, net irrigation requirement in feet and number of acres associated with the conversion. The LLNRD can provide historical evidence of irrigation through infrared photography collected since 2006. The NeDNR is expected to provide field inspection reports and adhere to the adjudication process defined by Nebraska Revised Statutes.

NRD MANAGEMENT: ACRE ROTATIONS

Acre rotations are agreements set forth by a participating landowner and the LLNRD, which allows the landowner an option to choose how they distribute certified acres over a tract of land. In 2024, there were two (2) acre rotations approved by the LLNRD. Acre Rotation Agreements have 2 or 3 options the landowner can choose in one calendar year. Acres remain in this rotation pattern until the landowner notifies the LLNRD otherwise. Enforcement is conducted by the LLNRD through annual infrared imagery and field personnel visitation.

***TABLE 10:* APPROVED ACRE ROTATIONS IN THE LLNRD IN 2024**

County	# of Acre Rotation Agreements Approved
Custer	2
Total	**2**

FLOW METER DATA

The LLNRD has collected groundwater and surface water use information for irrigation on an annual basis since 2010. Flow meters have been cost-shared across the District on a voluntary basis since 2009. However, the LLNRD required that all high-capacity irrigation wells in Groundwater Management Area 28 be outfitted with a flow meter to track irrigation total withdrawals starting in 2016. The two newest groundwater quality management areas, Subareas 29 and 30, also require flow meters. Groundwater quality management areas constitute 543 of all flow meters in the District. In February 2024, the LLNRD designated a Groundwater Quantity Area that requires flow meters on all high-capacity wells. Landowners have 2 years to comply within the area south of the South Loup River in Buffalo County and south of the Loup Power canal in Platte County.

In 2024, LLNRD collected records of usage from 1,223 flow meters verified as having an actual irrigation total water volume. The District average pumping withdrawals for irrigation for the 2024 season was 8.52 inches, down 2.65 inches in 2023. The corn/rye crop was the highest consumer of irrigation water with an average of 9.52 inches/acre pumped in 2024, with straight corn crop averaging 9.39 inches/acre. Except for Butler County (only 1 flow meter), the county with the least average irrigation recorded was Merrick County at 6.3 inches/acre pumped. Wheeler County had the highest average irrigation rates at 14.02 inches/acre.

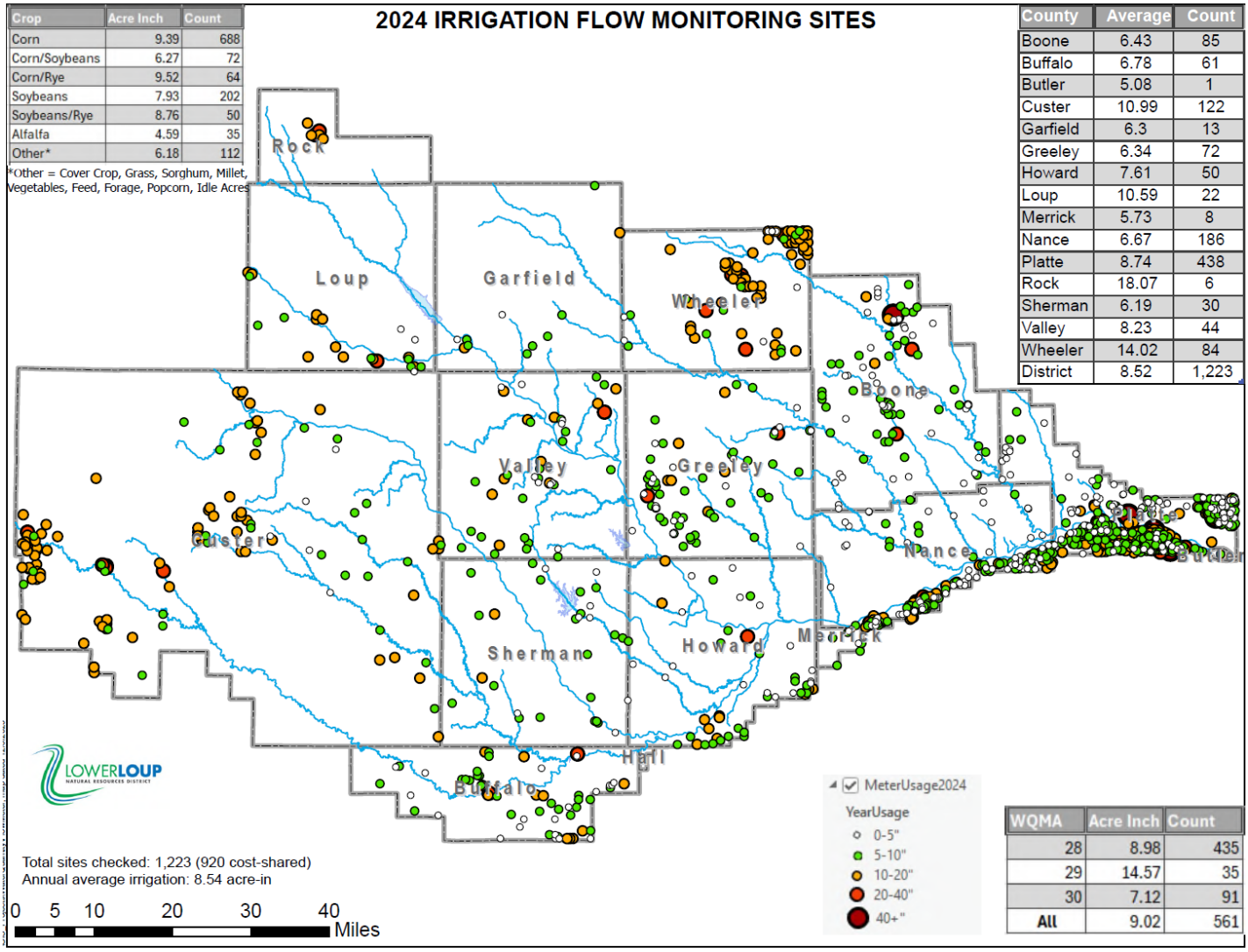

FIGURE 1: **IRRIGATION MEASURING AND REPORTING SITES IN THE LLNRD IN 2024**

GROUNDWATER ACRES ALLOCATIONS

The LLNRD has the option to issue additional groundwater allocations each year based on the conditions of water resources in the District. During the April 2023 Board of Directors meeting, it was decided that due to ongoing drought conditions in most of the Loup Basin, lower than normal stream flows, and instream flow numbers that were causing administrative action requirements on instream flow rights, no additional irrigated acres would be allocated during the application period. This results in a net loss of 0 acre-feet to the Lower Loup NRD depletion accounting due to new groundwater acre allocations.

DEPLETION ACCOUNTING

As mentioned in "Approved Water Transfers," LLNRD Rules and Regulations allow any person to transfer irrigation rights from one location to another if they meet the criteria set forth by the District. Because of the established criteria for not allowing any new net increase in depletions to any stream, the net impact of acre-feet should be either similar by a transfer or decreased due to any transferring of irrigated acre rights to a higher SDF, which would require an offset in acres. Transfers from a higher SDF to a lower SDF are only allowed at a 1:1 ratio. The same agricultural methodologies used on groundwater acre applications were applied to transfers.

Both the transferring location, where the acres were removed, and the newly developed acres, where the right was transferred to, were assessed. Table 13 represents the net effect of all transfers in acre-feet through the year 2024.

From the 2024 transfers, the sum impact of the transferred depletions removed was 140.61 AF on 56 total transfer agreements, while the impact of the receiving acres with new development was 92.99 AF. The difference and beneficial impacts were 47.62 AF back to the basin as a positive gain.

***TABLE 13:* SUMMARY OF ALLOWABLE DEPLETION IMPACT**

Lower Loup Natural Resources District	
Project	**11,908.00 AF**
2016 New Irrigated Acres	-204.52
2016 Transfers	+69.66 [a]
2017 New Irrigated Acres	-164.65
2017 Transfers	+40.88 [a]
2018 New Irrigated Acres	-275.30 [b]
2018 Transfers	+66.67 [a]
2019 New Irrigated Acres	-245.48 [c]
2019 Transfers	+19.85
2020 New Irrigated Acres	-216.02 [d]
2020 Transfers	+19.98
2020 Variances	-29.30
2016-2020 SW/GW Conversion	+558.15
2021 New Irrigated Acres	-310.38 [e]
2021 Transfers	+47.15
2021 Variances	-85.95 [e]
2021 SW/GW Conversion	+105.6
2022 New Irrigated Acres	-89.55
2022 Variances	-21.18
2022 Transfers	+136.29 [f]
2023 New Irrigated Acres	0
2023 Variances	+3.01
2023 Transfers	+74.67 [g]
2024 Variances	+6.86
2024 Transfers	+47.62
Allowable Depletion Total	**11,462.06 AF**

[a] revised February 2020; corrections made to some transfers for 2016, 2017, and 2018
[b] revised June 2019; not all approved acres were certified by applicants in 2018
[c] revised August 2020; not all approved acres were certified by applicants in 2019
[d] revised August 2021; not all approved acres were certified by applicants in 2020
[e] revised August 2022; not all approved acres were certified by applicants in 2021
[f] revised December 2024; acre certification revisions by owners in 2024
[g] revised January 2024; transfers calculated using 1995 to 2020 NIR

GROUNDWATER ELEVATION DATA

One of the LLNRD's primary responsibilities since its inception in 1972 has been collecting groundwater elevation data. Each year, District personnel measure groundwater elevations in both the spring and fall to compare against historical levels. Spring levels are used to report on the status of groundwater, whether increasing or decreasing, and to determine if potential changes are needed in the District. Fall levels are used as an indicator of stress that has been placed on the aquifer during the irrigation season. The District has employed the use of pressure transducers to get continual monitoring. To date, the LLNRD has 77 active transducers across the District recording water levels every 8 hours. Additionally, the District implemented a real-time transducer network in Columbus vicinity as part of the recharge project and near the Petersburg vicinity in northern Boone County to track in-season drawdown. Dedicated monitoring wells contain telemetry equipment that collects an hourly reading which is available for viewing on the NRD's In-Situ HydroVu site.

In spring 2024, the LLNRD staff collected groundwater level depths on 455 sites which include both dedicated monitoring and irrigation wells. The District average decreased from 2023 readings by -0.19 feet. The District average still maintains a level well above the 1982 levels by 5.47 feet. The 1982 level is used by the Lower Loup NRD's Groundwater Management Plan as the keystone level to implement additional management action.

NEW DATA COLLECTED OR MODEL/STUDY RESULTS

The LLNRD Drought Management Plan, accepted by the Board of Directors on November 17, 2022, provides measures to monitor drought severity and susceptibility across the entire NRD. Triggers for additional management are based on spring static water level measurements, the State Drought Monitor Map status, stream flows, localized well issues, and filed reports. A majority of 2024 saw significant drought across the majority of the Lower Loup NRD.

LLNRD has two local models that are being constructed with Airborne Electromagnetic (AEM) projects previously completed. The Buffalo County Groundwater Model (BC Model) with LRE and The Flatwater Group was finalized in late 2024 and the Nance County Model work has just begun. The BC Model focus area contains the northern portion of Buffalo County which overlaps the LLNRD. A localized model was developed and is being used to assess various management impacts to the area including using excess South Loup River water diverted in a retiming cell to augment groundwater. Other scenarios include an expansion of the area ethanal plant to determine drawdown and assess the impacts of a groundwater allocation and the impacts on long-term water levels. The Nance County Model encompasses a large area of Nance County that was flown with AEM in 2022. This area has minimal saturated thickness, limited groundwater development, low aquifer transmissivity, and has higher likelihood of well impacts than the rest of the Loup Basin. The model will assess different management strategies and examine whether a more robust restriction zone should be established. The primary goal is to protect existing water users and calculate a water balance for long-term sustainability of the aquifer.

COLUMBUS AREA GROUNDWATER RECHARGE PROJECT

The Columbus Area Recharge Project was developed because of significant groundwater depletions in an area on the southeast edge of Columbus, NE. The LLNRD initiated the project and gathered partners including Archer Daniels Midland, City of Columbus, Platte County, and the Christopher's Cove Homeowners Association that worked collectively to develop and complete the project. The project fundamentals involve providing the area with additional groundwater recharge by conveying supplemental surface water to areas of high potential recharge. The surface intake pump station transfers surface water from the nearby Loup Tailrace canal and discharges it into the Lost Creek channel near the city. The water infiltrates into a dry creek channel, recharging the area's groundwater. The project also discharges recharged water from an auxiliary well into Christopher's Cove, which is a nearby water body used by the project for additional groundwater recharge storage. The recharged water provided by the project offers more stable groundwater levels for public use, especially in dry years.

The 2024 operating season began on March 21, 2024, and ended on November 7, 2024. The water pumping systems operated multiple periods where runtime varied from a few days up to a few weeks. The runtime duration was based on several factors including groundwater levels, surface water levels, weather conditions and channel conditions. The surface intake pump station operated for 193 days for an approximate total of 1,326 acre-feet of water. The auxiliary well operated 129 days for an approximate total of 313 acre-feet of water. The 2024 operating season estimated groundwater recharge amount is 1,286 acre-feet of water. The calculations consider volume of water pumped, recharge area, potential recharge rates, evapotranspiration rates, and additional factors that may affect groundwater recharge. The recharge estimates do not consider amounts from Christopher's Cove although groundwater recharge is evident when comparing pumped volumes to measured lake water levels. Project groundwater modeling demonstrated Christopher's Cove effectively retains and retimes water in the project area.

NON-ACTION/REPORTING ITEMS

The Coalition members are responsible for reporting on items that are currently not included as part of the LLNRD day-to-day operations. These Items include:

- Retirement of Groundwater Consumptive Uses
    - LLNRD does not currently have a need for large retirement of groundwater consumptive use.
- Stream Flow Accretion Activities
    - Transfers allowed by the NRD do not have a negative net impact on the stream and theoretically result in neutral or positive effects on streamflow, see "APPROVED WATER TRANSFERS" above.
    - Under "NRD MANAGEMENT: WELL AGREEMENTS" the LLNRD is taking proactive measures to reduce surface water allocations, switching those primary sources to groundwater which would result in an immediate reduction to streamflow impacts and likely cause accretion to flows in the impacted stream.
- Stream gage measurements on NRD maintained gages.
    - LLNRD has no stream gages under its operational authority; however, the LLNRD is a partner with both the NeDNR and USGS in the operations of various streams across the Loup Basin.
- Instream Flow Requests
    - The LLNRD submitted a request for an instream flow application to the Nebraska Department of Natural Resources. An order of approval was received by the NRD on May 31, 2022. The application is in consideration of the value of benefits to fish, wildlife, recreation, out-of-stream

uses and economic impacts. The flow reach begins at the confluence of the North and Middle Loup Rivers near St. Paul and extends to the Loup Power canal near Genoa. The application included supporting scientific, economic, biological, and hydrological data and information.

- The instream flow request at the confluence of the North Loup River and Middle Loup River varies depending on the time of year. This instream flow is the sum of flows at gages on each river near St. Paul. A review of the daily stream flow data for the calendar year 2024 shows that requested flows were not met on 90 days during the year.

Summary of 2024 Instream Flows

Time Period	Flow Req.	Days with flow less than Flow Request	Daily Average (cfs)	
			Period	Year
Jan 1 - Feb 28	1,700	16	2350	2313
Mar 1 - May 31	2,400	40	2536	
Jun 1 - Aug 1	1,700	18	2326	
Sep 1 - Dec 31	1,600	16	2063	
	Total	90		