

Water Committee Meeting  
 Wednesday, June 26, 2024 6:00 PM  
 Lower Platte North NRD Office  
 P.O. Box 126  
 Wahoo, NE 68066

1. UNFINISHED BUSINESS

2. REGULATORY

2.A. GROUND WATER MANAGEMENT AREA

2.A.1. Variance Request in the Hydrologically Connected Area (Limited Development Area)

Dave Hume recommends utilizing the current scoring sheet for variances until LRE has a chance to review the process. A scoring sheet is attached which the staff is planning on using for the 2024 variances. This is the scoring sheet that has been used since 2021.

2.A.2. Well Permit Program

2.A.2.a. Well Permits Approved

The total number of approved permits for 2024 is 18

Location of Approved Well Permits for 2024: Correct as of 6/19/2024

County	Irrigation - New	Irrigation - Replacement	Stoc
Butler	3 supplemental	2	
Colfax	1		
Dodge	1		
Boone			
Madison			
Platte		3	
Saunders	5	2	
<b>Total</b>	<b>10</b>	<b>7</b>	

2.A.3. Hazard Mitigation Drought Plan

Becky Appleford and Phil Luebert presented at the Committee Meeting on the Drought Plan Proposal to include in the Hazard Mitigation Plan. This is a 75-25 cost share grant with NRD share of the \$95,000 proposal being \$23,750.

This will allow the NRD to assist communities in drought awareness and determine their needs in preparing for a drought.

Attached is an updated proposal.

2.A.4. Nitrate Assessment

Attached is an invoice for a nitrate assessment project for Shell Creek of \$9,189.16 per contract.

2.A.5. Groundwater Management Plan

An invoice is attached for \$1,920.00 which is part of the contract with LRE. The posters attached were displayed at the stakeholder meetings along with the presentation shown.

At the June Board meeting, \$35,000 was approved to be included in next year's budget to review groundwater level graphs and triggers.

2.A.6. Cost Share Programs

2.A.6.a. Drinking Water RO Units

The policy that was presented at the May Water Committee is attached. One change is the RO units requirement for nitrates from 3 ppm to 6 ppm for the acceptable number after installation of the units. Staff recommends putting \$20,000 into next year's budget.

Suggestions to include in the policy from the Committee meeting would be a followup on operation and maintenance after 1 or 2 years. It was also suggested that the unit needs to stay with the residence once installed.

2.A.7. Bellwood Phase 2 Area

2023 is the twenty-first year for this Phase 2 Area.

	Nitrate-nitrogen Range	Percent Nitrate-nitrogen 0 to 8.0 ppm	Percent Nitrate-nitrogen 8.01 to 10.00 ppm	Percent Nitrate-nitrogen 10.01 to 15 ppm	Percent Nitrate-nitrogen greater than 15 ppm
	0 to 25 ppm	46.3% (44 of 95)	8.4% (8 of 95)	45.3% (43 of 95)	
	0 to 25 ppm	47% (44 of 94)	15% (14 of 94)	38% (36 of 94)	

	0 to 24 ppm	41% (29 of 71)	14% (10 of 71)	45% (32 of 71)	
	0 to 31 ppm	48% (48 of 100)	9% (9 of 100)	43% (43 of 100)	
	0 to 28 ppm	53.75% (43 of 80)	7.5% (6 of 80)	38.75% (31 of 80)	
	0 to 22 ppm	45.5% (41 of 90)	15.5% (14 of 90)	39% (35 of 90)	
	0 to 35.7 ppm	48.65% (54 of 111)	11.71% (13 of 111)	39.64% (44 of 111)	
	0 to 26.6 ppm	51% (56 of 110)	6% (7 of 110)	43% (47 of 110)	
	0 to 28.9 ppm	57% (61 of 107)	9% (10 of 107)	34% (36 of 107)	
	0 to 25.8 ppm	50% (53 of 107)	9% (10 of 107)	14% (44 of 107)	26%
	0 to 22.3 ppm	51% (55 of 108)	13% (14 of 108)	18% (39 of 108)	20%
	0 to 32.3 ppm	43% (31 of 72)	8% (6 of 72)	14% (35 of 72)	33%
	0 to 35.1 ppm	34% (25 of 74)	11% (8 of 74)	26% (41 of 74)	26%
	0 to 23.5 ppm	36% (27 of 74)	15% (11 of 74)	19% (36 of 74)	22%
	0 to 30.9 ppm	40% (25 of 63)	11% (7 of 63)	22% (31 of 63)	28%

	0 to 24.5 ppm	46% (22 of 48)	10% (5 of 48)	28% (21 of 48)	22%
	0 to 20.5 ppm	33.33% (20 of 60)	13.33% (8 of 60)	35% (21 of 60)	18.33% (11 of 60)
	0.12 to 27.7 ppm	40.6% (26 of 64)	15.6% (10 of 64)	25% (16 of 64)	18.8% (12 of 64)
	0.13 to 23.0 ppm	43.75% (28 of 64)	12.50% (8 of 64)	26.56% (17 of 64)	17.19% (11 of 64)
	0 to 19.8 ppm	50.8% (32 of 63)	15.9% (10 of 63)	20.6% (13 of 63)	12.7% (8 of 63)

2.A.8. Richland - Schuyler Phase 3 Area

2023 is the eighth year of this Phase 3 Area. This Phase 3 area went into effect September 1, 2015. The 55 sections of this area first went into a Phase 2 Area in 2004. The ten sections that were in Phase 2 are now in Phase 3. As such, the 2020, 2021 and 2022 numbers (at bottom of table) are for 65 sections.

Year	Nitrate-nitrogen Range	Percent Nitrate-nitrogen 0 to 8.0 ppm	Percent Nitrate-nitrogen 8.01 to 10.00 ppm
2004	0 to 47 ppm	30% (42 of 139)	10% (14 of 139)
2005	0 to 120 ppm	31.3% (74 of 236)	10.2% (24 of 236)
2006	0 to 53 ppm	28% (50 of 181)	14% (26 of 181)
2007	0 to 99 ppm	32% (75 of 231)	10% (22 of 231)
2008	0 to 46 ppm	28% (53 of 190)	12% (23 of 190)
2009	0 to 57 ppm	33% (72 of 216)	6% (13 of 216)
2010	0 to 57.5 ppm	31% (70 of 229)	7% (15 of 229)
2011	0 to 65.8 ppm	28% (67 of 241)	9% (21 of 241)
2012	0 to 52.6 ppm	29% (70 of 241)	9% (21 of 241)
2013	0 to 94.0 ppm	25% (63 of 252)	9% (23 of 252)

2014	0 to 101.0 ppm	27% (68 of 251)	9% (22 of 251)
2015	0 to 53.3 ppm	23% (55 of 238)	12% (29 of 238)
2016	0 to 50.5 ppm	25% (58 of 228)	10% (22 of 228)
2017	0 to 53.4 ppm	25% (60 of 238)	6% (14 of 238)
2018	0 to 56.9 ppm	26.5% (50 of 189)	6.3% (12 of 189)
2019	0 to 39.4 ppm	25% (53 of 209)	11% (22 of 209)
2020	0 to 50.8 ppm	26% (69 of 261)	6% (15 of 261)
2021	0 to 43.0 ppm	25.5% (67 of 263)	8.4% (22 of 263)
2022	0 to 58.5 ppm	23.0% (57 of 248)	6.45% (16 of 248)
2023	0 to 46.5 ppm	26% (68 of 263)	6% (17 of 263)

2.A.9. Groundwater Modeling Project

Attached are the streams that will be included in the model that shows flowing water.

2.B. CHEMIGATION

For 2024, we have 653 renewals and 36 new permit applications for a current total of 689. Inspections for 39 renewal permits, and 27 new permits have been completed.

Report is attached.

2.C. GROUND WATER QUALITY SAMPLING

Staff have been sampling monitoring wells throughout the district for nitrates, irrigation suitability and pesticides. The plan is to assist Newman Grove and Platte Center with more extensive sampling in their Wellhead Protection Areas.

3. GROUND WATER PROGRAMS

3.A. DECOMMISSIONED WELL PROGRAM

3.A.1. Well Estimates

There are no new wells that have been reviewed and approved for decommissioning since the last Committee meeting.

Well Owner	Type of Well	Cost Share Estimate	County

3.A.2. Plugged Wells

no new wells have been plugged, reviewed, and ready for cost share payment approval this month.

Well Owner	Type of Well	Cost Share Estimate	County

3.B. LOWER PLATTE NORTH NRD GROUND WATER STUDIES

3.B.1. Phase Area Update

From the awareness that LPN has been conducting, a producer in the area planted soybeans in the rotation with the local elevator exchanging for corn.

3.B.2. Eastern Nebraska Water Resources Assessment (ENWRA)

Attached is the ENWRA budget for 2024-25. The LPNNRD contribution is \$30,000 per year with Katie Cameron making a presentation on the projects this fall.

Discussion and presentation on UNL Mesonet Weather Stations were given. The following is the website to obtain that information.

<https://mesonet.unl.edu>

Attached is some additional information about the weather stations.

3.B.3. Lower Platte River Consortium

Attached are some new ideas for projects or education to include in the drought consortium work plan.

4. SURFACE WATER PROGRAMS

4.A. STATE LAKES, FOR THE WEEK OF JUNE 21, 2024

This week's beach Bacteria and Harmful Algal Bloom results are now posted on the NDEE web page ([Current Health Alerts and Sampling Results For This Week](#)).

Good news! There will be no lakes on Health Alert this week. Iron Horse

Trail Lake and Maskenthine Reservoir will be removed from Health Alert. There will be **0** beaches on Health Alert this week.

<b>Current Lakes on "Health Alert"</b>			
<b>Lake</b>	<b>County</b>	<b>Microcystin (ppb)</b>	<b>Sample Date</b>
<b>NONE!!!</b>			

When a lake exceeds 8 ppb of microcystin it will be placed on Health Alert. If a lake is under a Health Alert, signs will be posted recommending people avoid full body contact activities such as swimming, wading, skiing, jet skiing, etc.

We have **5** beaches with *E.coli* testing above 235 colonies/100 ml.

<b>Lakes with High <i>E.coli</i> Bacteria</b>			
<b>Lake</b>	<b>County</b>	<b><i>E.coli</i> (MPN)</b>	<b>Sample Date</b>
<b>Carter Lake (Omaha)</b>	<b>Douglas</b>	<b>387</b>	<b>6/17/2024</b>
<b>Fremont Lake No. 9 (SRA)</b>	<b>Dodge</b>	<b>&gt;2,419</b>	<b>6/17/2024</b>
<b>Harry Strunk Lake (Medicine Creek Reservoir)</b>	<b>Frontier</b>	<b>238</b>	<b>6/17/2024</b>
<b>Lewis &amp; Clark Reservoir at Weigand</b>	<b>Knox</b>	<b>&gt;2,419</b>	<b>6/17/2024</b>
<b>Maple Creek Recreation Area Lake</b>	<b>Colfax</b>	<b>1,300</b>	<b>6/17/2024</b>

When *E. coli* bacteria levels test above 235 colonies/100 ml a Health Alert is not issued. However, conditions are at a higher risk to human health when swimming. Considering the more rapid changes in bacteria conditions, signs are not posted with these higher levels. Although, we want people to be aware of beach conditions and use their own judgment as to whether they use a listed water body.

Have a good day.

Justin Haas  
**State Lakes Coordinator**  
**Nebraska Department of Environment and Energy**  
 P.O. Box 98922  
 245 Fallbrook Blvd., Suite 100  
 Lincoln, Nebraska 68509-8922  
 Direct: 402-471-4224 | Main office: 402-471-2186  
<http://dee.ne.gov> | [Twitter](#) | [Facebook](#)

5. OTHER

Attached is an interview in Irrigation Leader with Governor Jim Pillen.

5.A. COMMENTS FROM THE PUBLIC

<b>Draft Changes</b>				
<b>Application Number</b>	<b>Applicant Name</b>	Date:	6/24/24 3:44 PM	
LPN-V-024-0011 blank	John Smith		Total Score->	0
Category	Divisions	Points Available	Percent of Application	Points Received

<b>New Groundwater Consumptive Use</b>	<b>WF= 1.0</b>			
	0 to 8 Acre Feet	100	0	0
	9 to 16 Acre Feet	80	0	0
	17 to 24 Acre Feet	60	0	0
	25 to 32 Acre Feet	40	0	0
	33 to 40 Acre Feet	20	0	0
	41+ Acre Feet	0	0	0
			Total ->	0

<b>Land Class of field</b>	<b>WF= 1.0</b>			
	No Land Impact	100	0	0
	Class 1	100	0	0
	Class 2	80	0	0
	Class 3	60	0	0
	Class 4	40	0	0
	Class 5	10	0	0
	Class 6-8/ not more than 20%	0	0	0
			Total ->	0

<b>Stream Depletion Factor From DNR</b>	<b>WF= 1.25</b>			
	10 to 20%	100	0	0
	21 to 30%	90	0	0
	31 to 40%	80	0	0
	41 to 50%	70	0	0
	51 to 60%	60	0	0
	61 to 70%	50	0	0
	71 to 80%	40	0	0
	81 to 90%	20	0	0
	>90%	10	0	0
			Total ->	0

<b>Saturated Thickness</b>	<b>WF= 1.0</b>			
	176 to 200 ft.	100	0	0
	151 to 175 ft.	90	0	0
	126 to 150 ft.	80	0	0
	101 to 125 ft.	70	0	0
	76 to 100 ft.	40	0	0
	51 to 75 ft.	20	0	0
	26 to 50 ft.	10	0	0
	0 to 25 ft.	0	0	0
			Total ->	0

<b>Specific Yield</b>	<b>WF= 1.0</b>			
	18.1 to 22 %	100	0	0
	14.1 to 18 %	60	0	0
	10.1 to 14 %	30	0	0
	6.1 to 10 %	10	0	0
	2 to 6%	0	0	0
			Total ->	0

<b>Transmissivity</b>	<b>WF= 1.0</b>			
	21331 to 23700	100	0	0
	18961 to 21330	90	0	0

16591 to 18960	80	0	0
14221 to 16590	70	0	0
11851 to 14220	60	0	0
9481 to 11850	50	0	0
7111 to 9480	40	0	0
4741 to 7110	30	0	0
2371 to 4740	20	0	0
0 to 2370	10	0	0
		Total ->	0

<b>Irrigation Systems</b>	<b>WF= 1.0</b>				
		Subsurface Drip	100	0	0
		Surface Drip	80	0	0
		Pivot	60	0	0
		Gravity, Gun, Other	10	0	0
		Total ->		0	

<b>Additional Points</b>	<b>WF= 1.0</b>				
		Chemigation	10	0	0
		Variable Rate Irrigation	10	0	0
		Total ->		0	

Minimum Score of 300 is needed to be considered for variance approval Once a variance is submitted and not approved, it will be carried over for 3 years Land Classes 6-8, with slopes, greater than 20% of the parcel not eligible for a variance				Total Score->	0
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**AMENDMENT TO OWNER-ENGINEER AGREEMENT  
Amendment No. 1**

**The Effective Date of this Amendment is: date signed by owner**

ARTICLE 1 – BACKGROUND DATA

Effective Date of Owner-Engineer Agreement: **December 8, 2022**  
Owner: Lower Platte North NRD  
Engineer: JEO Consulting Group, Inc.  
JEO Project Number: 220954.00  
Project: Lower Platte North NRD 2025 Hazard Mitigation Plan Update

ARTICLE 2 – NATURE OF AMENDMENT

- Additional Services to be performed by Engineer
- Modifications of payment to Engineer

ARTICLE 3 – DESCRIPTION OF MODIFICATIONS

**Perform engineering services related to Drought Management Plan. See Exhibit A, attached.**

ARTICLE 4 – AGREEMENT SUMMARY

Original agreement amount:	\$ <u>155,000</u>
Net change for prior amendments:	\$ <u>0</u>
This amendment amount:	\$ <u>95,000</u>
Adjusted Agreement amount:	\$ <u>250,000</u>

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit B.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect.

OWNER: **Lower Platte North NRD**

ENGINEER: **JEO Consulting Group, Inc.**

By: \_\_\_\_\_  
Print name: \_\_\_\_\_

By:   
Print name: Rebecca Appleford

Title: \_\_\_\_\_

Title: Project Manager

Date Signed: \_\_\_\_\_

Date Signed: 6/21/2024

## Lower Platte North NRD Drought Management Plan as part of the 2025 Hazard Mitigation Plan Update Additional Services Scope

### Amendment Task Description

As part of the update to the 2025 Lower Platte North NRD's Hazard Mitigation Plan, the NRD included additional funds in their FEMA BRIC Grant to lead an effort to develop a proactive drought management plan for the district. The drought management plan will reduce district-wide impacts during drought events and aid the NRD in water resource management. A significant part of the planning process will focus on the district's communities and public water systems to evaluate their drought vulnerabilities, provide educational materials to communities to share with residents, and understand available community drought ordinances that are in place. Drought mitigation strategies and other recommendations will be developed and based on the outcomes of the drought risk analysis for the NRD and district's communities. Additionally, this project will include the establishment of a drought monitoring and forecasting protocol; identify potential best management practices and future recommendations that could be promoted and/or implemented within the district that will reduce drought impacts; and help proactively prepare for drought and provide awareness during drought events. The outcome of the project will be a more sustainable and stable water supply for all users across the district and key information will be integrated into the NRD's 2025 Hazard Mitigation Plan Update.

### Additional Project Task 7

#### *Task 7.1: Project Management and Coordination*

**Task 7.1.1 Kick-Off Meeting.** JEO and NRD staff will have a project kick-off meeting. JEO will develop meeting materials to include a meeting agenda, proposed project schedule, roles and responsibilities, draft contact list, and other items as necessary.

**Task 7.1.2 Mid-Project Meeting.** JEO and NRD staff will have a mid-project meeting to review information gathered from community meetings (see Task 7.3). During this meeting, JEO and NRD staff will discuss draft drought monitoring procedures and potential best management practices that could be implemented to reduce drought impacts.

**Task 7.1.3 Project Management and Coordination.** JEO will develop a project management plan and will provide monthly update and project invoices to NRD as part of Task 1.1 in the hazard mitigation plan contract. JEO will coordinate with LRE and the NRD while the update to the groundwater management plan is under development. Up to two (2) JEO staff members will attend groundwater management plan meetings as needed (up to 4 meetings) to support the development of the drought plan.

#### *Task 7.2: Data Collection, GIS, and Drought Risk Assessment*

**Task 7.2.1 Data Collection.** JEO will collect data from historic records, reports, and monitoring sites along with other necessary data to complete the plan. Data sources may include, but are not limited to:

- NRCS
- NDHHS
- NDEE
- NeDNR
- NGPC
- USGS

- NCEI

Furthermore, data will be collected from community public water systems. Information to be obtained includes frequency of checking water levels in PWS wells, monitoring wells, available loggers/transducers, water level meters, flow meter loggers, and any other water level or drought monitoring that is done. Communities and the NRD will be asked to provide drought-related plans and studies which may include, but not limited to voluntary integrated management plan, groundwater quality and quantity rules and regulations, water emergency contingency plans, etc. Any drought ordinances or regulations will also be collected.

**Task 7.2.2 GIS Mapping.** JEO will coordinate with NRD staff for water related GIS data to produce GIS maps to be used in the risk assessment, monitoring protocol, and other sections of the plan.

**Task 7.2.3 NRD and Communities Vulnerability and Risk Assessments.** After gathering the required data, historical drought data will be examined for the NRD to learn about previous drought events, how severe they were, and how they affected communities and agriculture. Moreover, a thorough evaluation will be done for each community of their susceptibility to drought. Information and assessments completed as part of the development of the NRD's groundwater management plan will be integrated into the drought plan.

### ***Task 7.3: Community Meetings and Engagement Materials***

**Task 7.3.1 Community Meetings.** JEO will work with the NRD's Source Water Protection (SWP) person to develop questions/materials for community meetings to discuss drought impacts, vulnerabilities, monitoring, and drought ordinances. This will include assessing existing response measures and monitoring practices for drought events. Additional topics of discussion will encompass potential mitigation and response strategies, considerations for drought ordinances and regulations, and ways in which the NRD can effectively assist communities during drought periods. JEO will meet with up to three (3) communities with the SWP person to refine the meeting approach/questions as well as an opportunity to train the SWP on facilitating these meetings across the district. It is assumed that the SWP person will work with as many communities within the NRD as possible to collect and provide responses to JEO for inclusion in the assessment and plan.

**Task 7.3.2 Community Engagement Materials.** JEO will create a public outreach strategy kit for communities to utilize for educational outreach and/or those wishing to implement or update a drought ordinance. The kit will include clear guidelines on how and when to communicate with the public regarding their drought ordinance. Additionally, the kit will provide templates that will be easily edited for their use and may include items such as social media prompts, website posts, press releases, and flyers.

### ***Task 7.4: Develop Drought Management Plan***

**Task 7.4.1 Develop Drought Management Plan.** JEO will lead the development of the Drought Management Plan document, with a primary focus on identifying and addressing drought impacts on communities. This includes identifying vulnerable populations, critical management periods, past water shortages, and other community-specific vulnerabilities. Collaborating with the NRD, JEO will establish procedures for district-wide drought monitoring and forecasting.

Quantitative and qualitative data will be used to analyze community and public water systems to identify and prioritize those that are at greatest risk of drought and/or are in need of improved well level monitoring. JEO will work with LRE to leverage existing available data to recommend potential monitoring well location areas (up to 10) and the development of other drought mitigation strategies.

Furthermore, in coordination with the NRD, JEO will identify and recommend best management practices tailored for the NRD and the district's communities. These practices will aim to reduce drought impacts, enhance proactive drought preparedness, and raise awareness during drought events. JEO will also provide recommendations for ongoing plan updates to ensure continued effectiveness in addressing community drought challenges.

**Task 7.4.2 Sample Community Drought Ordinance.** Create an example drought ordinance that communities can use to create their own individualized drought ordinance. Two to three example ordinances will be provided ranging from a basic short ordinance to a more complex longer ordinance.

**Task 7.4.3 Quality Control.** JEO will conduct a thorough review of the Drought Management Plan for both grammatical and technical accuracy.

## Task 7 Deliverables

Deliverables will be distributed to the NRD and communities as necessary throughout the project. Specific deliverables for this project include:

- An electronic copy of the Drought Management Plan
- Up to two print copies of the Drought Management Plan, as requested.
- Sample Community Drought Ordinances (max 3)
- Community Engagement Materials Kit

## Assumptions

JEO will develop a project management plan that includes: a framework for project related communications, proposed project schedule, anticipated milestones, and project deadlines. JEO will provide monthly update reports and project invoices to NRD as part of Task 1.1 in the hazard mitigation plan contract. Other project assumptions are listed below:

- LRE will provide data and groundwater management plan outcomes for use within the development of the drought management plan.
- No additional modeling will be completed as part of this scope.
- NRD staff will assist JEO in collecting community-specific information where possible.
- NRD SWP will work with JEO in developing community meeting materials/questions.
- NRD SWP will conduct community meetings following guidance/training from JEO and provide responses to JEO.
- NRD will assist in scheduling and will identify and secure locations for all in-person plan meetings.
- NRD will assist with dissemination of public engagement materials.
- NRD will assist with collection of technical data (planning documents, groundwater data, etc.).
- NRD will assist in providing GIS data used in the development of the plan.
- NRD will review the draft plan and provide comments/revisions prior to finalization.
- JEO will not need to attend NRD board meetings regarding the Drought Management Plan.

**Project Schedule**

The following project schedule relates to the tasks outlined above with the original project schedule remaining unchanged. This schedule may be adjusted based on NRD and JEO availability.

Drought Plan Kick-off Meeting:	July 2024
Data Collection:	July 2024 – January 2025
Community Meetings:	September 2024 – February 2025
Plan Development:	September 2024 – April 2025
Draft Plan Review:	April – May 2025
Submit Plan to FEMA with HMP:	May – July 2025

**Updated Project Fee**

The contract project fee will be amended as outlined below:

Task 7.1: Project Management and Coordination	\$12,500
Task 7.2: Data Collection, GIS, and Drought Risk Assessment	\$24,500
Task 7.3: Community Meetings and Engagement Materials	\$10,250
Task 7.4: Develop Drought Management Plan	\$47,750
<b>Task 7 Subtotal:</b>	<b>\$95,000</b>
<b>Tasks 1-6 Subtotal (original contract):</b>	<b>\$155,000</b>
<b>Total Revised Project Fee:</b>	<b>\$250,000</b>



June 17, 2024  
 Invoice No: 26693

<b>Invoice Total:</b>	<b>\$9,189.16</b>
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Daryl Andersen  
 Lower Platte North NRD  
 511 Commercial Park Road  
 Wahoo, NE 68066-0126

**Please Remit To:**  
**LRE Water**  
**1221 Auraria Pkwy**  
**Denver, CO 80204**  
**(303) 455-9589**  
**accounting@LREwater.com**

Invoice Email: dandersen@lpnrd.org  
 Project No.: 5036LPN04  
 Project Name: LPNNRD Nitrate Assessment Project

**Professional Services through May 25, 2024**

Task 01 Risk Tool Expansion

**Professional Personnel**

	<b>Hours</b>	<b>Rate</b>	<b>Amount</b>	
Barry, Michael	.50	185.00	92.50	
Carter, Will	4.25	208.00	884.00	
Close, Kelly	2.75	250.00	687.50	
Salazar, Timothy	2.25	169.00	380.25	
Sopiwnik, Roscoe	6.50	200.00	1,300.00	
Totals	16.25		3,344.25	
<b>Total Labor</b>				<b>\$3,344.25</b>

**Unit Billing**

Contract Developer III	2.0 Hours @ 150.00		300.00	
<b>Total Units</b>			<b>\$300.00</b>	<b>\$300.00</b>
		<b>Total this Task</b>		<b>\$3,644.25</b>

Task 02 USC Groundwater Model

**Professional Personnel**

	<b>Hours</b>	<b>Rate</b>	<b>Amount</b>	
Bauer, Jacob	2.50	225.00	562.50	
Foster III, Allan	2.00	166.00	332.00	
Mohr, Jonathan	4.50	195.00	877.50	
Plante, Michael	.75	224.00	168.00	
Stokes, Scott	23.25	149.00	3,464.25	
Totals	33.00		5,404.25	
<b>Total Labor</b>				<b>\$5,404.25</b>

**Consultants**

Seequent

5/9/2024

Seequent

Customer No: 1006680396

140.66

**Total Consultants**

**140.66**

**\$140.66**

**Total this Task**

**\$5,544.91**

**Total this Invoice**

**\$9,189.16**

**Outstanding Invoices**

**Number**

**Date**

**Balance**

26358

5/17/2024

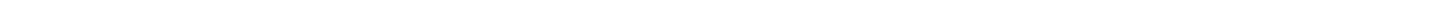
2,203.00

**Total**

**\$2,203.00**

**Total Now Due**

**\$11,392.16**





June 17, 2024  
 Invoice No: 26692

<b>Invoice Total:</b>	<b>\$1,920.00</b>
-----------------------	-------------------

Daryl Andersen  
 Lower Platte North NRD  
 511 Commercial Park Road  
 Wahoo, NE 68066-0126

**Please Remit To:**  
**LRE Water**  
**1221 Auraria Pkwy**  
**Denver, CO 80204**  
**(303) 455-9589**  
**accounting@LREwater.com**

Invoice Email: dandersen@lpnrd.org  
 Project No.: 5036LPN03  
 Project Name: LPNNRD GW Management Plan

**Professional Services through May 25, 2024**

Task 02 Stakeholder Involvement

**Professional Personnel**

	<b>Hours</b>	<b>Rate</b>	<b>Amount</b>	
Hume, David	1.75	245.00	428.75	
Mohr, Jonathan	1.50	195.00	292.50	
Totals	3.25		721.25	
<b>Total Labor</b>				<b>\$721.25</b>
		<b>Total this Task</b>		<b>\$721.25</b>

Task 03 Plan Development

**Professional Personnel**

	<b>Hours</b>	<b>Rate</b>	<b>Amount</b>	
Hume, David	2.25	245.00	551.25	
Mohr, Jonathan	.50	195.00	97.50	
Sopiwnik, Roscoe	2.75	200.00	550.00	
Totals	5.50		1,198.75	
<b>Total Labor</b>				<b>\$1,198.75</b>
		<b>Total this Task</b>		<b>\$1,198.75</b>

**Total this Invoice** \$1,920.00

**Outstanding Invoices**

<b>Number</b>	<b>Date</b>	<b>Balance</b>
26357	5/17/2024	6,701.50
<b>Total</b>		<b>\$6,701.50</b>

**Total Now Due** **\$8,621.50**



LOWER PLATTE NORTH  
Natural Resources District



**Stakeholder Group Meeting #1**  
**Tuesday, June 4, Noon to 1:30PM**  
**Platte Center Auditorium**

# **GROUNDWATER MANAGEMENT PLAN UPDATE**

[LREWATER.COM](http://LREWATER.COM)

ROCKY MOUNTAIN | MIDWEST | SOUTHWEST | TEXAS

# AGENDA

## GROUNDWATER MANAGEMENT PLAN UPDATE - 2024 STAKEHOLDER GROUP MEETING#1 AGENDA

**Project:** LPNNRD GWMP Update  
**Meeting Location:** Platte Center Village Auditorium  
**Meeting Date/Time:** Tuesday, June 4, Noon to 1:30pm

- 1) **Introductions**
- 2) **Groundwater Management Plan (GWMP) Purpose**
  - Requirements of a GWMP
  - Current GWMP - 1995
  - Rules & Regulations Overview
- 3) **Stakeholder Group Roles**
- 4) **Groundwater Data Sources**
- 5) **Hydrogeologic Assessment and 3D AEM Framework**
- 6) **Open Discussion**
  - Water quality
  - Water quantity and supplies
  - Water management
- 7) **Schedule**
  - Project Kickoff – February 10, 2024
  - Summer/Fall 2024 – Plan Development
  - August 2024 – Open Houses (2)
  - December 2024 – Draft GWMP
  - Plan Acceptance – Spring 2025
- 8) **Discussion**

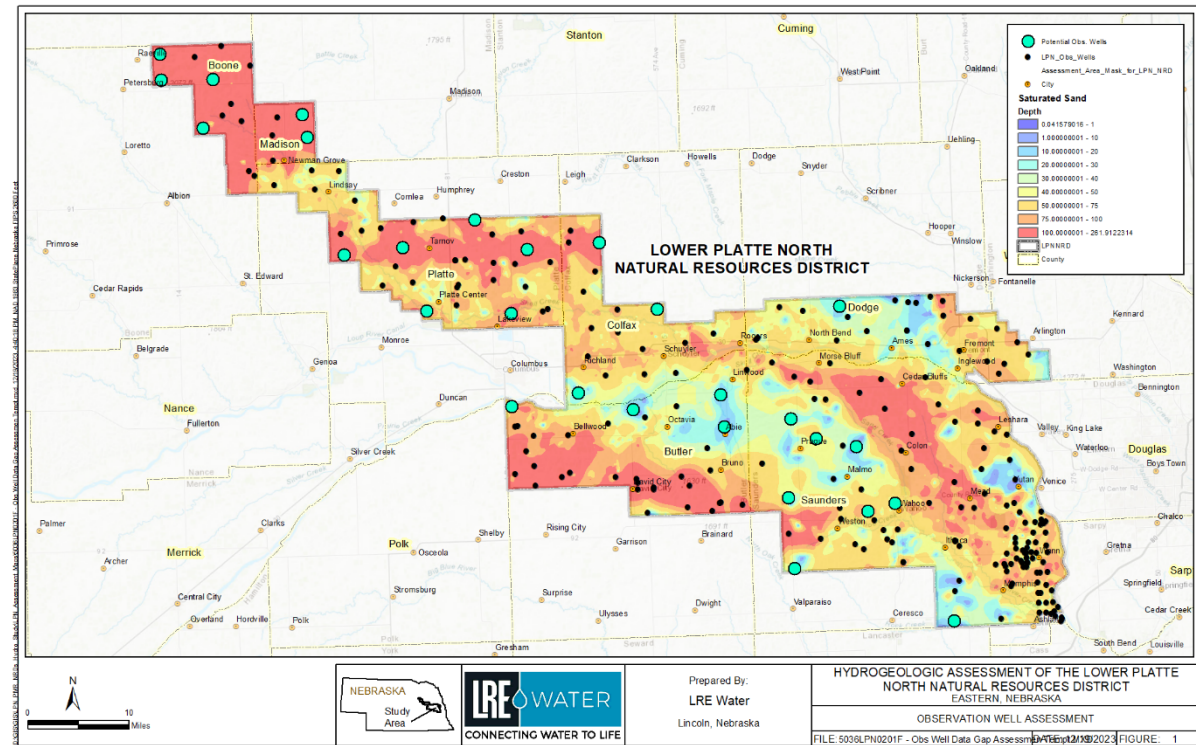
# GROUNDWATER MANAGEMENT PLAN

- Groundwater Management and Protection Act
  - State Statute 46-709 – GWMP Required Contents
  - Utilize best available scientific data
  - 14 required elements
  - State Agency Reviews



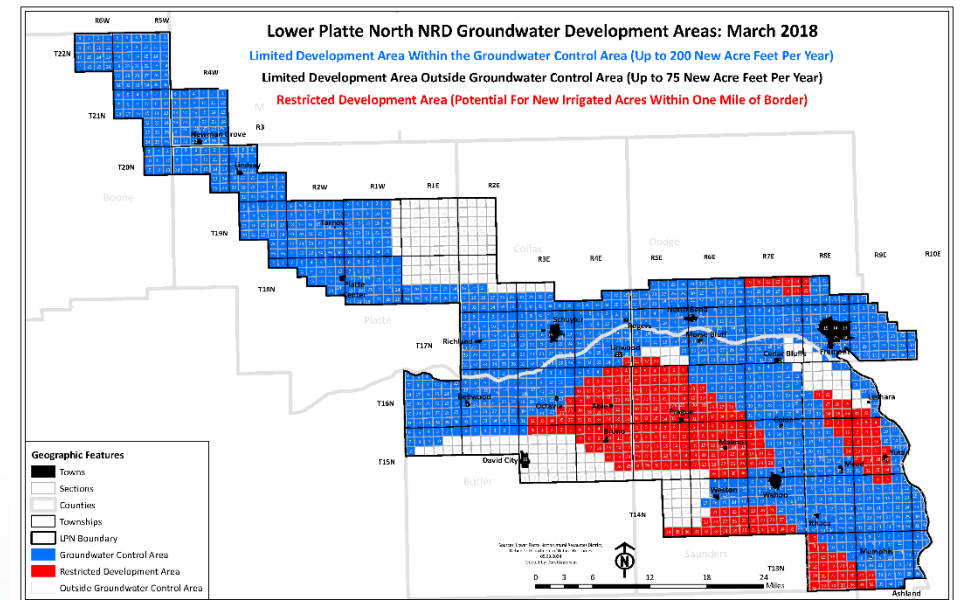
# PLAN REQUIREMENTS

1. Groundwater Supplies (transmissivity, saturated thickness, etc.)
2. Recharge
3. Precipitation
4. Crop water needs
5. Data collection programs
6. Water uses
7. Quality concerns



# PLAN REQUIREMENTS

8. Conservation and augmentation programs
9. Supplementation supplies
10. Opportunity to integrate and coordinate water supplies
11. Goals and objectives
12. Sub-irrigation uses
13. Relative economic value of groundwater uses
14. Groundwater Management Areas



# STAKEHOLDER ROLES & RESPONSIBILITIES

- 1) Work with LPNNRD and LRE
- 2) Attend two meetings and one Open House
- 3) Communicate throughout process
- 4) Provide guidance and information
- 5) Talk with other stakeholders
- 6) Review the GWMP draft

\*See handout



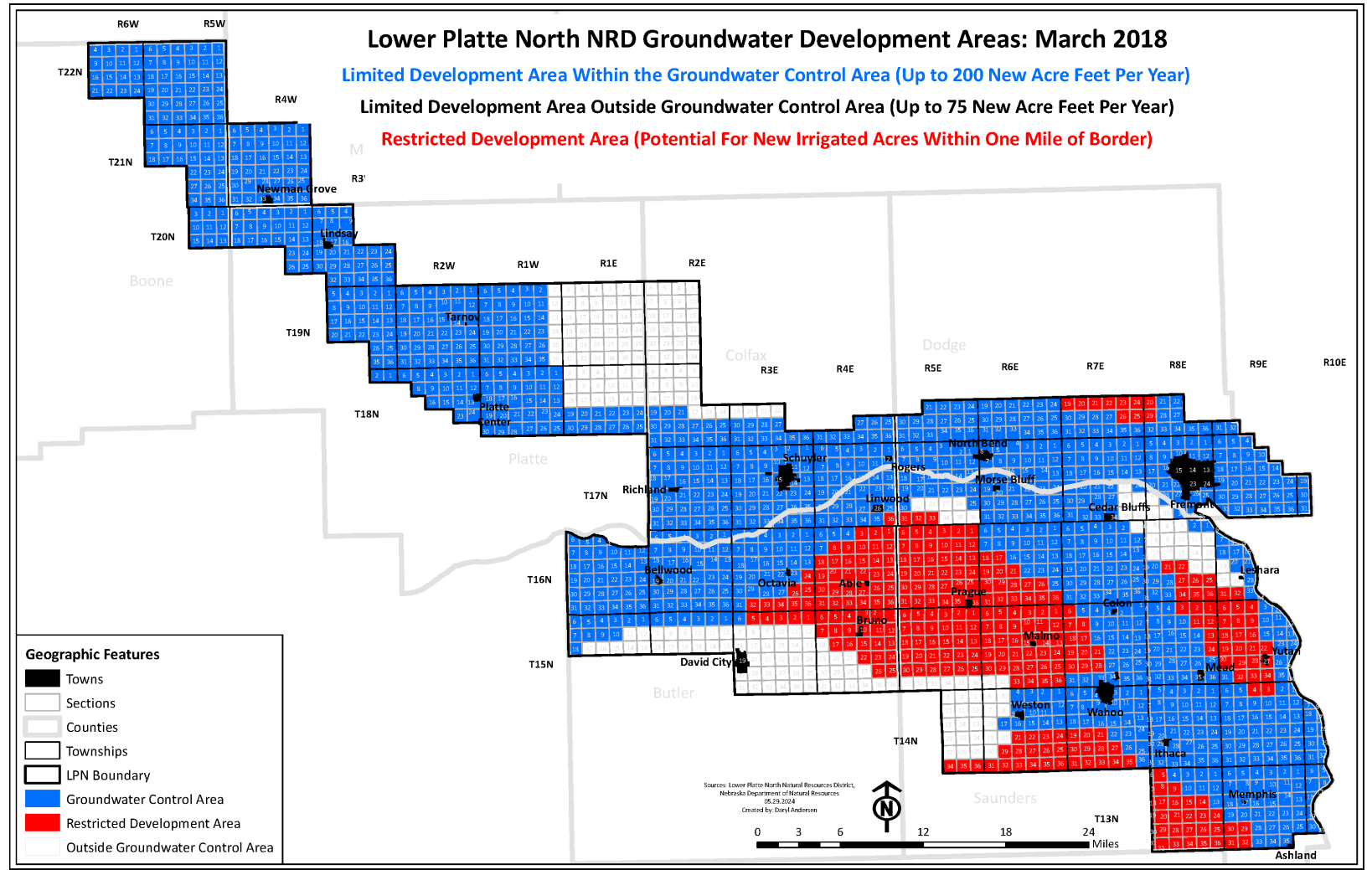
# RULES & REGULATIONS

- NRD Authority to Implement Rules, Regulations, and Controls (Neb. Rev. Stat. 46-709)
- Quality Phase Triggers – based upon concentration of nitrate
  - Phase 1 – 0-8 ppm
  - Phase 2 - > 8-10 ppm
  - Phase 3 - > 10 - 15 ppm
  - Phase 4 – 15 ppm +
- Quantity Control Triggers – based upon issues or drops in aquifer levels



# IMP DEVELOPMENT AREAS

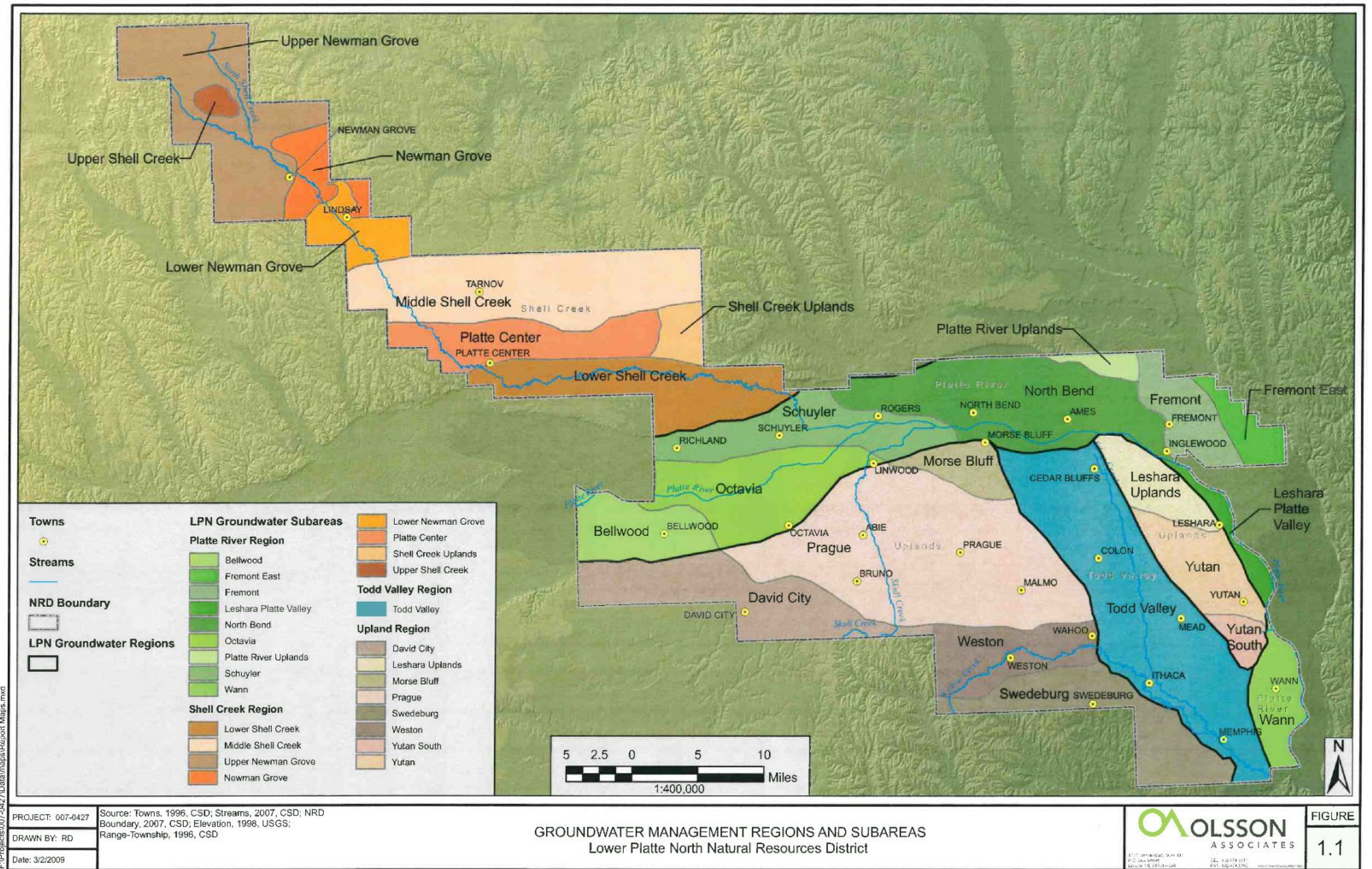
- Integrated Management Plan
- Limits development of irrigated acres
- Hydrologically Connected Areas





# PROPOSED SUBAREAS

- Created in 2009
- Being considered as an addition to the GWMP
- Will be refined using well data, AEM, and recent studies



# WHAT DATA IS MOST OFTEN USED?

- Geologic Logs
- Airborne Electromagnetic (AEM) Survey
- Topography
- Stream Flow
- Groundwater Levels
- Aquifer Pumping Tests

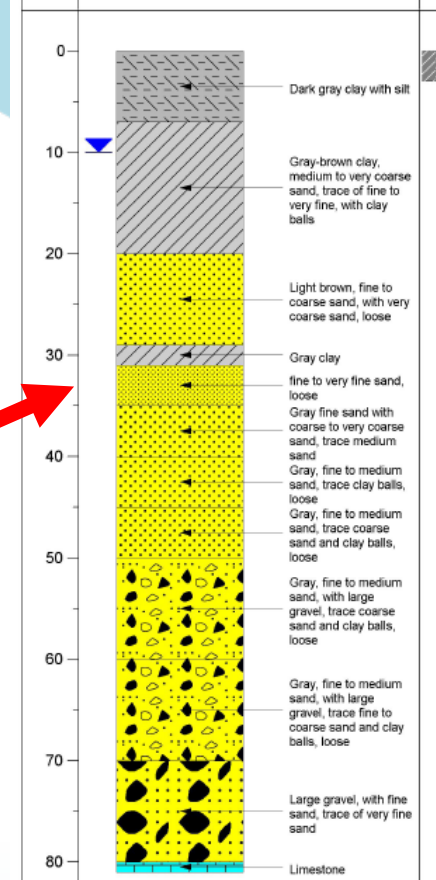


# GEOLOGIC DATA VS. AEM DATA

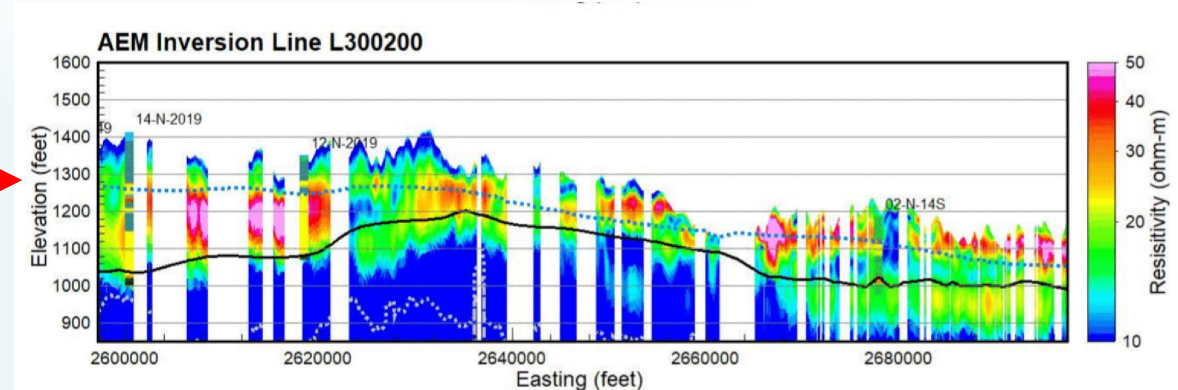
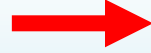
- Geologic = well logs or test holes (sand, gravel, clay, etc.)



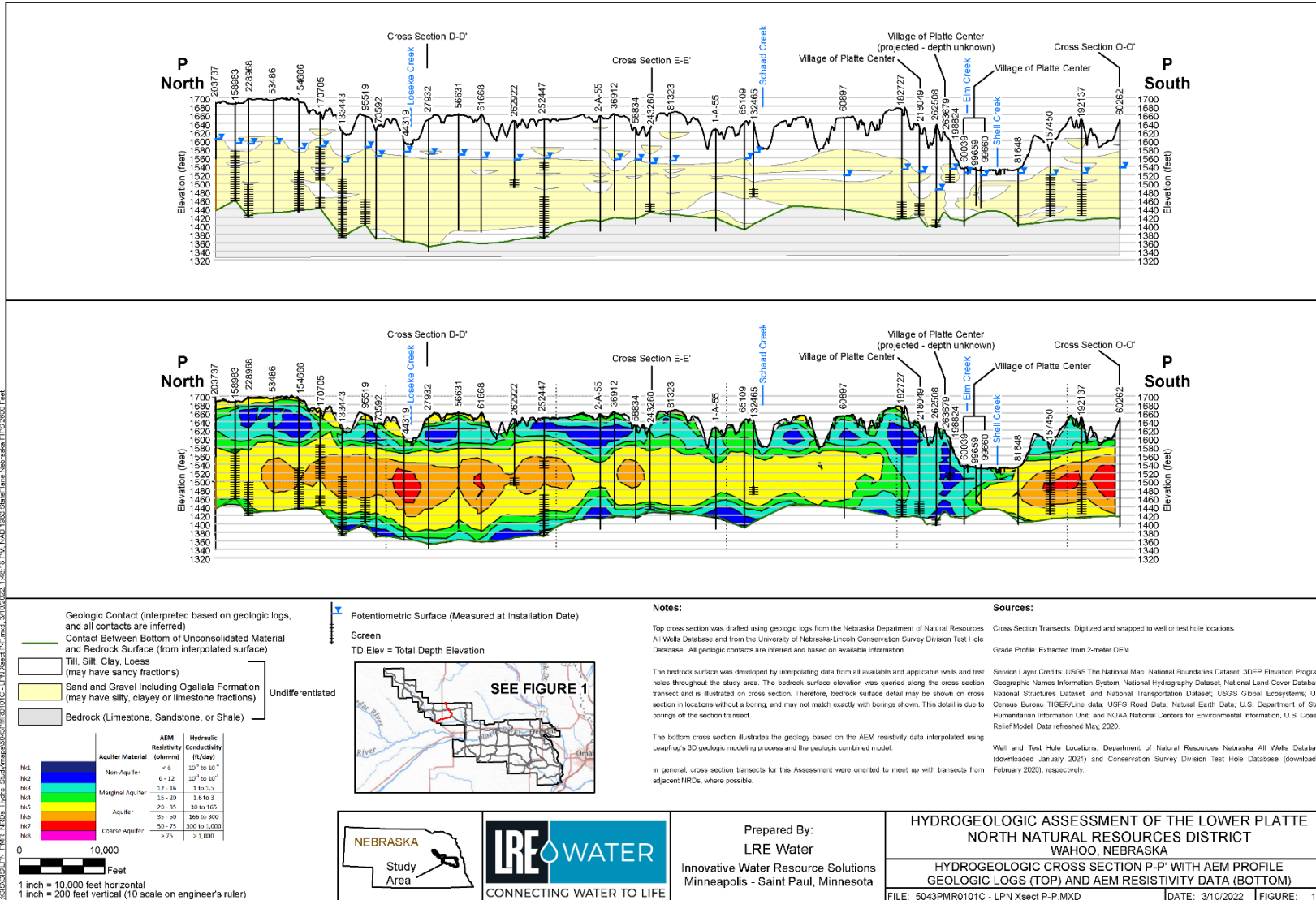
DEPTH (FEET)		RECORD DESCRIPTION
0	10	Dark gray clay with silt
10	20	Gray-brown clay, medium to very coarse sand, trace of fine to very fine, with clay balls
20	30	Light brown, fine to coarse sand, with very coarse sand, loose
30	35	Gray clay
35	40	fine to very fine sand, loose
40	45	Gray fine sand with coarse to very coarse sand, trace medium sand
45	50	Gray, fine to medium sand, trace clay balls, loose
50	55	Gray, fine to medium sand, trace coarse sand and clay balls, loose
55	60	Gray, fine to medium sand, with large gravel, trace coarse sand and clay balls, loose
60	65	Gray, fine to medium sand, with large gravel, trace fine to coarse sand and clay balls, loose
65	70	Gray, fine to medium sand, with large gravel, trace coarse sand and clay balls, loose
70	75	Large gravel, with fine sand, trace of very fine sand
75	80	Limestone



- AEM = electrical resistivity/hydraulic conductivity



# HYDROGEOLOGIC ASSESSMENT



Prepared By:  
**LRE Water**  
 Innovative Water Resource Solutions  
 Minneapolis - Saint Paul, Minnesota

**HYDROGEOLOGIC ASSESSMENT OF THE LOWER PLATTE NORTH NATURAL RESOURCES DISTRICT WAHOO, NEBRASKA**

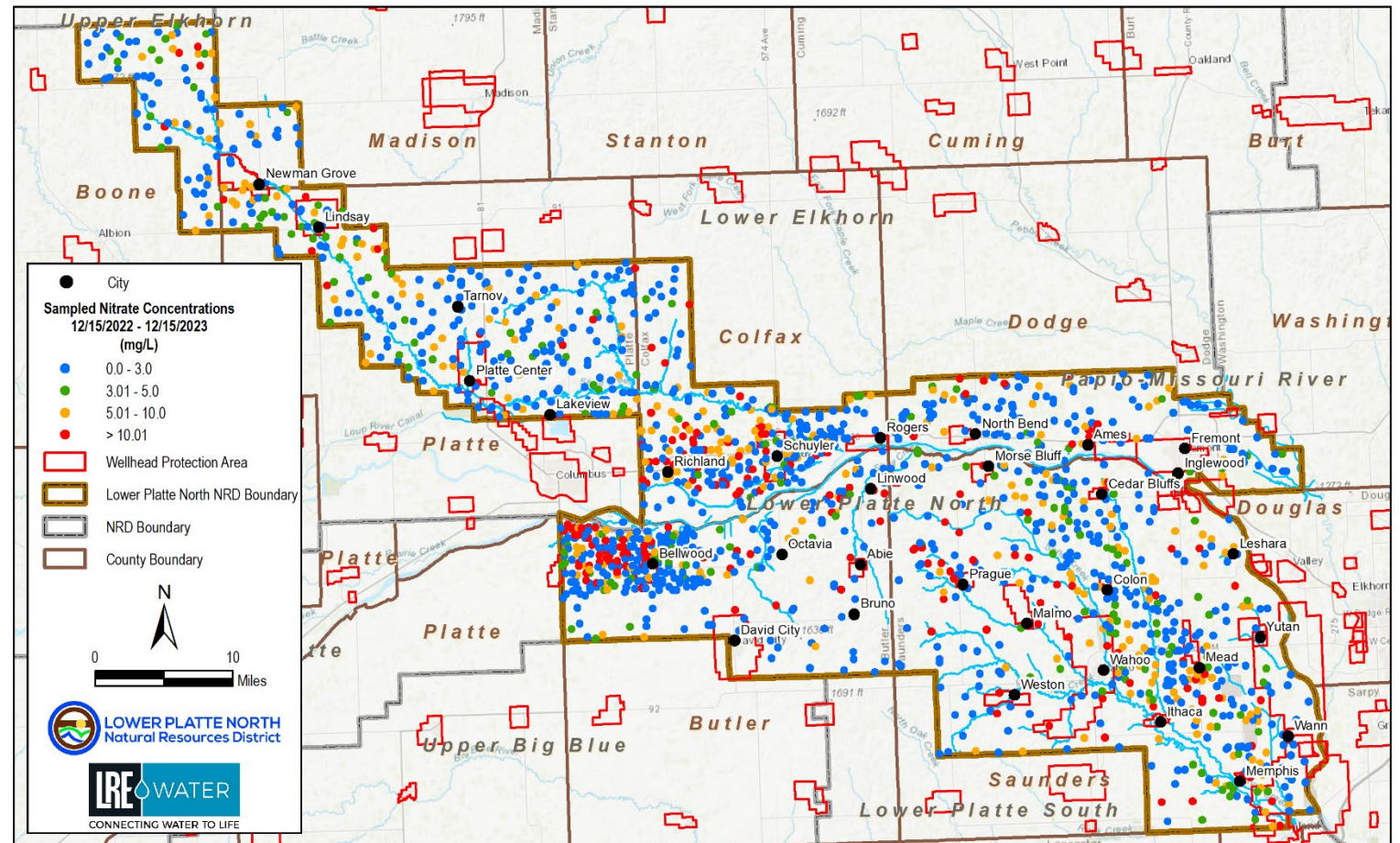
**HYDROGEOLOGIC CROSS SECTION P-P' WITH AEM PROFILE GEOLOGIC LOGS (TOP) AND AEM RESISTIVITY DATA (BOTTOM)**

FILE: 5043PMR0101C - LPN Xsect P-P.MXD | DATE: 3/10/2022 | FIGURE: 17



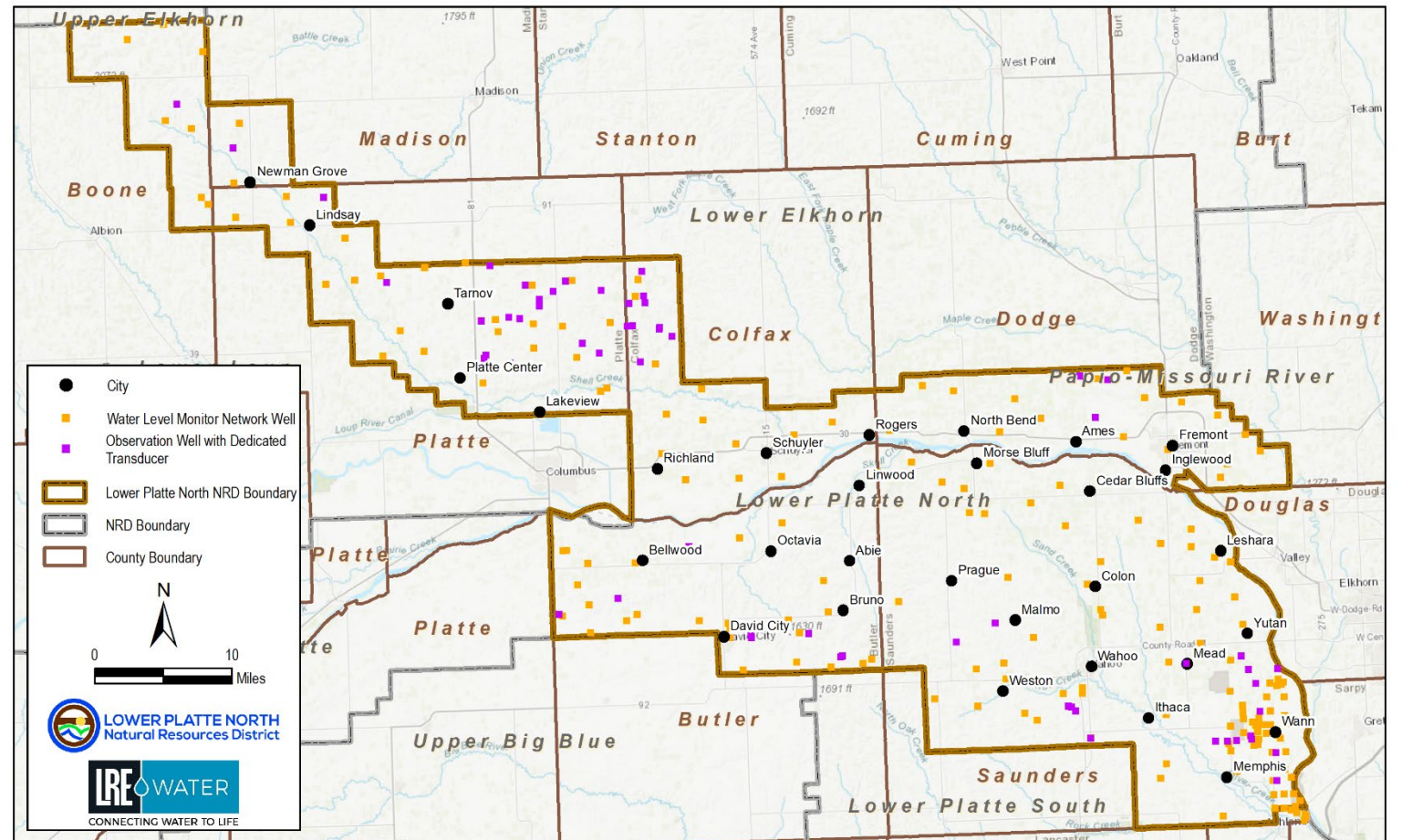
# QUALITY - NITRATE CONCENTRATIONS

- Maximum Contaminant Level (MCL) = 10 ppm
- Annual sampling
- Wellhead protection areas



# QUANTITY - MONITORING NETWORK

- Spring/fall water levels (215)
- Dedicated observation wells (62)
- 53 Statewide Network wells sampled annually for nitrates and pesticides, every 4 years, since 2012





# OPEN DISCUSSION

- 1) Water quality issues and concerns
- 2) Water supply issues and concerns
- 3) Water management
- 4) Feedback and suggestions



# SCHEDULE

- Kickoff – February 10, 2024
- Technical Group Mtg – April 25, 2024
- Stakeholder Meetings
  - June 4 – Platte Center
  - June 6 – Wahoo
- Open House Meetings (2) – August 2024
- Stakeholder Meetings Round 2 – December 2024
- Draft GWMP – December 2024



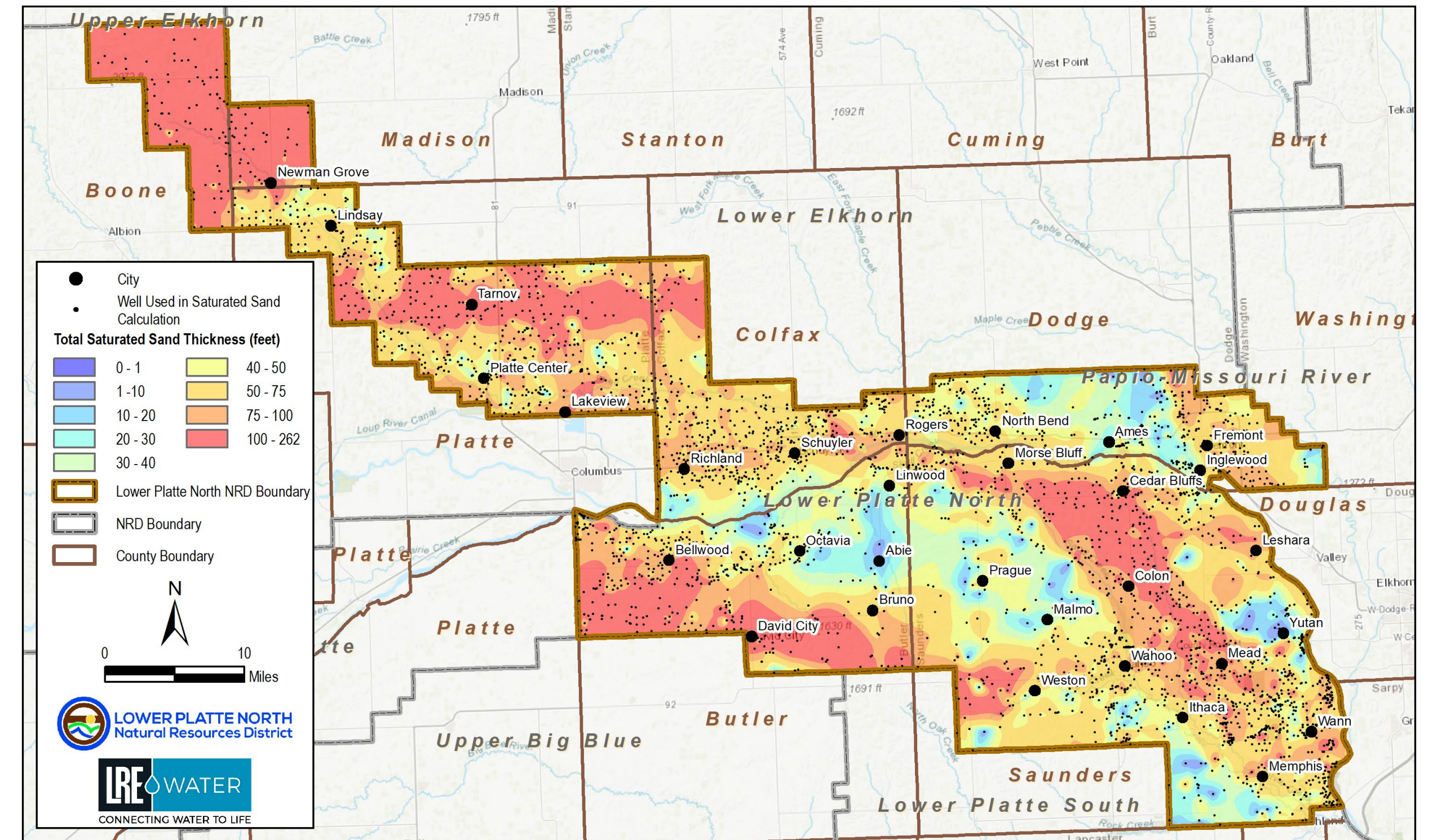
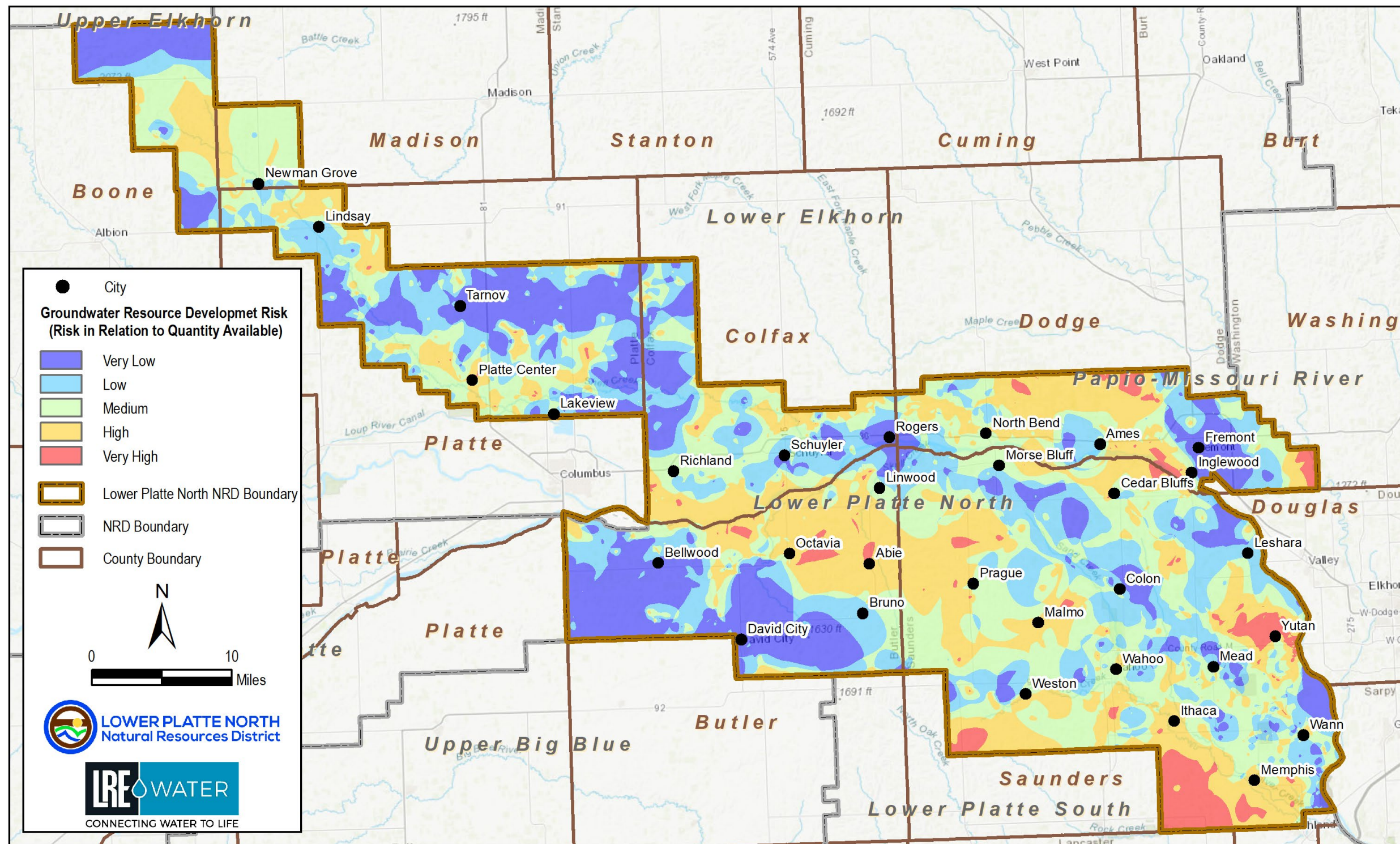
CONNECTING WATER TO LIFE



**HYDROGEOLOGIC DATA, MONITORING, AND NITRATE CONCENTRATIONS**

**GROUNDWATER RESOURCE DEVELOPMENT RISK**

**SATURATED SAND & GRAVEL THICKNESS**

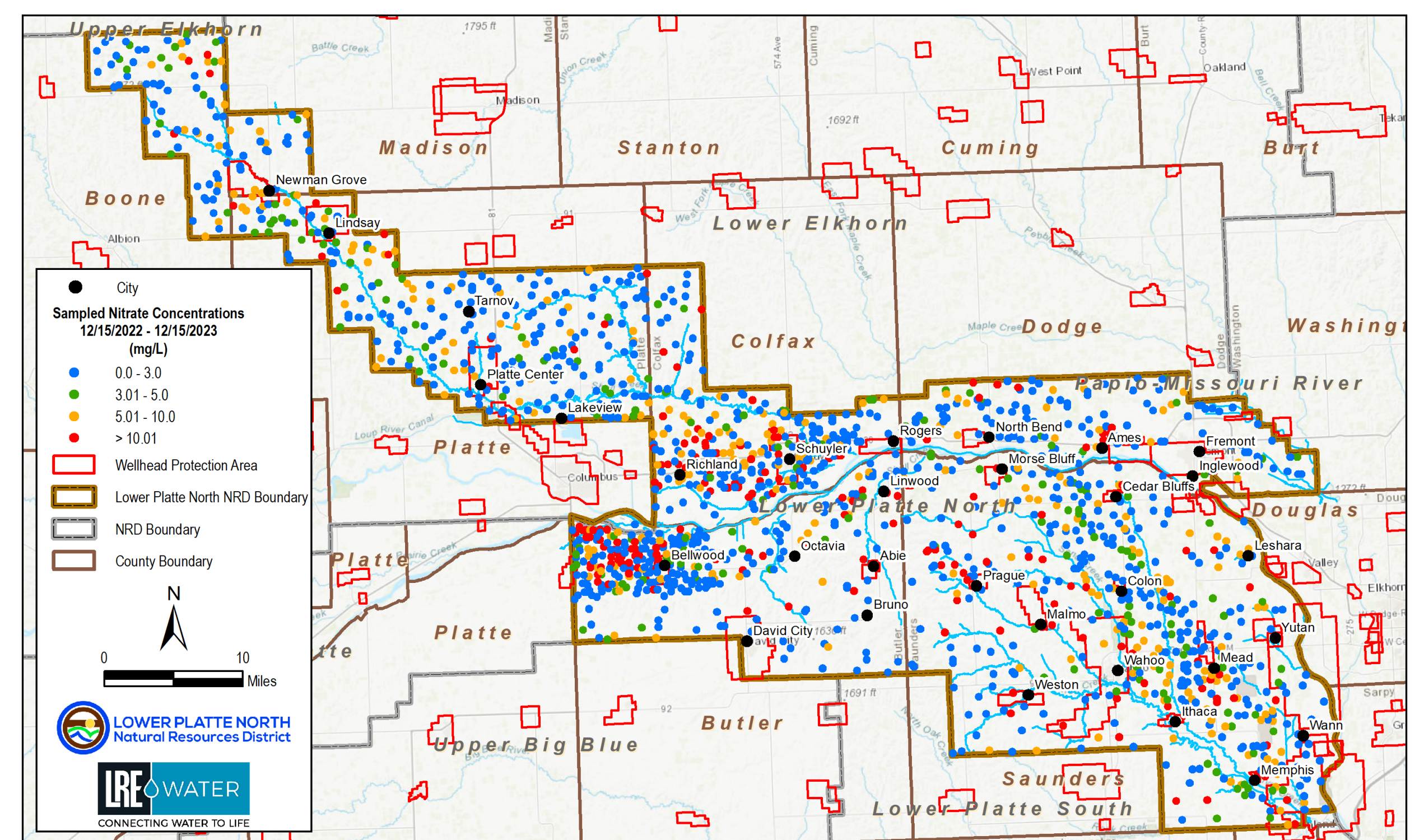
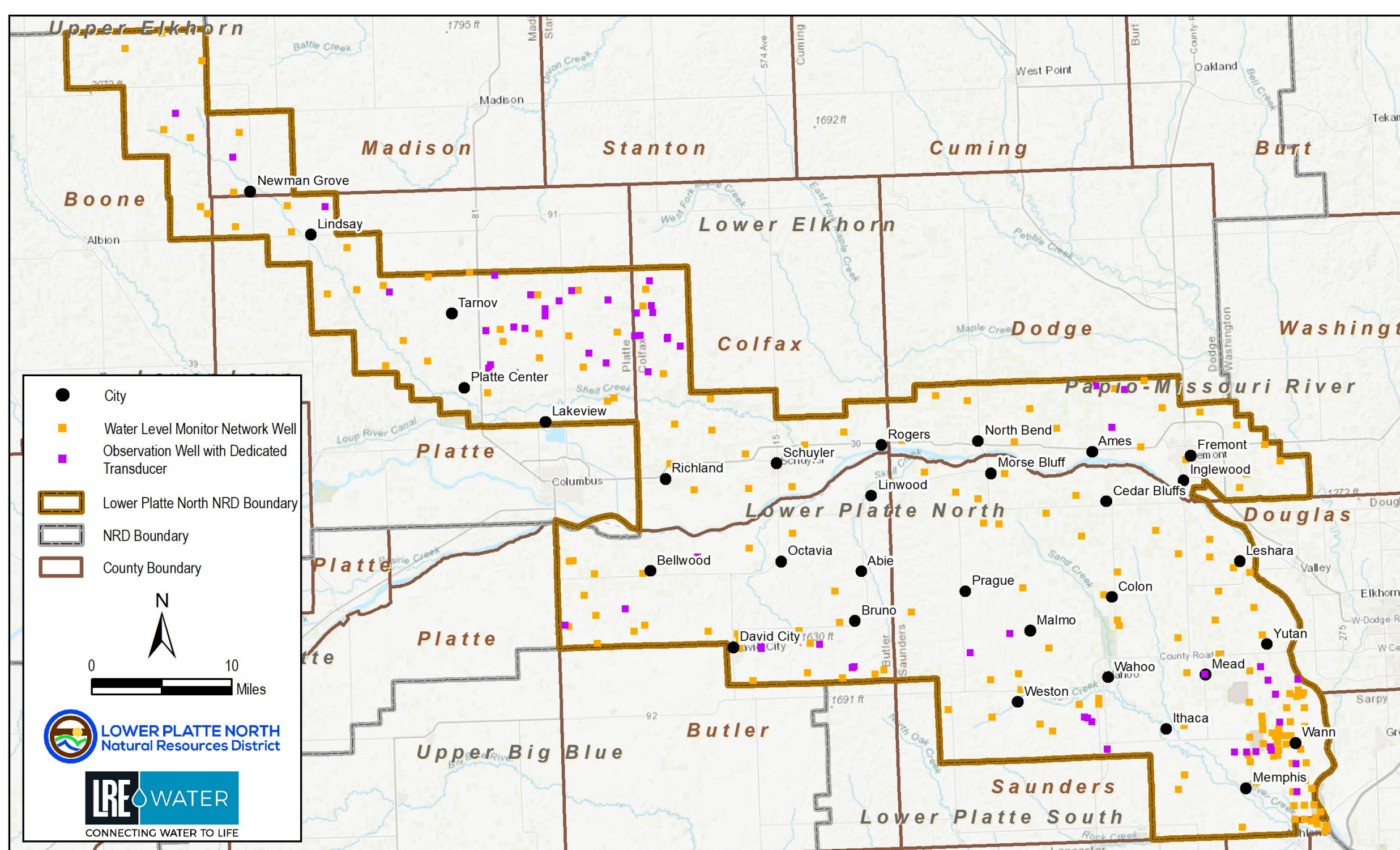


- Illustrates risk of irrigation development based upon geologic data.
- Built using Transmissivity (T) and Total Saturated Sand Thickness and incorporated into ESRI ModelBuilder, each weighted at 50%.
- The layer was created in 2023 as part of the Hydrogeologic Framework.

- Total saturated sand/gravel thickness water determined by reviewing all available well logs that encountered bedrock.
- All unconsolidated sand layers below the install or interpolated water level were considered saturated.
- Saturated clay is not included in this dataset.

**EXISTING OBSERVATION NETWORK**

**NITRATES & WELLHEAD PROTECTION AREAS**

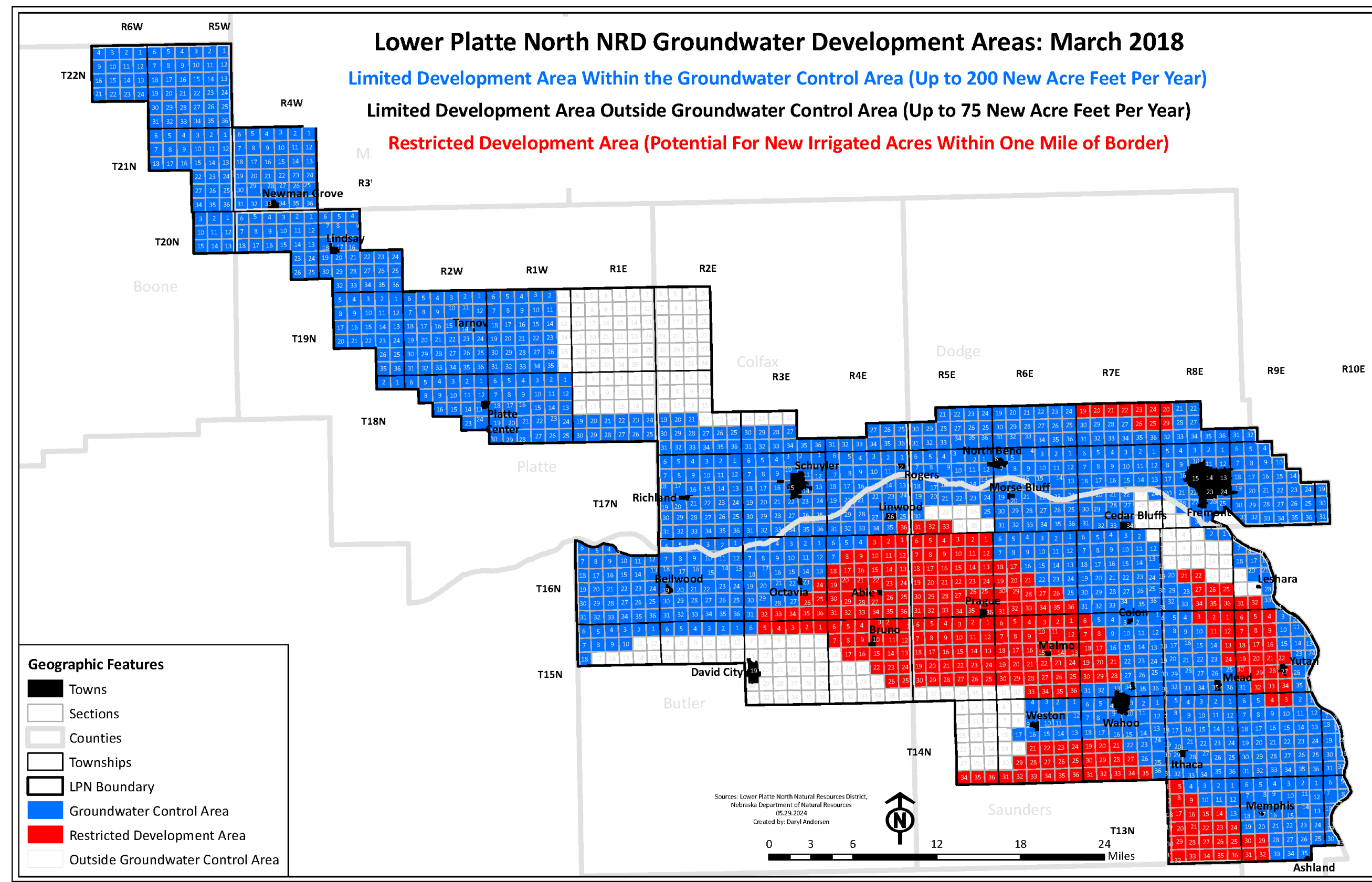


- LPNNRD has 215 irrigation wells that are measured in the spring and fall.
- Another 62 wells have dedicated logging equipment with telemetry, allowing staff to see water levels in real time.
- Water level data is critical to supporting water management decisions.

- The primary water quality concern district-wide is nitrate contamination.
- The Maximum Contaminant Level (MCL) is 10 mg/L or parts per million.
- Annually collected nitrate data is used to determine if additional actions are necessary to reduce nitrate information through 'phase areas'.

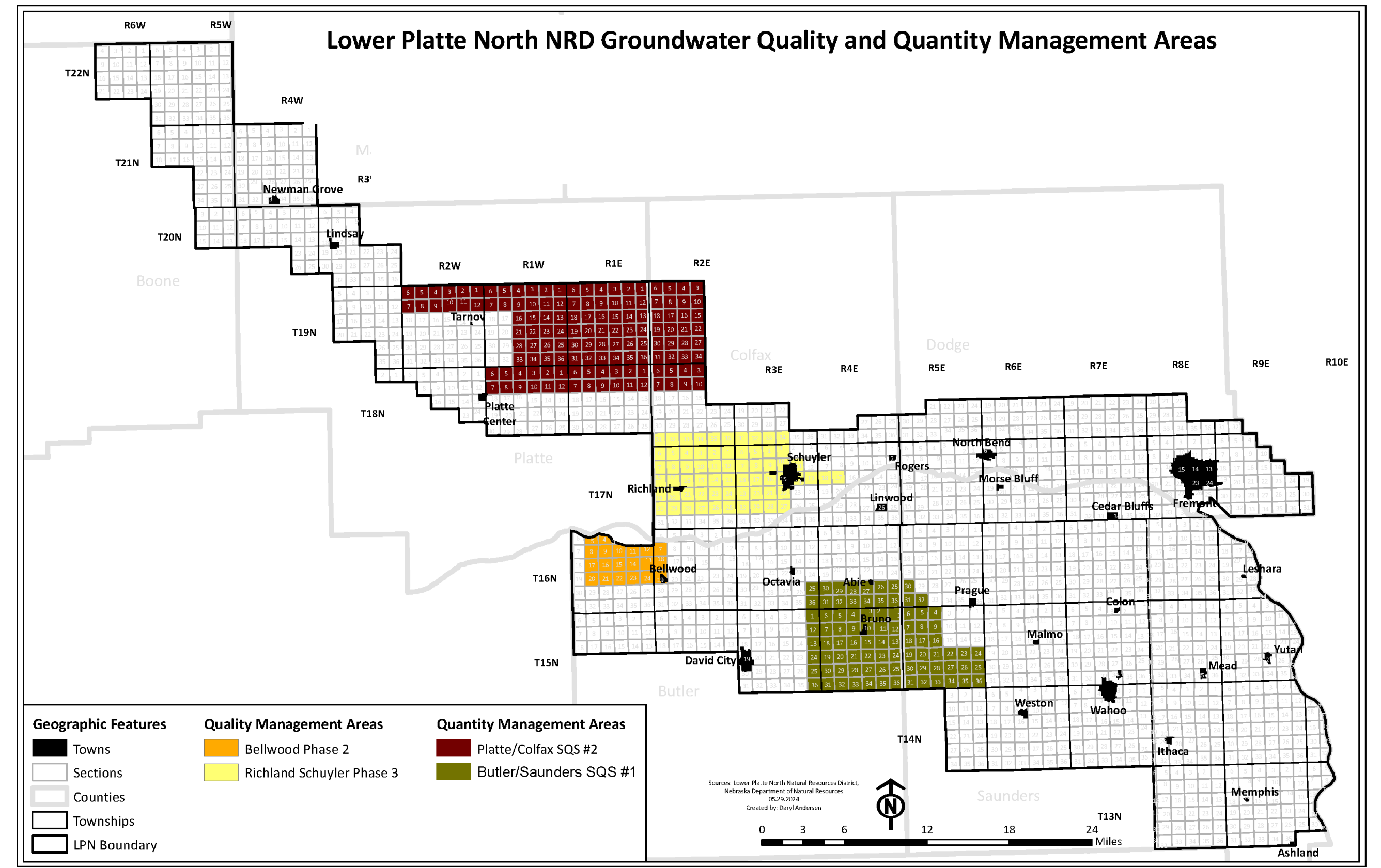
**MANAGEMENT POLICIES & PRACTICES**

**INTEGRATED MANAGEMENT - DEVELOPMENT AREAS**



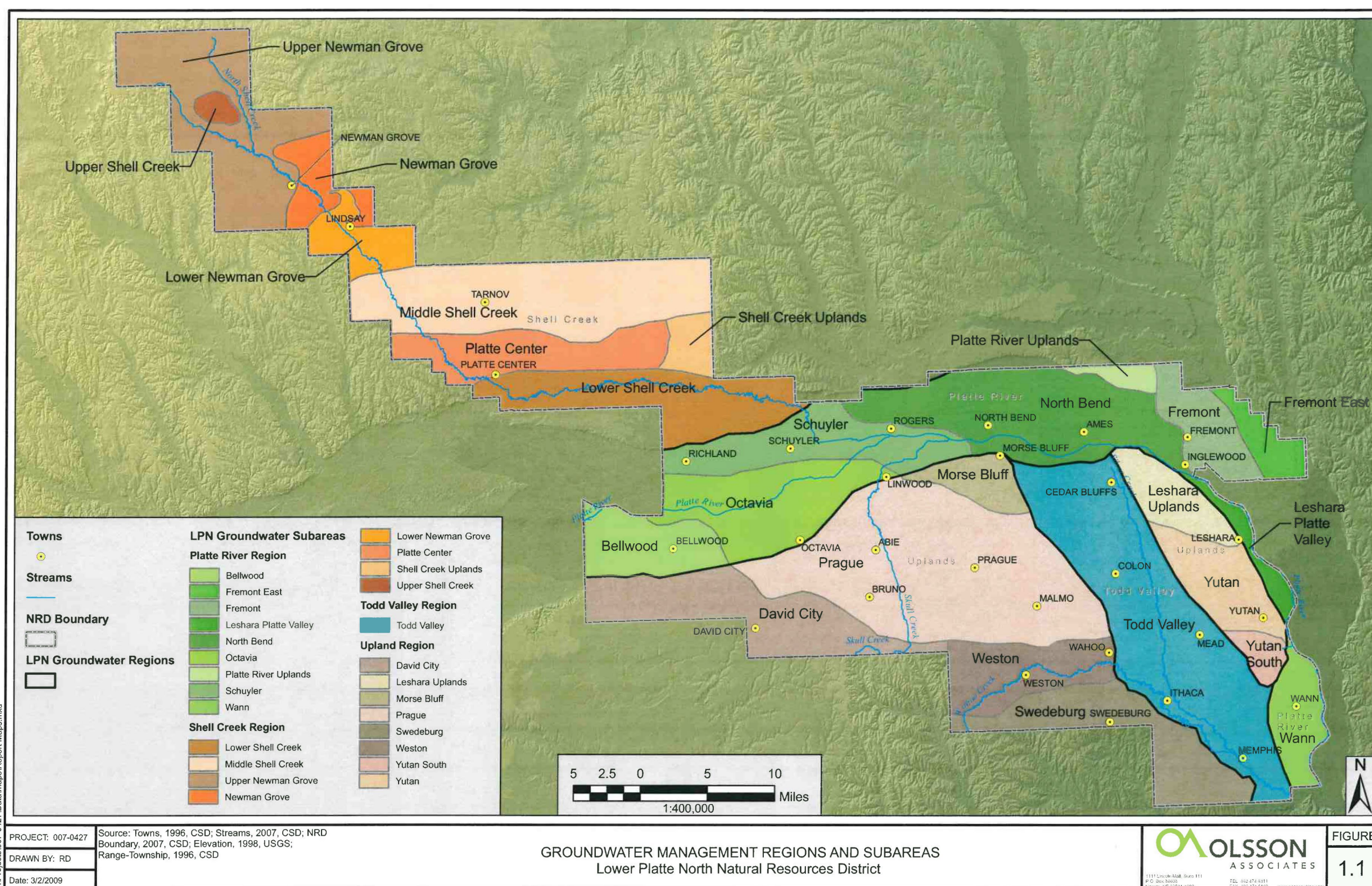
- Based upon the joint Voluntary Integrated Management Plan.
- Places limits on new water consumption for groundwater and surface water.
- New depletions are managed through the Lower Platte River Basin Water Management Plan.

**GROUNDWATER MANAGEMENT AREAS**



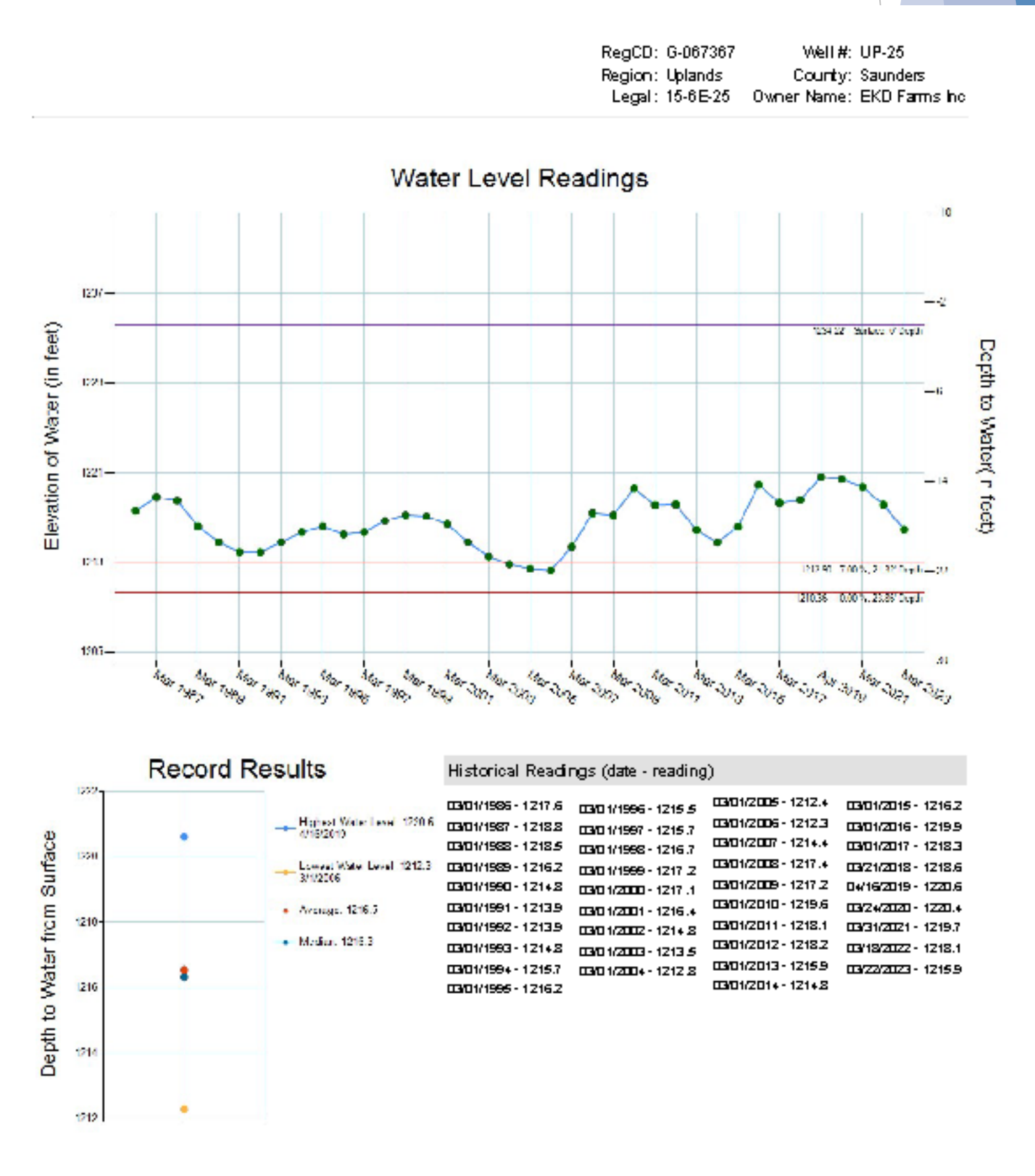
- Based upon LPNNRD's Rules & Regulations (Updated: June 15, 2018).
- Water quality area (Phases) triggered by nitrate contamination.
- Water quantity (Special Quantity Subareas) triggered by groundwater issues.

**GROUNDWATER REGIONS & SUBAREAS**



- Historically, LPNNRD has managed water through four regions:
  - Platte River
  - Shell Creek
  - Todd Valley
  - Upland Region
- Subareas were established in 2009, have not been adopted, but are being considered as part of the 2024 GWMP Update.
- Subareas would be used primarily for evaluating and managing concerns with groundwater quantity but could also be used for quality studies.

**WATER LEVEL HYDROGRAPHS**



- Each spring, LPNNRD staff record water levels in 215 irrigation wells.
- This data is used to evaluate trends in water levels and supports decisions on how water is managed in the district.

**SUPPORTING DATA SOURCES**

**GEOLOGIC DATA COLLECTION**

**AIRBORNE ELECTROMAGNETIC (AEM) SURVEY**



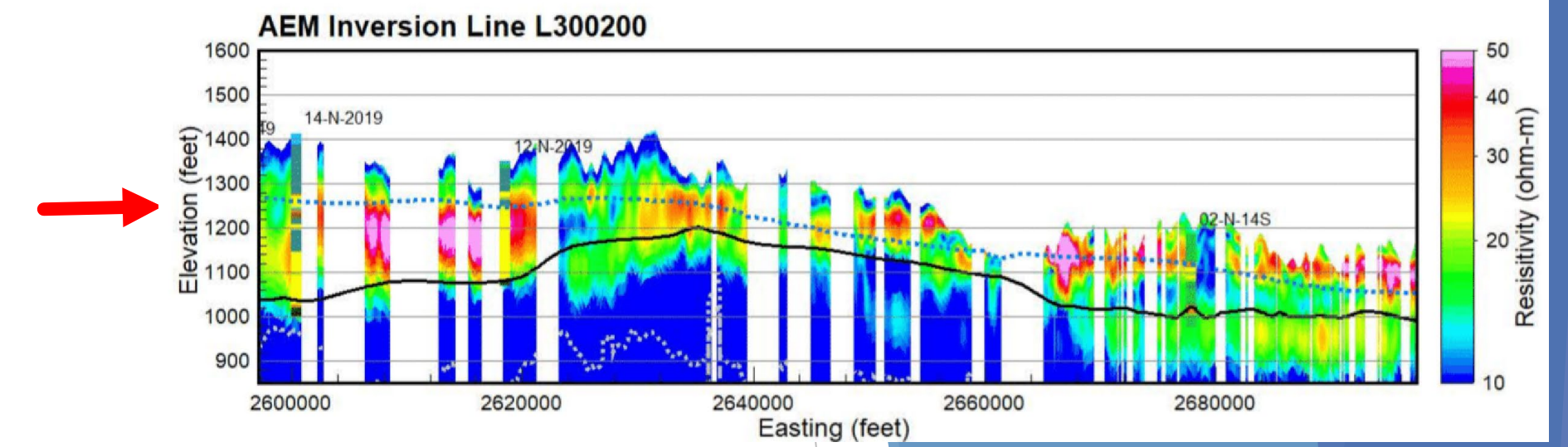
**DRILLING**



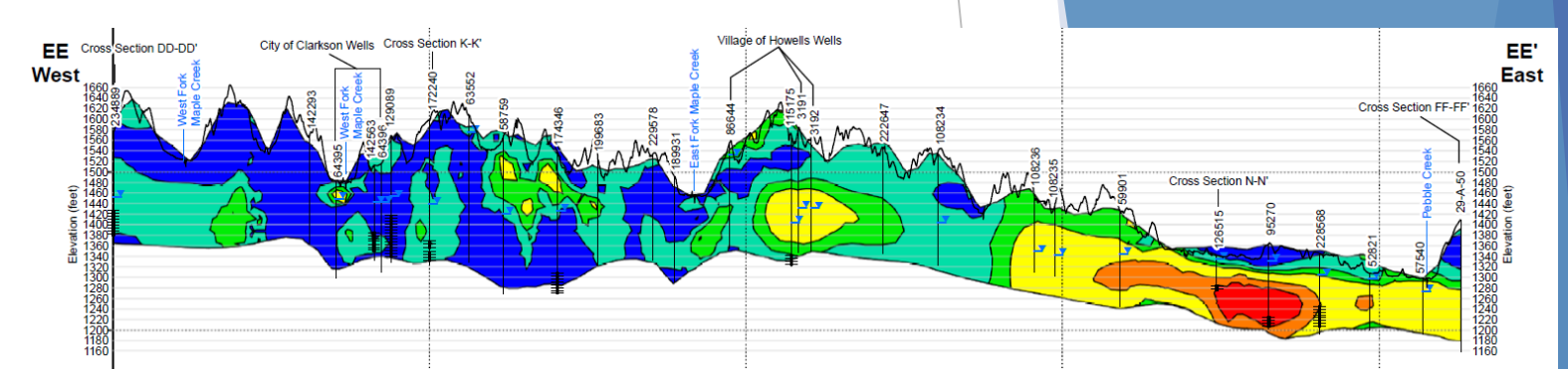
**LOGGING**



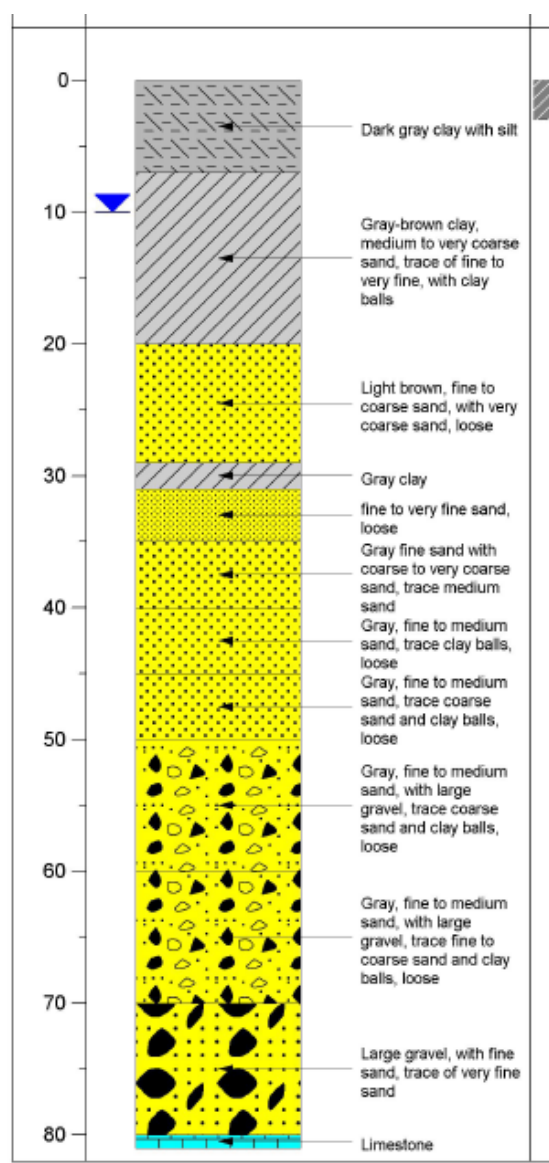
**FLIGHTS**



**RAW DATA**

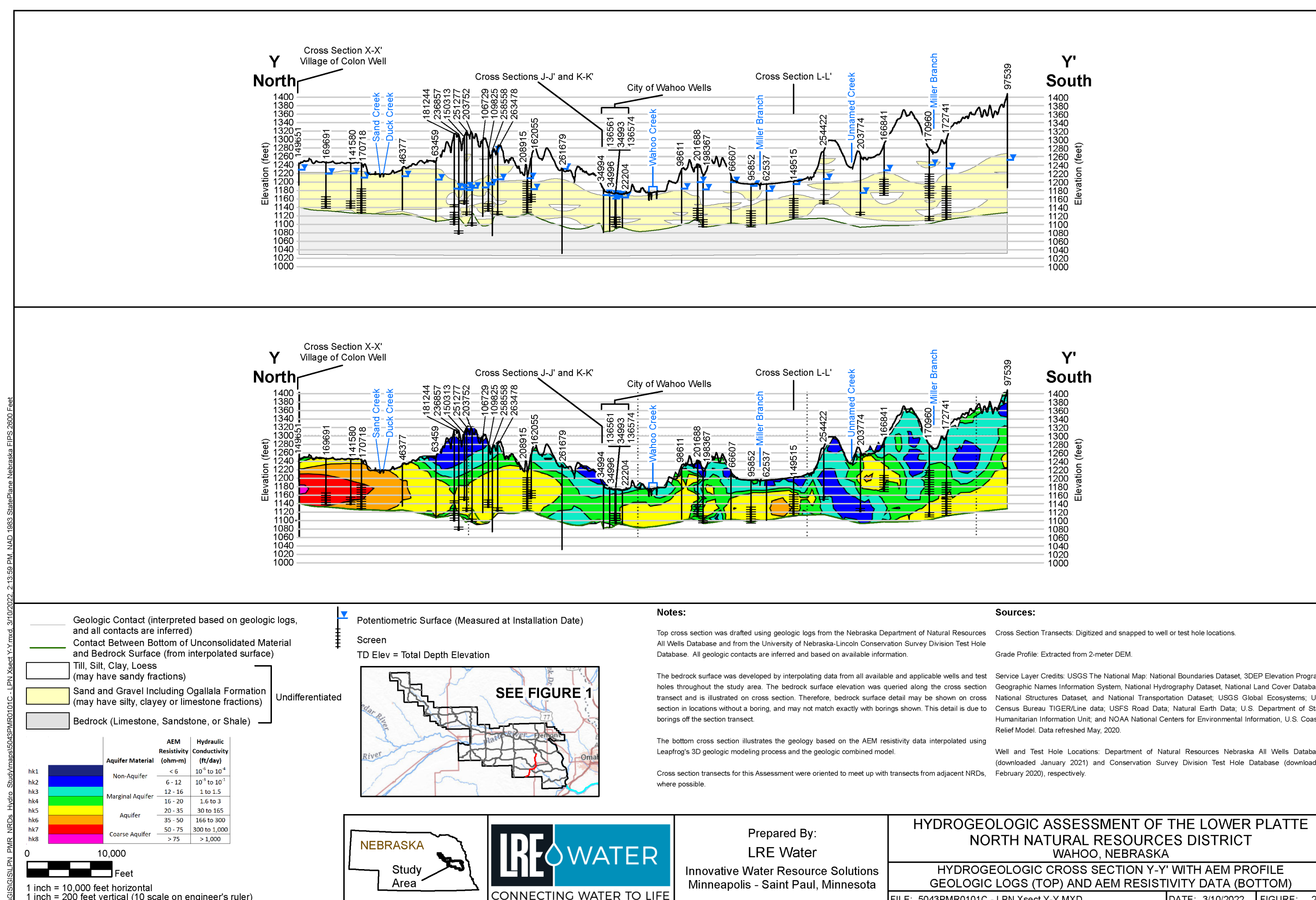
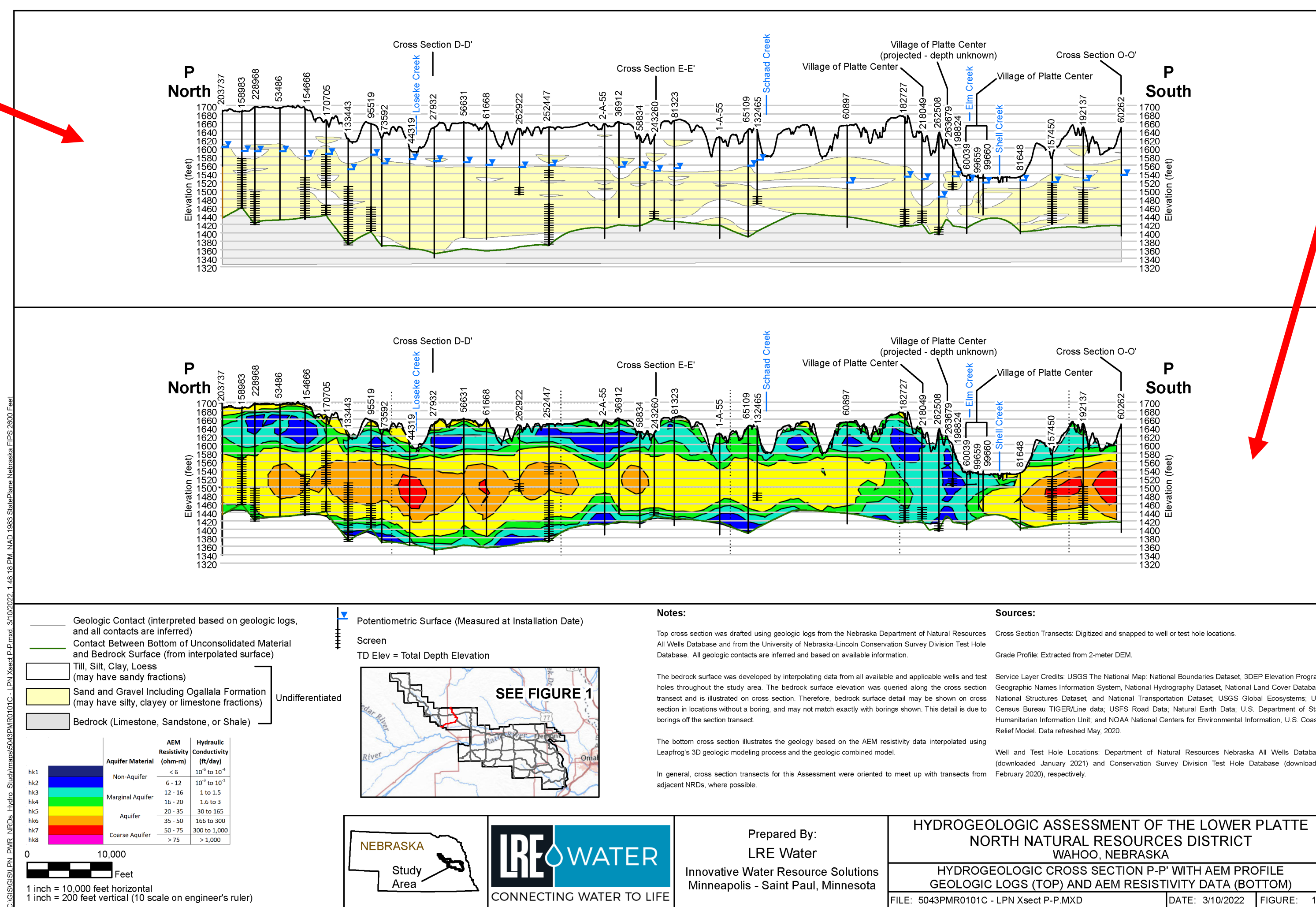


**INTERPOLATION / CONCEPTUAL MODEL**



**BOREHOLE DESCRIPTION**

**LPNRD HYDROGEOLOGIC CROSS SECTIONS**



## DOMESTIC WELL WATER TREATMENT SYSTEM COST-SHARE PROGRAM

Purpose: *This program is intended to assist with funding the installation of a water treatment system on eligible domestic wells.*

Eligible Participants: Active domestic wells within the LPNNRD. Well must be sampled through the LPNNRD's domestic well sampling program, which utilizes the Nebraska State Laboratory. Cost-share program is for a one-time purchase of a water treatment system through this program.

Eligible Components:

- Equipment and installation costs for a water treatment system
- Registration cost of the domestic well up to \$70.

In-Eligible Components:

- Maintenance costs and follow up sampling
- Registration of illegal wells or equipment (i.e. sand point wells)

Requirements:

1. If the domestic well is not currently registered, the LPNNRD will assist in the paperwork along with the cost of registering the well.
2. Well owners must first apply for and utilize any other funding if available and eligible.
3. If ineligible for other funding, or funding is exhausted, well owners may apply for LPNNRD cost share program.
4. **The sample results must be 8 ppm or greater for nitrate or test positive for other contaminants over the drinking water standards.**
5. The application must be approved by the LPNNRD prior to the purchase and installation of the equipment.
6. Equipment must reduce nitrate to **less than 6** parts per million (mg/l) and be approved by the LPNNRD. For other contaminants the equipment must reduce the level to meet drinking water standards and be approved by the LPNNRD. Cost estimate from a licensed plumber must be submitted for the installation of an RO system certified by the American National Standards Institute.
7. Following installation, well owners are required to conduct one follow-up sample to verify the equipment is functioning correctly and send results to LPNNRD.
8. After receiving water treatment system cost share, the domestic well is no longer eligible for the LPNNRD's water sampling program.

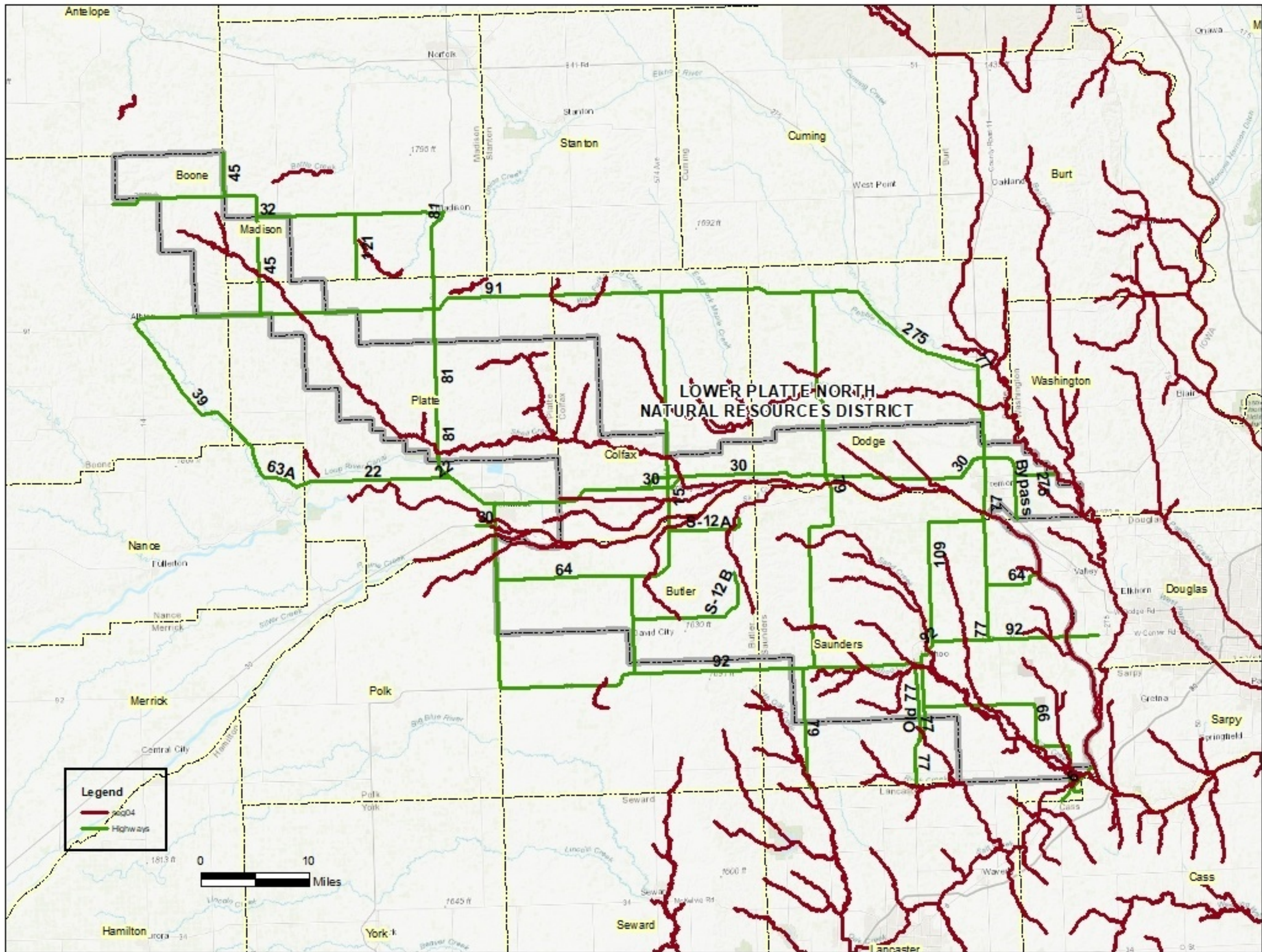
Cost-Share: 75% of the total cost, not to exceed \$800. One time use program.
---

### Reasons to register your well:

- What you get in return is over \$300 in water testing for free! Testing your water, especially if you have a family drinking, bathing, and cooking with it, will give you peace of mind that the water is safe.
- Registering your well allows NRD staff to review locations when high capacity well permits are submitted. This might give you protection from potential infringements on your quality and quantity of water from new wells drilled in the future.
- Registering your well is easy and it opens the door to this program and others that may be offered by the LPNNRD in the future. The potential to save thousands of dollars and improve the quality of your drinking water makes this program WELL worth looking into,

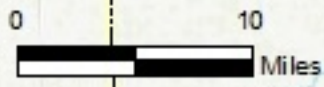
### Registration Cost for a well

**Important!** For single water wells which were completed before 2002 and are being registered by the well owner please review the bottom of the last page of the registration form for minimal information required. For single wells pumping 50 gallons per minute (gpm) or less the current registration fee is **\$70**. For single wells pumping more than 50 gpm the current fee is **\$110** and you may need a permit from your local Natural Resources District (District) before the well may be registered. Check with the District before submitting a registration form for wells pumping more than 50 gpm. For more detailed fee information and instructions on how to fill out a registration form please click the link below to download the companion instruction document. It is imperative that the geographic coordinates for the well location and the legal description required in section 3 of the form are accurate and consistent with each other.



LOWER PLATTE NORTH  
NATURAL RESOURCES DISTRICT

**Legend**  
— 2004  
— Highways



# CHEMIGATION - June 2024

## TOTAL CHEMIGATION APPLICATIONS IN 2023 (701)

### NEW CHEMIGATION APPLICATIONS - 36

(5) Boone (5) Butler (7) Colfax (2) Dodge (1) Madison (1) Platte (15) Saunders

### RENEWALS: 653

BOONE COUNTY - 45  
BUTLER COUNTY - 80  
COLFAX COUNTY - 80  
DODGE COUNTY - 120  
MADISON COUNTY - 6  
PLATTE COUNTY - 116  
SAUNDERS COUNTY - 206

### RENEWAL INSPECTIONS: 39

(0) Boone (12) Butler (8) Colfax (4) Dodge (3) Madison (1) Platte (11) Saunders

### NEW INSPECTIONS: 27

(5) Boone (5) Butler (7) Colfax (2) Dodge (1) Madison (0) Platte (7) Saunders

### NEW CANCELLATIONS: 1

(0) Boone (0) Butler (1) Colfax (0) Dodge (0) Madison (0) Platte (0) Saunders

### EMERGENCY: 0

ENWRA Fiscal Year (FY) 2024 (24) to 2025 Budget

ENWRA FY24 :

Total Bank for start of FY 24:	Budgeted	\$ 343,605.21
Planned Routine (PR) expenses:		
PR Pilot site wells/equip maintenance	\$ 15,000.00	
PR Pilot site water sampling (Includes select extra param.)	\$ 17,000.00	
PR Weather stations (new pricing)	\$ 9,000.00	
PR Test Holes or other \$9,150 (NNRD, LENRD, LPSNRD)	\$ 27,450.00	
PR Conferences, booths, advertisements, handouts etc.	\$ 2,500.00	
PR Coordinator Salary (UNL Coop Agree. Y3 of 5)	\$ 65,000.00	
PR Coord. Office Reimbursement to LPSNRD	\$ 5,000.00	
PR Nebraska GeoCloud (\$15,000 from ENWRA account, \$8,000 from 4 non-ENWRA NRDS)	\$ 23,000.00	
<b>Subtotal</b>	<b>\$ 163,950.00</b>	

UPDATED est. as of June 12, 2024

ENWRA FY25 DRAFT #1 (May 7th LPSNRD) :

Total Bank for start of FY 25: (\$293,512.17 if \$74k hits)	Budgeted	\$ 300,000.00
Planned Routine (PR) expenses:		
PR Pilot site wells/equip maintenance	\$ 15,000.00	
PR Pilot site water sampling (incl. ASH 2x and select metals)	\$ 17,000.00	
PR Weather stations (3 current plus new station?)	\$ 39,900.00	
PR \$9,150 use (LENRD, P-MRRND, LCNRD)	\$ 27,450.00	
PR Conferences, booths, advertisements, handouts etc.	\$ 2,500.00	
PR Coordinator Salary (UNL Coop Agree. Y4 of 5)	\$ 65,000.00	
PR Coord. Office Reimbursement to LPSNRD	\$ 5,000.00	
PR Nebraska GeoCloud (\$15,000 from ENWRA account, \$8,000 from 4 non-ENWRA NRDS)	\$ 23,000.00	
<b>Subtotal</b>	<b>\$ 194,850.00</b>	

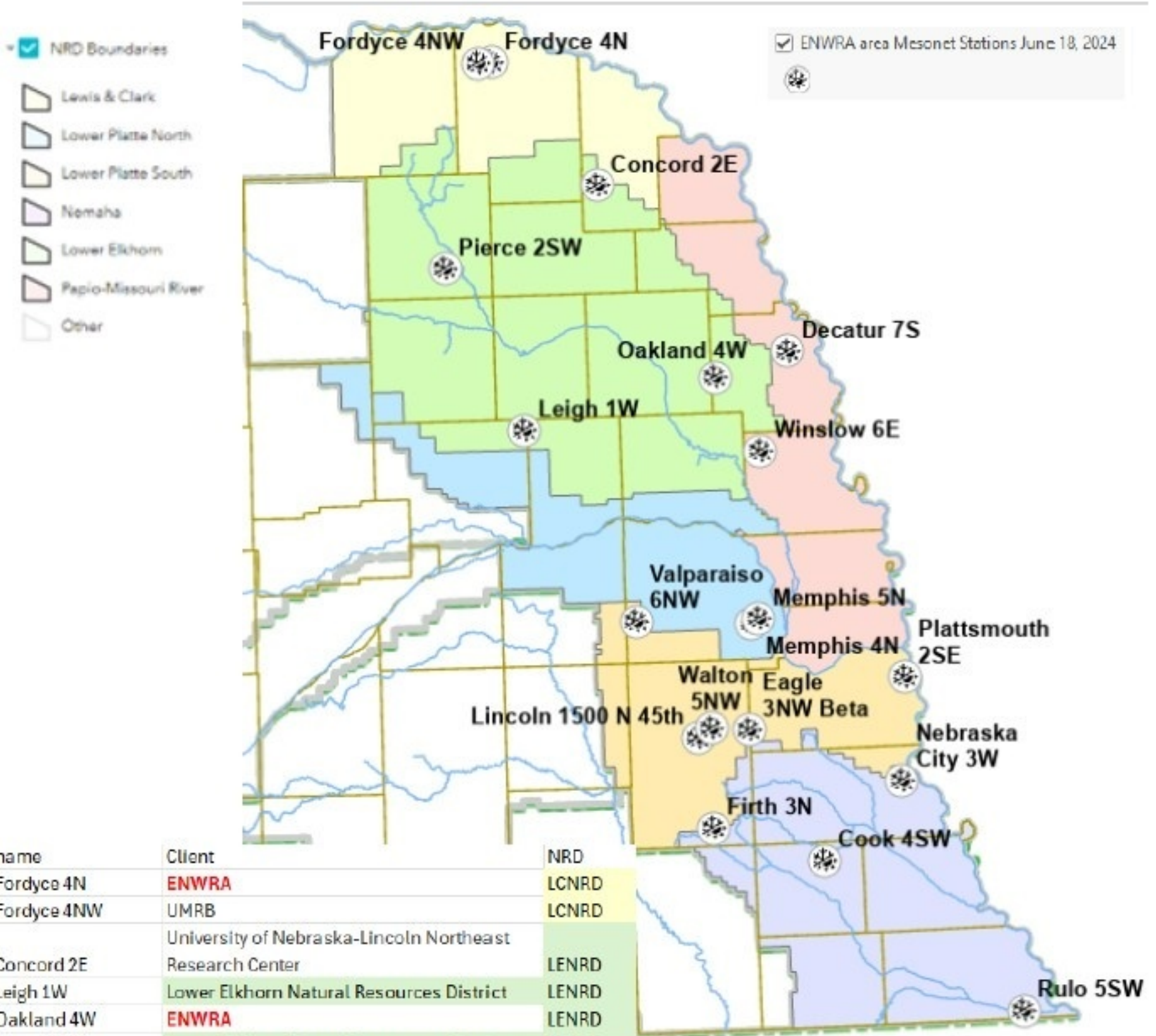
Committed (C) and/or Suggested (S) expenses for consideration:		
S Data Management (new Website set-up services, would also increase annual maintenance to \$1,500)	\$ 12,935.00	
C WSF Grant (Recharge H M L Project with USGS & CSD), FY24 spent is \$55,796.59, \$22,533.35 (60%) from DNR	\$ 38,000.00	
S Consultant proposal OR 3D project with or without grant funds (includes possible new software \$2,000 and \$12,000 out-of-pocket for \$18,000 est. reimbursement on \$30,000 grant)	\$ 14,000.00	
<b>Subtotal</b>	<b>\$ 64,935.00</b>	
<b>TOTAL</b>	<b>\$ 228,885.00</b>	
Plus Incoming FY24 Dues: \$149,150 + NGC \$8,000	\$ 157,150.00	
Plus interest on banked funds:	\$ 1,000.00	
<b>Estimated Bank going into FY25:</b>	<b>\$ 272,870.21</b>	

Committed (C) and/or Suggested (S) expenses for consideration:		
S Data Management (last of the charges related to the new Website change over and annual maintenance of \$1,500)	\$ 5,500.00	
C WSF Grant (recharge H M L grant with USGS & CSD), FY25 est. \$62,500 spending, \$37,500 est. DNR claims 4 & 5)	\$ 25,000.00	
S Consultant proposal OR 3D project with or without grant funds (includes possible new software \$3,000 and \$12,000 out-of-pocket for \$18,000 est. reimbursement on \$30,000 grant)	\$ 15,000.00	
<b>Subtotal</b>	<b>\$ 45,500.00</b>	
<b>TOTAL</b>	<b>\$ 240,350.00</b>	
Plus Incoming FY25 Dues: \$149,150 + NGC \$8,000	\$ 157,150.00	
Plus interest on banked funds:	\$ 1,000.00	
<b>Estimated Bank going into FY26:</b>	<b>\$ 217,800.00</b>	

Notes: Numbers in green are actual charges to-date. About \$30,000 in UNL invoices (4/1/23-6/30/23 WSF and Coord. charges) didn't arrive by fiscal cutoff last year and were not incurred until January 2024.

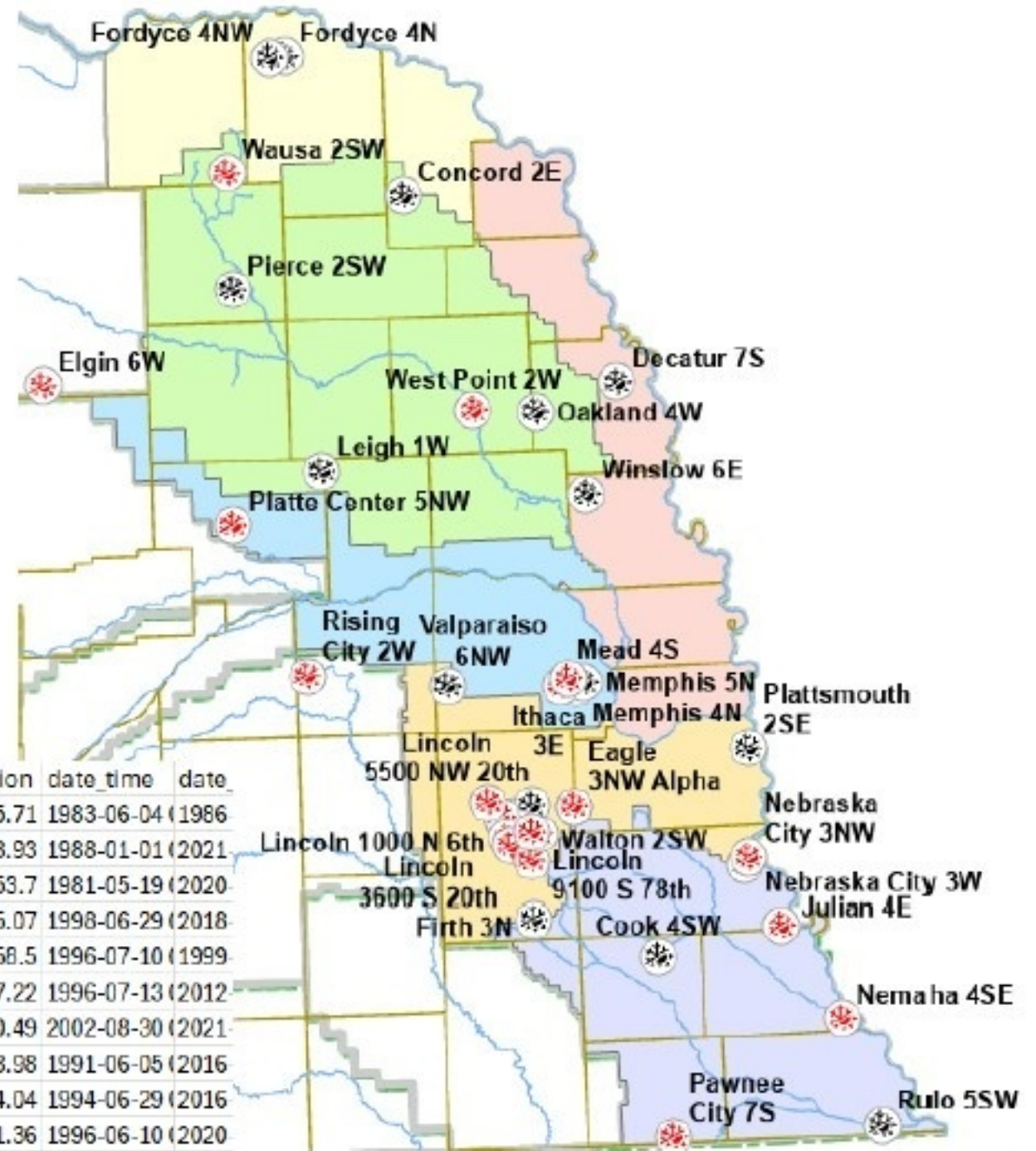
Note: LRP Draft#1 uses \$300,000 for BANK to start FY25 to round uncertainties & \$217,800 was listed as FY25 end

# Current Active Mesonet Weather Stations (ENWRA sponsors Oakland 4W, Firth 3N and Fordyce 4N)



name	Client	NRD
Fordyce 4N	ENWRA	LCNRD
Fordyce 4NW	UMRB	LCNRD
Concord 2E	University of Nebraska-Lincoln Northeast Research Center	LENRD
Leigh 1W	Lower Elkhorn Natural Resources District	LENRD
Oakland 4W	ENWRA	LENRD
Pierce 2SW	Lower Elkhorn Natural Resources District	LENRD
Memphis 4N	University of Nebraska-Lincoln Agriculture Re	LPNNRD
Memphis 5N	University of Nebraska-Lincoln Agronomy	LPNNRD
Eagle 3NW Beta	Nebraska State Climate Office (slotted for ren	LPSNRD
Firth 3N	ENWRA	LPSNRD
Lincoln 1500 N 45th	Nebraska State Climate Office (slotted for ren	LPSNRD
Plattsmouth 2SE	Nebraska Forest Service	LPSNRD
Valparaiso 6NW	Lower Platte South Natural Resources District	LPSNRD
Walton 5NW	University of Nebraska-Lincoln Agronomy	LPSNRD
Cook 4SW	Nemaha Natural Resources District	NNRD
Nebraska City 3W	Kimmel Orchard	NNRD
Rulo 5SW	UNL Extension (Laura Thompson)	NNRD
Decatur 7S	Papio-Missouri Natural Resources District	PMNRD
Winslow 6E	Papio-Missouri Natural Resources District	PMNRD

**INACTIVE STATION MAP (red icons and text)**



name	serial_r	name	abbrev	name	latitude	longitude	elevation	date_time	date
<b>Eagle 3NW Alpha</b>	16	Lancaster	NE	CST6C	40.85	-96.4667	365.71	1983-06-04	(1986
<b>Elgin 6W</b>	37	Antelope	NE	CST6C	41.94358	-98.1918	628.93	1988-01-01	(2021
<b>Ithaca 3E</b>	1	Saunders	NE	CST6C	41.15286	-96.4914	353.7	1981-05-19	(2020
<b>Julian 4E</b>	68	Otoe	NE	CST6C	40.53153	-95.7994	325.07	1998-06-29	(2018
<b>Lincoln 1000 N 6th</b>	61	Lancaster	NE	CST6C	40.8167	-96.7	358.5	1996-07-10	(1999
<b>Lincoln 1400 S C otner</b>	63	Lancaster	NE	CST6C	40.79908	-96.651	377.22	1996-07-13	(2012
<b>Lincoln 1700 N 10th</b>	72	Lancaster	NE	CST6C	40.83064	-96.7077	350.49	2002-08-30	(2021
<b>Lincoln 3600 S 20th</b>	46	Lancaster	NE	CST6C	40.77767	-96.6917	378.98	1991-06-05	(2016
<b>Lincoln 5500 NW 20th</b>	52	Lancaster	NE	CST6C	40.868	-96.7473	374.04	1994-06-29	(2016
<b>Lincoln 5700 S 27th</b>	58	Lancaster	NE	CST6C	40.75642	-96.6815	381.36	1996-06-10	(2020
<b>Lincoln 9100 S 78th</b>	111	Lancaster	NE	CST6C	40.71918	-96.6142	424.82	2018-06-07	(2021
<b>Mead 4S</b>	31	Saunders	NE	CST6C	41.17011	-96.4671	356.74	1986-07-29	(2015
<b>Nebraska City 3NW</b>	70	Otoe	NE	CST6C	40.70306	-95.8971	328.9	2001-12-21	(2022
<b>Nemaha 4SE</b>	66	Nemaha	NE	CST6C	40.29278	-95.6168	335.98	1998-06-17	(2018
<b>Pawnee City 7S</b>	65	Pawnee	NE	CST6C	40.0167	-96.1833	345.71	1998-01-01	(2001
<b>Platte Center 5NW</b>	30	Platte	NE	CST6C	41.5833	-97.5667	487.07	1986-06-04	(1996
<b>Rising City 2W</b>	29	Butler	NE	CST6C	41.2	-97.3333	492.49	1985-07-27	(1996
<b>Walton 2SW</b>	47	Lancaster	NE	CST6C	40.7833	-96.5833	384.86	1991-06-05	(1992
<b>Walton 2W</b>	49	Lancaster	NE	CST6C	40.78931	-96.6076	414.94	1992-06-30	(2015
<b>Wausa 2SW</b>	100	Knox	NE	CST6C	42.46572	-97.5545	530.65	2015-06-03	(2019
<b>West Point 2W</b>	7	Cuming	NE	CST6C	41.85194	-96.749	413.7	1982-05-15	(2020

ENWRA area Mesonet Stations June 18, 2024

## Cost Estimate Table from Ruben

revised	Item	Price Each	Quantity	Total	Tripod	Tower	optional
Data Equipment	Analog Campbell Sci VOLT 116 Input Module	\$ 2,448.00	1.0	\$ 2,448.00	y	y	
Data Equipment	Campbell CR1000x Datalogger	\$ 2,016.00	1.0	\$ 2,016.00	y	y	
Data Equipment	Campbell ENC16/18 Enclosure	\$ 649.92	1.0	\$ 649.92	y	y	
Data Equipment	Modem Mount	\$ 53.76	1.0	\$ 53.76	y	y	
Data Equipment	Sierra Wireless RX55-NA Modem,shipping	\$ 702.24	1.0	\$ 702.24	y	y	
Data Equipment	Interface SC932A	\$ 125.76	1.0	\$ 125.76	y	y	
Data Equipment	Relay 7321	\$ 118.03	3.0	\$ 354.09	y	y	
Data Equipment	Cellular Antenna, Antenna Mounts, Mag Mounting Stand	\$ 113.52	1.0	\$ 113.52	y	y	
Sensor	ML3 Soil Sensors, shipping	\$ 600.00	6.0	\$ 3,600.00	y	y	
Sensor	Bare Soil Thermometer	\$ 153.72	1.0	\$ 153.72	y	y	
Sensor	Campbell Scientific BLACKGLOBE-L	\$ 684.92	1.0	\$ 684.92	optional	optional	* used to get wet bulb globe temperature, not needed
Sensor	Campbell Scientific CS100 (Setra 278) barometer	\$ 763.20	1.0	\$ 763.20	y	y	
Sensor	Pluvio2, w/cables & base, Shipping	\$ 6,699.87	1.0	\$ 6,699.87	optional	y	* used to measure snow water equivalent
Sensor	Texas Instruments Tipping Bucket 525 rain gauge	\$ 520.00	1.0	\$ 520.00	y	optional	* measures rainfall only
Sensor	Pyranometer, Heated w/Base	\$ 375.00	1.0	\$ 375.00	y	y	
Sensor	R.M. 051508 Young Anemometer (2m)	\$ 1,550.36	1.0	\$ 1,550.36	y	y	
Sensor	R.M. 051508 Young Anemometer (10m)	\$ 1,579.76	1.0	\$ 1,579.76		y	
Sensor	SnowVue10 Sonic Snow Depth Sensor, Mounting Kit	\$ 852.48	1.0	\$ 852.48	optional	y	
Sensor	cameras	\$ 1,200.00	1.0	\$ 1,200.00	optional	y	
Sensor Accessory	DTR13 Radiation Shield	\$ 450.40	2.0	\$ 900.80	y	y	
Sensor	Heated HMP 155e, shipping	\$ 1,343.90	1.0	\$ 1,343.90	y	y	
Sensor	Heated HMP 155e, shipping	\$ 1,343.90	1.0	\$ 1,343.90		y	
Sensor Accessory	Ott Precipitation Gauge Alter Shield	\$ 1,474.98	1.0	\$ 1,474.98	optional	y	* needed if Pluvio2 is installed
Sensor Accessory	Snowboard (1/2" PVC board, 4' by 8')	\$ 120.00	0.5	\$ 60.00	optional	y	* needed if SnowVue 10 (sonic snow depth sensor is installed)
Station Construction	Site Construction (10m, Contractor Estimate)	\$ 7,000.00	1.0	\$ 7,000.00		y	
Station Equipment	Solar Mast w/cap	\$ 433.67	1.0	\$ 433.67		y	
Station Equipment	10m Universal Tower	\$ 1,176.00	1.0	\$ 1,176.00		y	
Station Equipment	10m Universal Tower Concrete Mounting Base	\$ 268.80	1.0	\$ 268.80		y	
Station Equipment	10m Universal Tower Grounding Kit, Anchor Bolt Template	\$ 151.68	1.0	\$ 151.68		y	
Station Equipment	91615A460 Anchors	\$ 63.82	3.0	\$ 191.46		y	
Station Equipment	2x4, 8ft, treated	\$ 10.00	2.0	\$ 20.00	y	y	
Station Equipment	4' crossarm	\$ 132.99	2.0	\$ 265.98	y	y	
Station Equipment	6' crossarm	\$ 157.17	2.0	\$ 314.34		y	
Station Equipment	Conduit, 1"	\$ 2.00	50.0	\$ 100.00	y	y	
Station Equipment	Conduit, 1/2"	\$ 1.30	100.0	\$ 130.00	y	y	
Station Equipment	Conduit, 3/4"	\$ 1.50	100.0	\$ 150.00	y	y	
Station Equipment	corral panels, 16', shipping	\$ 173.68	8.0	\$ 1,389.44	y	y	
Station Equipment	corral panels, 8'	\$ 85.96	4.0	\$ 343.84	y	y	
Station Equipment	Crossarm Brace Kit	\$ 171.12	2.0	\$ 342.24	y	y	
Station Equipment	Crossarm Mounting Kits	\$ 70.68	2.0	\$ 141.36	y	y	
Station Equipment	Miscellaneous	\$ 1,000.00	1.0	\$ 1,000.00	y	y	
Station Equipment	Solar Setup w/ toothed and shipping	\$ 5,160.00	1.0	\$ 5,160.00		y	
Station Equipment	Power Setup	\$ 2,000.00	1.0	\$ 2,000.00	y		
Sensor	Vaisala AQT560	\$ 5,673.00	1.0	\$ 5,673.00	optional	optional	* air quality sensors are optional; Vaisala offers a high accuracy model
Sensor	Purple Air Air quality sensor	\$ 300.00	1.0	\$ 300.00	optional	optional	* air quality sensors are optional; Purple air offers a lower accuracy, "good" model
					<b>\$21,553.13</b>	<b>\$46,940.07</b>	

# Lower Platte Drought Consortium Workshop Summary Report

The following report summarizes ideas gathered during a brainstorming session held after the Lower Platte Drought Consortium meeting on April 24, 2024. The purpose of the brainstorming session was to identify drought mitigation activities to consider for inclusion in the updated Drought Plan.

## Supply Increase Activities

- Multipurpose Infrastructure
  - 12-16 Reservoirs for Salt Creek flood protection, add drought response to design considerations
  - Joint flood control/storage reservoirs
  - Canal for retimed flows and groundwater recharge
  - Enhanced stormwater/wastewater capture for groundwater recharge
  - Rainwater harvesting
  - Fremont Dewatering
  - Storage and retiming on Elkhorn
  - Off-season flow releases
- Use of Graywater/Treated Wastewater
  - Watering public parks and sports fields with graywater
  - Cost share for household graywater systems
  - Saltwater treatment from Salt Creek

## Demand Reduction Activities

- Education and Outreach
  - Realtor continuing education
  - HOA outreach program
  - Lawn care watering education for homeowners
  - Irrigation Professional Certification (Consortium Seal of Approval?)
  - Education for kids on running toilet/faucet prevention
  - Education and cost share for installation of low-flow showerheads
- Funding and Incentives for lower water use vegetation
  - Promotion of lower water use crops
  - Education and funding for native plant landscaping
  - Promote use of native grasses for lawns that don't require irrigation
  - Restrict size of new lawns in Lincoln/Omaha suburbs
  - Metering of external water faucets
- NRD Policy Changes
  - Incentive program to reduce inches applied per acre adjusted by crop price
  - GWMP Updates including regulations and allocations
- Technological Updates

- Leak detection for municipal water customers
- Remote reading on all types of wells for quicker information

# Governor Jim Pillen: Charting the Future With Technology and Groundwater Conservation



Governor Pillen (second from left) visits a Nebraska dairy farm along with Sherry Vinton, the director of the Nebraska Department of Agriculture (right).

**N**ebraska Governor Jim Pillen sees the Ogallala aquifer as his state's great liquid asset, which irrigated agriculture can tap sustainably using efficient technology. In this interview, Governor Pillen shares with us his view of new, value-added agricultural industries for Nebraska that go beyond the traditional production of food and fiber for export.

**Irrigation Leader:** Please tell us about your background and how you came to serve the people of Nebraska as their governor.

**Governor Pillen:** I've been immersed in agriculture my whole life. I had the dream of being a veterinarian from the time

I was 8 years old. I got my undergraduate degree at the University of Nebraska–Lincoln and received my doctorate in veterinary medicine from Kansas State University. I was in the service business and then in production agriculture before I became involved in agriculture full time. We raise commercial pigs, and we've been in the pig genetics business for 25 years. In the last 6 or 7 years, we've been involved in processing. We believe in value-added agriculture. I was sworn in as governor 13 months ago, the first week of January 2023.

**Irrigation Leader:** What is the importance of irrigated agriculture for the state of Nebraska?



Governor Pillen (center) visits the site of a future U.S. Department of Agriculture research facility at the Nebraska Innovation Campus at the University of Nebraska–Lincoln during his 2024 Ag Week tour.

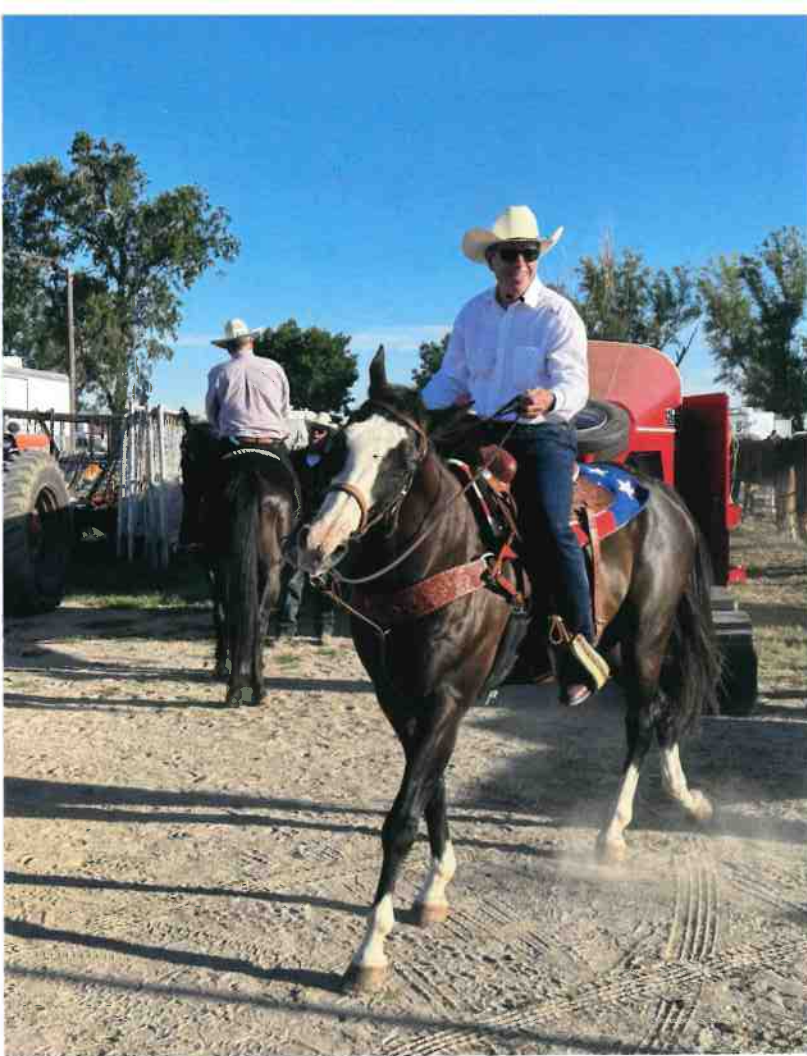
**Governor Pillen:** Nebraska has five agroecological zones, each of which has vastly different soil types. As you go west of the Missouri River, it gets drier and drier. Some of us who are older remember the difficulty of agriculture prior to the introduction of center-pivot irrigation. You did lots of rotations of crops such as milo and grain sorghum because there wasn't enough rainfall. We raised a lot of wheat back in the day. Center-pivot irrigation and the use of the Ogallala aquifer, which is the largest sustainable underground reservoir in the Western Hemisphere, have been game-changers for the state of Nebraska. Agriculture has flourished.

**Irrigation Leader:** You emphasize the importance of a biobased economy for the state. What does that mean for irrigated agriculture?

**Governor Pillen:** It started back with President Bush's state of the union address in January 2007, in which he proposed a renewable fuels policy. When the policy came into law, it created 5 billion bushels of new corn demand, an increase of nearly 35 percent over what we'd been producing in the United States. There's no place on the planet that benefited more from that than the state of Nebraska. As the price of corn went up, we were able to expand our irrigation acreage, taking marginal ground and turning it into productive land. We've created tremendous value across the state while caring for every drop.

Nebraska's 24 ethanol plants serve as the foundation of today's bioeconomy. Now, we're making a lot of other products out of ethanol and its byproducts, including amino acids, plastics, acetone, and acetic acid. My simple brain says that the future is making things from carbon above the ground instead of from carbon below the ground. There's absolutely nobody in the world who can do it better than we can in Nebraska because of the innovation of our people and the pot of gold that is the Ogallala aquifer. We can raise more with less by putting water on at the exact right time the soil tells us to, using artificial intelligence, sensors, and monitoring. The future for Nebraska agriculture is off the charts. Commercial airlines' demand for sustainable aviation fuel is nearly 50 billion gallons, compared to the roughly 15 billion gallons of ethanol that the United States currently produces—and no one can compete with Nebraska.

To give you an idea of what water means, my dad would always say when I was a kid that he wished great-grandpa had stopped in Illinois, which had rainfall and dark soil. Today, none of us in Nebraska would ever sell our land and replace it with land in Iowa or Illinois, because they can't compete with us. Our vision is simple: We want to incentivize Nebraska producers to use less water, which will allow us to irrigate more acres and protect our Ogallala aquifer. We don't want to export one kernel of corn. We want to process and use it here in the state of Nebraska.



Governor Jim Pillen at the Burwell Rodeo in 2023.

**Irrigation Leader:** In the past, there have been issues with overdraft in parts of the Ogallala aquifer. What can you tell us about the aquifer's water level protection?

**Governor Pillen:** We've got a very good water management plan because of our 23 natural resources districts. The long-term goal will be to do what I witnessed in the Twin Platte Natural Resources District, where there are 500 farmers across 300,000 acres of land irrigated with surface water and groundwater. They have real-time monitoring of irrigation. They know exactly how many gallons they're pumping every single day during the growing season. If you know what you're pumping, do you use less water or more water? Everybody there says we use less water. The goal would be to accomplish that across the state, even in areas where people think they have enough water to last forever.

My dad was an early pioneer, and nobody in the neighborhood was happy to see him put a pivot up, because first, they didn't want to look at it, and second, they thought it would empty the aquifer. By measuring how much water we use every day, we can produce more, irrigate more acres, and create more value, all while protecting our aquifer so that it doesn't change one iota. If it's dry during one year, you might use a little more, but over the years, it all evens

out. Our aquifer is within a foot of the level it stood at before we started irrigating. The Sandhills act as a sponge. If we get 100 inches of snow, the moisture goes straight into the aquifer. We are incredibly blessed.

**Irrigation Leader:** You've alluded to the use of technology such as sensors, monitoring, and artificial intelligence to improve agriculture and reduce water use. Is there anything more you want to say about how some of those technologies will play into irrigated agriculture?

**Governor Pillen:** It's essential that we have real-time measurements so that we know what we're doing during the growing season. We should know when that water needs to be applied. The irrigation industry is doing a lot of cool stuff with imagery and artificial intelligence. My understanding is that precision agriculture allows us to know our exact soil types across the field. That indicator can tell with 98 percent accuracy when your plant needs water. There are a lot of exciting things happening in real time. The reality is that we're in the technology business. We just happen to raise cattle and pigs or corn and soybeans. If we're not using the latest technology, we've missed out on a lot. It's exciting to ensure that Nebraska has innovation and education, not regulation. That's what will lead the way with water management and taking full advantage of the bioeconomy. We like to say in Nebraska agriculture that we feed the world, and we save the planet doing it.

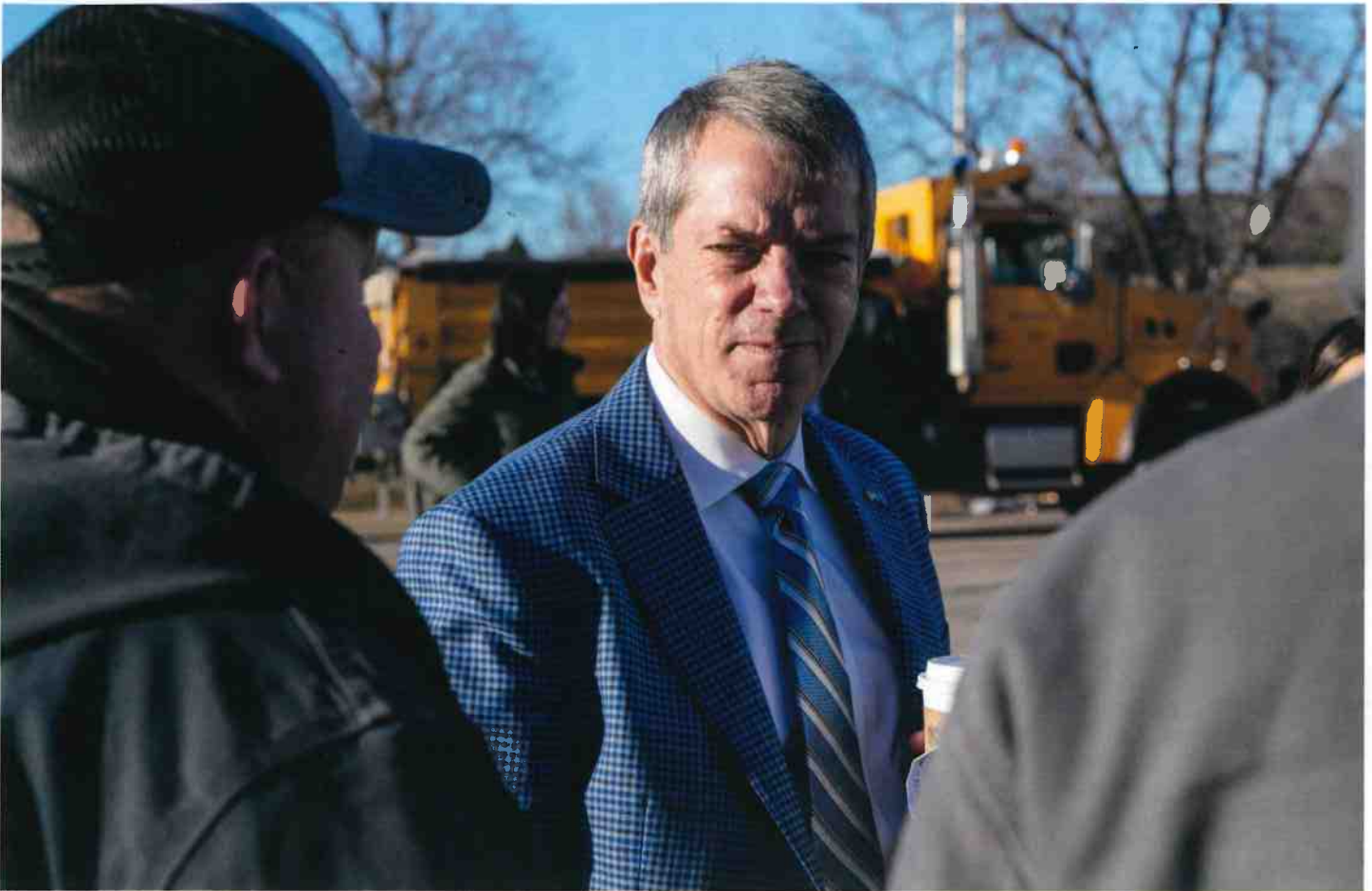
**Irrigation Leader:** Another priority for you is protecting water rights. What does that mean for irrigated producers?

**Governor Pillen:** Keeping our water in Nebraska for agriculture is our priority. I've met large ranchers from other states who sold their land because aquifer decline had made the water beneath it so valuable. Water is the basis of our state's largest economic driver, and we have long recognized that the local governance of water management practices, with irrigators at the table, is foundational to our success.

The other priority is paying attention to who owns our land. We are partnering with a state senator this year to make sure that people from foreign adversarial countries cannot purchase and own land in Nebraska. It's important that our land and water are ours, and we're going to protect our aquifer for seven generations and more. Water is just like God's grace. It's a gift. You can't make it, you receive it.

**Irrigation Leader:** Another irrigation-related issue that's been in play for some time is the Perkins County Canal. What is the importance of that project and its status today?

**Governor Pillen:** We were able to get the funding for the Perkins County Canal approved last year. The Nebraska Legislature has funded the project at the level of about \$628 million. Ten percent of the canal has been designed.



Governor Pillen thanks snow fighters at a news conference with the Nebraska Department of Transportation in February 2024. They were critical in clearing pathways so producers could get product out and farmers could reach animals.

We've been engaging with folks along the eastern part of the Perkins County Canal in Colorado and the western part in Nebraska. The construction of the Perkins County Canal was ordered by law 100 years ago, so now it's just got to be completed. It's a high priority.

**Irrigation Leader:** Is there anything you would like to add?

**Governor Pillen:** We need to brag more about Nebraska. We are the center of the world when it comes to water. Center-pivot irrigation and the practice of using less water to raise more crops was pioneered in Nebraska. We irrigate 80 percent of our production agriculture acres, and our aquifer is near the same depth that it was before we started. There's virtually no more flood irrigation and no more spraying water up in the air. We keep using less water but irrigating more. Water and irrigation are at the center of the incredible state of Nebraska.

**Irrigation Leader:** Do you have a message for irrigated producers in Nebraska?

**Governor Pillen:** I can't make the message any stronger to Nebraska farmers and ranchers: The more we can embrace technology, the more we can get educated and embrace the

future, the better your business is going to be and the more you're going to make per acre. Sometimes, change scares us. We Nebraska farmers and ranchers need to be bold and courageous in embracing the latest technology, because we are the breadbasket of the world thanks to the Ogallala aquifer. The better we measure it, the better we can take care of it, and the more money we make.

**Irrigation Leader:** What is your vision for the future?

**Governor Pillen:** The vision for the future is that we irrigate more acres than we do today, using less water, to protect the Ogallala aquifer forever. We never export corn or soybeans, and we process everything that we raise right here in Nebraska. We sell finished products around the world. We want to remove our producers from the commodity business and create value-added agriculture at every turn. <sup>11</sup>



*Jim Pillen is the governor of Nebraska. For more on Governor Pillen, visit [governor.nebraska.gov](http://governor.nebraska.gov).*