

# LCNRD Voluntary Integrated Management Plan **2017-2018 Biennial Review Report**

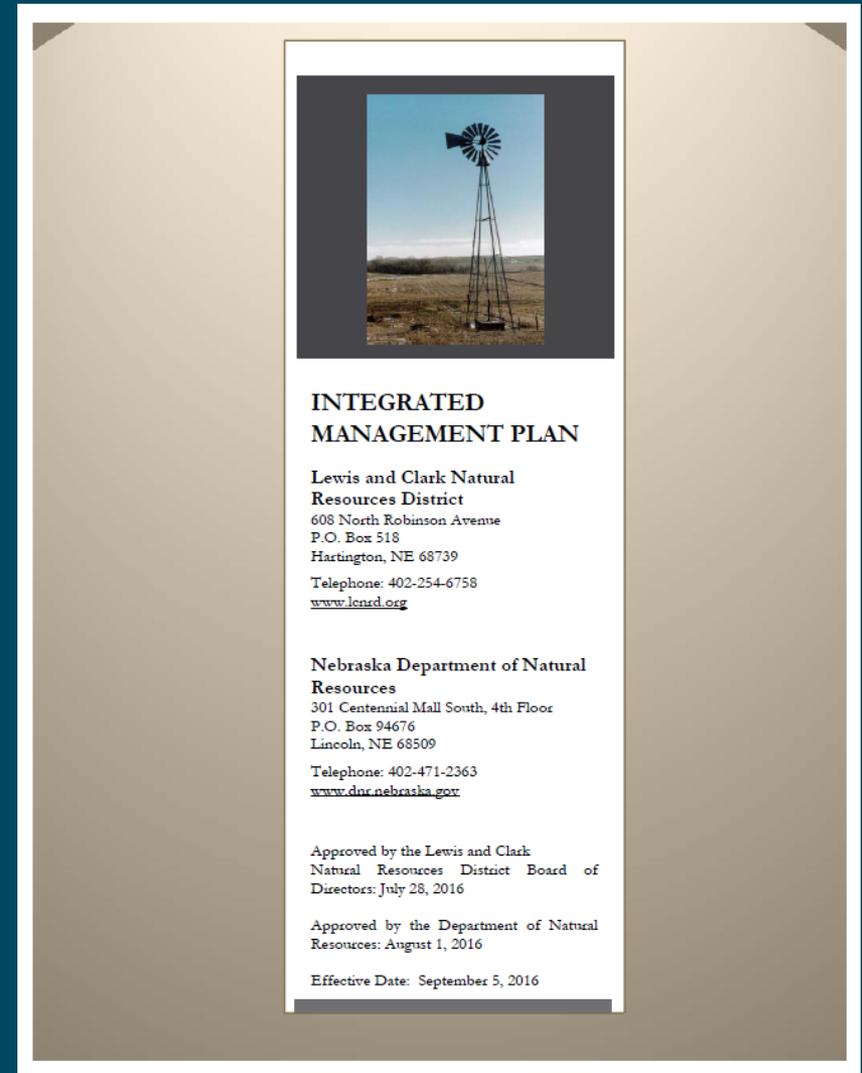
Annette Sudbeck, LCNRD and Amy Zoller, NeDNR

LCNRD Board Meeting  
Hartington, Nebraska  
October 17, 2019



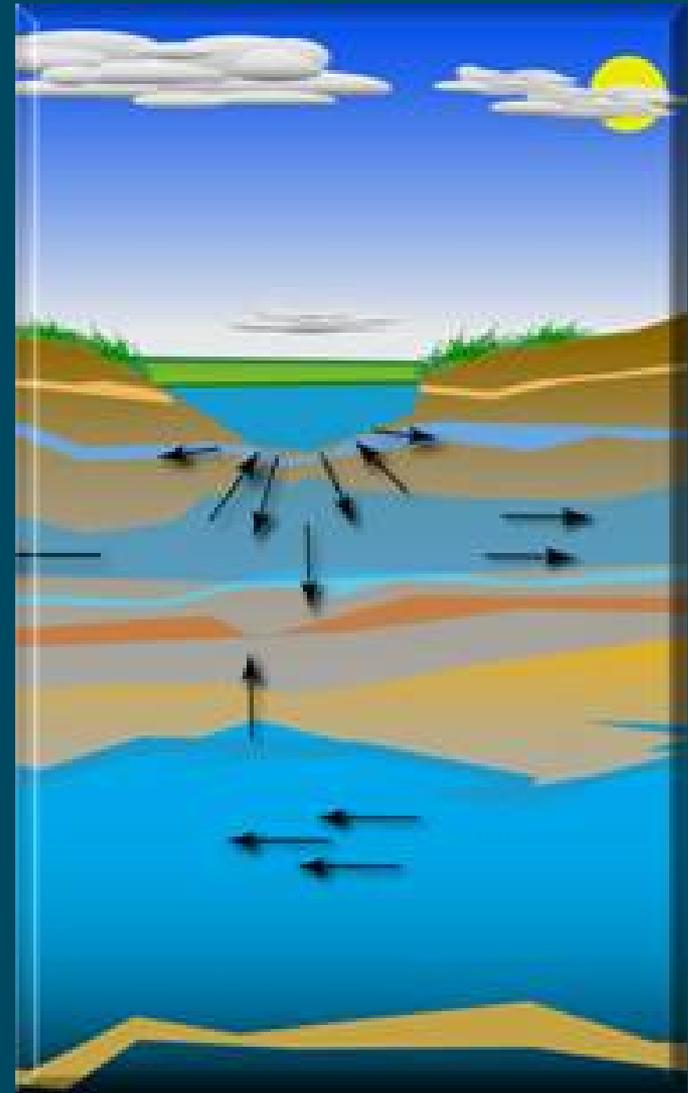
# Background

- Jointly developed IMP
  - Lewis and Clark NRD
  - NE Dept. of Natural Resources
- Stakeholder process
  - 11 stakeholders
  - Four meetings (2014-2015)
- Partnership/coordination
  - LCNRD/NeDNR meetings
  - Joint IMP writing
- Effective Sept. 5, 2016



# Background

- Joint management of groundwater/surface water
  - Hydrologically connected supplies
- Groundwater
  - Regulated by NRDs
  - Correlative rights system
- Surface water
  - Regulated by NeDNR
  - Prior appropriation system



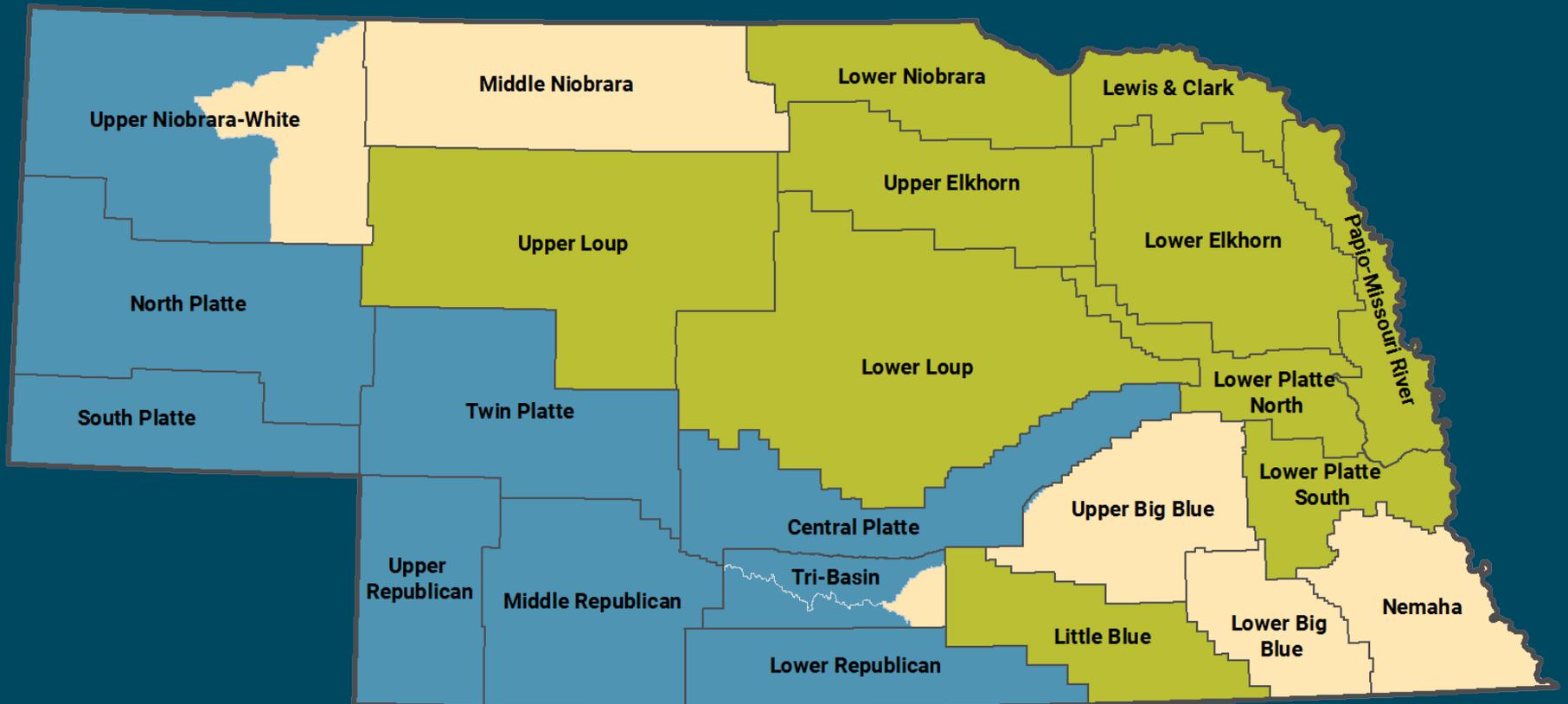
# Background

- LCNRD IMP contents
  - Geographic area (whole NRD)
  - Goals and objectives
  - Monitoring plan
  - Groundwater and surface water controls (education)
- IMP Benefits
  - Improved LCNRD and NeDNR coordination
    - Data collection and sharing
    - Research and technical studies
  - Water Sustainability Funds eligibility

## LCNRD Integrated Management Plan Goals

1. Develop and maintain a district-wide water inventory
2. Protect existing water users while allowing for future water development
3. Increase public awareness and understanding of integrated water management

# Background: Statewide IMP Status



Required, Approved

Voluntary, Approved

Voluntary, In Development

# Background

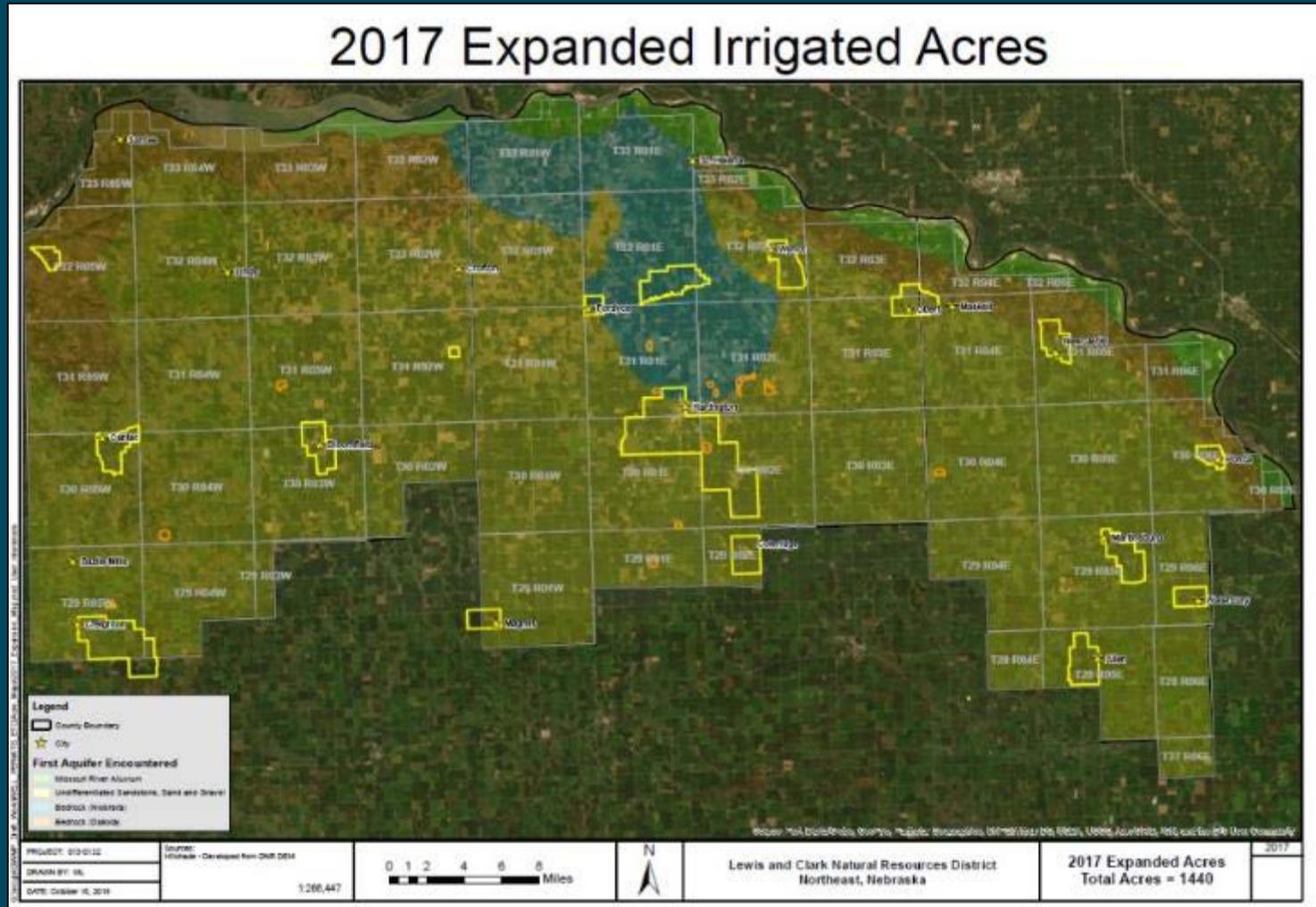
- Adaptive management framework
  - Implementation
  - Monitoring plan
  - Plan refinement
- Biennial Reviews
  - Review monitoring activities
    - Groundwater
    - Surface water
  - Updates on research and studies
  - Assess progress towards goals



# GROUNDWATER MONITORING

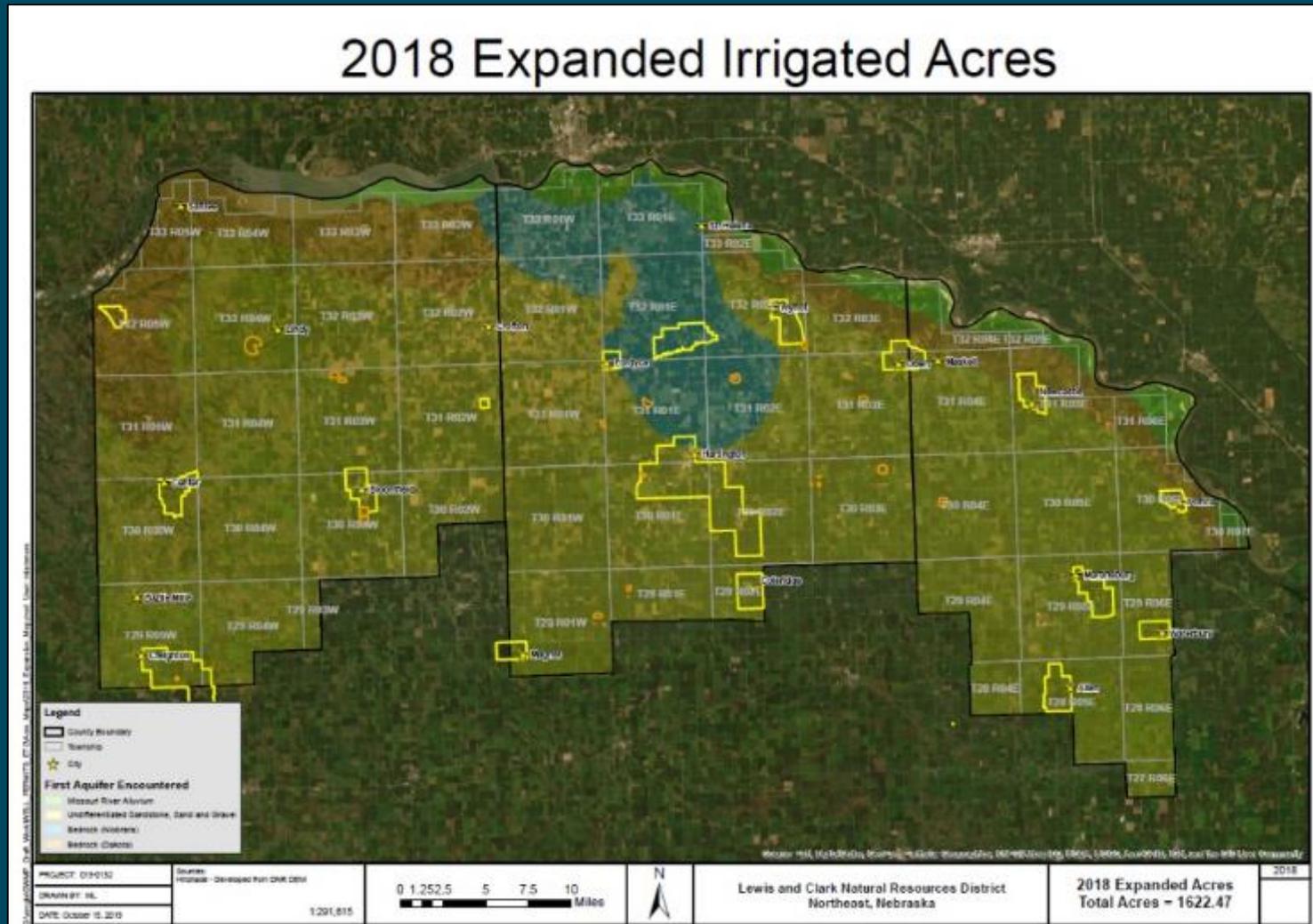
# Groundwater Monitoring: New Permits in 2017

- 27 new well permits
- 1,307 new GW irrigated acres



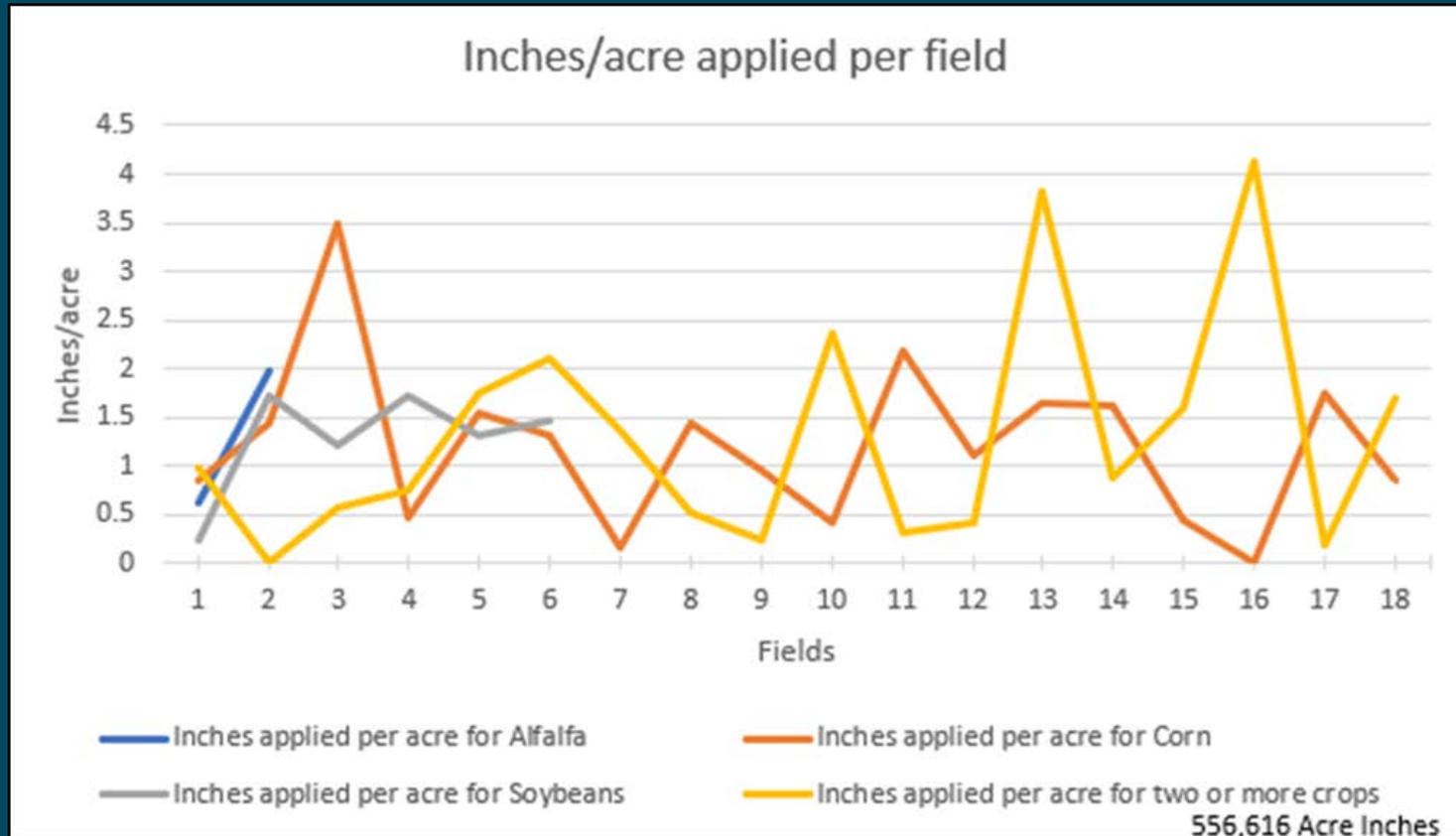
# Groundwater Monitoring: New Permits in 2018

- 18 new well permits
- 1,689 new GW irrigated acres

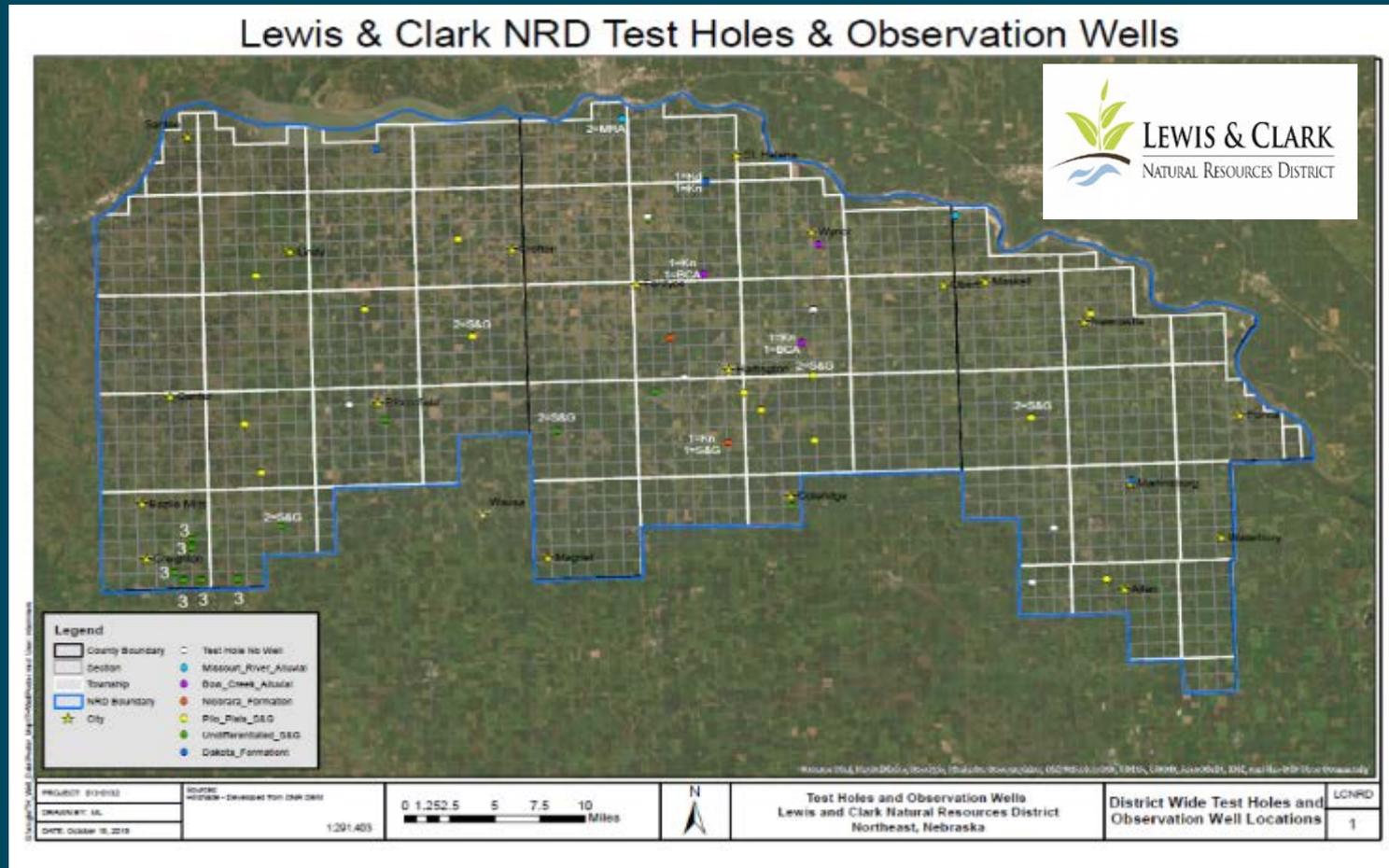


# Groundwater Monitoring: GW Use Reporting

- Required reporting for new irrigation wells
- 70 reports received in 2018, 44 showed use.



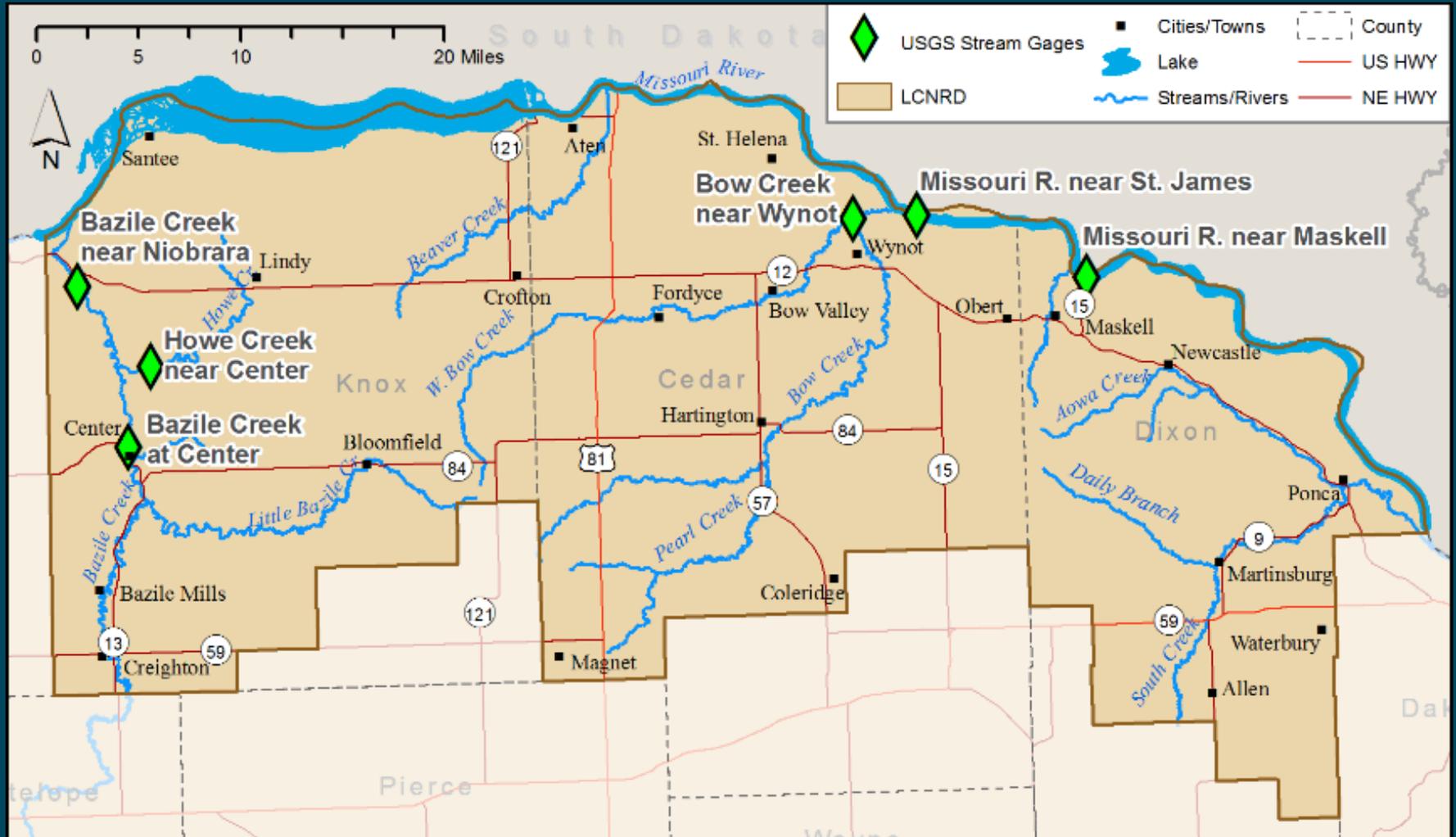
# Groundwater Monitoring: Observation Wells



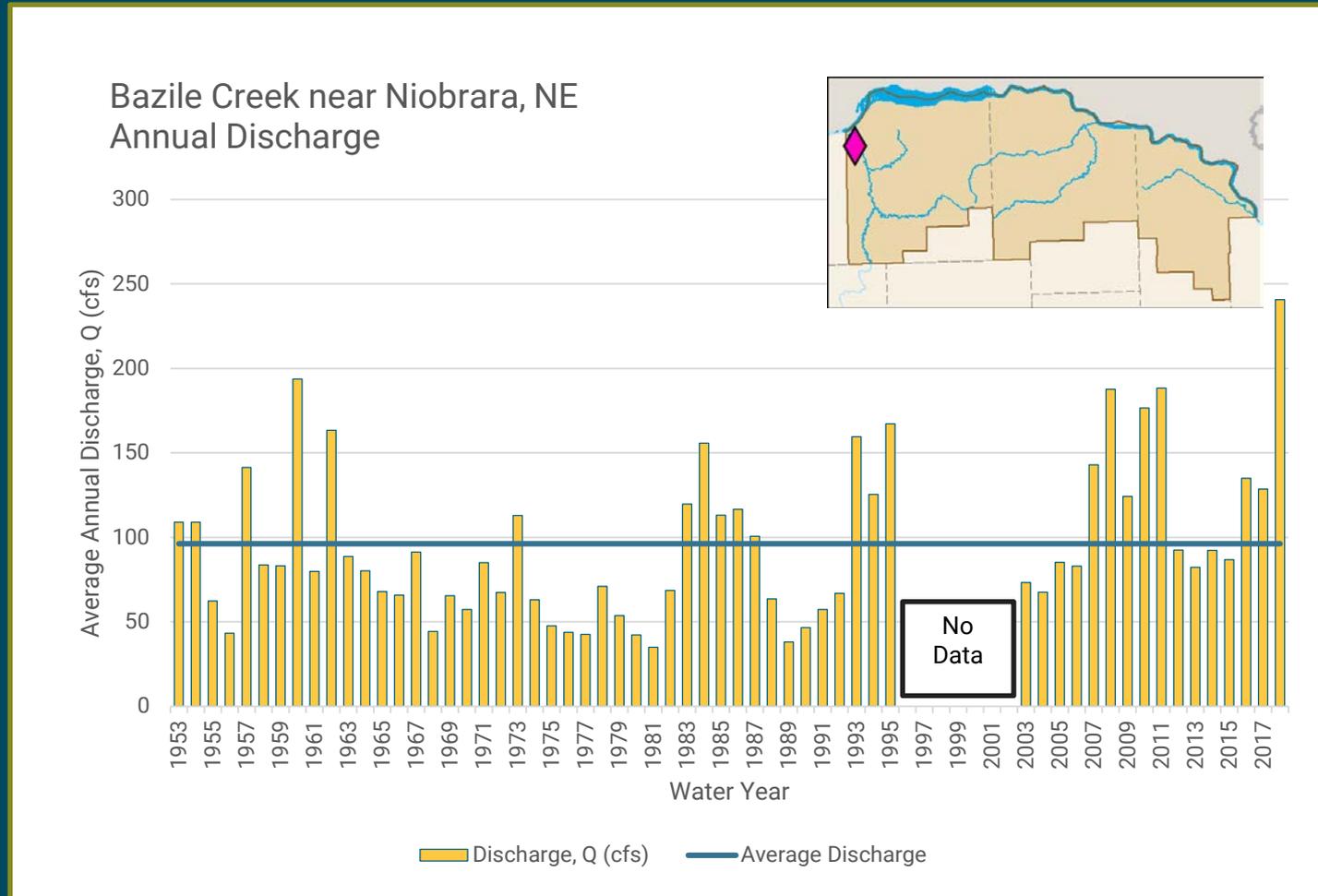
# SURFACE WATER MONITORING

- Stream gaging
- Surface water permit actions
- Voluntary water use reporting

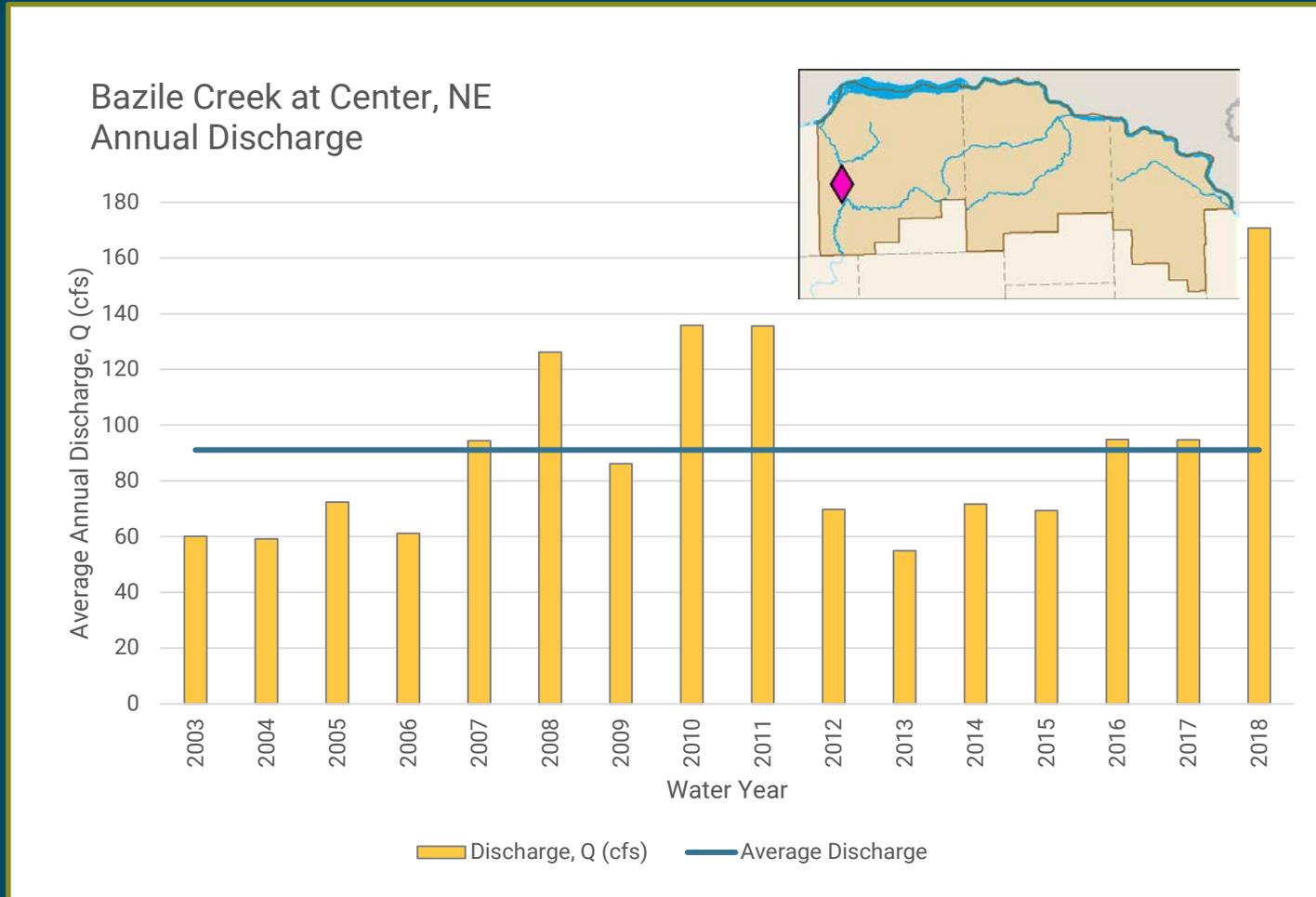
# SW Monitoring: Streamgaging



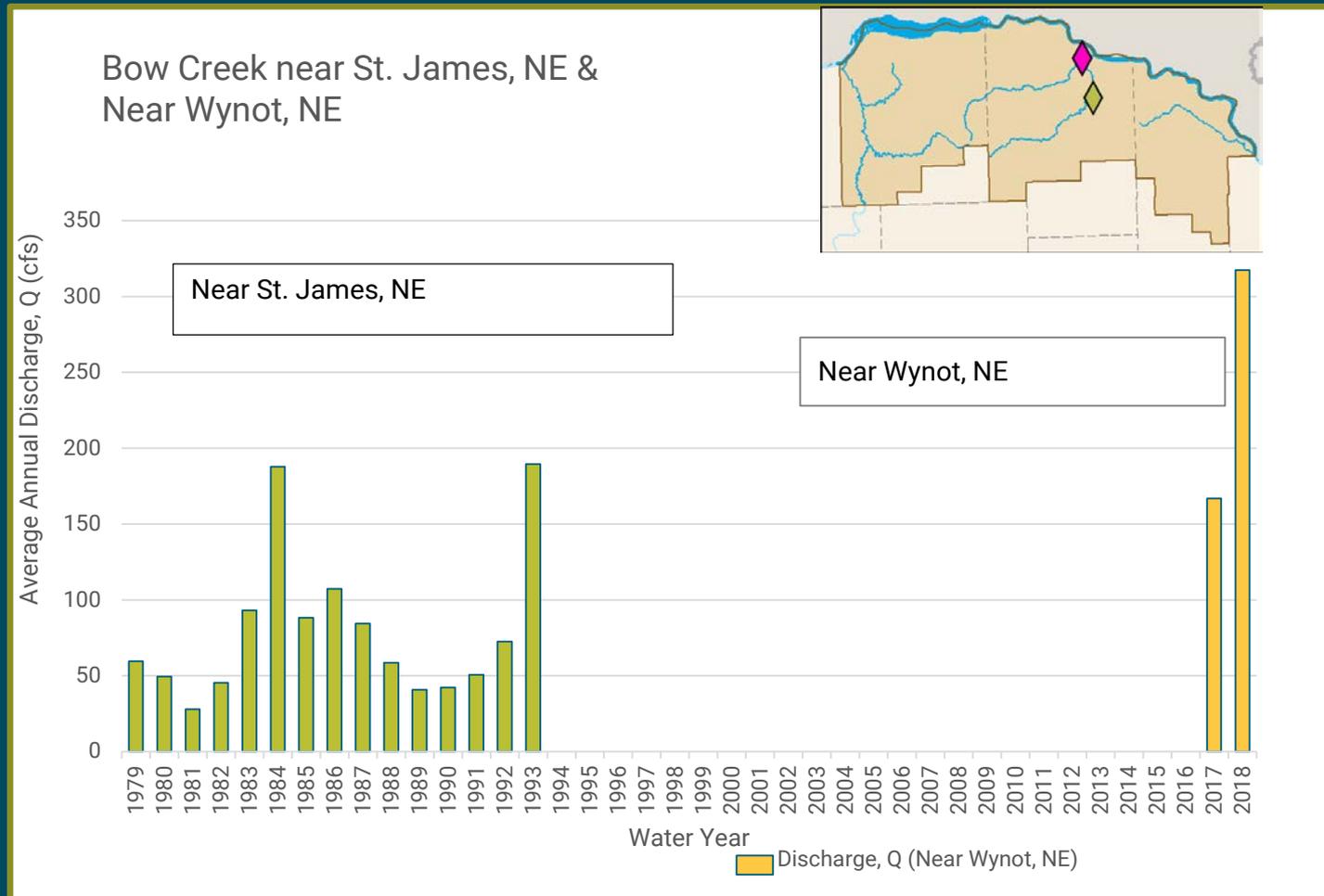
# SW Monitoring: Streamgaging



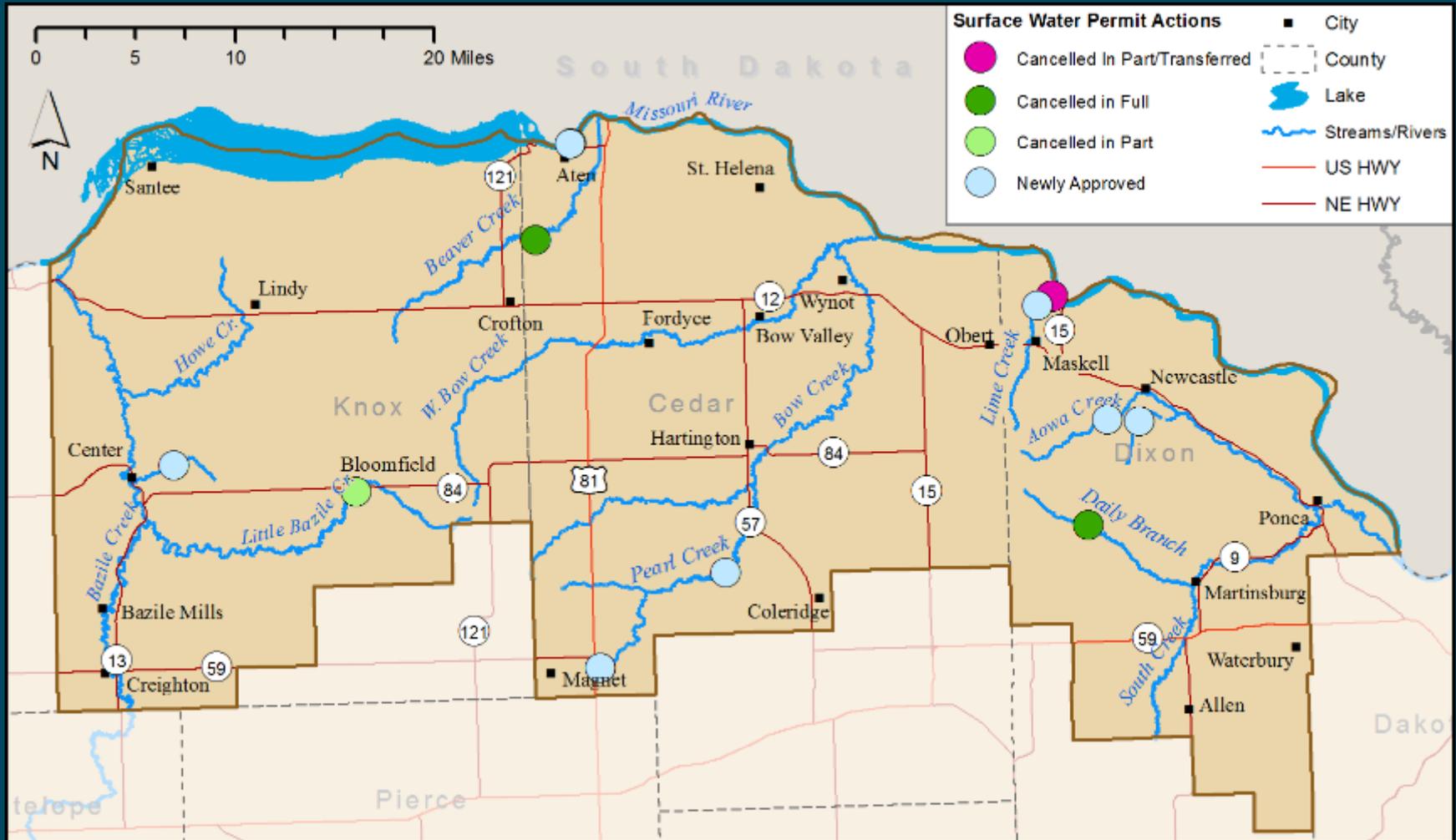
# SW Monitoring: Streamgaging



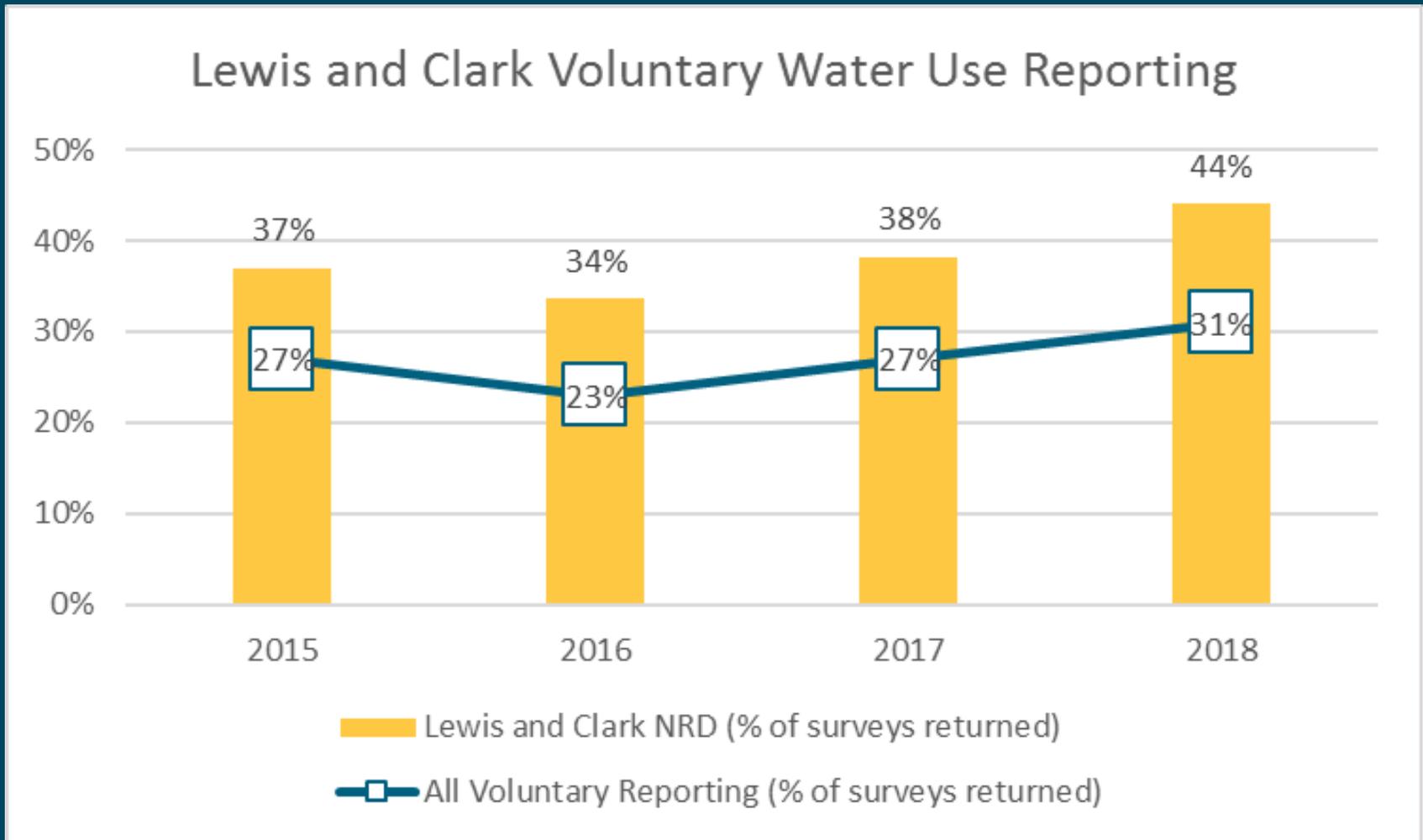
# SW Monitoring: Streamgaging



# SW Monitoring: Permitting Activities



# SW Monitoring: Voluntary SW Use Reporting

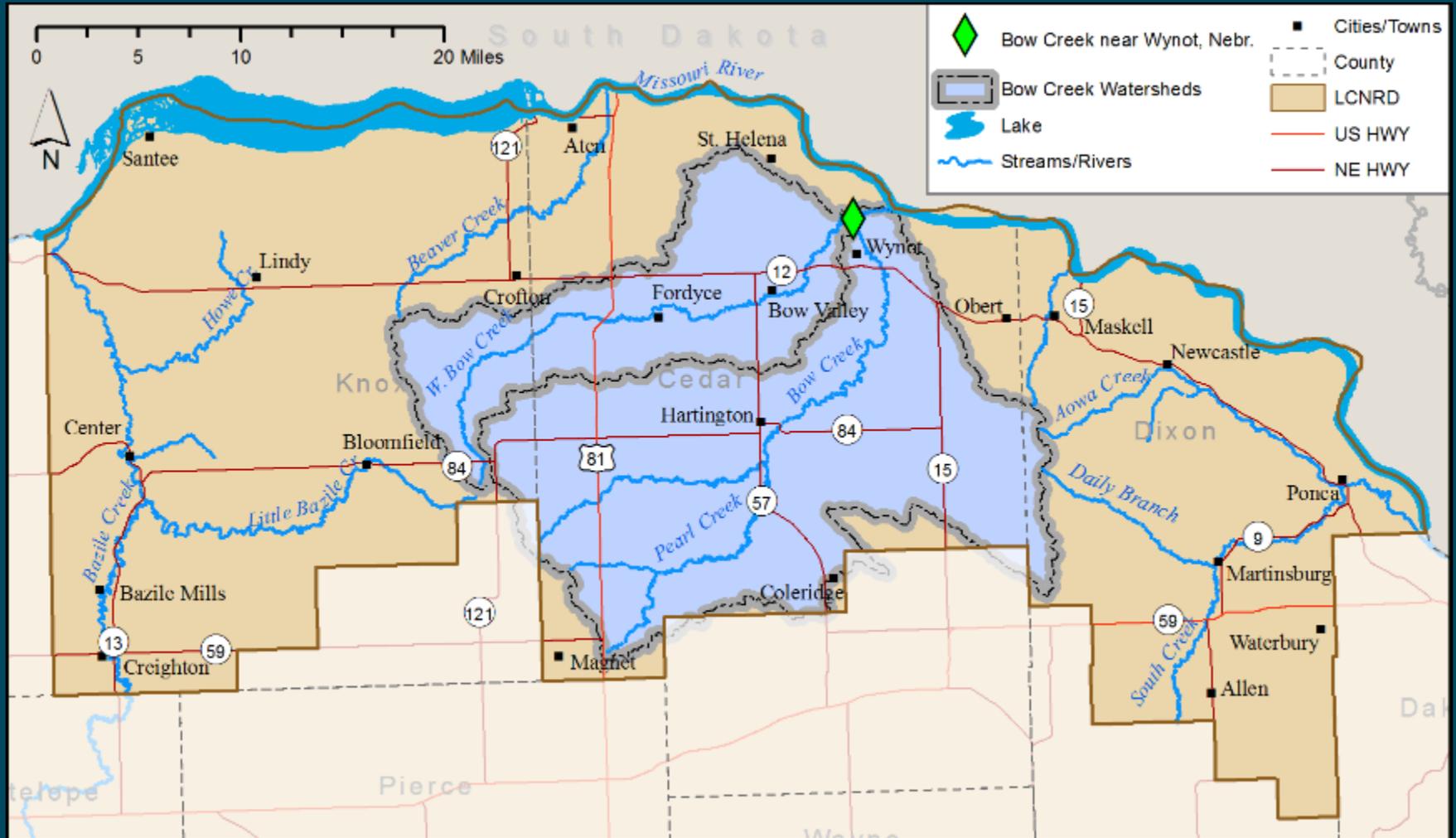


High response rates for LCNRD compared to the average response rate for NRDs in voluntary IMP areas.

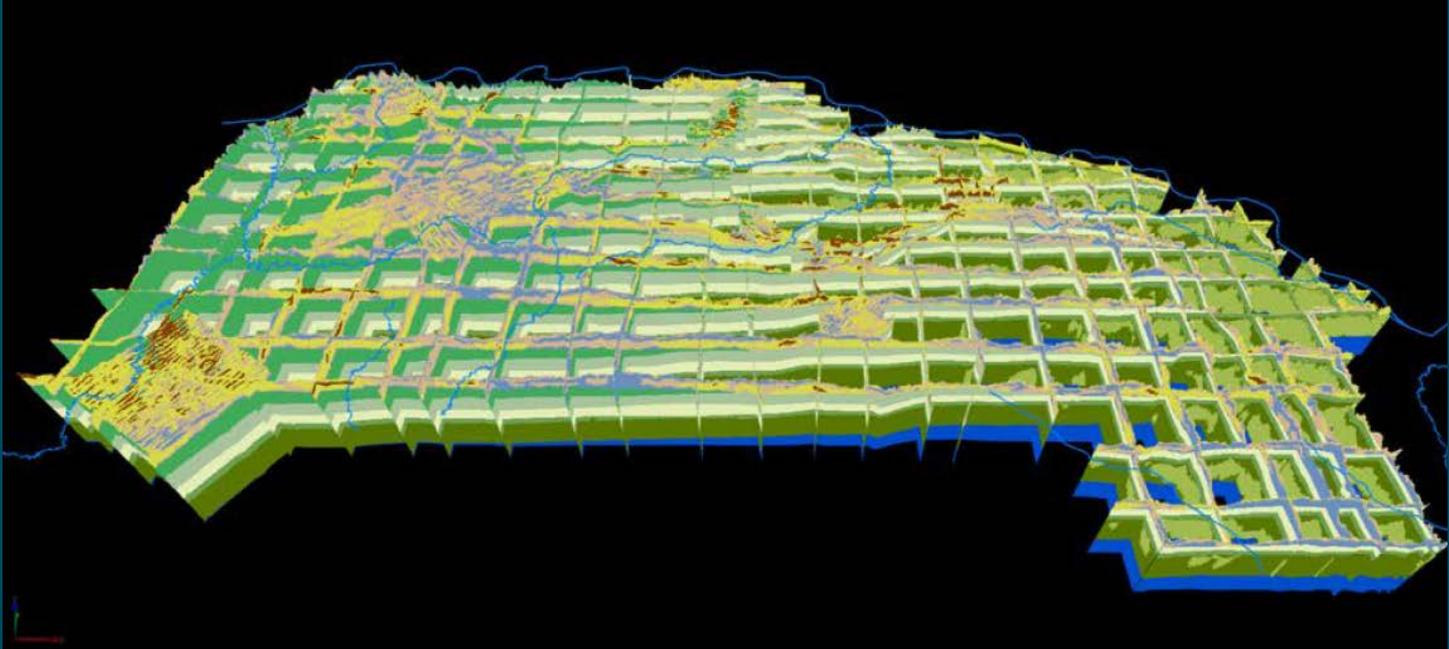
# Collaboration Activities

- Eastern Nebraska Water Resources Assessment (ENWRA)
- Missouri River Sedimentation Action Coalition
- UNL Conservation Survey Division
- Missouri River Recovery Implementation Committee (MRRIC)
- LCNRD, U.S. Geological Survey, NeDNR on Bow Creek streamgange

# Collaboration: Bow Creek Streamgange

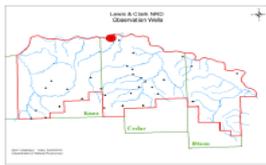


# Technical Studies and Projects: LCNRD AEM Surveys



Airborne Electromagnetic Mapping and Hydrogeologic Framework of Selected Regions of the Eastern Nebraska Water Resources Assessment Area – Chapter on the Lewis and Clark Natural Resources District.

# Technical Studies and Projects: LCNRD Hydrographs



1C

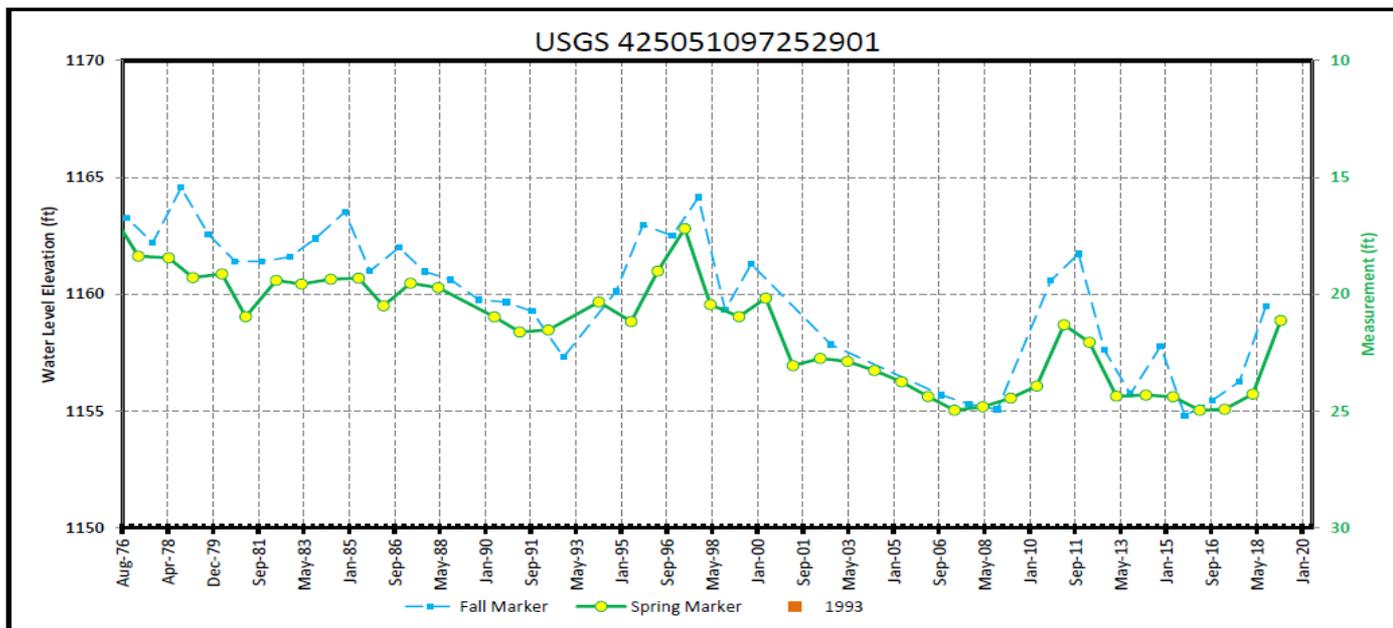
Page 1

Well Depth 54

33N 1W 10CCB

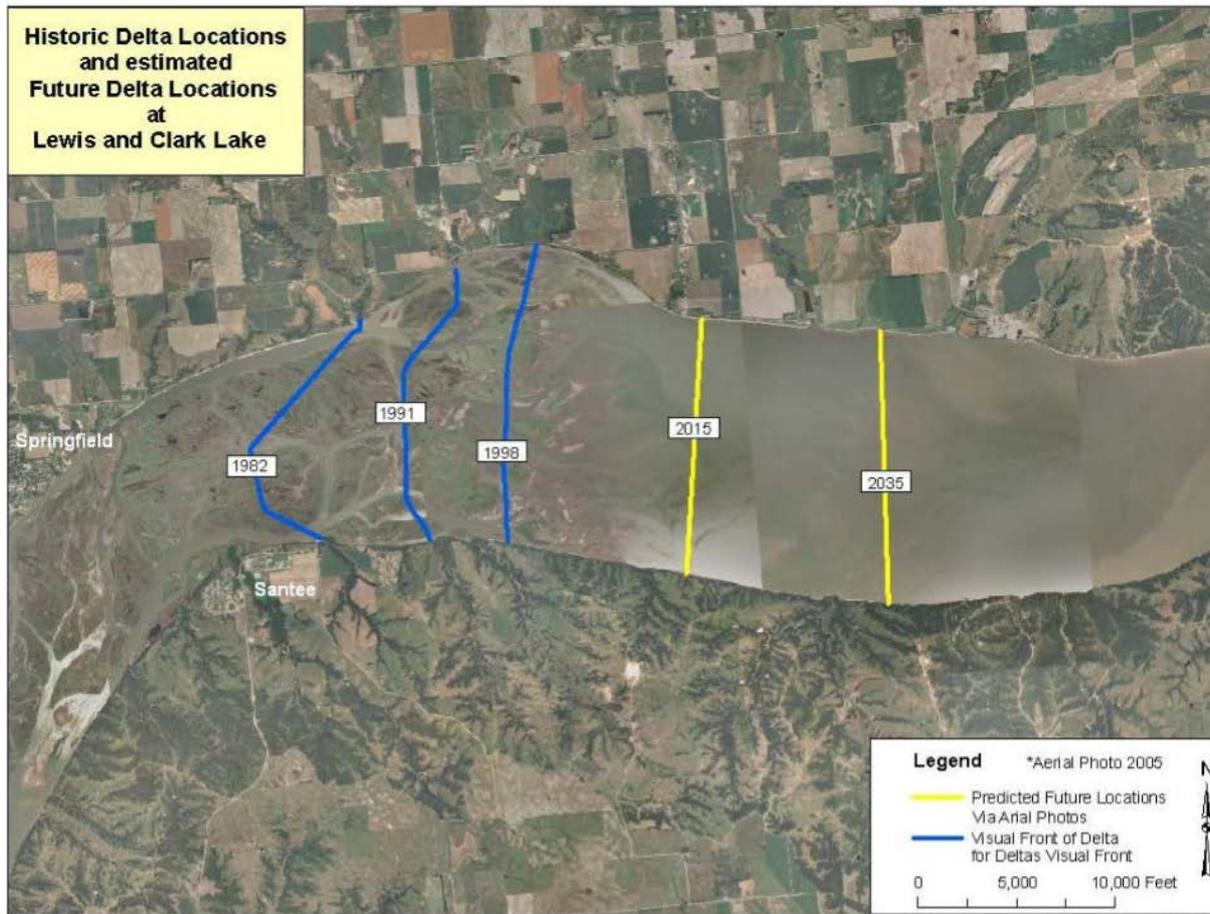
1180 Missouri River Alluvium

16-Oct-19



# Technical Studies and Projects: MSAC Sedimentation Study

## HISTORICAL GAVINS POINT DELTA



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# Technical Studies and Projects: MSAC Sedimentation Study – Section 22

## PLANNING ASSISTANCE TO STATES AND TRIBES

**Authority:** Section 22, Water Resources Development Act of 1974, as amended

**Purpose:** Provide technical planning and engineering services to states, local governments, federally-recognized Indian Tribes and non-federal entities to address a broad range of water resource related issues.

**Cost Share:** 50% Federal / 50% Non-Federal

**Federal Limit:** \$2 million for each state or tribe per year.

- Very wide ranging, but does not lead to construction. A Sediment Management Study could be completed under PAS.
- Program is funded and ongoing, with potential for funding in current FY.

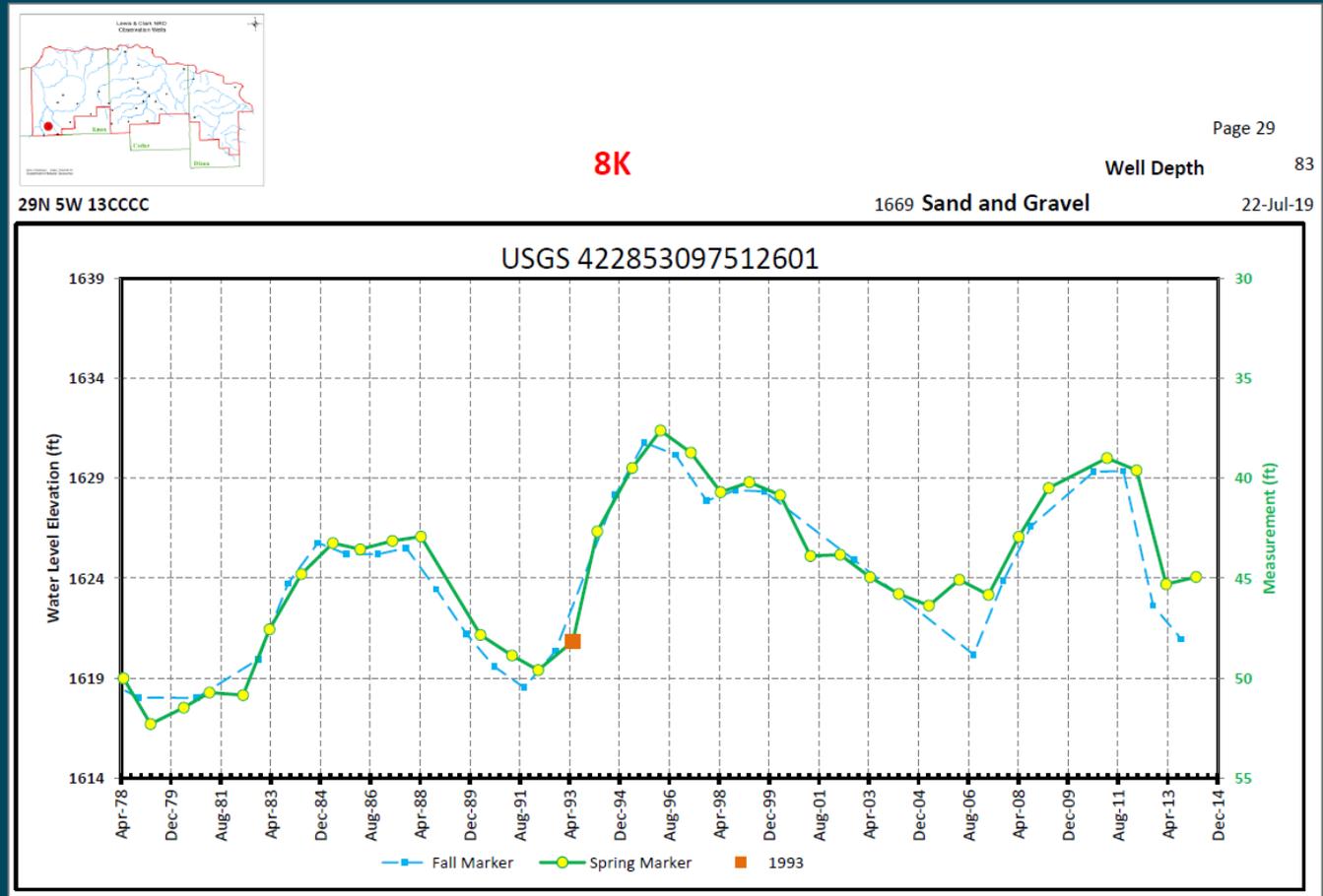


# Technical Studies and Projects: NeDNR

- Eastern Nebraska regional groundwater model
- AEM integration with groundwater model
  - Pilot study in Lower Elkhorn NRD
- INSIGHT web tool for water balance
  - <https://nednr.nebraska.gov/INSIGHT/>
- SUSTAIN modeling program
  - NeDNR data and models available for NRD use
  - Evaluate alternative management scenarios

# Technical Studies and Projects: NeDNR

- Technical assistance for LCNRD
  - Automate creation of well level charts



# Education and Outreach

- LCNRD Activities
  - Booths at Cedar and Knox County Fairs
  - Booth at Ponca Outdoor Expo
  - Youth educational events



# Education and Outreach

- NeDNR Activities
  - Booths at statewide events
  - Some local events with NRDs
  - Interactive web simulators



# Progress towards goals and objectives

*Progress was made towards the following IMP goals and action items:*

## **GOAL 1: DEVELOP AND MAINTAIN A DISTRICT-WIDE WATER INVENTORY**

1.1.1 Compile and update information concerning streamflow, surface water uses and hydrologically connected areas.

1.1.5 Update hydrographs for groundwater wells monitored.

1.2.1 Implement and maintain a voluntary water use reporting system for surface water users.

1.2.2 Evaluate the need for new stream or well level gages, and the best location for these.

1.3.1 Develop groundwater models for Eastern Nebraska to further understanding of hydrologically connected areas.

1.3.2 Assess benefits/limitations of using remotely accessed electromagnetic data to aid interpretation of hydrologically connected areas.

# Progress towards goals and objectives

*Progress was made towards the following IMP goals and action items:*

## **GOAL 2: PROTECT EXISTING USERS WHILE ALLOWING FOR FUTURE WATER DEVELOPMENT**

2.1 Stay up-to-date on USFWS, USACE and NPS water management efforts that may affect LCNRD and to facilitate compliance with state and federal laws.

2.2.1 Continued Department participation in MRRIC as long as Nebraska remains a participating member.

2.2.2 Coordination to disseminate pertinent information to the District regarding activities along the Missouri River.

2.2.3 Continued monitoring of USACE potential to charge for surface water use from storage in Lewis and Clark Lake.

## **GOAL 3: INCREASE PUBLIC AWARENESS AND UNDERSTANDING OF INTEGRATED WATER MANAGEMENT**

3.2.2 Develop informational materials about integrated water management and, as needed, other groundwater and/or surface water related topics affecting the District.

# Next steps and action items

## Monitoring of groundwater and surface water

- Surface water permitting activities
- Groundwater level well readings
- Water use reporting, where available
- Streamgaging

## Collaboration with Other Entities

- ENWRA, MRRIC
- USGS for Bow Creek stream gage

## Technical Projects and Studies

- AEM/modeling pilot project
- Eastern Nebraska groundwater model
- Well hydrograph assistance, if needed

## Education/Outreach

- Continue events
- Continue interactive web application development
- Collaborate to develop an educational handout on integrated water management
  - Will fulfill IMP control

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# THANK YOU

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