

PAPIO-MISSOURI RIVER NRD VOLUNTARY INTEGRATED MANAGEMENT PLAN 2023 ANNUAL REPORT

October 8, 2024, at 4p.m.

Papio-Missouri Rivers NRD Office
8901 S. 154th Street, Omaha, NE 68138

Phillip Paitz
Groundwater Management Engineer



**PAPIO-MISSOURI RIVER
NATURAL RESOURCES DISTRICT**
Finding Solutions Today for a Secure Tomorrow.

Tyler Martin
IWM Coordinator

NEBRASKA
DEPT. OF NATURAL RESOURCES

2023 IMP OVERVIEW

Assess and review the 2023 IMP process and requirements

- Data collection and monitoring
- Plan goals
- Actions



2014 IMP ADOPTION PMRNRD BOARD AND NEDNR

Four Goals:

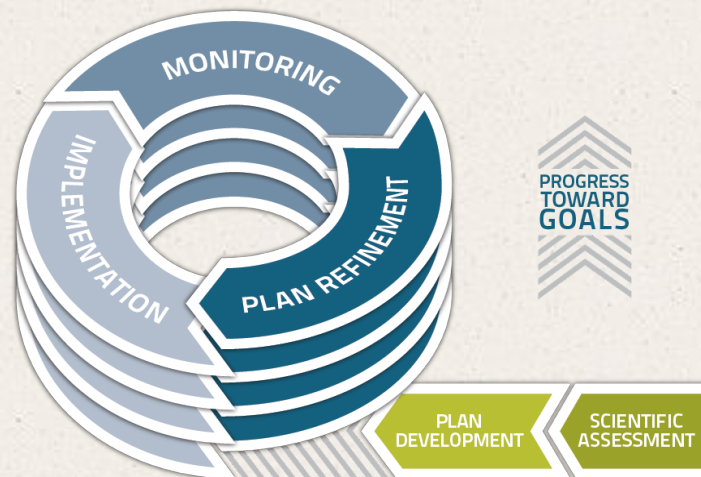
- Water Use Policies and Practices
- Water Supply and Use Inventory
- Water Use Educational Programs
- Basin-wide Water Management Plan



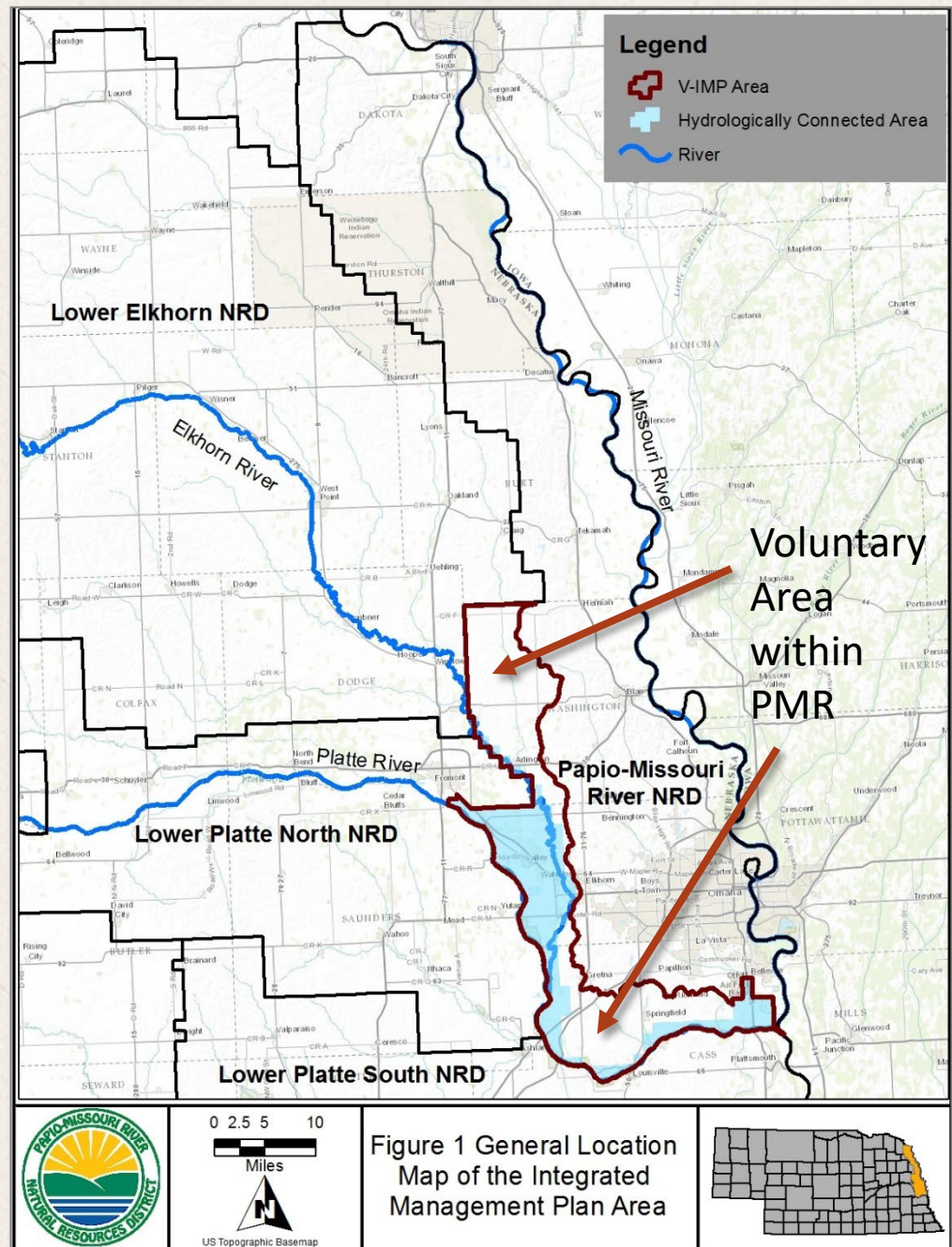
WHY DO WE CONDUCT IMP ANNUAL REVIEWS?

Joint management of hydrologically connected (HC) groundwater and surface water

- Identify new opportunities and challenges
- Increase understanding of HC areas (data, studies)
- Evaluate and convey progress towards goals and objectives
- Prioritize joint management actions for upcoming years



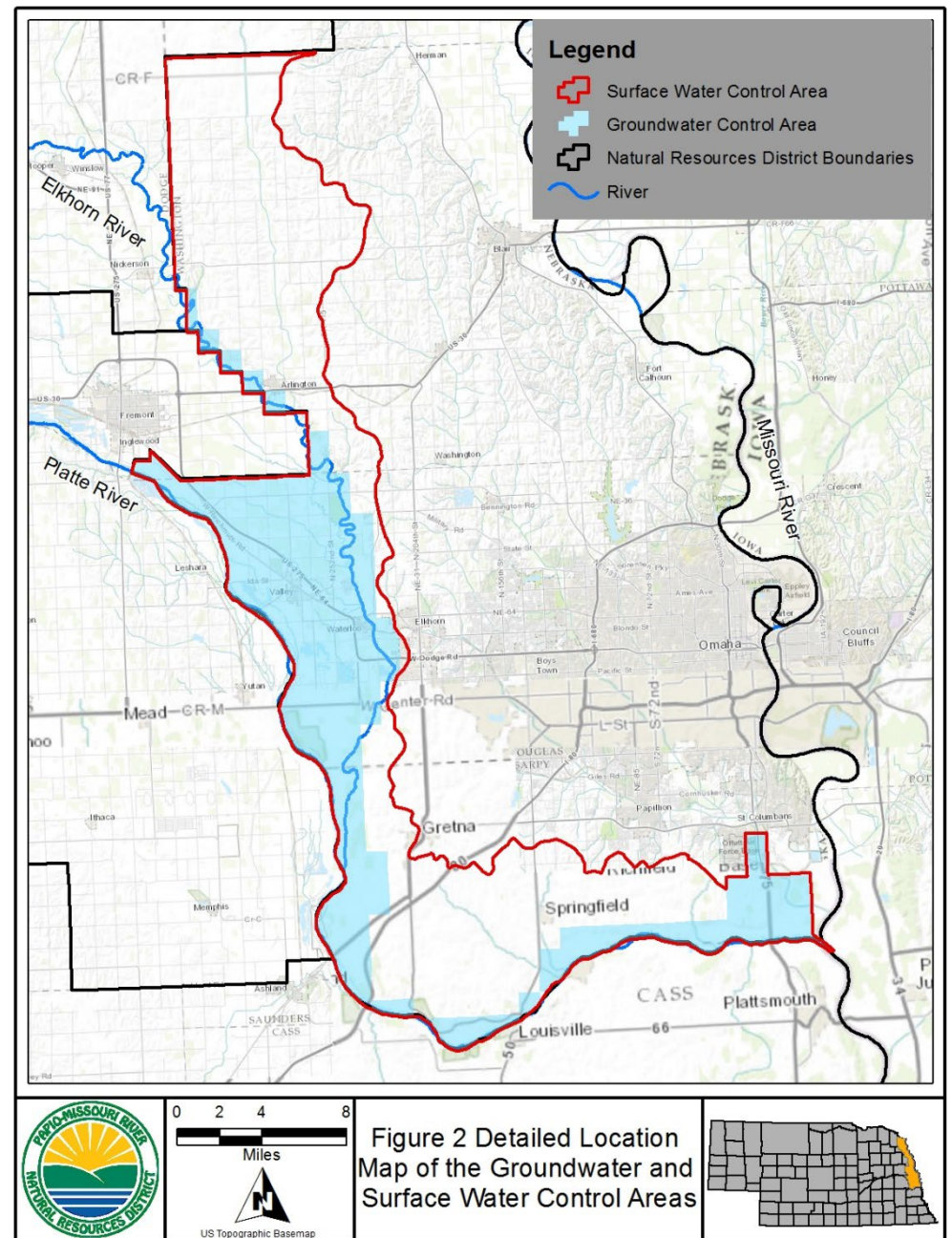
Papio-Missouri River NRD Integrated Management Plan Area



Groundwater and Surface Water Controls

Groundwater irrigated acres expansions in the District follow the agreed to conditions with the Lower Platte River Basin Coalition.

PMRNRD, NeDNR, and other Basin NRDs continue cooperative water development discussions based on the Lower Platte Basin Water Management Plan



NeDNR DATA COLLECTION & MONITORING

NeDNR Monitoring

- Surface water permitting activities
- NeDNR stream gage measurements
- Surface water pump site inspections
- Surface water irrigation use



NeDNR DATA COLLECTION & MONITORING

2023 NeDNR Surface Water Appropriations Approved PMNRD IMP Area

Appropriation Number	Date Approved	Source	Diversion or Reservoir Location	Sub-basin	Use	Grant (cfs)	Grant (af)	Acres
A-19937	8/3/2023	Missouri River	S13-T15 R13E	Missouri River	MF	20.0	NA	NA
A-19919	11/6/2023	Tiburon Creek	S21-T14 R11E	Missouri River	FL	NA	84.7	NA
A-19811	1/4/2023	Wehrspann Creek	S01-T13 R10E	Missouri River	ST	NA	167.1	NA

NeDNR DATA COLLECTION & MONITORING

NeDNR 2023 Surface Water Permitting Actions Within the IMP Area Appropriations Cancelled or Expired

Surface Water Appropriations Cancelled-in-Full in 2023 Within the IMP Area

Appropriation Number	Cancel Date	Source	Location of Diversion or Reservoir	Use	Begin Acres	Cancelled			Estimated Date of Last Use	Basis for NeDNR Action
						Acres	Grant in cfs	Grant in af		
A-16850	6/8/2023	Papillion Creek, South, Trib. to	S21-T14 R11E	ST	NA	NA	NA	11.7	2019	Rel-9980
A-19858*	8/30/2023	East Knight Creek	S14-T16 R12E	ST	N/A	N/A	N/A	5.0	N/A	N/A

A-19858 was cancelled because plans were not filed

NeDNR DATA COLLECTION & MONITORING

NeDNR Surface Water Pump Site Inspections, PMRNRD			
Year	SW Points of Diversion	Number of Pumps Inspected	Associated Permitted Acres
2017	51	44	4,812
2018	51	49	5,213
2019	49	1	95.2
2020	53	9	448.0
2021	51	50	5,634
2022	51	26	2,794
2023	51	49	3,604

As time and conditions allow, the NeDNR field office staff visit pump sites (as mapped) for each appropriation to check compliance and collect data.

In 2023, the pump sites were inspected for appropriations.

Of the sites visited, 17 had a pump site set up and 7 were running.

NeDNR DATA COLLECTION & MONITORING

2023 NeDNR Surface Water Pump Site Inspections IMP Area, Lower Platte River Basin Coalition

NRD	Total Number of Permits	Number of pump site Inspections	Number of pump sites set up for irrigation
Lower Elkhorn	344	341	85
Lower Loup	758	656	422
Lower Platte North	137	137	24
Lower Platte South	201	175	36
Papio-Missouri River	109	91	19
Upper Elkhorn	86	84	21
Upper Loup	30	18	
Total	1692	1502	607

NEEDNR 2023

VOLUNTARY SURFACE WATER REPORTING

- 20 responses from 51 surveys
 - 7 Surface Water only (657 acres)
 - 4 comingled (512 acres)
 - 8 No Irrigation
 - 1 groundwater only
- 4.7" average inches applied

PMNRD DATA COLLECTION & MONITORING

NRD Monitoring

- Irrigated acres expansion
- Groundwater level measurements
- Municipal water use

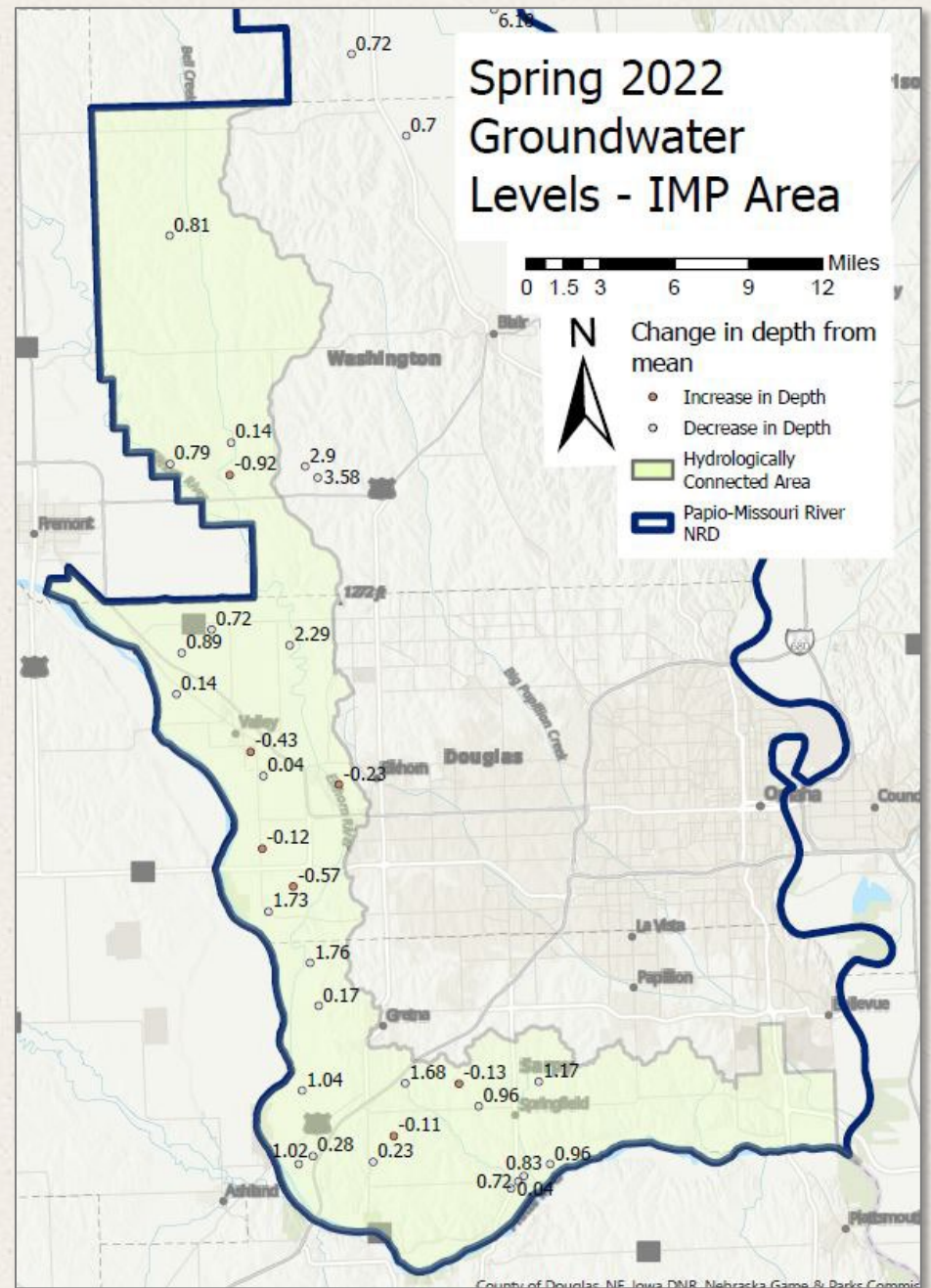


PMNRD DATA COLLECTION & MONITORING

Groundwater Irrigated Acres Expansion PMNRD		
Year	Number of Acres with a Variance (IMP Area)*	Groundwater Peak Depletion (AF)
> July 1, 2016	0	0
2017	11	1.5
2018	0	0
2019	0	0
2020	205	28.5
2021	26	4.0
2022	102.8	14.6
TOTAL	344.8	48.6

PMNRD Data Collection and Monitoring

Spring 2022 Groundwater Level Measurements



PMNRD DATA COLLECTION & MONITORING

Municipal Water Use PMNRD IMP Area						
Municipal Wellfield	Total Pumped (Ac-ft)					
	2017	2018	2019	2020	2021	2022
Papillion	4,661.1	4,482.2	4,655.4	5,807.8	5,656.3	5,883.0
Lincoln	22,115.1	11,866.5	8,246.5	9,007.9	18,561.5	19,753.7
M.U.D. South	27,217.2	31,104.3	36,201.0	35,701.3	30,554.0	
M.U.D. West	12,225.1	10,741.7	9,861.9	12,706.1	14,042.8	13,707.0
Fremont	4,987.4	5,395.3	5,719.6	7,262.3	7,960.5	8,694.3
Valley	469.3	506.3	537.3	740.4	713.9	862.1
Springfield	183.8	202.3	188.7	232.0	243.0	368.8
Gretna	1,267.4	1,263.5	1,279.7	1,648.0	1,635.7	18,951.1
Arlington	231.3	165.8	195.3	269.7	301.2	32.8
TOTAL	73,357.7	65,727.9	66,885.4	67,531.7	79,668.9	54,485.8

LOWER PLATTE RIVER BASIN COALITION

2ND INCREMENT ACCOUNTING

NRD	PEAK SEASON 5-YR ALLOWABLE DEPLETION (AF)	2023 NRD Reported NET Depletion (AF)	NeDNR Reported Depletion (AF)	NRD Prior Years Peak Season CU Use (AF)	2023 NRD Peak Season CU (AF)	NRD Total Peak Season CU Use (AF)	NeDNR Total Peak Season CU (AF)	Total New Peak Season Depletion	Total New Peak Season CU	Remaining 5-YR Allowable Depletion (AF)	Percent of Remaining 5-YR Allowable Depletion
Upper Loup NRD	5393.46	39.5	0.0	959.6	134.2	1093.8	0.0	39.5	1093.8	5354.0	99.3%
Lower Loup NRD	11928.68	-11.7	26.9	2347.9	-69.6	2278.3	26.9	15.2	2305.2	11913.5	99.9%
Upper Elkhorn NRD	2927.25	0.3	0.0	686.1	1.1	687.2	0.0	0.3	687.2	2927.0	100.0%
Lower Elkhorn NRD	8356	305.9	-38.0	2826.6	605.5	3432.1	-38.0	267.9	3394.0	8088.1	96.8%
Papio-Missouri River NRD	1811.4	88.5	0.0	87.5	66.4	153.9	0.0	88.5	153.9	1722.9	95.1%
Lower Platte South NRD	2065.526	-0.9	0.0	26.6	-0.1	26.5	0.0	-0.9	26.5	2066.5	100.0%
Lower Platte North NRD	3790.808	205.4	14.0	1847.5	322.2	2169.7	14.0	219.4	2183.7	3571.4	94.2%
TOTALS	36,273	627	3	8,782	1,060	9,841	3	630	9,844	35,643	98%

CU = Consumptive Use AF = Acre Feet

PMRNRD 2023 IMP Goals Achievement

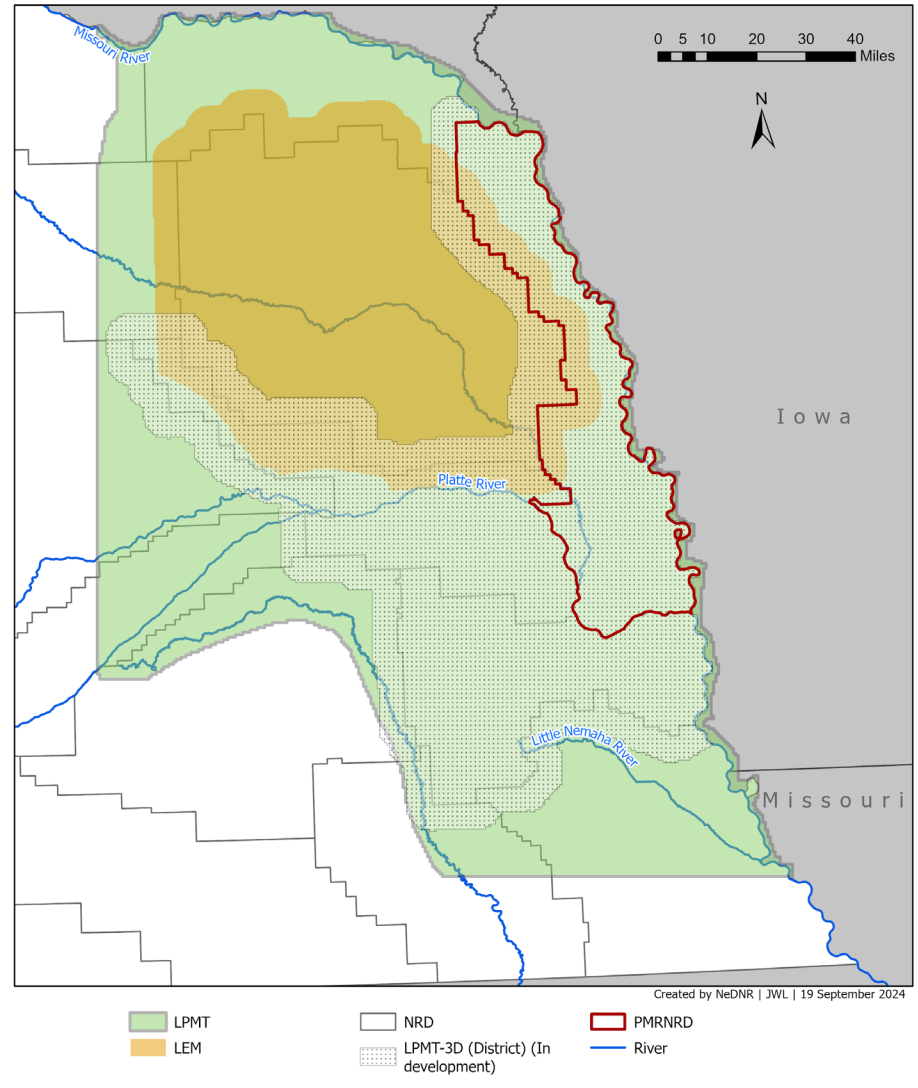
Met	Examples
Goal 1 Policy	Weed management support, completed LPRB Water Management Plan, GW Management & Plan, LPR Drought Contingency Plan
Goal 2 Inventory	USGS Platte & Elkhorn R. Integrated Monitoring Study, NRD Water Balance Study, data collection (basin-wide database, municipal water use), modeling (LPMT, sub-regional with AEM 3-D data)
Goal 3 Education	World O' Water, urban water conservation activities, cost share soil moisture probes and flow meters, LPRDC press releases, online tools
Goal 4 Cooperate	Lower Platte River Drought Coalition, Basin Accounting, Lower Platte River Drought Consortium Mitigation Plan

NeDNR MODELS

NeDNR Lower Platte - Missouri Tributaries Region Models

- Updated LPMT to cover 2014 through 2021
 - Documentation completed in late 2023
- Contracted with JEO to create new 3 District Model
 - Creating sub-regional model with AEM data
 - Data has been collected for model
 - Initial framework model in development this year

Lower Platte Missouri Tributaries Models



JOINTLY IDENTIFIED ACTIONS FOR THE NEXT 2 YEARS

- Continue effort to develop depletion/consumptive use tracking database as a part of LPRBC
- NRD will complete Irrigated Acres Certification
- Review data from local studies, as available
- Continue to participate in basin-wide and regional planning efforts such as ENWRA, the Lower Platte River Consortium (drought contingency plan), and Lower Platte River Basin Coalition (LPRBC)

QUESTIONS?

Phillip Paitz
Groundwater Management
Engineer
ppaitz@papionrd.org



PAPIO-MISSOURI RIVER
NATURAL RESOURCES DISTRICT
Finding Solutions Today for a Secure Tomorrow.

THANK YOU.

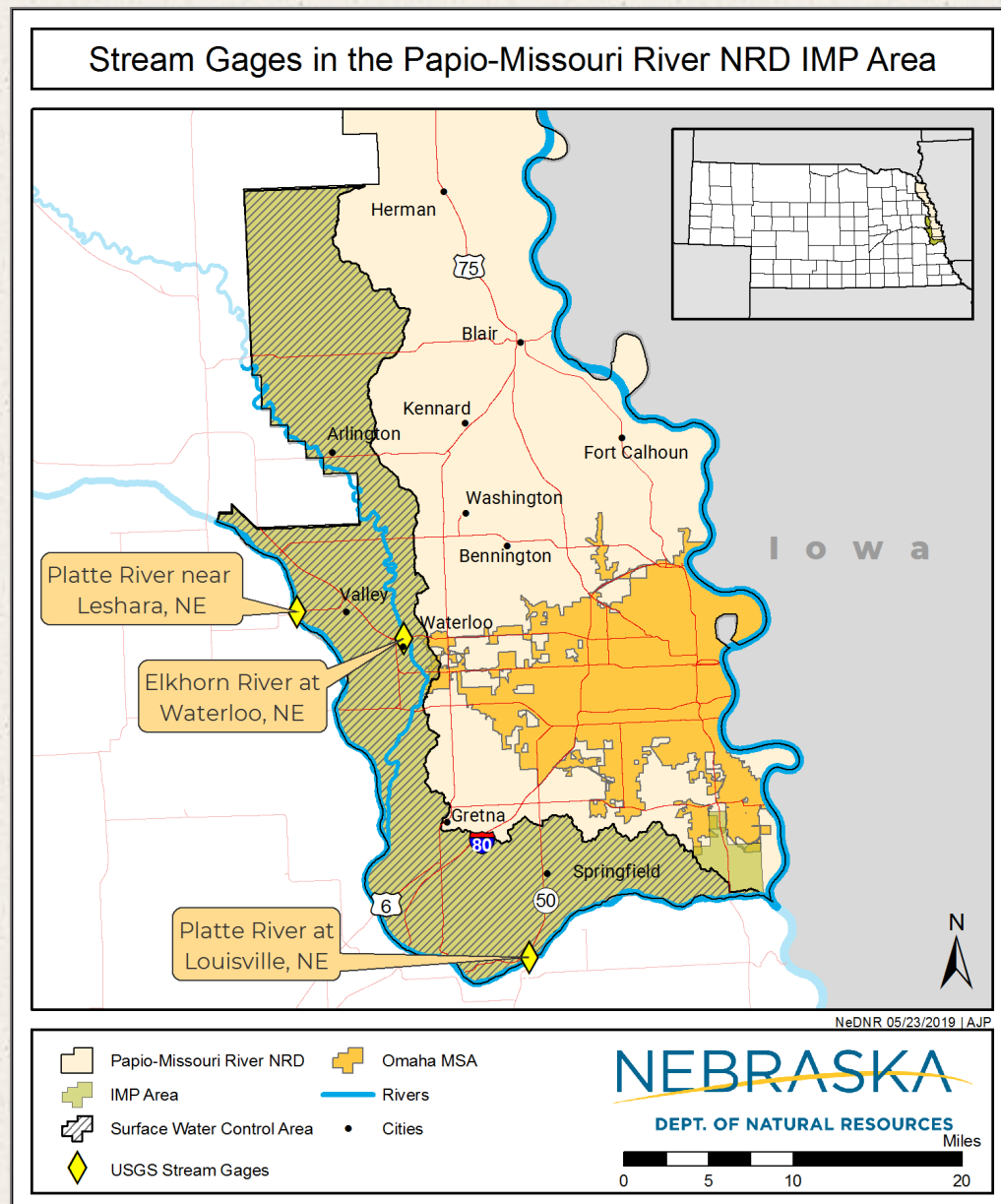
Tyler Martin
Integrated Water
Management Coord.
Tyler.Martin@nebraska.gov

NEBRASKA
DEPT. OF NATURAL RESOURCES

NeDNR DATA COLLECTION & MONITORING

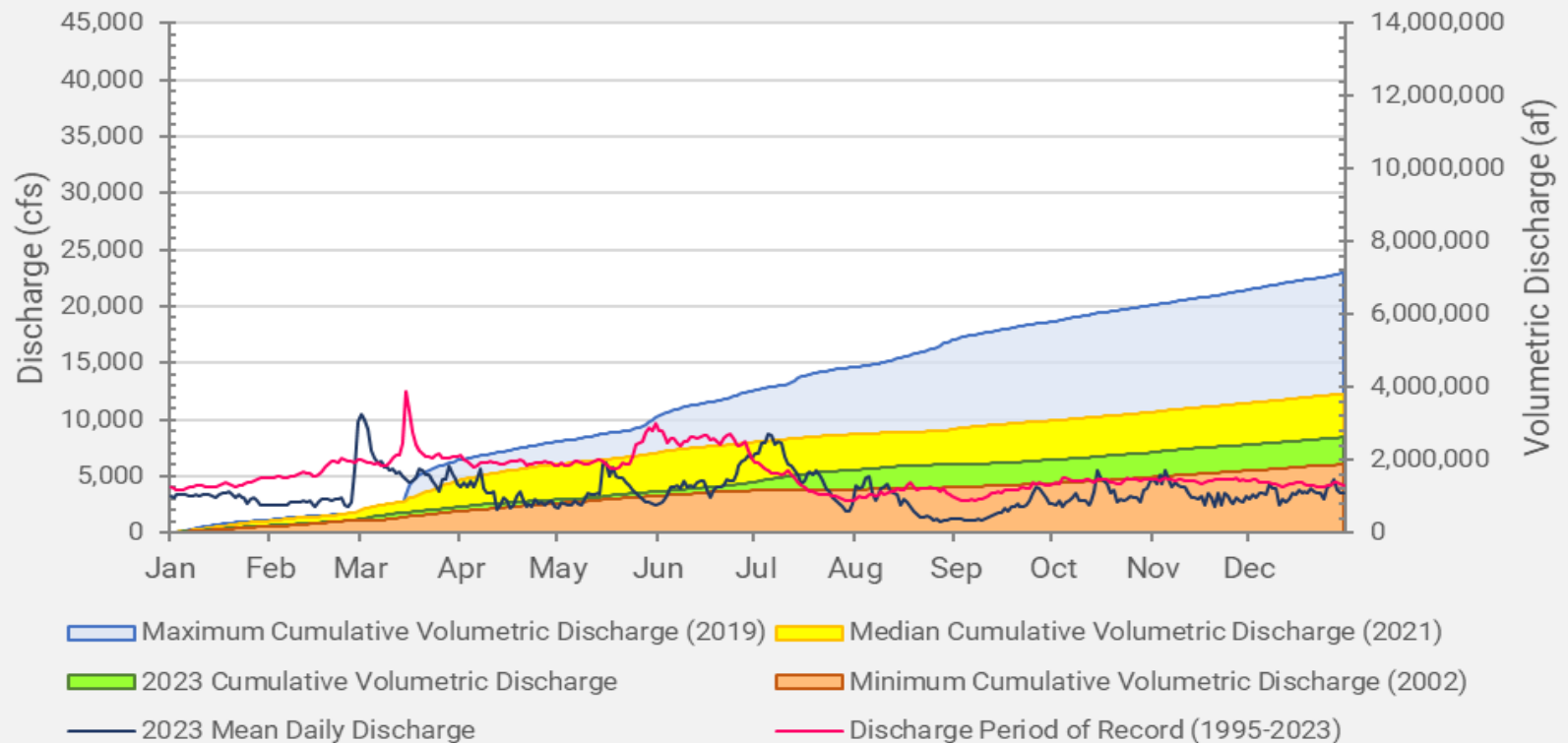
NeDNR Stream Gaging

- 3 USGS-owned gages in the IMP area

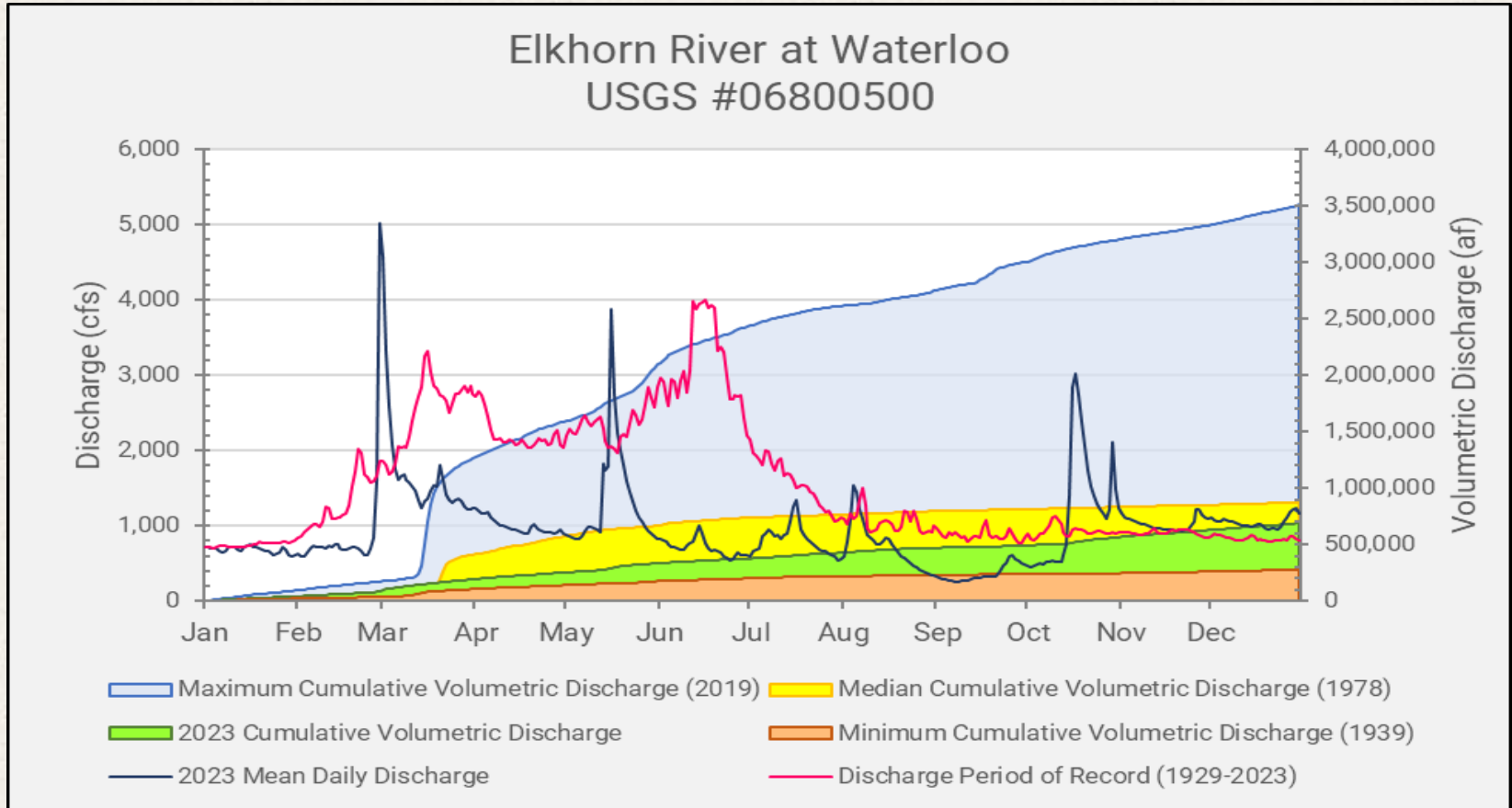


SURFACE WATER MONITORING

Platte River near Leshara
USGS #06796500



SURFACE WATER MONITORING



SURFACE WATER MONITORING

