

Nemaha Natural Resources District

Voluntary-Integrated Management Plan (V-IMP)

Annual Review of Nebraska Department of Natural Resources 2022\2023 Activities

March 14th, 2024

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Overview

- Reporting of NeDNR Data
- Evaluation of data reporting
- Evaluation of Goals
- Evaluate progress on implementation of the V-IMP

Why Conduct Integrated Management Plan (IMP) Reviews

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



Integrated Management Plan (IMP) Process

- The process is an adaptive management approach
 - Allows for inventory and uses of both ground and surface water
 - Increases collaboration between water management entities
 - Increases public awareness
 - Allows for increased opportunity of both long- and short-term input
- IMP can be altered as areas change or as more data becomes available

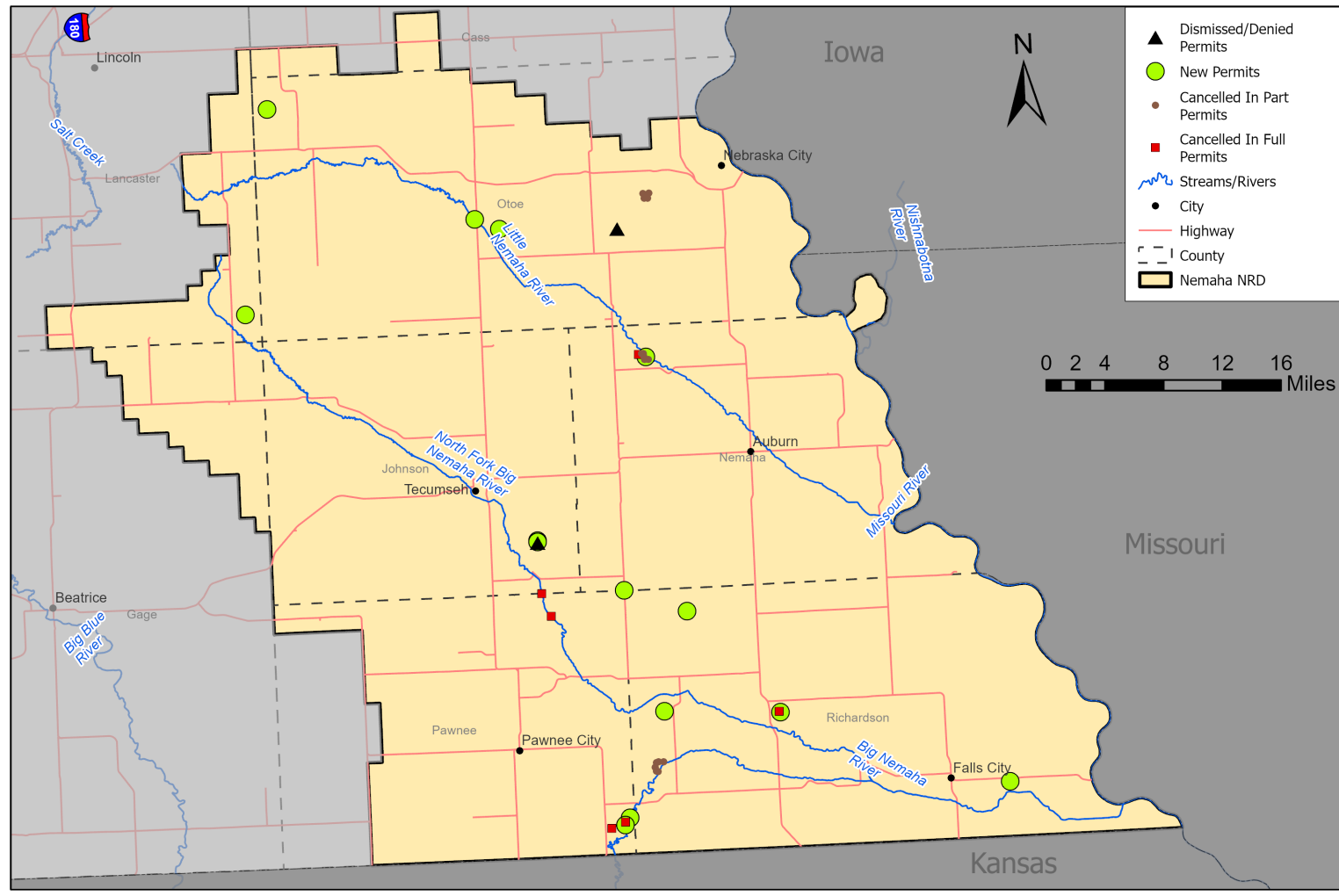
Integrated Management Plan (IMP) Goals

- Goal 1 – Develop a better understanding of the Nemaha Natural Resources District’s water supplies and uses.
- Goal 2 – Prevent or mitigate water-related conflicts within the Nemaha Natural Resources District
- Goal 3 – Inform the public of the Nemaha Natural Resources District’s water resources and management efforts.



2022 NeDNR Surface Water Permitting Activities

Surface Water Permitting Activity in the Nemaha NRD



Created by NeDNR | jwl 07/13/2023



NeDNR Surface Water Permitting Activities

15 new surface water permits were issued in 2022. Nine permits were for irrigation (IR), four were for storage-only (SO), one was for storage (ST) and one MF permit that expired on July 20, 2023.

New Surface Water Permits within the Nemaha NRD							
Appropriation Number	Date Approved	Source	Diversion / Reservoir Location	Use	Grant in (cfs)	Grant in (af)	Acres
A-19793	1/19/2022	Long Branch Creek	S36-T4-R13E	IR	1.05		73.8
A-19826	4/22/2022	Tributary to Little Muddy Creek	S11-T3-R13E	IR	1.67		116.8
A-19857	7/20/2022	Muddy Creek	S17-T1-R17E	IR	4.74		331.7
A-19859	8/5/2022	Tributary to North fork Big Nemaha River	S26-T7-R8E	IR	0.28		19.9
A-19863	8/29/2022	Hooper Creek	S18-T9-R9E	IR	0.03		2.2
A-19867	9/20/2022	Brownell Creek	S35-T8-R11E	IR	1.9		132.8
A-19864	7/20/2022	Little Nemaha River	S28-T8-R11E	MF	0.22		
A-19843	6/10/2022	Rist Pond	S16-T2-R13E	SO		8.44	70.4



NeDNR Surface Water Permitting Activities

New Surface Water Permits within the Nemaha NRD							
Appropriation Number	Date Approved	Source	Diversion / Reservoir Location	Use	Grant in (cfs)	Grant in (af)	Acres
A-19809	4/26/2022	Robinson Reservoir	S18-T4-R14E	SO		34	84.8
A-19869	10/24/2022	Kean Pond 2	S14-T2-R14E	SO		21.3	134.5
A-19870	10/24/2022	Kean Pond 2	S14-T2-R14E	SO		0.8	5
A-19810	4/26/2022	Tributary to North Fork Big Nemaha River	S18-T4-R12E	ST		34	
A-19872	11/9/2022	South Fork Big Nemaha River	S24-T1-R12E	IR	2.46		172.5
A-19878	12/13/2022	Little Nemaha River	S16-T6-13E	IR	2.66		186.1
A-19882	12/13/2022	South Fork Big Nemaha River	S24-T1-R12E	IR	3.46		242.5



NeDNR Surface Water Permitting Activities

A total of 14 existing permits were acted on in 2022. Seven permits were cancelled in full, four were cancelled in part and three were dismissed or denied.

Surface Water Applications Cancelled in Full, Cancelled in Part or Denied within the Nemaha NRD								
Appropriation Number	Status	Date	Source	Diversion / Reservoir Location	Use	Grant in (cfs)	Grant in (af)	Acres
A-13915	Cancelled in Full	12/13/2022	Piper Creek	S17-T6-R13E	IR	1.02		71.8
A-15702	Cancelled in Full	12/13/2022	South Fork Big Nemaha River	S24-T1-R12E	IR	1.43		100
A-19420	Cancelled in Full	12/13/2022	Lores Branch	S26-T1-R12E	IR	1.74		121.8
A-19681	Cancelled in Full	12/13/2022	North Fork Big Nemaha River	S6-T3-R12E	IR	2.22		155.4
A-19687	Cancelled in Full	12/28/2022	North Fork Big Nemaha River	S7-T3-R12E	IR	2.15		150.7
A-19614	Cancelled in Full	1/14/2022	Kean Pond 2	S14-T2-R14E	SO		0.8	5
A-19615	Cancelled in Full	1/14/2022	Kean Pond 2	S14-T2-R14E	SO		21.3	134.5



NeDNR Surface Water Permitting Activities

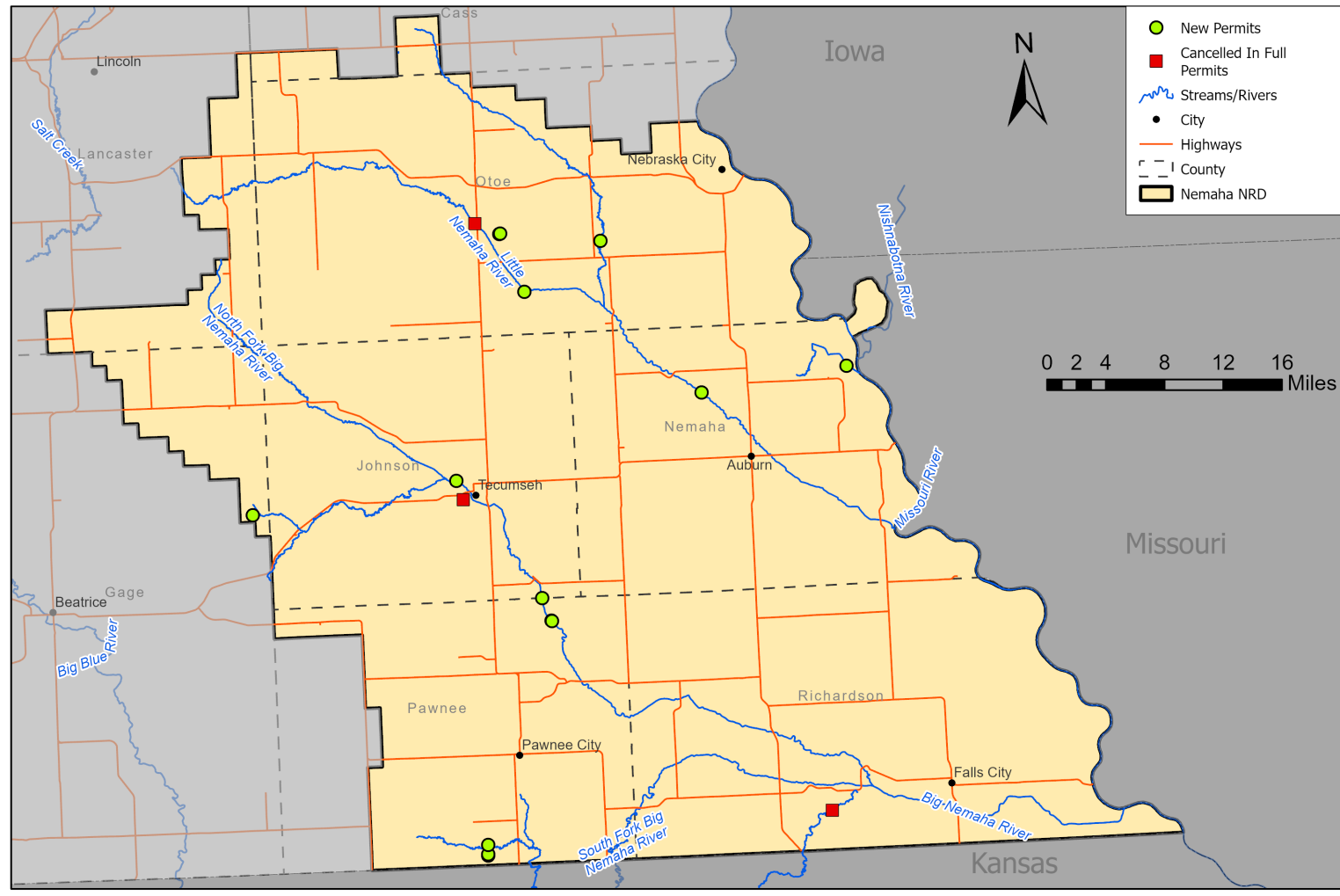
Surface Water Applications Cancelled in Full, Cancelled in Part or Denied within the Nemaha NRD

Appropriation Number	Status	Date	Source	Diversion / Reservoir Location	Use	Grant in (cfs)	Grant in (af)	Acres
A-19495	Cancelled in Part	9/13/2022	Fox Creek	S21-T8-R13E	IR	0.55		38.6
A-11513	Cancelled in Part	12/13/2022	Little Nemaha River	S8-T6-R13E	IR	0.07		5
A-19717C	Cancelled in Part	12/6/2022	South Fork Big Nemaha River	S5-T1-R13E	IR	0.5		34.7
A-8032	Cancelled in Part	12/13/2022	Little Nemaha River	S16-T6-R13E	IR	0.65		91.2
A-19743	Dismissed	3/1/2022	Robinson Reservoir	S18-T4-R12E	SO		0	
A-19702	Dismissed	7/19/2022	McGinnis Reservoir	S31-T8-R12E	SS		0	
A-19701	Dismissed	7/19/2022	Tributary to North Fork Little Nemaha River	S31-T8-R13E	SS		0	



2023 NeDNR Surface Water Permitting Activities

Surface Water Permitting Activity in the Nemaha NRD



Created by NeDNR | jwl 02/12/2024



NeDNR Surface Water Permitting Activities

15 new surface water permits were issued in 2023. Eleven permits were for irrigation (IR), four were for storage-only (SO), one was for storage (ST) and one MF permit that will expire on July 20, 2023.

New Surface Water Permits within the NNRD in 2023							
Appropriation Number	Date Approved	Source	Diversion / Reservoir Location	Use	Grant in (cfs)	Grant in (af)	Acres
A-19885	44973	Muddy Creek	S19-T7-R12E	IR	2.57	540	180
A-19888	45015	Nemaha River, Little	S25-T6-R13E	IR	4.4	924.3	308.1
A-19893	45001	Nemaha River, Big, North Fork	S7-T3-R12E	IR	2.14	453	151
A-19892	45001	Nemaha River, Big, North Fork	S6-T3-R12E	IR	2.16	453.9	151.3
A-19891	45015	Brownell Creek	S35-T8-R11E	SO		17.99	
A-19894	44999	Nemaha River, Big	S19-T5-R11E	IR	1.22	256.5	85.5
A-19895	45001	Nemaha River, Big, North Fork	S7-T3-R12E	IR	5.56	1167.3	389.1
A-19916	45058	Harms Irrigation Reservoir	S35-T8-R11E	IR		17.99	116.2



NeDNR Surface Water Permitting Activities

New Surface Water Permits within the NNRD in 2023

Appropriation Number	Date Approved	Source	Diversion / Reservoir Location	Use	Grant in (cfs)	Grant in (af)	Acres
A-19907	45034	Nemaha River, Little, North Fork	S36-T8-R12E	IR	1.08	225.9	75.3
A-19911	45233	Johnson Creek	S29-T1-R11E	SO		114	
A-19912	45233	Rottinghaus Reservoir	S32-T1-R11E	IR		228	221.4
A-19913	45233	Johnson Creek	S29-T1-R11E	IR	3.16	664.2	221.4
A-19915	45233	Johnson Creek, Trib. To	S32-T1-R11E	SO		114	
A-19922	45119	Buck Creek	S22-T6-R15E	Wetlands	2	24.8	
A-19927	45128	Randy Miller Reservoir	S35-T5-R8E	IR		51.99	120.4



NeDNR Surface Water Permitting Activities

A total of three existing permits were acted on in 2023. All three permits were cancelled in Full.

Surface Water Applications Cancelled in Full, Cancelled in Part or Denied within the NNRD in 2023								
Appropriation Number	Status	Date	Source	Diversion / Reservoir Location	Use	Grant in (cfs)	Grant in (af)	Acres
A-10600	Cancelled in Full	5/22/2023	Badger Branch Creek	S32-T5-R11E	IR	0.07		4.9
A-14434	Cancelled in Full	4/25/2023	Rock Creek	S20-T1-R15E	IR	2.02	423.3	141.1
A-19864	Cancelled in Full	7/20/2022	Nemaha River, Little	S28-T8-R11E	MF	0.22	10	

* Permit A-19864 is a temporary permit of one year that was issued on 7/20/2022



NeDNR Surface Water Closures during 2023

- One surface water closure on the South Fork of the Big Nemaha River
 - Effective dates of closures were 06/28/2023 through 07/02/2023.
 - Closure was for localized administration of a senior water right.
 - Total of eight irrigation permits and five storage permits were closed.



NeDNR Updates - Missouri River

- HiVIS Cameras along Missouri River
 - Partnership with USGS for 3 to 4 additional cameras
 - NeDNR offering to cover initial installation and first year operation/maintenance
- Planned Assistance to States study was completed in July 2023
 - Used in Lower Missouri River Flood Risk and Resiliency Study
- Preliminary flood risk reduction measures
 - Public meeting, to be scheduled, for late March for public comments and feedback



Nemaha NRD Static Water Level Measurements

Lifetime Changes:

- District Average down 0.12'
- Irrigation wells down 0.42'

2022 District Data

Spring 2022 – Fall 2022: Average down 4.07' (114 wells)
Fall 2021 – Fall 2022: Average down 1.83' (113 wells)
Spring 2021 – Spring 2022: Average down 1.59' (111 wells)

2022 Irrigation Well Data (30 wells)

Spring 2022 – Fall 2022: Average down 3.02'
Fall 2021 – Fall 2022: Average down 1.42'
Spring 2021 – Spring 2022: Average down 1.50'

2023 District Data

Spring 2023 – Fall 2023: Average down 3.33' (110 wells)
Fall 2022 – Fall 2023: Average down 0.31' (110 wells)
Spring 2022 – Spring 2023: Average down 0.83' (110 wells)

2023 Irrigation Well Data (30 wells)

Spring 2023 – Fall 2023: Average down 2.94'
Fall 2022 – Fall 2023: Average down 0.72'
Spring 2022 – Spring 2023: Average down 0.64'



Nemaha NRD Tracking & Water Use Data

District Flowmeter Data

2022: District Average Irrigation Water Applied Was 5.96 inches per acre on 22,153 acres.

2023: District Average Irrigation Water Applied Was 3.89 inches per acre on 24,401 acres.

2022 Well Construction Permits Issued

23 High Capacity Well Permits Were Issued, 0 Denied

2023 Well Construction Permits Issued

33 High Capacity Well Permits Were Issued, 0 Denied

No certified acre data, no public water use data collected, no variances were granted, no transfer permits were granted.

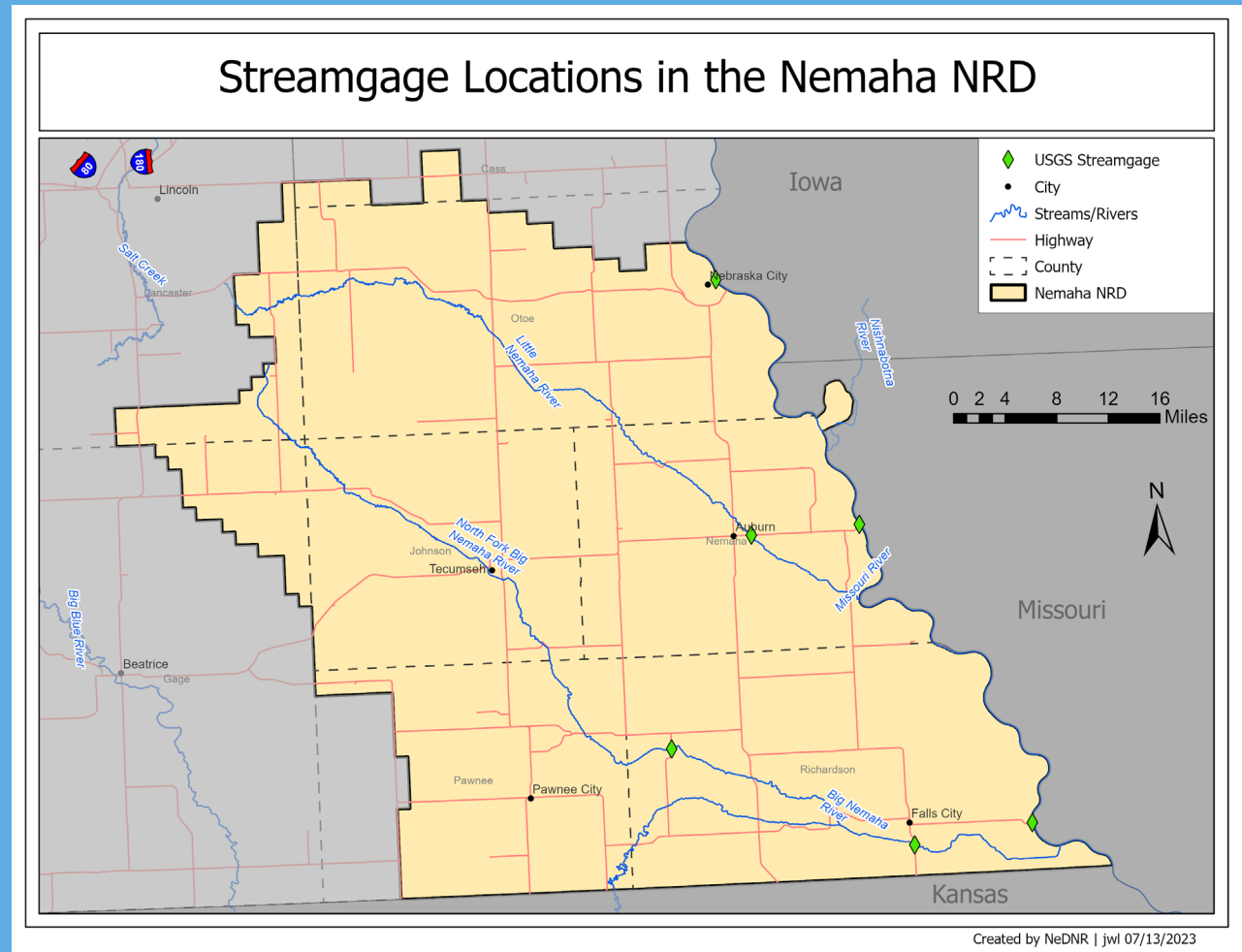


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Streamgauge Locations in the Nemaha NRD

Streamgages in the Nemaha NRD					
Name	Gage ID	Start Year	Gage Height (Stage)	Discharge	Agency / Partner Agency
Little Nemaha River at Auburn*	6811500	1990	x	x	USGS / US Army Corp of Engineers
Big Nemaha River at Falls City*	6815000	1991	x	x	USGS / US Army Corp of Engineers
Missouri River at Nebraska City*	6807000	1991	x	x	USGS / US Army Corp of Engineers
North Fork Big Nemaha River at Humboldt	6814500	2007	x	x	USGS
Missouri River at Rulo*	6813500	1990	x	x	USGS / US Army Corp of Engineers
Missouri River at Brownville, NE	6810070	2019	x	x	USGS / US Army Corp of Engineers

*Not all data is available for every year



NeDNR streamgages can be found at the following: <https://nednr.nebraska.gov/RealTime/>

Models and Studies

- The Nemaha NRD was awarded a Water Sustainability Grant for an Airborne Electromagnetic (AEM) mapping project in Fall of 2022.
 - This project will collect hydrogeologic information through AEM flights to complete studies in the remainder of the Nemaha NRD's desired study areas. It will additionally compile all new and existing AEM data into one database.
 - Flights took place in the summer of 2023 and the final report and combined data will be delivered in Winter of 2024.
- The Nemaha NRD is a member of the Eastern Nebraska Water Resources Assessment (ENWRA). ENWRA's ultimate goal is to develop a three-dimensional geologic framework and water budget for eastern Nebraska.
 - AEM hydrogeologic logs have been used to create a topographic bedrock map for an area of concern.
- The Nemaha NRD provided \$2,600 annually for the Cook Mesonet Weather Station.
- The Nemaha NRD reviews and acts on issues discovered in dam safety inspections.
- The Nemaha NRD maintains a joint hazard management plan through the Nebraska Emergency Management Agency.



Joint Action Slide

- Annual newsletter focused on water resources
 - The Nemaha NRD will seek information from NeDNR to include in the annual water edition of their quarterly newsletter
- School Activities Upon Request
 - The Nemaha NRD will visit classrooms to discuss water resources upon request. NeDNR's resources may be requested to assist the Nemaha NRD
- Maintain Website and Social Media
 - The Nemaha NRD will continue to manage their website and social media accounts to provide information on water resources, including cost share available.



Questions?

Thank You!

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