

---

**2024 ANNUAL INTEGRATED  
MANAGEMENT PLAN REPORT:**

**LOWER NIOBRARA NATURAL  
RESOURCES DISTRICT**

**&**

**NEBRASKA DEPARTMENT OF  
NATURAL RESOURCES**

---

REPORTING ON 2023 DATA  
ANNUAL MEETING HELD ON JULY 10, 2024

## ***Purpose***

The Lower Niobrara Natural Resources district (LNNRD) and the Nebraska Department of Natural Resources (NeDNR) developed and adopted a Voluntary Integrated Management Plan (IMP), which became effective on May 1, 2014. The overarching goal of the plan is to jointly manage groundwater and surface water within the LNNRD to sustain a balance between water uses and supplies for the long term. The purpose of this report is to fulfill NeDNR's responsibilities in accordance with the plan's annual reporting obligations and provide updates on current projects or studies.

Reporting and exchanging information gathered from monitoring projects, streamflow data, or other studies provides a basis to increase understanding of the surface water and hydrologically connected groundwater system. The data gathered through the IMP's monitoring plan is designed to evaluate and measure the success of the objectives of the IMP. This information exchange also helps to test the validity of the conclusions and information upon which the IMP is based. This report contains information from January 1, 2023, through December 31, 2023.

## ***Department Reporting***

The Department annually reports on data related to the following. Items in **bold** are required under the IMP. Other data presented in this report are collected by the Department and shared to present a more complete picture of water management actions in the district.

- **Surface water use**
  - ◇ Breakdown of all surface water permits in LNNRD
  - ◇ **Voluntary water use reports**
- **Surface water permitting**
  - ◇ **New surface water permits issued**
  - ◇ **Surface water permits denied or cancelled**
  - ◇ Surface water transfers and modifications
  - ◇ Pumpsite inspections
- **Groundwater transfers approved**
- **Streamflow measurements**
- Surface water administration
- **Offsets provided for depletions resulting from increased consumptive use related to any of the above-listed items**

## 1. Surface Water Use

The Nebraska Department of Natural Resources is responsible for issuing surface water permits in the state. In the LNNRD, approximately 70% of all surface water permits are for irrigation, either from a naturally flowing source, or from a reservoir. The remaining surface water permits allow for water storage, domestic and industrial uses, and instream flow protections. **Table 1** shows a breakdown of all active surface water permits in the district by use type as of December 31, 2023. It also includes the total number of each permit type, acres approved for irrigation, and the cumulative rate or volume granted for each type of permit.

Table 1: Surface Water Use in the Lower Niobrara NRD as of December 31, 2023

<b>ACTIVE SURFACE WATER PERMITS IN THE LOWER NIOBRARA NRD</b>				
as of December 31, 2023				
<b>Purpose of Permit</b>	<b>Number of Permits</b>	<b>Acres Approved for Irrigation</b>	<b>Grant (cfs)</b>	<b>Grant (af)</b>
(IR) Diversion from naturally flowing source for irrigation	287	32,001.5	446.5	N/A
(SI) Diversion from a reservoir for irrigation of land that is also approved to receive water from a naturally flowing source	49	6,307.8*	N/A	2,216.1
(SO) Diversion only from a reservoir for irrigation	48	4,462.4	N/A	4253.2
<b>Total Irrigation Permits</b>	<b>384</b>	<b>36,463.9</b>	<b>446.5</b>	<b>6,469.3</b>
(ST) Storage of water in a reservoir	148	N/A	N/A	7,649.1
(SS) Supplemental storage	13	N/A	4.2	729.1
<b>Total Storage Permits</b>	<b>161</b>	<b>N/A</b>	<b>4.2</b>	<b>8,378.2</b>
Domestic use	11	5.9	0.3	N/A
Fish culture	1	N/A	3.6	N/A
Manufacturing	2**	N/A	5.6	10
Instream basin-management	4	N/A	2,460	N/A
Instream flow	5	N/A	10,358	N/A
<b>Total Permits</b>	<b>568</b>	<b>36,469.8</b>	<b>13,282.4</b>	<b>14,857.5</b>
* SI permits allow for irrigation with water from storage on land already approved for irrigation from natural flow. Therefore, acres approved under SI permits are not counted in total irrigated acres.				
** One manufacturing permit is temporary and is set to expire 8/8/2024.				

The Niobrara River Basin Alliance (NRBA)—an interlocal cooperative agreement between the three Niobrara River basin NRDs, and the Nebraska Game and Parks Commission—holds four instream basin-management (IB) permits, and five instream flow (IF) permits

(listed in **Table 2**). These permits are intended to ensure that streamflow is sufficient to protect fish and wildlife habitats. The IB permits are for the reach of the Niobrara River upstream of the former Spencer hydroelectric dam and the IF permits are for the reach downstream of the Spencer dam to the confluence with the Missouri River.

*Table 2: Instream Basin-management and Instream Flow permits within the Niobrara River Basin.*

Purpose of Permit	Number of Permits	Grant in cfs
(IB) Instream Basin-management	4	Varies
(IF) Instream Flow	5	Varies

Instream basin-management permits are established under *Neb. Rev. Stat. § 46-290 (3) (e)* and are used to maintain streamflow for fish, wildlife, and recreation. The IB permits held by the NRBA were originally for the manufacture of hydropower at the now decommissioned Spenser hydroelectric dam. They were purchased from NPPD by the NRBA and maintain the same priority dates and preference category as the original hydropower permits. The four IB permits have the following priority dates and associated grants:

- A-359R                      Priority date of 9/12/1896                      35 cfs<sup>1</sup>
- A-1725                      Priority date of 10/30/1923                      1,450 cfs<sup>2</sup>
- A-3574                      Priority date of 6/8/1942                      550 cfs
- A-18503                      priority date of 4/16/2007                      425 cfs<sup>3</sup>

The five IF permits are A-19406A through A-19406E<sup>4</sup> with each permit covering a specific period of the year. A breakdown of each permit, their associated time periods and allotted flows are listed below:

- A-19406A                      Jan 1 - Feb 28 (29)                      2,084 cfs
- A-19406B                      Mar 1 – May 14                      2,270 cfs
- A-19406C                      May 15 – June 30                      2,270 cfs
- A-19406D                      July 1 – Sept 30                      1,765 cfs
- A-19406E                      Oct 1 – Dec 31                      1,969 cfs

---

<sup>1</sup> Administration can only be done on the Minnechaduzza creek as per the original water right.

<sup>2</sup> Administration for rights A-1725 and 3574 are allowed for a total of 2,000 cfs on the Niobrara River.

<sup>3</sup> This water right does not have the ability to have a call placed against it for administration purposes.

<sup>4</sup> Instream flow permits A-19406A through A-19406E have a priority date of 12/04/2015.

## 2. Surface Water Permitting

In 2023, there were three new surface water permits issued by the Department (listed in **Table 3**). Additionally, five permits were cancelled in full, one permit was cancelled in part and one permit was dismissed/denied. See **Table 4** for cancelled and dismissed permitting. **Figure 1** below shows the locations of surface water permitting actions within the District.

The IMP's monitoring section requires the department to report on any offsets provided for depletions resulting from increased consumptive use due to activities in the District. No offsets were provided in the 2023 reporting year.

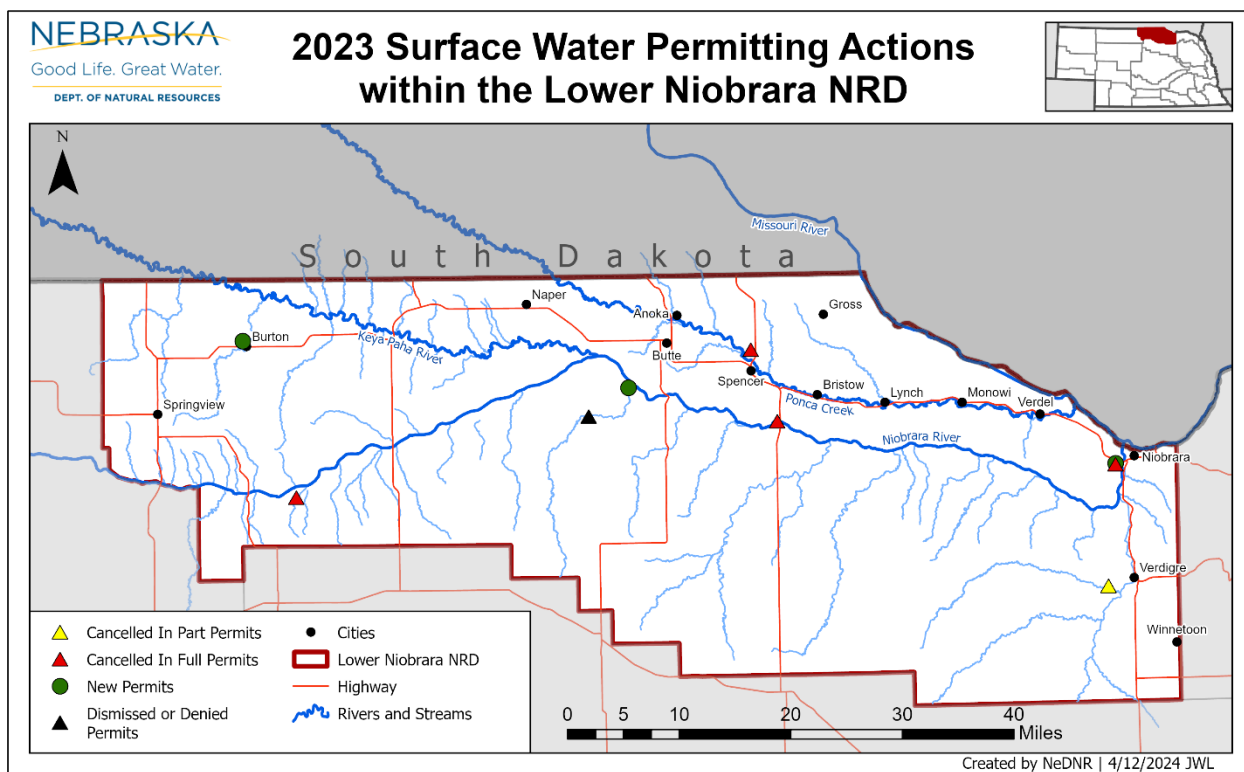


Figure 1: Surface Water Permitting Actions in the Lower Niobrara NRD.

Table 3: New Surface water permitting actions granted in 2023 within the Lower Niobrara NRD.

Appropriation Number	Approval Date	Point of Diversion Location	Use	Source	Acres	Grant	Associated Variance
A-19942*	8/30/2023	S18 T32-R6W	MF	Niobrara River	N/A	2.2 cfs 10 af	N/A
A-19883	1/17/2023	S18 T34-R19W	ST	Tributary to Burton Creek	N/A	17 af	N/A
A-19889	3/30/2023	S12 T33-R14W	DO	Tributary to Niobrara River	N/A	0.1 af	N/A

\*A-19942 is a temporary manufacturing permit for road construction. It is set to expire 8/8/2024.

Table 4: Summary of surface water permits that expired, cancelled, or were dismissed/denied within the Lower Niobrara NRD in 2023.

Appropriation Number	Approval Date	Cancelled Date	Status	Point of Diversion Location	Use	Source	Begin Acres	Cancelled Acres	Cancelled Grant in (CFS / AF)	Modification
A-1777 <sup>5</sup>	10/13/1925	9/28/2023	Cancelled in Full	S30 T33-R11W	RD <sup>6</sup>	Niobrara River	N/A	N/A	N/A	REL-9947
A-1955	10/20/1927	9/28/2023	Cancelled in Full	S30 T33-R11W	RD	Niobrara River	N/A	N/A	N/A	REL-9948
A-17032	4/25/1991	8/3/2023	Cancelled in Full	S23 T34-R12W	IR	Eilers Reservoir	20	20	20 af	REL-10053
A-18909 <sup>7</sup>	9/3/2020	10/5/2023	Cancelled in Full	S26 T32-R19W	IR	Coon Creek	148.5	148.5	2.1 cfs 445.5 af	BUC-10083
A-19865 <sup>8</sup>	7/19/2022	7/19/2023	Cancelled in Full	S18 T32-R6W	MF	Niobrara River	N/A	N/A	2.2 cfs 10 af	TEMP
A-14466CR	5/26/1978	10/20/2023	Cancelled in Part	S12 T30-R7W	IR	North Branch Verdigre River	89	74	10.6 cfs 222 af	PDNU-1022
A-19023 <sup>9</sup>	N/A	6/12/2023	Dismissed or Denied	S20 T33-R14W	IR	Big Sandy Creek	500	500	7.1 cfs	N/A

<sup>5</sup> Permit A-1777 and A-1955 were for Nebraska Public Power District (NPPD) and Spencer Dam.

<sup>6</sup> Abbreviation RD stands for raise dam. This was a Spencer Dam permit to raise head for power production.

<sup>7</sup> Permit A-18909 was amended in 2020 but maintained the original priority date of 4/16/2012.

<sup>8</sup> Temporary permit that automatically expires one year after issue.

<sup>9</sup> Permit A-19023 originally applied for on 2/19/2013, remained in pending status from 2016 till dismissal.

Modifications are actions done to a surface water permit, these actions include expedited and non-expedited transfers, relinquishments, provisional relinquishments, and reassignments of irrigated acres. These actions apply to irrigation and storage permits and do not allow for any new irrigation or withdrawals from any streams or reservoirs in the District. A permit holder has up to five years after a relinquishment to reassign acres within that District. **Table 5** summarizes any modifications to the affected permits.

*Table 5: Modifications to Surface Water Permits in the LNNRD from January 1, 2023 to December 31, 2023.*

<b>MODIFICATIONS TO SURFACE WATER PERMITS</b>									
January 1, 2023 to December 31, 2023									
Mod Number	Order Date	Permit ID	Use	Source	Acres Relinquished	Grant Relinquished	Mod Number	Acres Reassigned	Grant Reassigned
NEX-9655	4/18/2022	A-12358	IR	Keya Paha River	N/A	N/A	N/A	172.7	0.97 cfs
NEX-9656	4/18/2022	A-7886	IR	Keya Paha River	N/A	N/A	N/A	172.7	1.5 cfs
SPLT-9661	4/18/2022	A-18800R	IR	Tributary to Ponca Creek	N/A	N/A	N/A	188	2.69 cfs

### 3. Pump Site Inspections

The NeDNR field office staff regularly inspects pump sites of surface water diversion points as conditions allow. Not all pump sites are inspected every irrigation season and some pump sites may be visited more than once per season. See **Table 6** and **Figure 2** below. As part of inspections, field staff collect the following data:

- Evidence of pump site
- Pumps that are running
- Crops in field
- Irrigation method

*Table 6: 2023 surface water pump site inspections in the Lower Niobrara NRD.*

<b>2023 Surface Water Pump Site Inspections</b>			
Total Number of Irrigation Permits	Number of Pump Sites Inspected	Number of Pump Sites Set up for Irrigation	Total Observations Made*
377	198	127	205
*Can include multiple visits to the same pump site location.			

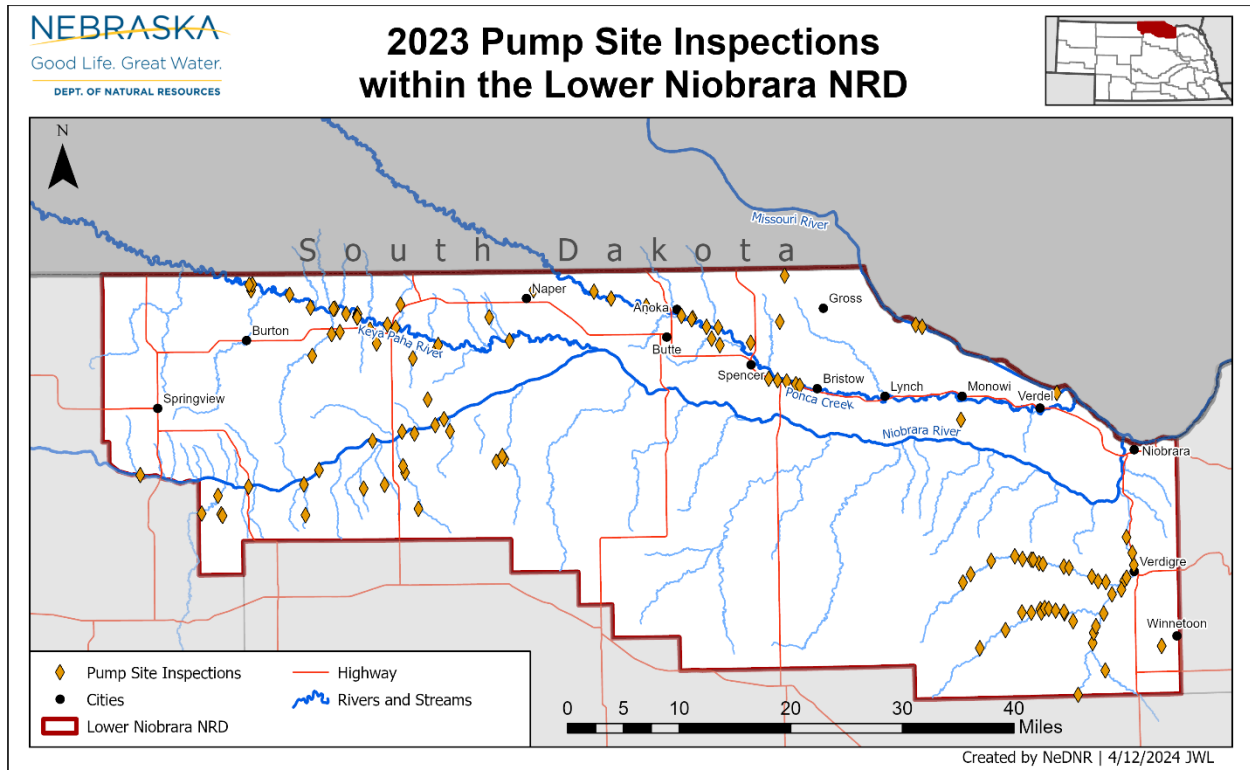


Figure 2: Pump Site Inspections within the Lower Niobrara NRD.

#### 4. Voluntary Water Use Reporting

Currently surface water use reporting within the LNNRD occurs on a voluntary basis. NeDNR requests water use data from all irrigation permit holders through surveys that contain questions about use or non-use, acres irrigated, estimated amount of water applied, and type of crops grown. **Table 7** provides a summary of LNNRD’s voluntary water use survey responses.

Table 7: Voluntary surface water reporting within the Lower Niobrara NRD in 2023.

Natural Resources District	No. of Water Rights	No. of Reports	No. of Reports SW Irrigated	No. of Reports Not Used	No. of GW Irrigated Reports	SW Irrigated Acres	SW Inches Per Acre
Lower Niobrara	377	81	59	22	3	7,939	10.8



## 5. Groundwater Permitting

The Department, in accordance with Neb. Rev. Stat. § 46-613.01, §§ 46-639 - 46-653, issues groundwater transfer permits for municipal use. In 2023, there were no new groundwater transfer permits issued by NeDNR in the Lower Niobrara NRD.

## 6. Stream Gage Measurements

There are eight active streamgages in the LNNRD, see **Table 8**. NeDNR operates three gages located on the Keya Paha River south of Naper, the Niobrara River south of Butte, and Verdigre Creek north of Verdigre, see **Figure 3**.

*Table 8: Active streamgages in the Lower Niobrara NRD*

Streamgage Number	Location	Operator	Years in Operation
06464900	Keya Paha River near Naper	NeDNR	2004-present
06464930	Niobrara River near Butte	NeDNR	2010-present
06465700	Verdigre Creek near Verdigre	NeDNR	2019-present
06463720	Niobrara River at Mariaville	USGS	1990-present
06465500	Niobrara River near Verdel	USGS	1959-present
06453600	Ponca Creek at Verdel	USGS	1957-present
06453620*	Missouri River below Ponca Creek near Verdel	USGS	1987-present
06466000*	Niobrara River at Niobrara	USGS	1956-present
*Stage only (discharge not recorded)			

The United State Geological Survey (USGS) operates five streamgages (**Table 8**) in the LNNRD, three of which record stage and discharge and two record stage only. Of the gages that record discharge and stage, one is located on Ponca Creek before it joins the Missouri river, and two are on the Niobrara River, along Highway 137 at Mariaville, and south of Verdel. The two stage-only gages are located on the Missouri river downstream of Ponca Creek and on the Niobrara River at Niobrara (**Figure 3**).

Yearly charts for NeDNR and USGS streamgages for the 2023 water year (October 1, 2022, to September 30, 2023) can be found in **Appendix A**. Each streamgage chart contains the following information.

- Mean Daily Discharge for the previous year and gage lifetime.
- Maximum, median, and minimum cumulative volumetric discharge for gage lifetime.
- Previous years cumulative volumetric discharge

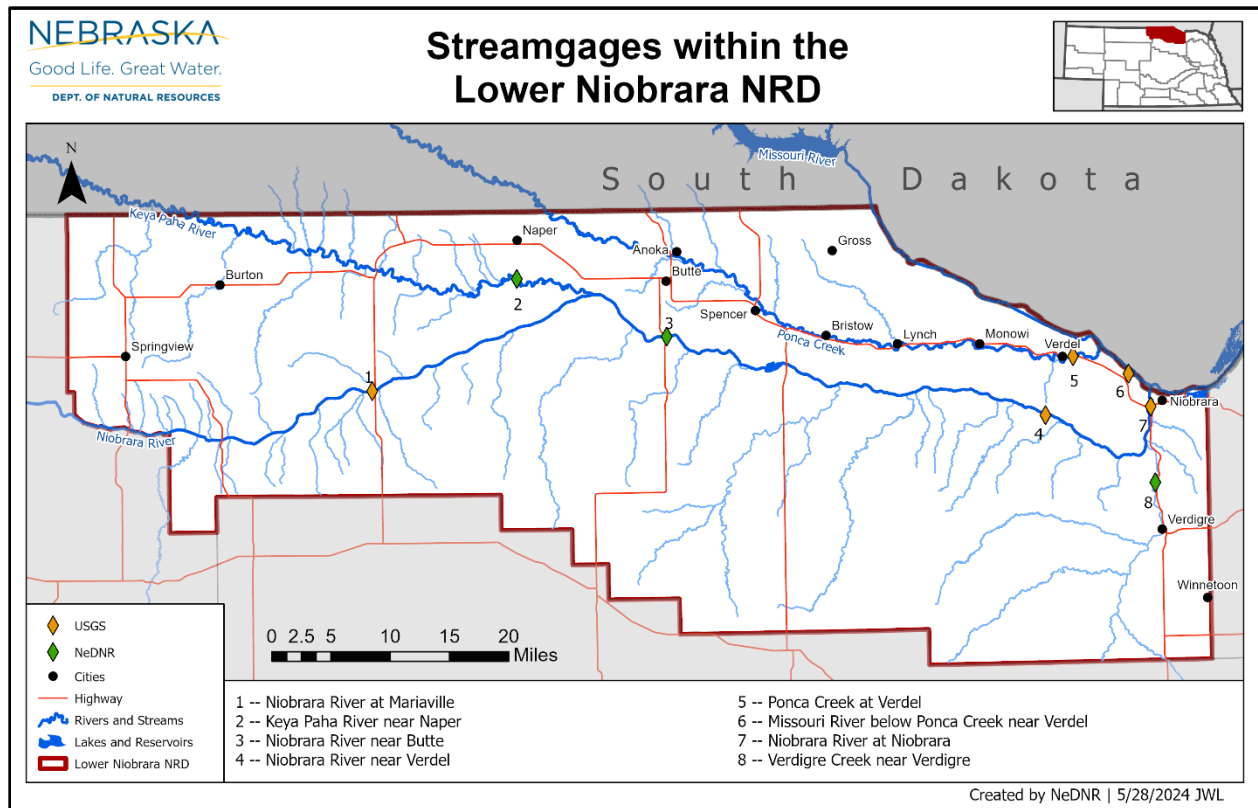


Figure 3: Location of NeDNR and USGS operated stream gages in Lower Niobrara NRD.

## 7. Surface Water Administration

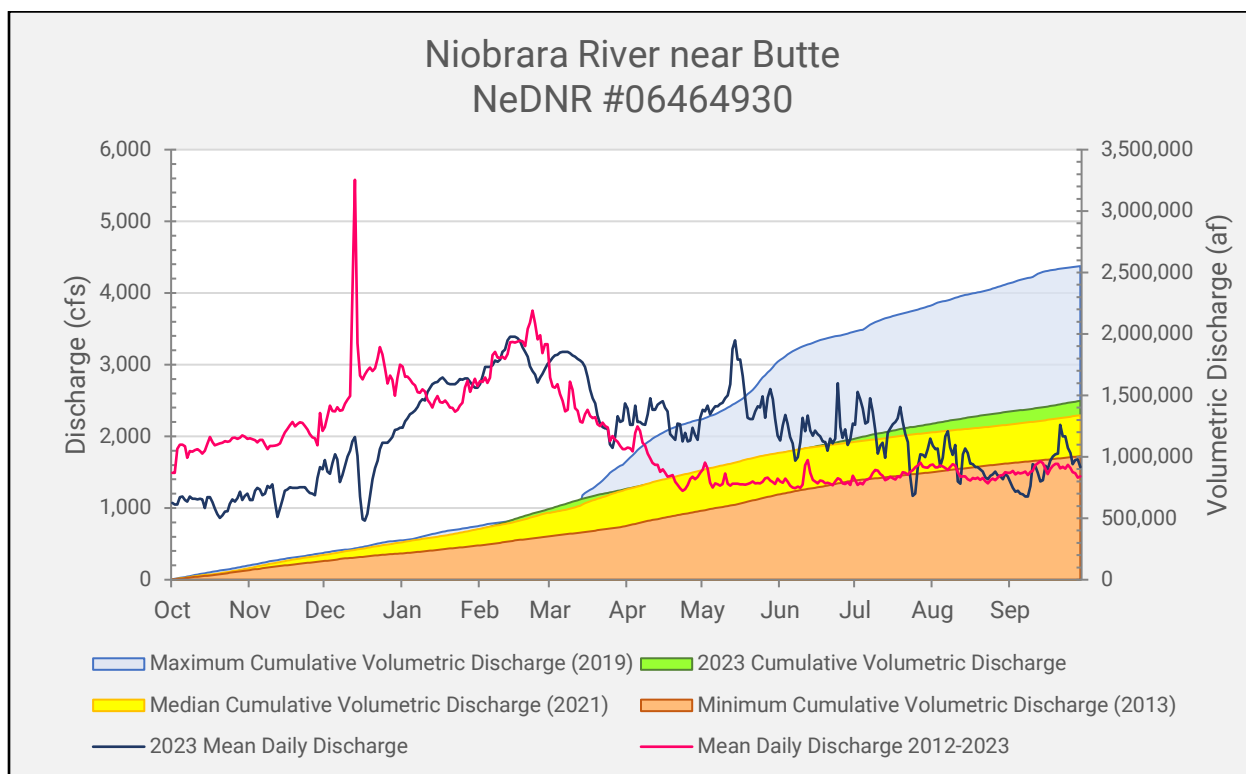
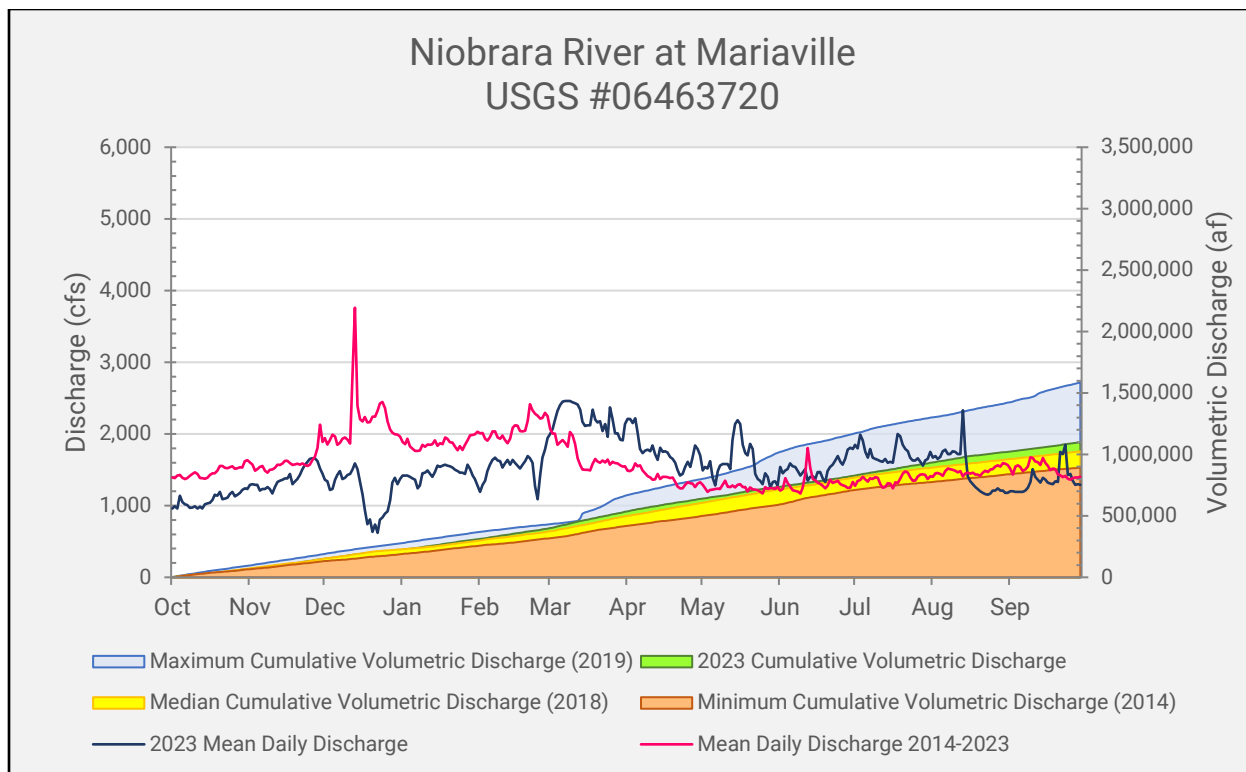
Since 1895, Nebraska has had an administrative system overseeing the orderly use of the state’s surface water resources. All diversions of surface water for irrigation, hydropower, industrial use, municipal use, domestic use, storage, and other uses require a permit from the State with each having certain responsibilities, limitations, and conditions associated with it. The Department has jurisdiction over all matters pertaining to surface water rights including the distribution of available supply during times of water shortages and adjudication of established water rights. The activity of distributing the supply of surface water on a stream during shortages is called “surface water administration.” Rules for surface water administration are set out in Nebraska Revised Statutes, Chapter 46, and operate on a first-in-time, first-in-right principle.

No surface water administrative actions were taken in the LNNRD in 2023.

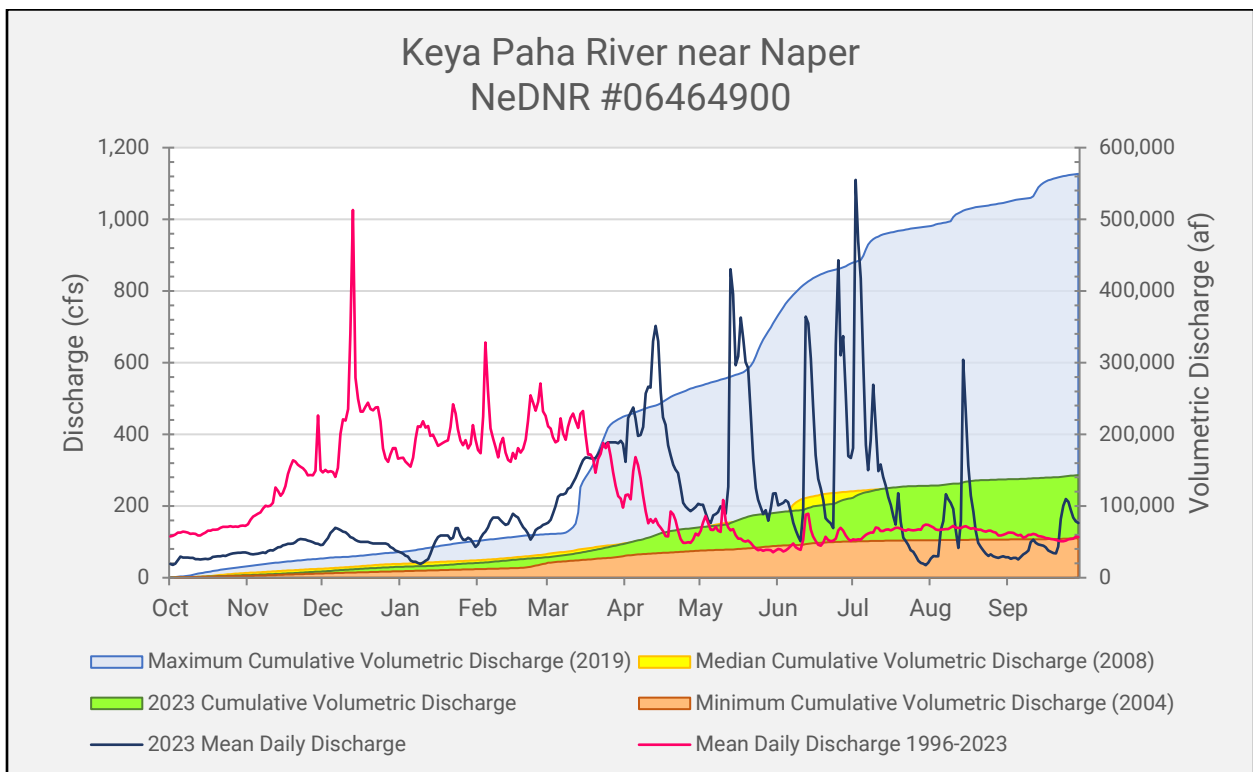
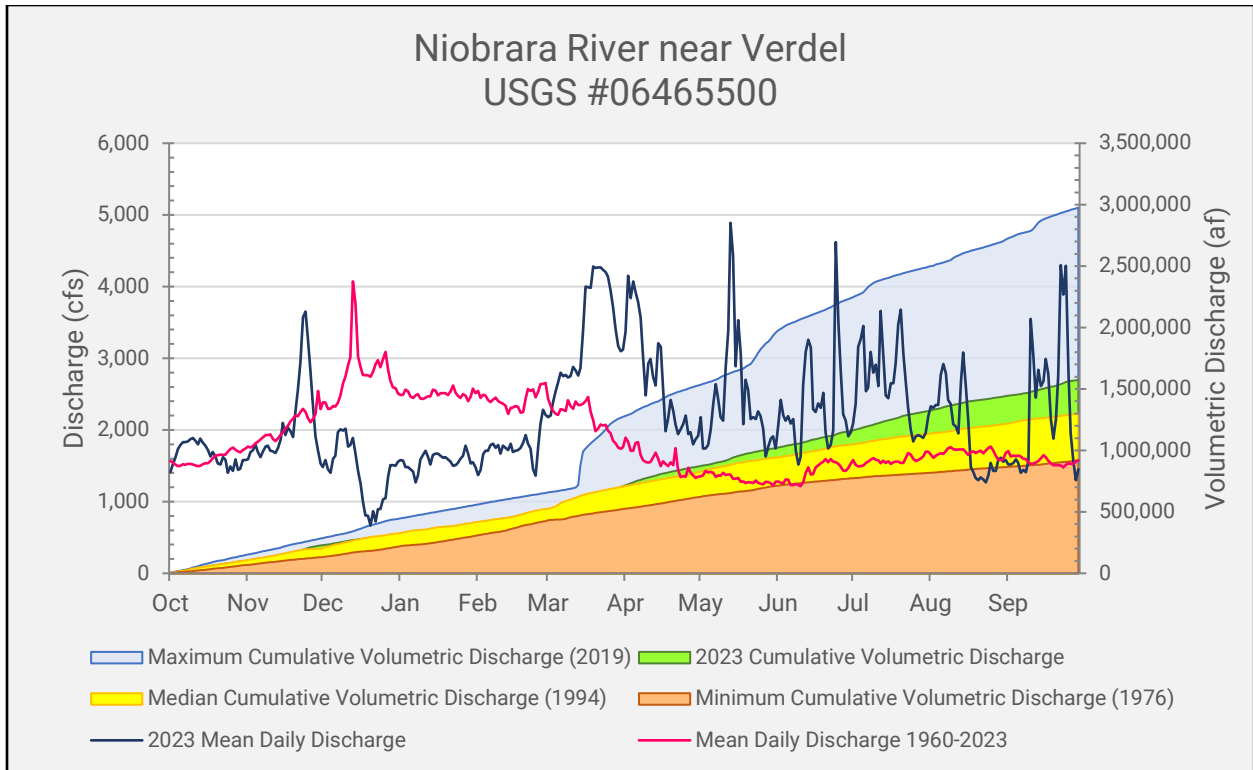
## 8. Current Studies and Modeling

In 2020, the Department began collaborating with the USGS and National Park Service on the development of a groundwater model that would cover the District. Calibration of this model has been completed and the USGS plans to publish the model in December 2024.

## Appendix A: STREAMGAGE MEASUREMENTS



## Appendix A: STREAMGAGE MEASUREMENTS



## Appendix A: STREAMGAGE MEASUREMENTS

