Nebraska Department of Water, Energy, and Environment 2025 Annual Report of 2024 Data

for the jointly developed

Little Blue Natural Resources District Integrated Management Plan

Prepared by the Nebraska Department of Water, Energy, and Environment
November 12, 2025

NEBRASKA
DEPT. OF WATER, ENERGY, AND ENVIRONMENT

INTRODUCTION

In 2015, the Little Blue Natural Resources District (LBNRD or District) and the Nebraska Department of Natural Resources (NeDNR or Department) began work on a jointly developed voluntary Integrated Management Plan (IMP). IMPs provide a framework for natural resources districts (NRDs) and the Department to collaboratively manage hydrologically connected surface water and groundwater at a local level. The Little Blue voluntary IMP was developed in accordance with the Nebraska Groundwater Management and Protection Act and included consultation with stakeholders from LBNRD. In July 2019, the District and the Department reached agreement on a draft IMP, and a hearing was held to take testimony from the public. After considering testimony provided at the public hearing the District and the Department agreed to adopt the IMP, which became effective on August 15, 2019.

As of July 1, 2025, the Department of Natural Resources and the Department of Environment and Energy were merged to form the Department of Water, Energy, and Environment[1] (Department or DWEE). The merger combined the functions of the two agencies with all previous agreements and statutes staying the same.

As outlined in the IMP, the LBNRD and NeDNR/DWEE meet annually to share data, exchange annual reports, and discuss actions taken to implement the IMP. This annual IMP report is intended to facilitate the exchange of information between the LBNRD and DWEE, and to keep the public informed about integrated water management activities within the district. It covers the actions and progress made by the Department in 2024 to implement the IMP—with a focus on surface water. The LBNRD completed a separate report that describes the actions and progress made in voluntary IMP implementation—with a focus on groundwater.

[1] Where name changes might happen, including Department, actions before July 1, 2025 will reflect NeDNR and actions after will reflect DWEE.

DEPARTMENT REPORTING

The Department annually reports on data related to the following as outlined in 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 permitting
    - All existing surface water permits
    - Permitting activity (new, cancelled, or transferred permits)
    - Variances granted by the Department
- Surface water administration
    - Pump checks
    - Voluntary reporting of surface water irrigation
        - Quantity of water pumped
        - Acres irrigated
        - Type of irrigation system
    - Evaluation of necessity for surface water flowmeters or mandatory water use reporting
- Streamgaging
- Update on current modeling projects or studies in the District
    - Depletion calculation methodologies (FAB analysis)

SURFACE WATER PERMITS

The Nebraska Department of Water, Energy, and Environment is authorized by statute to oversee the permitting and adjudication of surface water appropriations in the State[2]. This section provides a summary of all active surface water appropriations in the Little Blue NRD as of December 31, 2024, and includes details about all permitting actions taken by the Department in 2024.

This report addresses surface water appropriations in three categories: irrigation permits, which allow for irrigation from a naturally flowing source or from a reservoir; storage permits, which allow water from a naturally flowing source to be stored in a reservoir; and 'other' permits, which include domestic, industrial, and environmental uses. Additionally, a significant number of surface water permits in the LBNRD are exempt from surface water administration because they reuse groundwater that is collected in irrigation reuse pits located within the drainage of an ephemeral natural stream[3]. A summary of all active surface water permits in the LBNRD as of December 31, 2024, is available in **Table 1**.

As of December 31, 2024 there were 540 irrigation permits in the LBNRD, allowing for the irrigation of 35,623.11 total acres. Of those permits, 234 (12,842.4 acres) are exempt from administration under Neb. Rev. Stat. §§ 46-283 to 46-287. There are also 148 storage permits that allow for a total of 13,983.57 acre-feet (af) of water to be stored in reservoirs, six of which are exempt from surface water administration. The remaining 'other' permits combined allow the use of 17.64 af of water annually and represent a relatively small proportion of surface water uses in the District.

[2] Neb. Rev. Stat. § 61-206 and all of Chapter 46, Article 2
[3] Neb. Rev. Stat. §§ 46-283 to 46-287

Table 1: All surface water appropriations in the LBNRD as of December 31, 2024.

ACTIVE SURFACE WATER APPROPRIATIONS IN LBNRD as of December 31, 2024				
Purpose	**Number of Permits**	**Acres Approved for Irrigation**	**Instantaneous Grant cfs**	**Volumetric Grant af**
Irrigation Permits				
Direct Flow Irrigation (Exempt)	224	12,453.4	177.28	35,297.7
Direct Flow Irrigation (Not Exempt)	247	15,408.21	195.25	35,260.57
Direct Flow Irrigation Total	**471**	**27,861.61**	**372.53**	**70,558.27**
Storage Use (Exempt)	4	389	N/A	27.6
Storage Use (Not Exempt)	65	7,372.5	61.4	4,036.33
Storage Use Total	**69**	**7,761.5**	**61.4**	**4,063.93**
Irrigation Permits Total	**540**	**35,623.11**	**433.93**	**74,622.2**
Storage Permits				
Storage (Exempt)	6	N/A	N/A	46.84
Storage (Not Exempt)	142	N/A	1.11	13,889.93
Storage Permits Total	**148**	**N/A**	**1.11**	**13,936.77**
Other Permits				
Domestic	1	1.99	0.46	5.97
Cooling	1	N/A	16.7	N/A
Fish & Wildlife	1	N/A	N/A	10
Livestock Watering	4	N/A	0.44	N/A
Other Permits Total	**7**	**1.99**	**17.6**	**15.97**
All Surface Water Permits				
All SW Permits (Exempt)	234	12,842.4	177.28	35,372.1
All SW Permits (Not Exempt)	461	22,782.7	275.36	53,202.8
All Surface Water Permits Total	**695**	**35,625.1**	**452.64**	**88,574.9**

2024 SURFACE WATER PERMITTING ACTIONS

In 2024, the Department acted on 17 surface water appropriations in the District. Four of those actions were to approve new surface water appropriations and ten were to cancel appropriations. The locations of these actions can be found in **Figure 1** below.

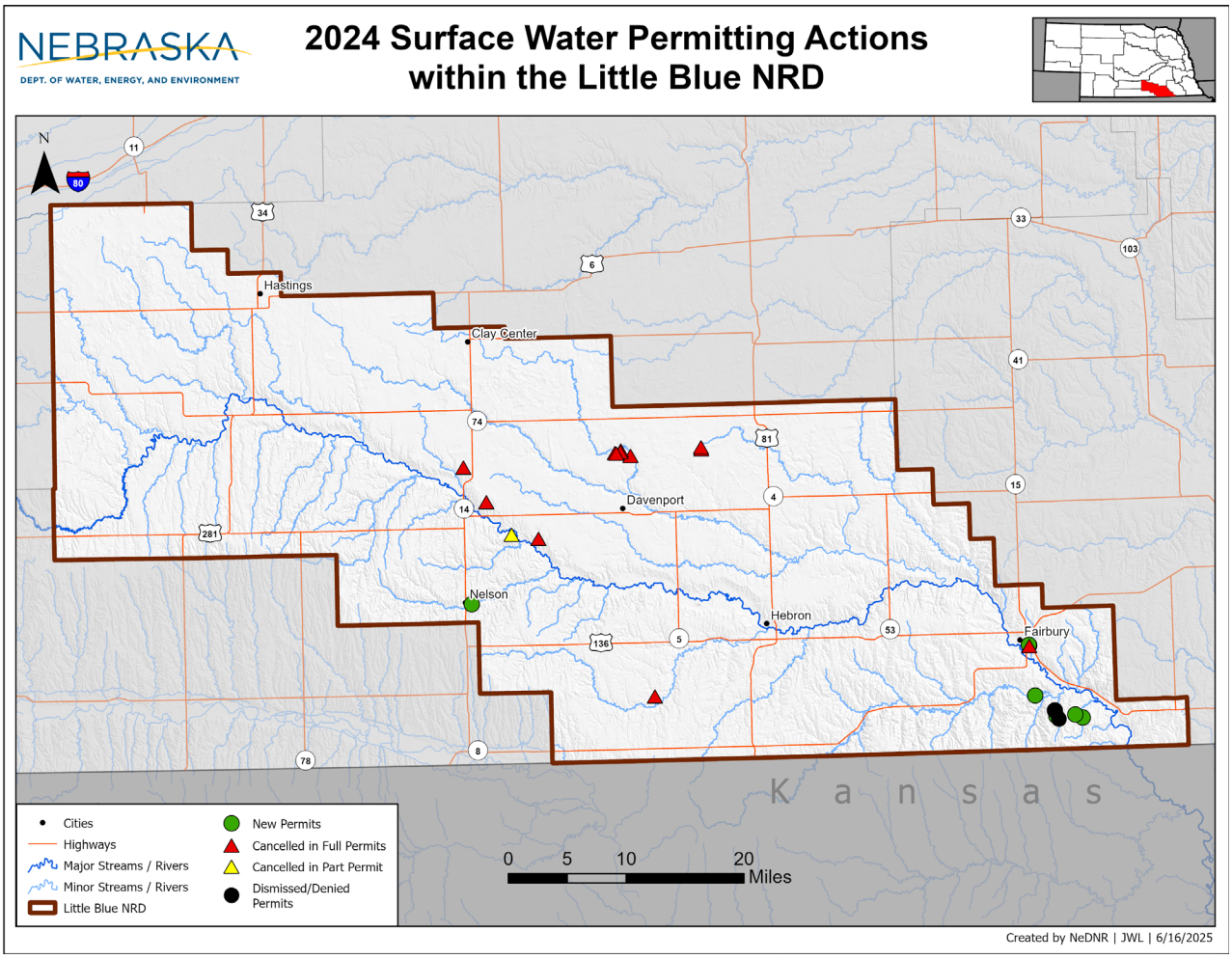


Figure 1: Surface water permitting actions in the LBNRD in 2024.

NEW SURFACE WATER APPROPRIATIONS

In 2024, the Department approved a total of eight permits. Three irrigation permits allowing a total 42.7 acres, one storage permit at 24.63 af and four livestock watering permits all allowing a total of 0.66 cfs. All new surface water permits approved in 2024 are summarized in **Table 2**.

Table 2: Surface water appropriations approved in 2024 in the LBNRD.

SURFACE WATER APPROPRIATIONS APPROVED IN 2024 IN THE LITTLE BLUE NRD						
Appropriation Number	**Approval Date**	**Use**	**Source**	**Acres**	**Grant**	**Diversion/ Reservoir Location**
A-19958	1/10/2024	ST	Malchow Pond	0	N/A	S23 T2-R2E
A-19959	1/10/2024	IR	Malchow Pond	34.6	24.63 af[4]	S23 T2-R2E
A-19966	2/5/2024	IR	Elk Creek	7.9	0.11	S25 T3-R7W
A-19967	3/18/2024	LW	Coon Creek	0	0.11	S22 T1-R3E
A-19969	3/18/2024	LW	Cole Creek	0	0.11	S20 T1-R3E
A-19970	3/18/2024	LW	Trib. to Coon Creek	0	0.11	S21 T1-R3E
A-19971	3/18/2024	LW	Cole Creek	0	0.11	S18 T1-R3E
A-20032	9/25/2024	IR	Rose Creek	0.2	0.11	S12 T1-R2E

CANCELLED SURFACE WATER APPROPRIATIONS

In 2024, the Department cancelled in full, ten surface water permits that irrigated a total of 299.7 acres of land. Eight permits were voluntary relinquishments, and two permits were a preliminary determination of non-use (PDNU). There was one cancelled-in-part permit, a beneficial use cancellation, within the District in 2024. Two permits were either dismissed or denied. Information about these appropriations can be found in **Table 3**.

[4] Permits A-19958 and A-19959 are to apply water to the same land.

Table 3: Surface water appropriations cancelled in 2024 in LBNRD.

	SURFACE WATER APPROPRIATIONS CANCELLED IN 2024 IN LITTLE BLUE NRD						
Appropriation Number	**Cancelation Date And Type**	**Use**	**Source**	**Acres**	**Grant Cancelled**	**Reason for Cancellation**	**Diversion/ Reservoir Location**
A-8383	2/13/2024 In Full	IR	West Little Sandy Creek	59.0	0.35 cfs	REL-10145	S29 T5-R4W
A-9862	6/7/2024 In Full	ST	Trib. to Little Blue River	N/A	49.00 af	REL-10256	S25 T4-R6W
A-10428	2/5/2024 In Full	IR	West Little Sandy Creek	86.0	0.29 cfs	REL-10137	S19 T5-R4W
A-11008	9/12/2024 In Full	IR	Trib. to Spring Creek	46.0	0.11 cfs	PDNU-10412	S4 T1-R4W
A-11027B	2/5/2024 In Full	IR	Trib. to Dry Sandy Creek	12.1	0.17 cfs	REL-10136	S20 T5-R3W
A-11027A	2/5/2024 In Full	IR	Trib. to Dry Sandy Creek	50.6	0.72 cfs	REL-10135	S20 T5-R3W
A-11109	9/12/2024 In Full	IR	Fintel Reservoir	46.0	0.00	PDNU-10413	S4 T1-R4W
A-15035	6/7/2024 In Full	ST	Trib. to Little Blue River	N/A	24.10 af	REL-10255	S7 T1-R6W
A-15126	6/18/2024 In Full	ST	Trib. to Buffalo Creek	N/A	19.40 af	REL-10254	S25 T5-R7W
A-19924	1/10/2024 In Full	ST	Brawner Creek	N/A	15.00 af	REL-10089	S23 T2-R2E
A-19789	10/29/2024 In Part	IR	Little Blue River	9.6	0.14 cfs	BUC-10727	S29 T4-R6W
A-19968	3/18/2024 Dismissed or Denied	DO	Cole Creek	N/A	N/A	N/A	S20 T1-R3E
A-19972	3/18/2024 Dismissed or Denied	DO	Cole Creek	N/A	N/A	N/A	S20 T1-R3E

In 2024, the Department received three relocation petition permits. These permits are a request to move the pump site to another location and are governed under Neb. Rev. Stat. § 46-283 (1). These permits must meet the following requirements below and as prescribed in the above statute.

- Must be used exclusively for irrigation purposes,
- Be within a contiguous quarter section of the original location,
- Be under the same ownership,
- Will not move above or below an existing diversion that is owned by another not dimmish the water supply of another.

SURFACE WATER TRANSFERS

In 2024, there were no surface water transfers in the LBNRD.

VARIANCES ISSUED

There were no variances issued in the District in 2024.

GROUNDWATER PERMITS

There were one two groundwater permits that had actions happen in 2024. MNI-31, which is a municipal notice of intent, was filed on January 1, 2024, and dismissed on 01/31/2025. The permit for WSP-132 was approved last year on April 15 (see **Table 4**).

Table 4: Groundwater permitting actions in LBNRD overseen by NeDNR.

Groundwater Permitting Actions			
Date	**Permit Number**	**Applicant**	**Comments**
01/31/2024	MNI-31	LBNRD	Dismissed on 01/31/2025.
02/20/2023	WSP-132	HT Chemical LLC	Approved on 04/15/2024.

PUMP SITE OBSERVATIONS

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. In 2024 NeDNR field office staff made a total of 297 inspections on 252 pump sites and observed that 121 of the sites were set up for irrigation. See **Table 5** and **Figure 2** below.

Table 5: Surface water pump site observations in the LBNRD in 2024.

Surface Water Pump Site Observations		
Number of Pump Sites Inspected	**Number of Pump Sites Set up for Irrigation**	**Total Observations Made[5]**
256	121	297

[5] Includes multiple visits to same site for water administration.

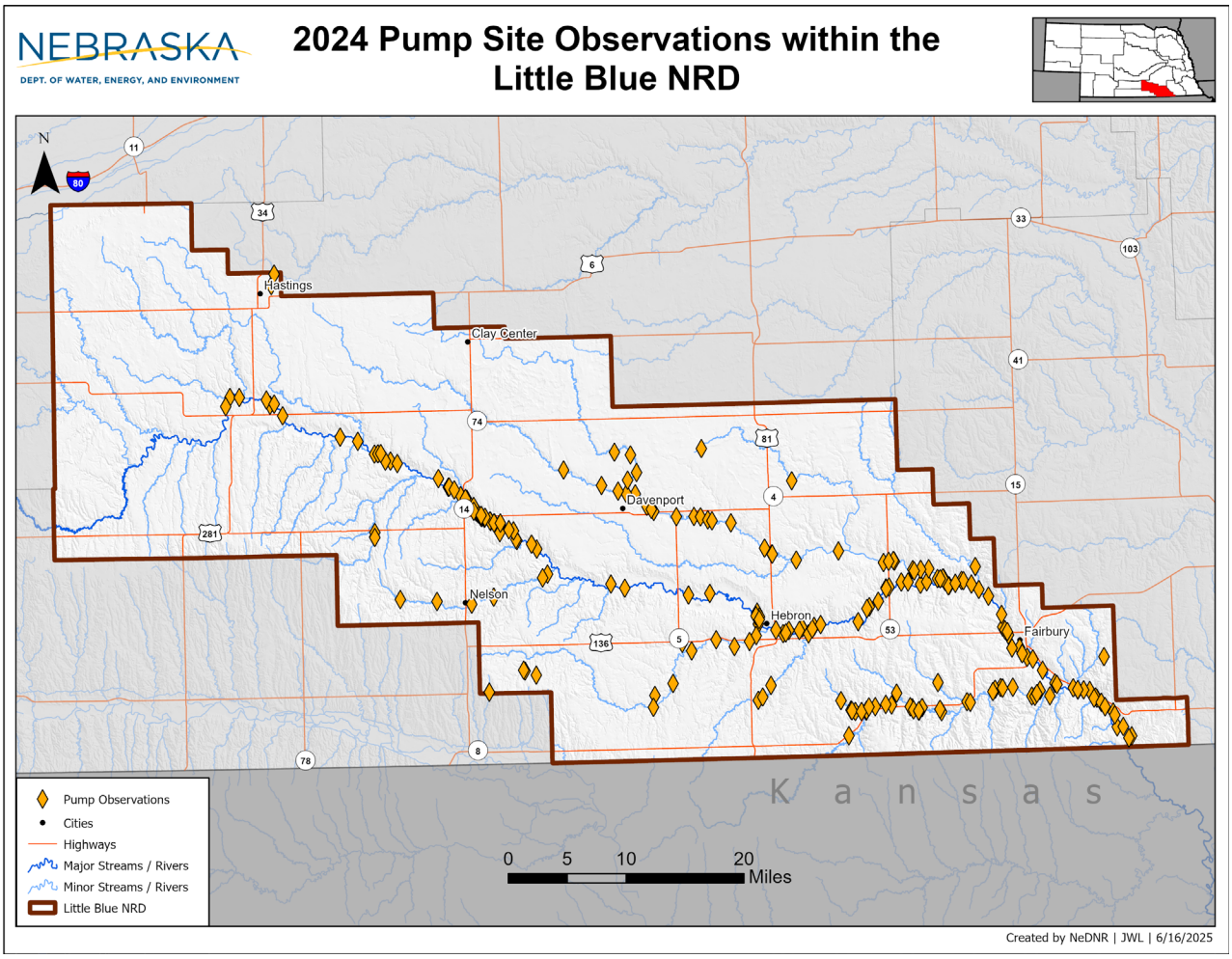


Figure 2: Pump site observations within the LBNRD in 2024.

VOLUNTARY WATER USE REPORTING

DWEE collects surface water use data in the LBNRD through its voluntary water use reporting program. Surveys requesting information about the number of irrigated acres, estimated amount of water applied, type of crops grown and reasons for non-use are sent to all non-exempt surface water irrigation permit holders in the basin. See **Table 6** below for data compiled from 2024 voluntary water use surveys.

Table 6: Voluntary surface water reporting within the LBNRD in 2024.

Voluntary Surface Water Reporting in Little Blue NRD in 2024						
Surveys Sent	**Surveys Returned**	**SW Irrigated**	**Reported Not Used**	**GW Irrigated**	**SW Irrigated Acres**	**SW Inches Per Acre**
319	64	37	27	7	2,386	4.5

STREAMGAGING

There are six active streamgages located inside of LBNRD and an additional gage located south of the Nebraska-Kansas state line on the Little Blue River near Hollenburg, Kansas. See **Figure 3** and **Table 7** below. Five gages monitor Little Blue River flows, and two monitor flows that contribute to the Little Blue River along Big Sandy Creek and Rose Creek. Four gages, including the Hollenburg gage, are operated by the USGS, and the remaining three gages are operated by the Department. Several entities including LBNRD, DWEE, and USGS contribute funds to operate and maintain the streamgages within the District.

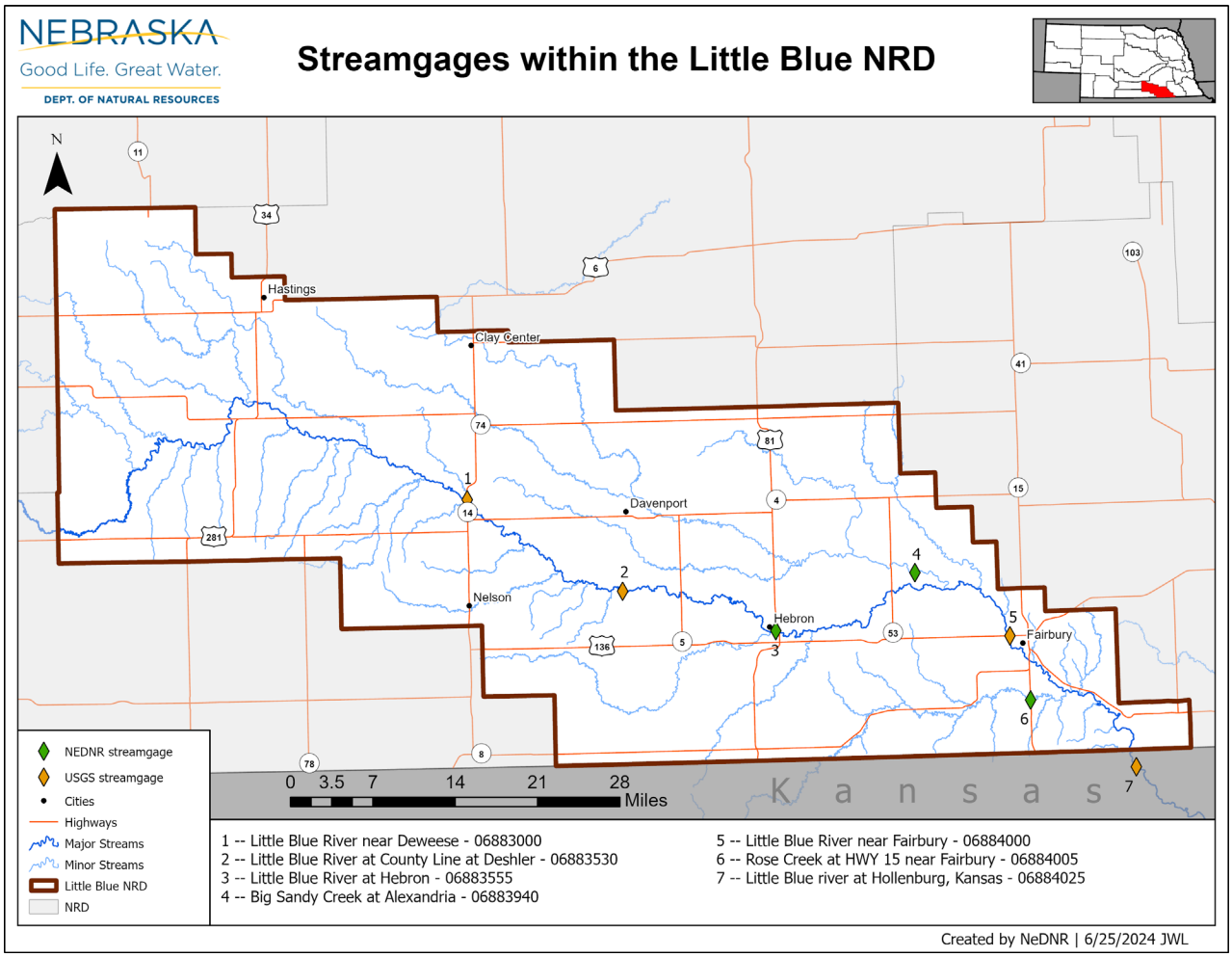


Figure 3: Active streamgages in the LBNRD.

Table 7: Active streamgages within Little Blue NRD.

Streamgages in the Little Blue NRD[6]				
Name of Gage	**Funding Source(s)**	**Gage ID**	**Active Since**	**Operator**
Little Blue River near Deweese	USGS	6883000	1990	USGS
Little Blue River at County Line at Deshler	LBNRD, Thayer and Jefferson Counties, City of Hebron, USGS	6883530	2017	USGS
Little Blue River at Hebron	LBNRD and DWEE	6883555	2017	DWEE
Big Sandy Creek at Alexandria	DWEE	6883940	1979	DWEE
Little Blue River near Fairbury	U.S. Army Corps of Engineers, USGS	6884000	1991	USGS
Rose Creek at HWY 15 near Fairbury	LBNRD and DWEE	6884005	2017	DWEE
Little Blue River at Hollenburg, Kansas	USGS, Big Blue River Compact Administration	6884025	1974	USGS

Two Department-operated gages were installed in 2017 to monitor flood flows upstream of Fairbury and Hebron and to further understand contributing flows along Rose Creek. The other Department-operated gage has been in operation since 1979 and collects streamflow data above the confluence of the Big Sandy Creek and the Little Blue River. The USGS-operated gage at Hollenburg, KS has the most extensive record, beginning in 1974.

Streamgaging data indicates that 2024 saw below median streamflow across the district, yet the total cumulative volumes were better than what was seen in 2023 with ranges from 11,000 to 19,000 af more. The gage on the Big Sandy Creek at Alexandria was the exception and 2024 set the minimum volumetric record seen in this record at 14,019 af. The USGS gage at Hollenburg, Kansas, which is used to monitor streamflow for compact compliance, reported that approximately 95,000 af of water passed the gage in 2024, compared to the period of record median year (1999), which recorded 275,000 af, this is better than 2023 when 71,000 af passed the gage. Charts summarizing streamflow at each of the district's gages can be found in **Appendix A**.

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 state permit and each permit has certain responsibilities, limitations, and conditions associated with it. DWEE has jurisdiction over all matters pertaining to these water rights. This includes 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."

[6] Streamgage data may be found at: https://nednr.aquaticinformatics.net.

Surface water administration rules and regulations are set out in Nebraska Revised Statutes, Chapter 46, and operate on a first-in-time, first-in-right principle.

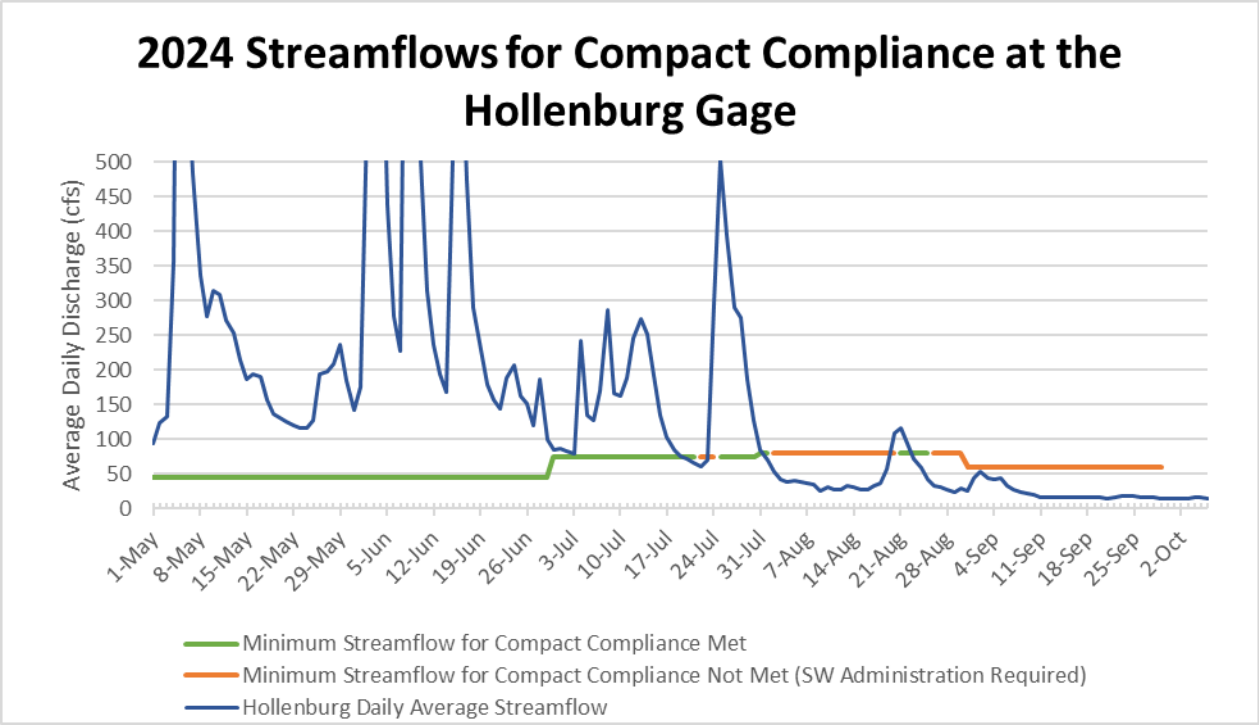


Figure 4: Hollenburg gage with surface water closure periods for 2024.

In order to meet minimum mean daily discharge requirements, set forth in the Kansas-Nebraska Blue River Compact, the Department prohibited surface water appropriations junior to November 1, 1968, from diverting water for a total of 58 days in 2024. **Figure 4**[7] above shows the 2024 closures for Compact compliance due to low flows at the Hollenburg streamgage; see **Table 8** below for additional details on closures dates and number of affected permits.

Table 8: Surface Water Administration in the Little Blue NRD in 2024.

SURFACE WATER ADMINISTRATION							
Water Division	**Date of Closure**	**Date Reopened**	**Days Closed**	**Permit Type**	**No. Affected**	**Reason for Closure**	**Reason for Reopening**
1C- Little Blue River Basin	7/22	7/25	3	Natural flow	131	Streamflow insufficient for Blue River Compact compliance	Minimum streamflow available for Blue River Compact compliance
				Storage	142		
	8/2	8/21	19	Natural Flow	131		
				Storage	142		
	8/26	10/1	36	Natural flow	131		
				Storage	142		

[7] To better show low flow periods, peak discharges above 500 cfs are not shown.

The IMP states: "The Department will institute mandatory reporting for all high-capacity (greater than 50 gallons per minute) surface water irrigation uses when a trigger is met. The trigger is 24 average days (over the past 20 years of record) of closure for surface water administration, between the period of July 1 and August 31. The Department reserves the right to institute mandatory reporting prior to the trigger being met, if deemed appropriate." **Table 9** shows the number of days of closure in the Little Blue River Basin, between July 1 and August 31 from 2005 to 2024. It also includes the 20-year rolling average for each year.

Table 9: Days of closure in the Little Blue River Basin in July and August

Year	Days of Closure (July1 – August 31)	Days of Closure 20-year Rolling Average (July 1 – August 31)
2005	22	12.35
2006	25	13.6
2007	0	13.6
2008	0	11.1
2009	14	11.6
2010	0	11.6
2011	0	4.6
2012	38	6.5
2013	26	7.8
2014	19	8.75
2015	4	8.95
2016	34	10.65
2017	14	11.35
2018	18	12.25
2019	0	12.25
2020	0	12.25
2021	0	12.25
2022	32	12.3
2023	44	14.5
2024	27	15.85

There were 27 days of closure between July 1 and August 31 in 2024, which changed the 20-year rolling average from 14.5 to 15.85 days of closure. This larger increase is because a "no closure" year (2004) was dropped from the 20-year average. This is below the 24-day trigger outlined in the IMP. However, drought conditions and low flows at the state line are concerning to the Department and mandatory water use reporting may be implemented prior to reaching the trigger. **Figure 5** below charts the annual number of days of closure and the 20-year rolling average for each year.

ADDITIONAL CLOSURES WITHIN LITTLE BLUE BASIN

Since the Kansas-Nebraska Big Blue River Compact requires Nebraska to maintain minimum flows at the state line from May through September, surface water administration can sometimes take place outside the July-August reporting window. **Table 10** shows any additional days of closure outside of the July-August window, and total days of closure in the Basin alongside the 20-year rolling average if all days of administration are counted (May-September).

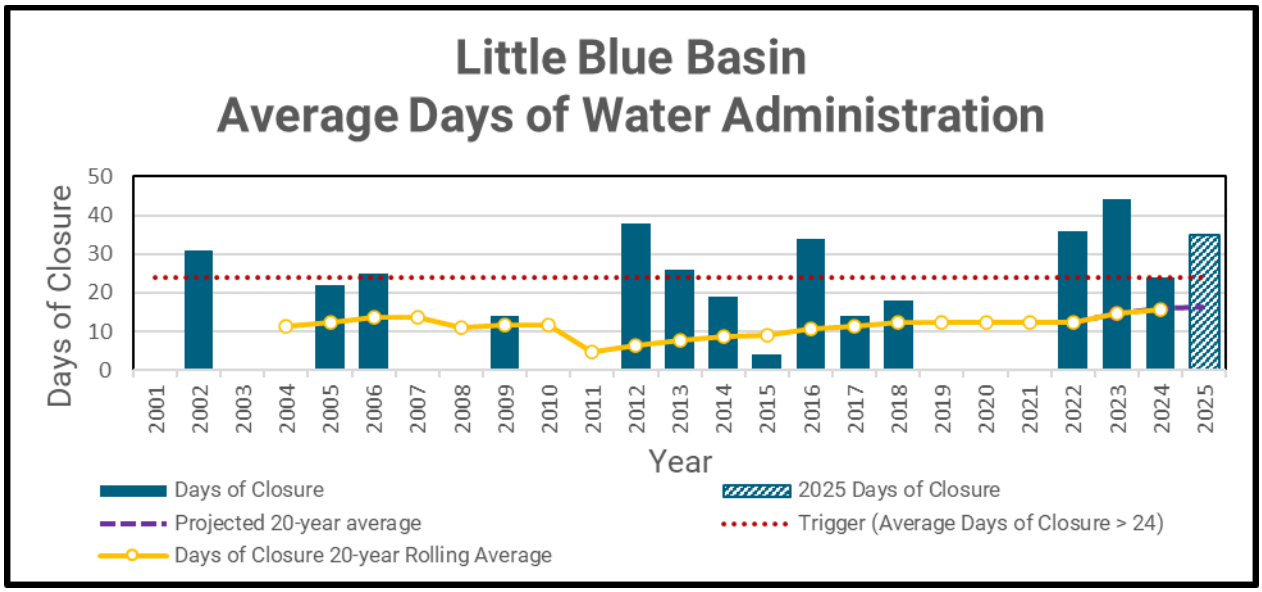


Figure 5: The average number of days of closure in the Little Blue NRD with projected 2025 data.

Table 10: Total days of closure for Compact compliance

Year	Days of Closure (Before June 1 and after August 31)	Total Closure Days (May 1-September 30)	Days of Closure 20-year Rolling Average (May 1-September 30)
2005	0	22	13.2
2006	0	25	14.5
2007	0	0	14.5
2008	0	0	12.0
2009	0	14	12.5
2010	0	0	12.5
2011	0	0	5.5
2012	30	68	8.9
2013	20	46	11.2
2014	0	19	12.1
2015	5	9	12.6
2016	0	34	14.3
2017	25	39	16.2
2018	0	18	17.1
2019	0	0	17.1
2020	0	0	17.1
2021	0	0	17.1
2022	30	62	18.3
2023	34	78	22.2
2024	30	57	24.6

NEW DATA COLLECTED AND MODEL UPDATES

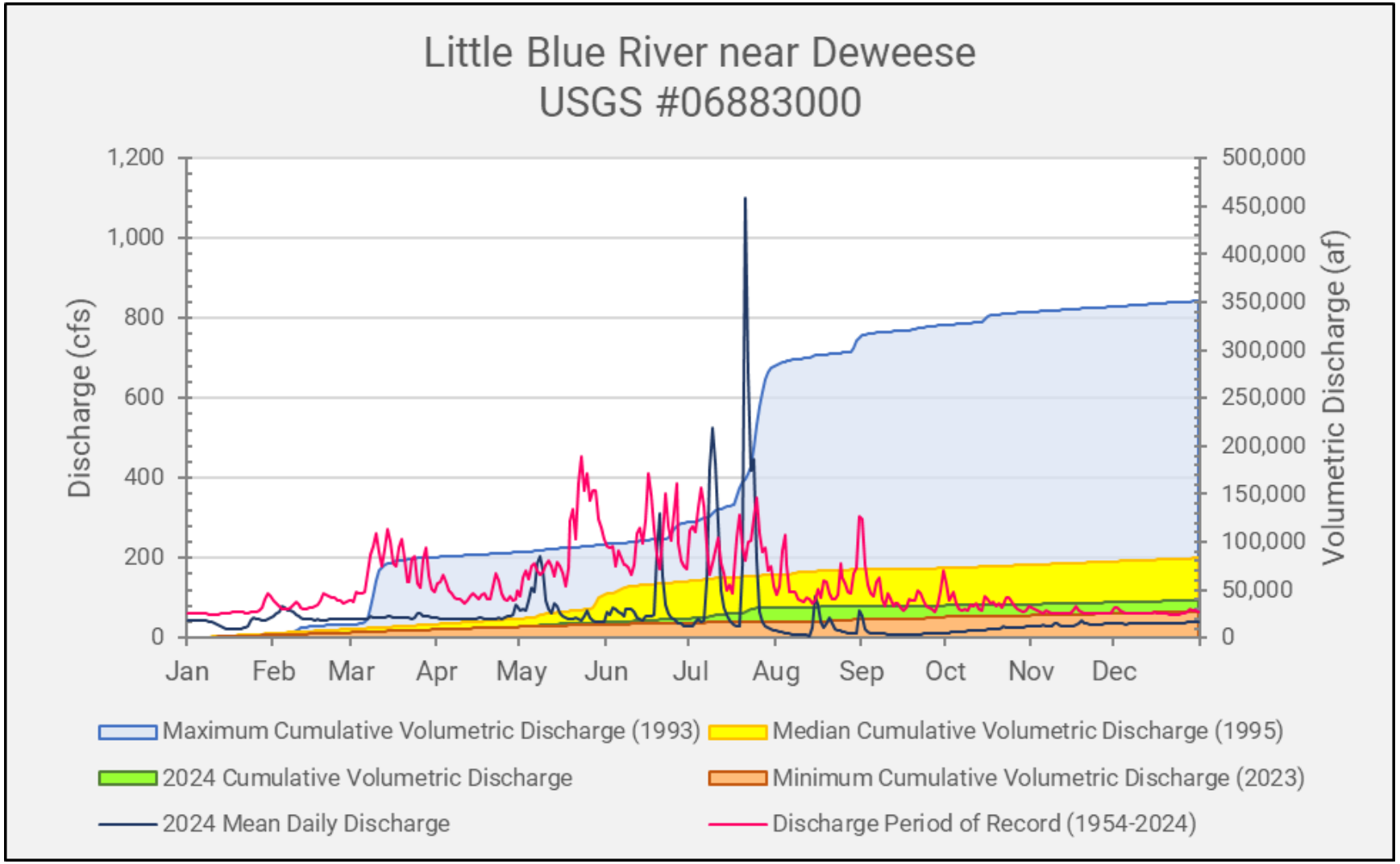
To increase the understanding of hydrologically connected water in the Blue basin, TBNRD, along with the Little Blue, Upper Big Blue, and Lower Big Blue NRDs and the Department worked with a consultant to develop a new numerical Blue Basin Groundwater Model. The model is intended to:

- Refine the delineations of hydrologically connected groundwater and surface water of the Blue River Basin.
- Simulate groundwater level changes and their impacts on stream baseflow and assess potential streamflow depletions, both spatially and temporally.
- Support DWEE's evaluation of the appropriation status of the Blue River Basin and other management decisions related to how groundwater pumping impacts streamflows; and
- Provide a platform and datasets representing the best available data for evaluation of local-scale water issues.

This project was completed near the end of 2023 and final documentation for the updated model was provided to the Department and the NRD partners. Since that time, the Department has undertaken a comprehensive review of the model and its documentation, which includes baseline and scenario model runs and a preliminary delineation of areas with hydrologically connected surface water and groundwater. This analysis is complete, and the Department has shared its findings with the Blue Basin NRDs as part of the 2024 IMP annual review meetings.

Appendix A

Streamgages for the Little Blue Natural Resources District



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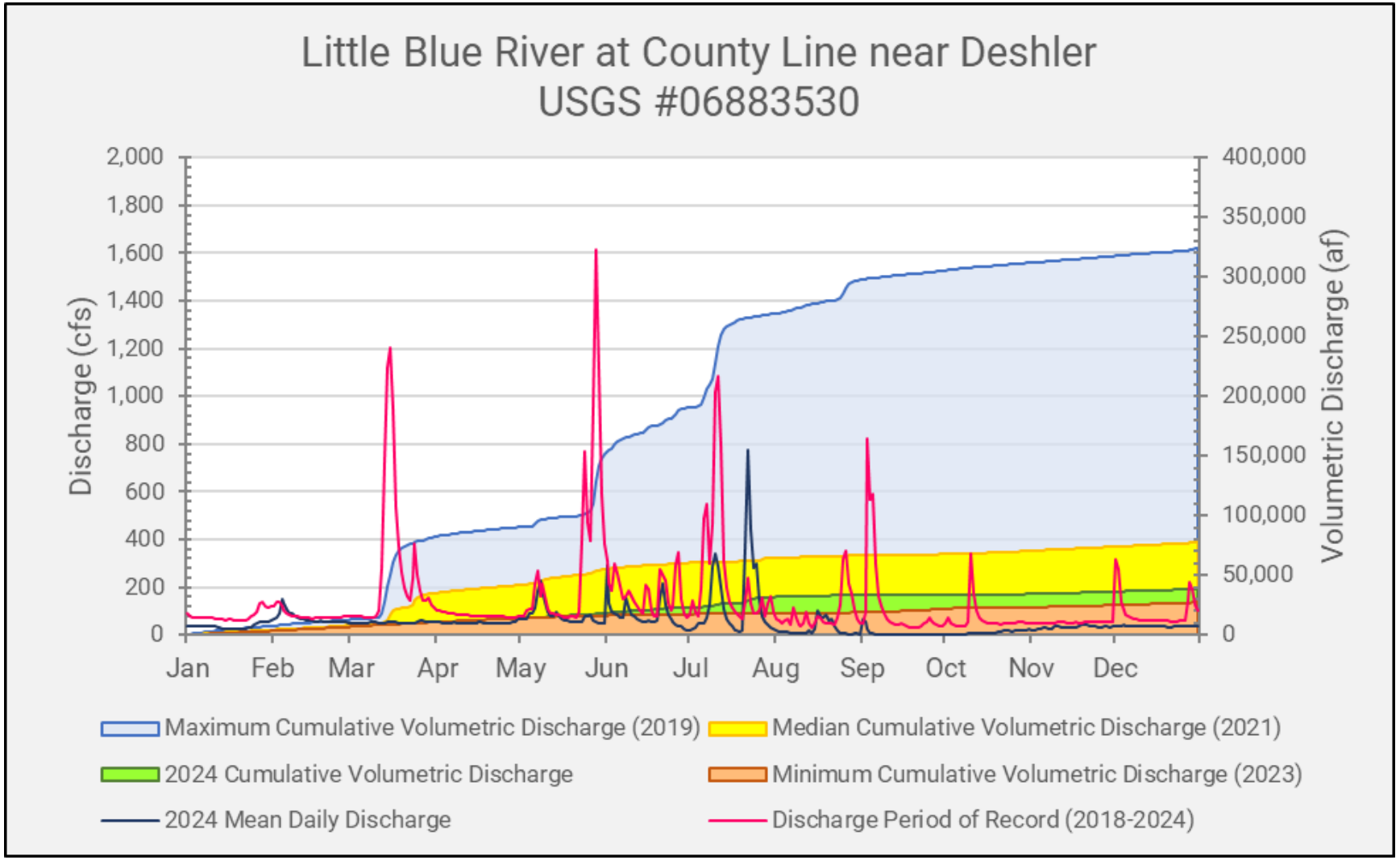

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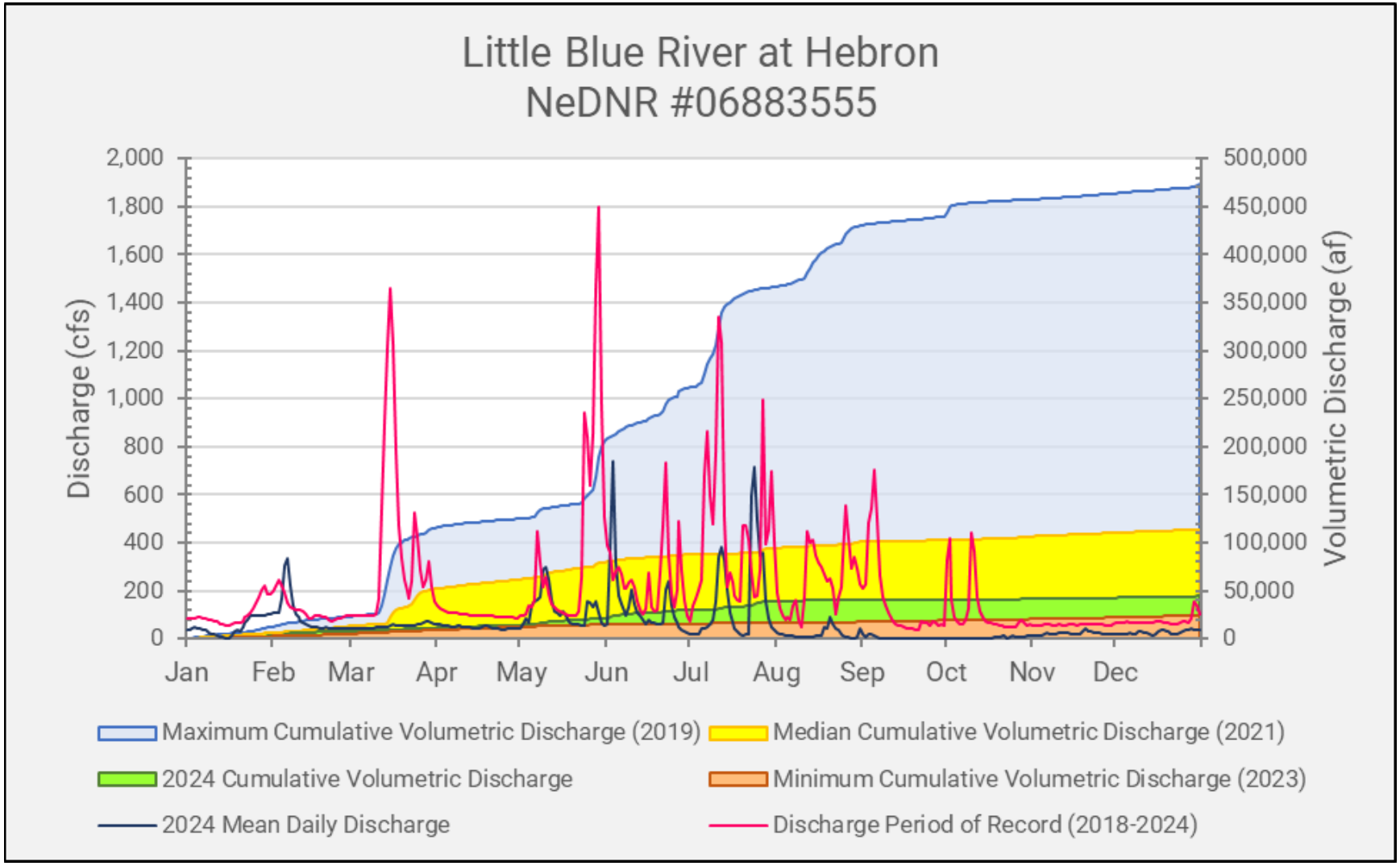

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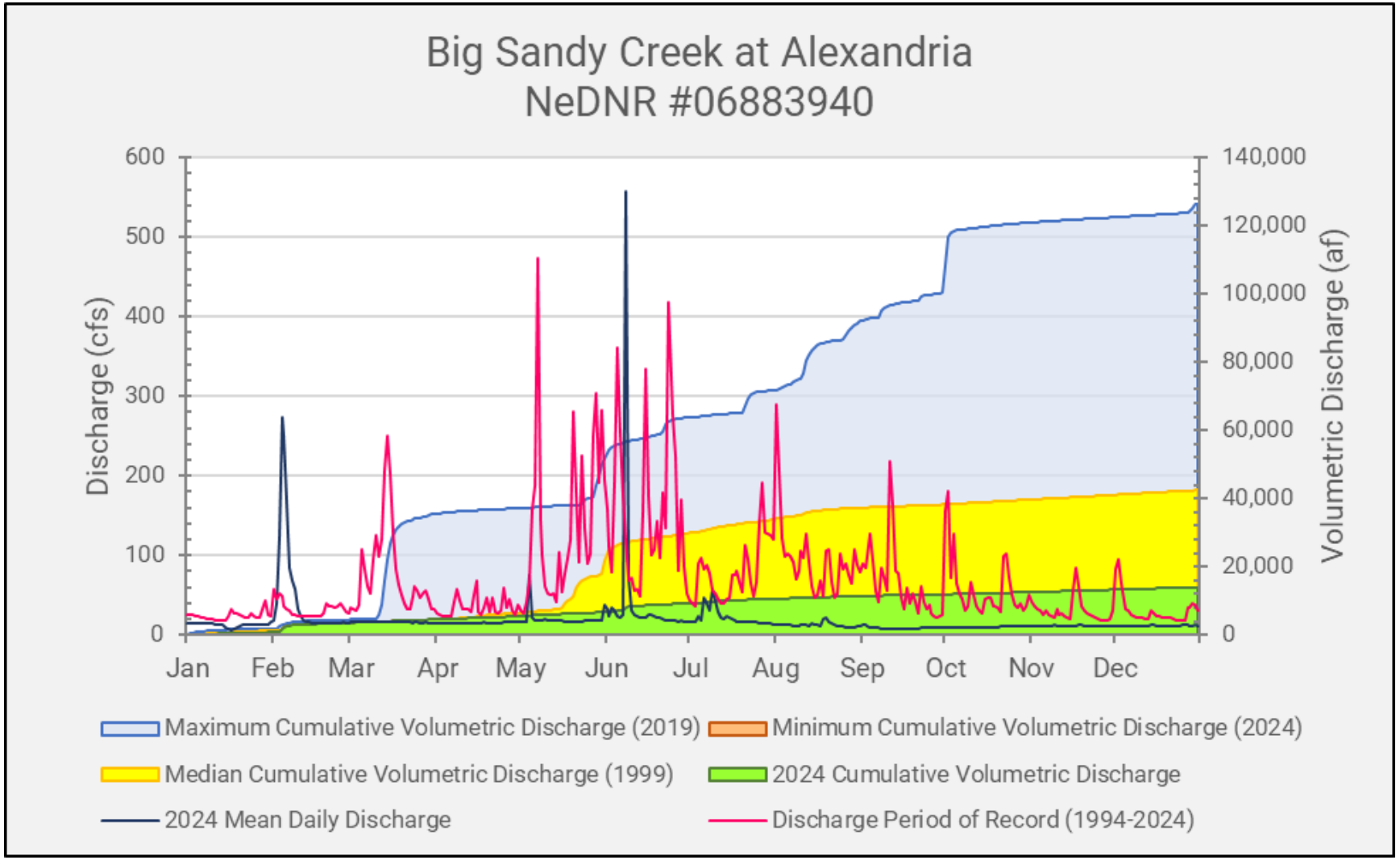

Note: Minimum Cumulative Volumetric Discharge (2024) and 2024 Cumulative Volumetric Discharge are identical so Minimum Cumulative Volumetric Discharge (2024) is hidden.

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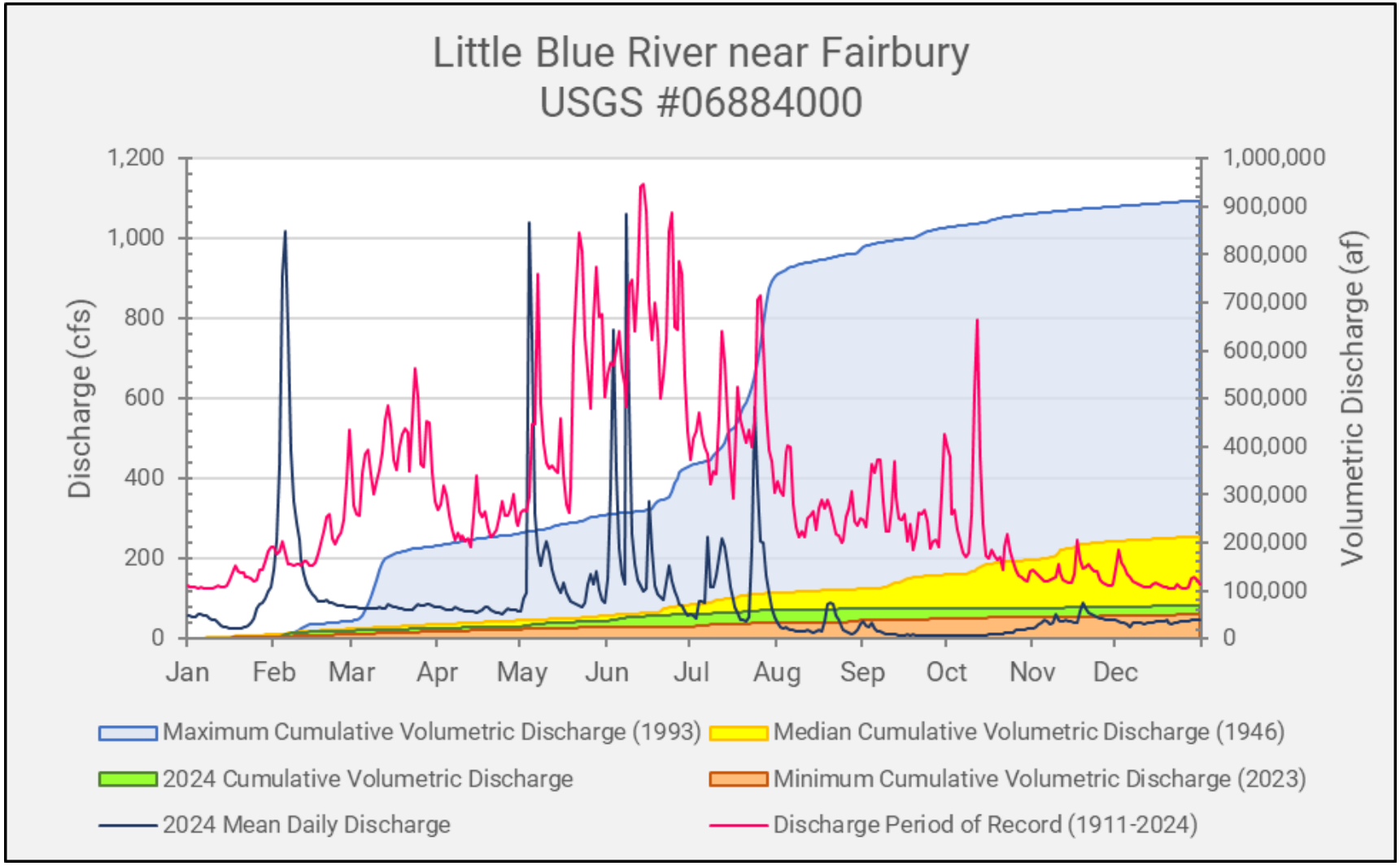

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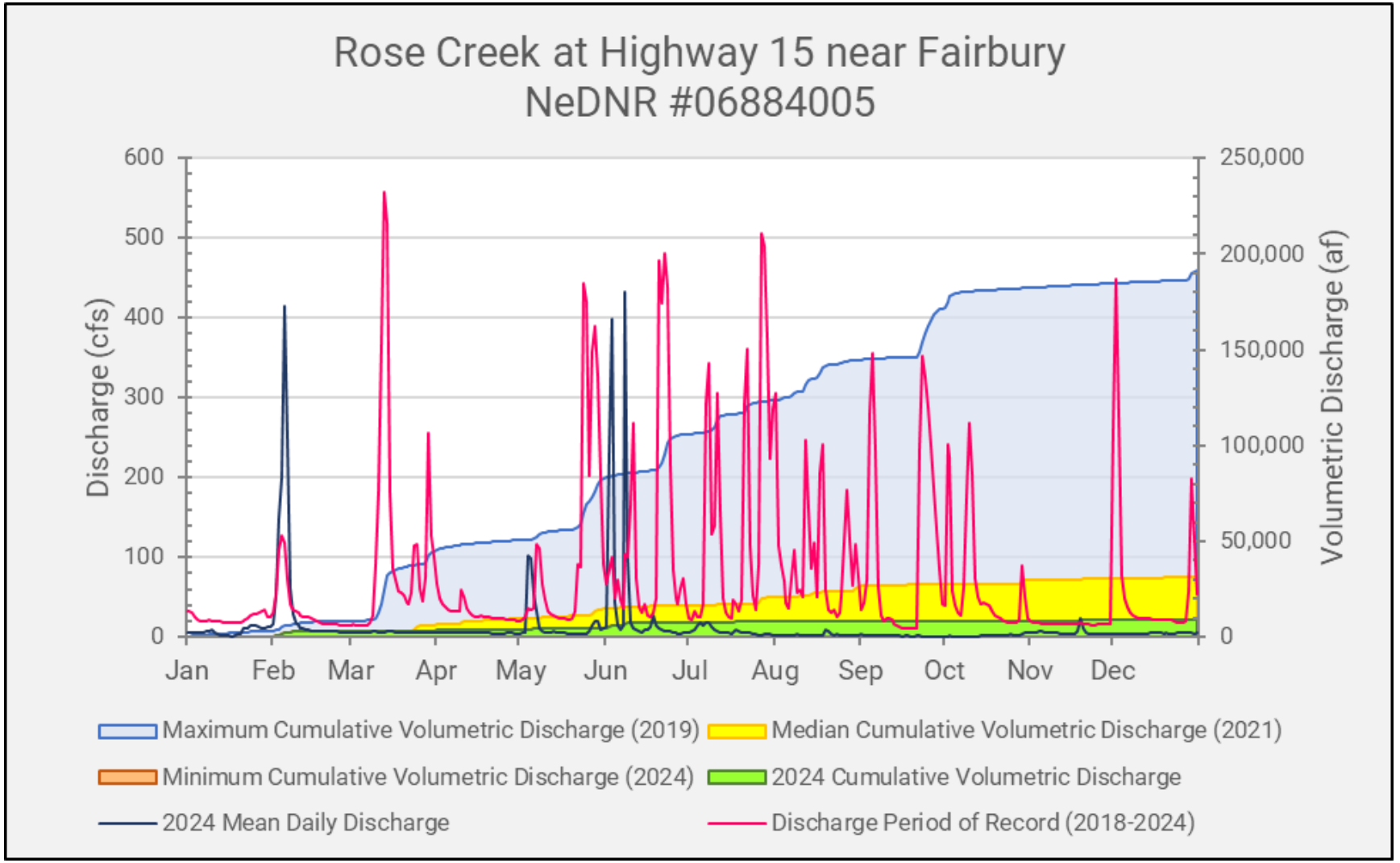

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