



**Nebraska Department  
of Natural Resources  
2022 Annual Report of  
2021 Data**

*for the jointly developed*

**Little Blue Natural  
Resources District  
Integrated  
Management Plan**

**Prepared by the  
Nebraska Department of Natural Resources  
June 30, 2022**

**NEBRASKA**

Good Life. Great Water.

DEPT. OF NATURAL RESOURCES

## INTRODUCTION

The Little Blue Natural Resources District (LBNRD or District) and the Nebraska Department of Natural Resources (NeDNR or Department) jointly adopted a voluntary Integrated Management Plan (IMP) which became effective on August 15, 2019.

The voluntary IMP annual reports are intended to provide transparency between the LBNRD and NeDNR, as well as to the public, regarding integrated water management activities. This annual report covers the actions and progress made by NeDNR in 2021 to implement the voluntary 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.

## NeDNR SURFACE WATER MONITORING

### 1. Streamgaging

There are currently six streamgages in the District, with an additional gage located near the Nebraska-Kansas state line on the Little Blue River near Hollenburg, Kansas (Table 1). Five of the gages monitor Little Blue River flows, and two gages 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 contribute funds to operate and maintain the District's streamgages in addition to the District, Department, and USGS.

Two of the Department-operated gages were installed in 2017 to better monitor flood flows upstream of Fairbury and Hebron and further understand contributing flows along Rose Creek. The remaining 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 Hollenburg gage has the most extensive record, beginning in 1974, and is used for administration of the Blue River Compact. Charts summarizing average streamflow at the gages below can be found in **Attachment B**. Streamgage data may be found at: <https://dnr.nebraska.gov/water-admin/streamgaging>.

NeDNR will continue to assess the need for additional streamgages in the voluntary IMP area.

*Table 1: Active streamgages within Little Blue NRD*

Streamgages in the Little Blue NRD				
Name of Gage	Funding Source(s)	Gage ID	Years Active	Operator
Little Blue River near Deweese	USGS	6883000	1990 to present	USGS
Little Blue River at County Line at Deshler	Little Blue NRD, Thayer and Jefferson Counties, City of Hebron, USGS	6883530	2017 to present	USGS

Streamgages in the Little Blue NRD				
Name of Gage	Funding Source(s)	Gage ID	Years Active	Operator
Little Blue River at Hebron,	Little Blue NRD and the Nebraska Department of Natural Resources	6883555	2017 to present	NeDNR
Big Sandy Creek at Alexandria	Nebraska Department of Natural Resources	6883940	1979 to present	NeDNR
Little Blue River near Fairbury	U.S. Army Corps of Engineers, USGS	6884000	1991 to present	USGS
Rose Creek at HWY 15 near Fairbury	Little Blue NRD and the Nebraska Department of Natural Resources	6884005	2017 to present	NeDNR
Little Blue River at Hollenburg, Kansas	USGS, Big Blue River Compact Administration	6884025	1974 to present	USGS

## 2. Administering Surface Water Rights According to State Law

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. Each permit has certain responsibilities, limitations, and conditions associated with it. The Department has jurisdiction over all matters pertaining to surface water rights for storage, irrigation, power, manufacturing, instream flows, and other beneficial uses. 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”. Surface water administration is set out in Nebraska Revised Statutes, Chapter 46.

In the LBNRD, there are 251 irrigation permits from a naturally flowing source that allow the use of surface water for irrigation on a maximum of 14,514.89 permitted acres, if the following conditions are true:

- The appropriator has not received a notice from NeDNR to stop diversion;
- Terms and conditions of the application approval do not prevent diversion; and
- The appropriator has not received a preliminary determination of nonuse.

When surface water administration occurs for permits that use naturally flowing water for irrigation, storage rights upstream from the call are also closed; this prohibits the storage of additional water behind a dam and requires appropriators to pass any inflows. Closing notices may be issued to storage appropriators for the benefit of the Big Blue River Compact as well. An operator may use previously legally stored water for irrigation during a closing notice as long as inflows are being passed downstream, and additional storage is not occurring. The Department would not order an appropriator to drain or release legally stored water.

Table 2 Closures in Little Blue NRD since 2002.

Year	Days of Closure	Days of Closure 20-year Rolling Average
2002	31	n/a
2003	0	n/a
2004	10	11.8
2005	22	12.9
2006	25	14.1
2007	0	14.1
2008	0	11.6
2009	14	12.1
2010	0	12.1
2011	0	5.1
2012	67	8.5
2013	44	10.7
2014	19	11.6
2015	9	12.1
2016	31	13.6
2017	12	14.2
2018	18	15.1
2019	0	15.1
2020	0	15.1
2021	0	15.1

In 2021, it was not necessary to issue closing notices for prior appropriations or for the Blue River Compact, nor were there any “calls” for water for localized shortages.

The IMP also states: “The Department will institute mandatory reporting for all high-capacity (greater than 50 gallons per minute) surface water irrigation uses when 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 2 shows the number of days between July 1 and August 31, each year from 2002-2021, that there was closure for surface water administration in the District.

The average annual number of days of closure for the past 20 years is 15.1, below the 24-day trigger; thus, the Department will not require reporting for high-capacity users at this time. Figure 1 charts the annual number days of closure and the 20-year rolling average for each year. There have been 33 days of closure in 2022, which will change the rolling average to 15.2 average days of closure.

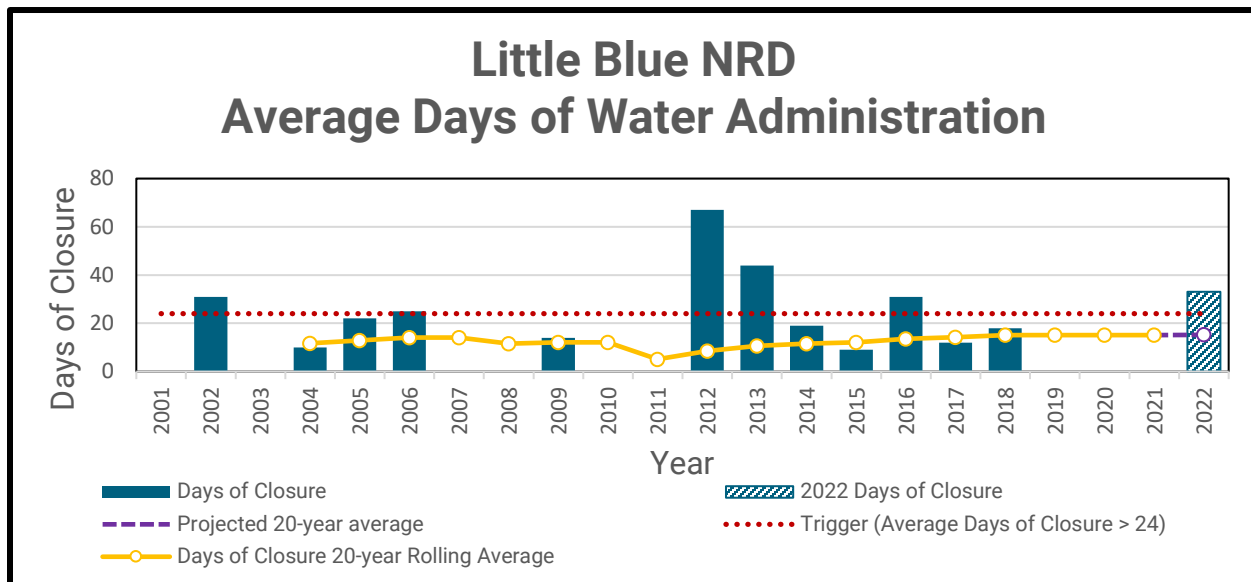


Figure 1: The average number of days of closure in the Little Blue NRD with projected

## **Surface Water Permits that are within LBNRD and Considered “Exempt” According to *Neb. Rev. Stat. §§ 46-283 to 46-287***

Nearly one-half of the irrigation-use surface water permits (227 of 478) in the Little Blue NRD are considered “exempt,” and the following offers some context as to what that means and how there came to be so many exempt permits. These exempt permits are for re-use pits that were built to capture and re-use runoff from groundwater irrigation, and for diversions from an ephemeral stream. Prior to 2008, the Department issued surface water permits according to the then-current statutes, which exempted the need for a permit on intermittent streams mapped as such by the U.S. Geological Survey (USGS). However, in 2008, the Nebraska Legislature modified statutes § 46-286 and § 46-287 to allow the Department to determine through investigation if streams should be identified as “intermittent.” The Department identified additional streams which were not mapped by the USGS as “intermittent.” Therefore, the existing surface water permits located on the newly classified intermittent streams as of 2008 are exempt from the provisions of Chapter 46, Article 2 (surface water permitting). Thus, permits with an exempt status are not included in Sections 2 through 7 below. **Attachment A** contains the full language of *Neb. Rev. Stat. §§ 46-283 to 46-287* for the reader’s reference. Chapter 46, Article 2 may be found at:

<https://nebraskalegislature.gov/laws/browse-chapters.php?chapter=46>.

### **Flow Meters**

The Department will continue to evaluate the need for flow meters on surface water diversions.

### **3. Monitoring Use of Surface Water to Make Sure that Unauthorized Irrigation is Not Occurring**

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

In 2021, the Department made 278 pump site inspections within the LBNRD area. Of the sites visited, 104 had pump sites set up and 25 of those were running.

### **4. Mapping and Tracking Acres Permitted to be Irrigated with Surface Water**

Maps are required for appropriations according to the *Department of Natural Resources Rules for Surface Water, Title 457*, and Nebraska Revised Statutes.

There are 251 irrigation permits from a naturally flowing source, including the appropriations located in the Big Blue River Basin, within the LBNRD, that are not exempt, allowing the use of surface water for irrigation on a maximum of 14,514.89 permitted acres.

Storage and supplemental storage permits are allowed to store a total of 13,517.77 acre-feet of water per year. Storage-use for irrigation is allowed on a maximum of 7086.3 permitted acres not covered by an irrigation-from-natural-flow permit.

Permit use codes are as follows:

- IR– “Irrigation”, a permit to divert water from natural flow for irrigation
- SO– “Store-only”, a permit to divert water from a reservoir for irrigation
- ST– “Storage”, a permit to store water

Permit information is available for viewing online on the Department’s website at: <http://nednr.nebraska.gov/Dynamic/WaterRights/WaterRights/SelectSearchOptions>.

#### 4.1. New Appropriations

In 2021, the Department approved two applications for a new surface water appropriation. Both permits allow for irrigation from a natural stream. The two permits approved in 2021 are summarized in Table 3.

Table 3: Applications for new surface water appropriations approved in 2021

Applications Approved in 2021 in the Little Blue NRD						
Appropriation Number	Approval Date	Use	Source	Acres	Grant	River Basin
A-19783	8/31/2021	IR	Big Sandy Creek	108.7	1.55 cfs	Little Blue
A-19789	10/12/2021	IR	Little Blue River	160.0	2.29 cfs	Little Blue

#### 4.2. Cancelled Appropriations

In 2021, there were no fully cancelled surface water appropriations in LBNRD. The Department did partially cancel one irrigation permit. This action is summarized in Table 4.

Table 4: Surface water appropriations cancelled in-part in 2021.

Surface Water Appropriations Cancelled in-part January 1, 2021, to December 31, 2021, Within the Little Blue NRD									
Appropriation Number	Cancelled Date	River Basin	Location of Diversion (S-T-R)	Use	Begin Acres	Cancelled Acres	Cancelled Grant in cfs	Cancelled Grant in af	Basis for NeDNR Action
A-19581	2/17/2021	Little Blue	S8-T2N-R2W	IR	711.6	57.6	0.82	NA	BUC-9313

The legal basis for the Department’s action pertains to one of the following authorities.

- Preliminary determination of non-use (PDNU): After a field investigation found the appropriation had not been used in the last five years, the owner did not successfully contest the preliminary determination of nonuse.
  - Authority upon which the action was based: *Neb. Rev. Stat. §§ 46-229.02(1) through 46-229.02(6)* which state that if the NeDNR makes a preliminary determination that an appropriation has not been used for more than five consecutive years, and the owner of said appropriation does not successfully contest the determination, then NeDNR may cancel said appropriation in whole or in part.
- Relinquishment (REL): Appropriator filed a voluntary relinquishment of water appropriation.

- Authority upon which the action was based: Department *Rules for Surface Water, Neb. Admin. Code. Title 457, Chapter 3*, which specifies that any appropriation, or part of any appropriation, may be voluntarily relinquished.
- Beneficial Use Cancellation (BUC): Occurs when any non-irrigated portion of a new irrigation water right is cancelled following a beneficial use investigation, after a three-season period of time in which to perfect a water right.

#### 4.3 Transfers

There were no transfers of surface water rights in the LBNRD in 2021. Expedited transfers have additional parameters that the proposed changes must meet. According to *Neb. Rev. Stat. §46-291(1)*, “expedited transfers” are restricted to the following but not limited to:

- Appropriations that are for irrigation
- No increase in the number of acres
- Location of use may only change to adjacent lands
- Land must all be owned by the same landowner or be under the same irrigation district
- The point of diversion may not change significantly

### 5. Voluntary Water Right Use Reporting

For the 2021 water year, the Department received 65 responses to the voluntary survey for surface water appropriators in the LBNRD.

There were 48 respondents with permits to use surface water for irrigation from a naturally flowing source (IR). Of those, 34 reported that they irrigated during the 2021 water year and 14 reported that they did not. Those who irrigated in 2021 reported applying an average of 7.44 inches per acre on a total of 3,564 acres.

There were 17 respondents with permits to irrigate with storage water only. Of those, 9 reported that they irrigated in 2021 and 8 reported that they did not. Those who irrigated in 2021 reported applying an average of 10.91 inches per acre on a total of 1,675 acres.

### 6. Variances Filed in Areas Under Moratorium

Since 2004, the Department has had a moratorium on new surface water applications in both the Republican River Basin and Upper Platte River Basin. No variances were filed in 2021 within the Republican River Basin or the Upper Platte River Basin.

No moratoriums exist in either the Big Blue River Basin or the Little Blue River Basin; therefore, no variances were sought in 2021.

### 7. NeDNR Methodology for Tracking Depletions

The Department notes that trigger levels have not been met for mandatory reporting of surface water use and, further, no surface water administration has been necessary for the past three consecutive years. With these being indicators of water availability, among others, the Department is of the opinion that - at this time - tracking depletions to streamflow is not necessary.

## 8. Modeling Tools, and Data Analysis

To increase the understanding of hydrologically connected water, LBNRD is participating with the Tri-Basin, Upper Big Blue, and Lower Big Blue NRDs and NeDNR 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 NeDNR'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.

In 2021, model development proceeded to the calibration phase. A fully calibrated model is expected to be completed by the end of 2022.



## ATTACHMENT A

### **Water Reuse Pit Related Statutes: *Neb. Rev. Stat. §§ 46-283 to 46-287***

#### **46-283 Legislative findings.**

The Legislature hereby finds and declares that the practice of reusing ground water from irrigation water reuse pits on irrigated land contributes to the efficient use and conservation of the state's water resources and that such reuse may be more feasible when done from irrigation water reuse pits located within ephemeral natural streams.

Source: Laws 1980, LB 908, § 1; Laws 2008, LB798, § 1. 46-284

#### **Definitions, sections found.**

For purposes of sections 46-283 to 46-287, unless the context otherwise requires, the definitions found in sections 46-285 and 46-286 shall be used.

Source: Laws 1980, LB 908, § 2.

#### **46-285 Irrigation water reuse pit, defined.**

Irrigation water reuse pit shall mean an excavation constructed to capture, for reuse, runoff resulting from ground water irrigation or a structure designed for the purpose of water impoundment which is used for this same purpose so long as the capacity of the facility does not exceed fifteen acre-feet.

Source: Laws 1980, LB 908, § 3.

#### **46-286 Ephemeral natural stream, defined.**

An ephemeral natural stream shall mean that portion of a natural stream in which water flows only after a precipitation event or when augmented by surface water runoff caused by the pumping of ground water for irrigation. The portion of a natural stream that is shown as an intermittent stream on the most recent United States Geological Survey topographic quadrangle map published - 49 - prior to July 18, 2008, shall be considered an ephemeral natural stream unless the Department of Natural Resources has investigated the stream and determined that the stream or a reach of the stream is perennial or intermittent and subject to Chapter 46, Article 2. The department's determination for the purposes of this section shall be adopted and promulgated in rule or regulation.

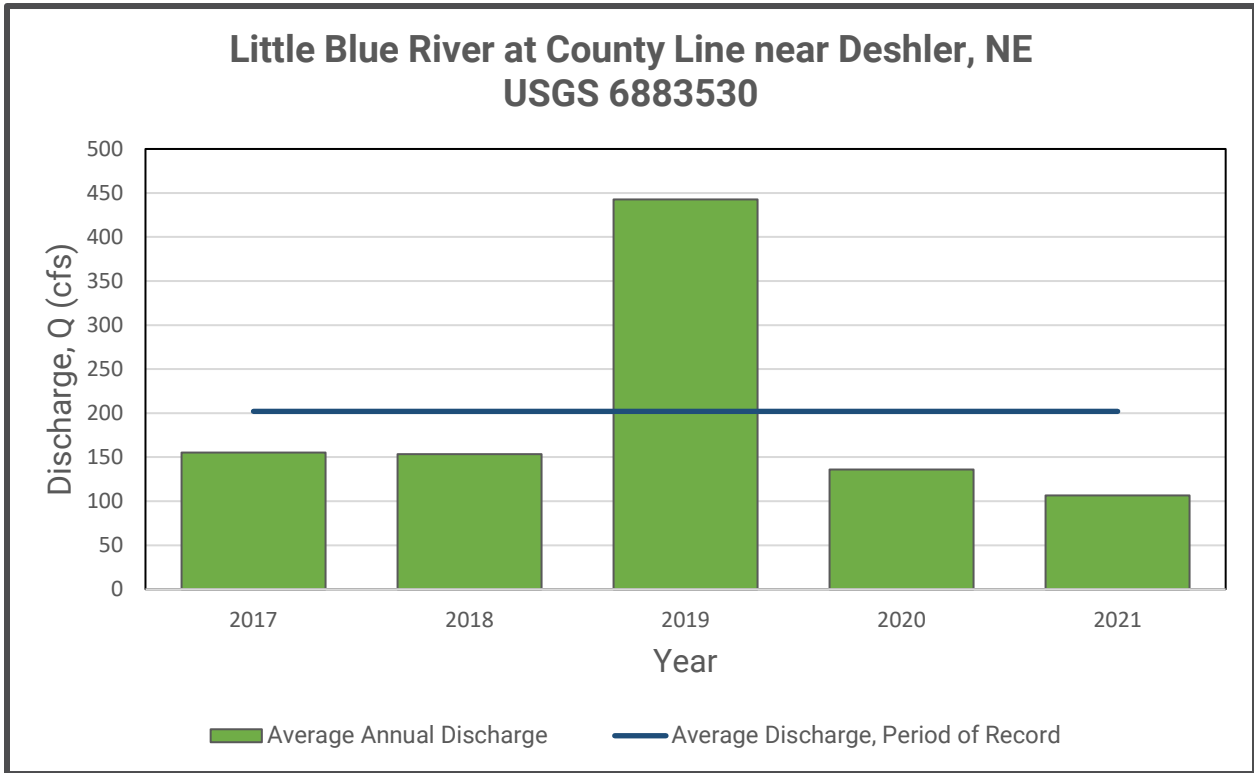
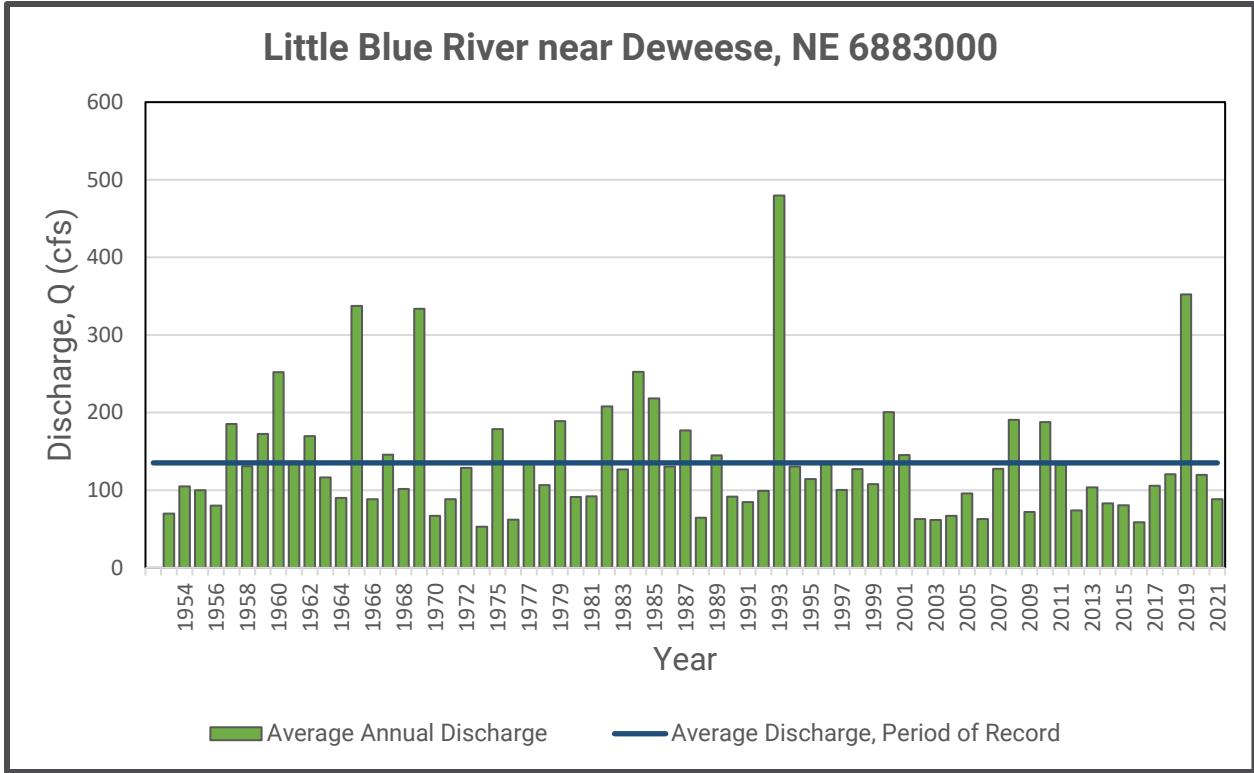
Source: Laws 1980, LB 908, § 4; Laws 2006, LB 508, § 1; Laws 2008, LB798, § 2.

#### **46-287 Irrigation water reuse pit; reusing ground water; exempt from certain provisions.**

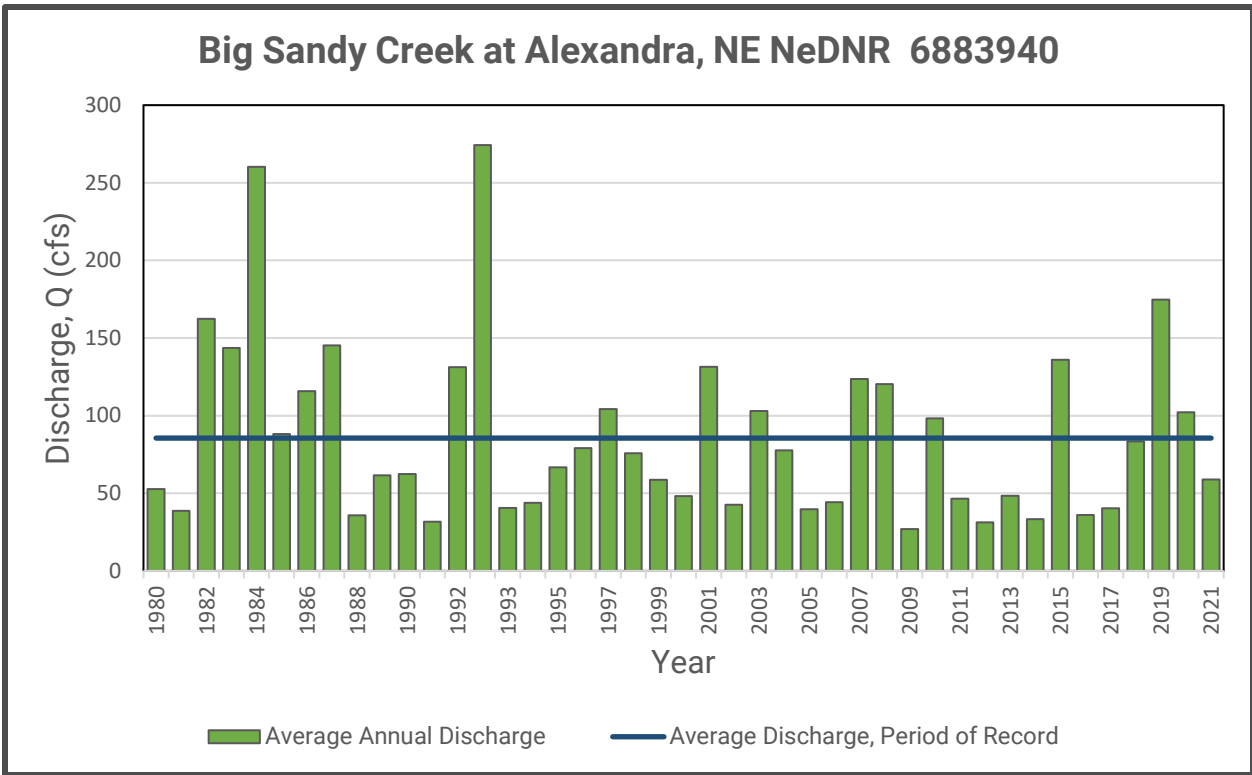
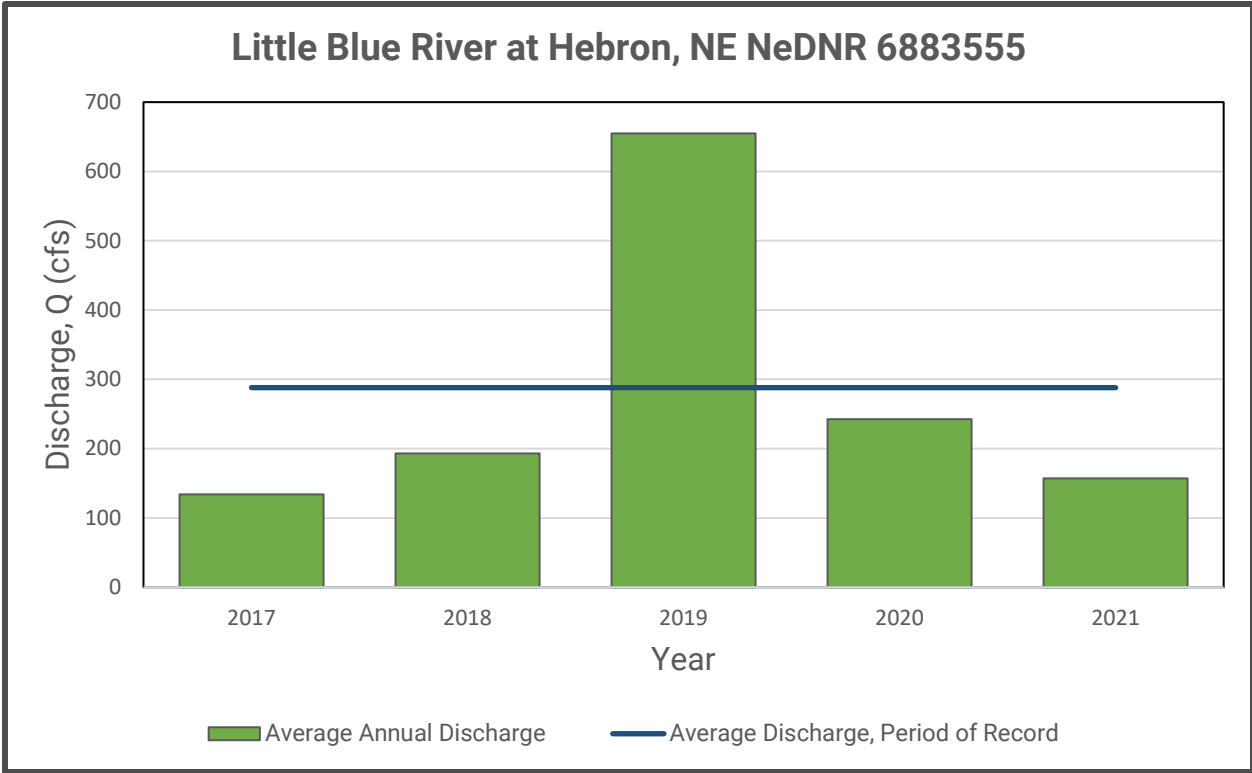
Notwithstanding any other provision of law, any person intending to or in the process of reusing ground water from an irrigation water reuse pit located within an ephemeral natural stream shall be exempt from the provisions of Chapter 46, Article 2, which would otherwise apply to such pits, and from the provisions of section 46-637.

Source: Laws 1980, LB 908, § 5; Laws 2008, LB798, § 3

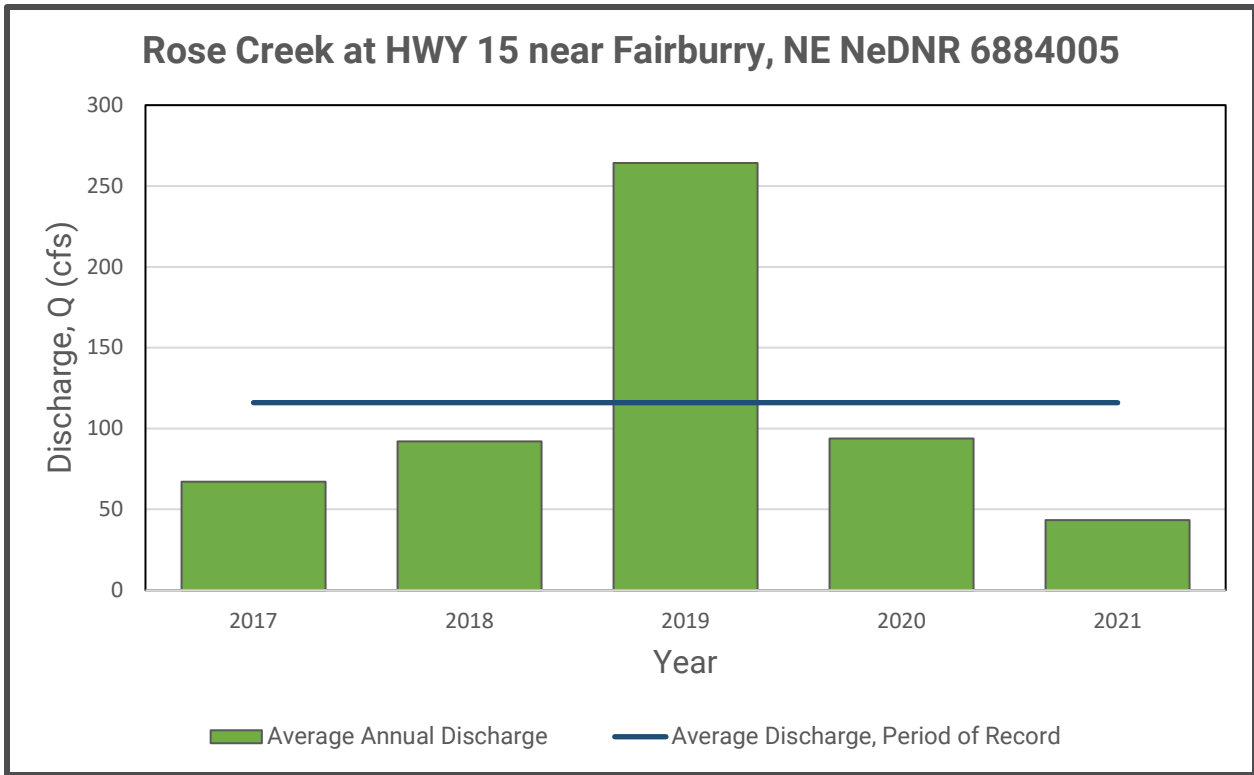
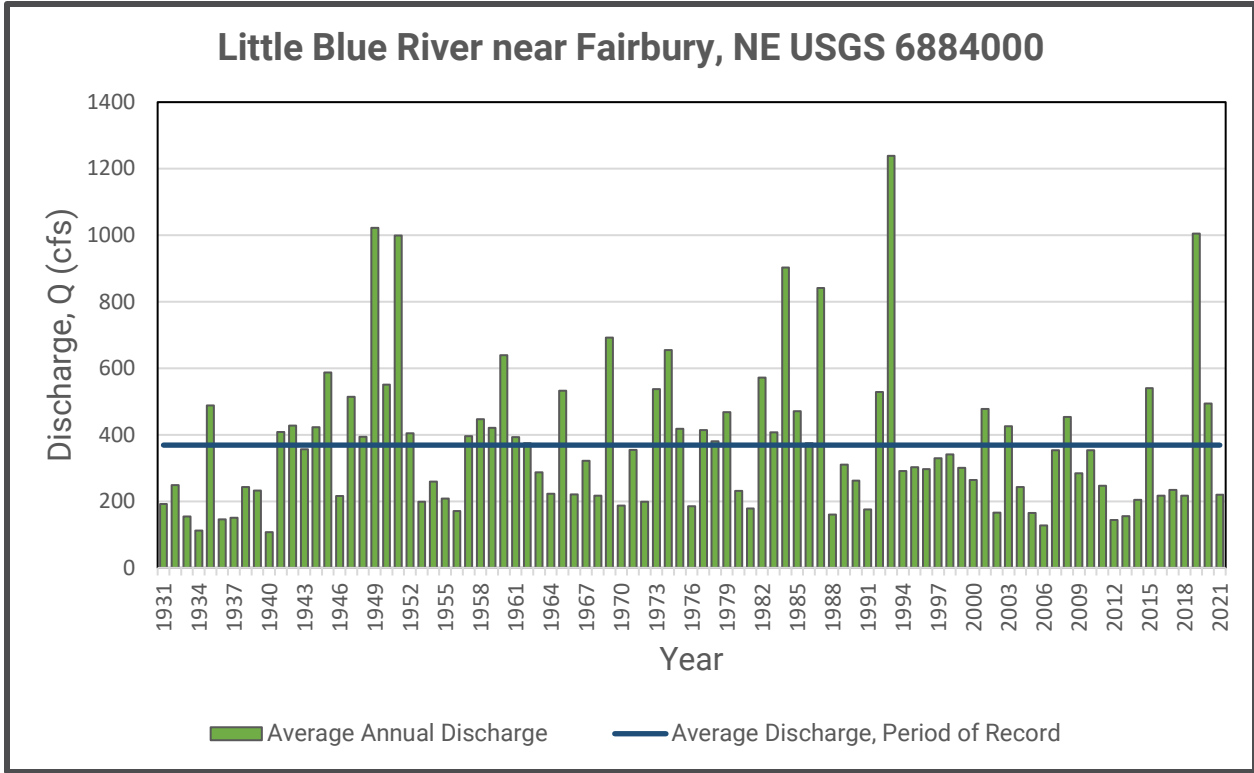
Attachment B



Attachment B



Attachment B



Attachment B

