KANSAS-NEBRASKA
BIG BLUE RIVER COMPACT

FORTY-EIGHTH
ANNUAL REPORT

FISCAL 2021

Lincoln, NE
May 13, 2021

KANSAS – NEBRASKA BIG BLUE RIVER

COMPACT ADMINISTRATION

May 18, 2022

The Honorable Joseph R. Biden, Jr.
President of the United States of America

The Honorable Laura Kelly
Governor of Kansas

The Honorable Pete Ricketts
Governor of Nebraska

Pursuant to Article VIII, Section 1 of the Rules and Regulations of the Kansas-Nebraska Big Blue River Compact Administration, I submit the Forty-Eighth Annual Report. The report covers the activities of the Administration of the Compact for the Fiscal Year 2021 while I was the presiding Federal Chair.

Respectfully,

W. Don Nelson

Federal Compact Chair

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NEBRASKA

Good Life. Great Water.

DEPT. OF NATURAL RESOURCES

Pete Ricketts, Governor

May 4, 2021

W. Don Nelson, Federal Chair
Kansas-Nebraska BBRCA
2430 S. Canterbury Lane
Lincoln, NE 68512

Earl Lewis, KS Commissioner
Kansas-Nebraska BBRCA
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Manhattan, KS 66502

Hanna Birge, Kansas Advisor
Kansas-Nebraska BBRCA
2110 Walnut Drive
Manhattan, KS 66502

Larry Moore, Nebraska Advisor
Kansas-Nebraska BBRCA
2240 A Road
Ulysses, NE 68669

Dear Compact Members:

The 2021 annual meeting of the Kansas-Nebraska Big Blue River Compact Administration will be hosted by Nebraska on Thursday, May 13, 2021, at 9:00 a.m. The meeting will be hosted virtually via the Zoom video conferencing app.

https://us02web.zoom.us/j/82674351302?pwd=NzNaSUFldUV4WW1nNVlwZUs5Ni96Zz09
Meeting ID: 826 7435 1302 **Passcode:** 637000
Dial by your location
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A tentative agenda is enclosed with this meeting notice.

Sincerely,

Thomas E. Riley

Tom Riley, P.E.
NE Commissioner

Tom Riley, P.E. Director
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P.O. Box 94676
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Enclosures or Attachments (1)

cc: Budget Committee – Amy Zoller, Elizabeth Hickman
Legal Committee – Emily Rose, Kenneth Titus
Engineering Committee – Jeremy Gehle, Elizabeth Hickman, Katie Tietsort
Water Quality Committee – Tom Stiles, Craig Romary, Dan Howell, Ryan Chapman
NRD Managers –Scott Nelson, David Clabaugh, David Eigenberg, John Thorburn
Add'l – Jim Macy, Jason Lambrecht, Tim Boyle

Kansas-Nebraska Big Blue River Compact Administration
48th Annual Meeting

May 13, 2021
9:00 A.M.
Zoom Video Conference Call with Screen Sharing

AGENDA

1. Call to Order
2. Introductions and Announcements
3. Minutes and Report of the 47th Annual Meeting
4. Chair's Report
5. Kansas Report
    a. State Overview Report
    b. Topeka Field Office Report
    c. Compact Advisor Comments
6. Nebraska Report
    a. State Overview Report
    b. Water Administration Report
    c. Reports of the NRDs
    d. Compact Advisor Comments
7. Secretary's Report
8. Treasurer's Report and Budget
9. US Geological Survey Report
10. Legal Committee Report
11. Engineering Committee Report
12. Water Quality Committee Report
13. Old Business
14. New Business
15. Committee Membership and Special Assignments
16. Adjournment

MINUTES OF THE 48th ANNUAL MEETING
OF THE
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION

Call to Order

The Forty-Eighth Annual Meeting of the Kansas-Nebraska Big Blue River Compact Administration (Administration) was held on May 13th, 2021 via a Zoom video conference call which was open to the public.

The meeting was called to order at 9:00 AM CDT by W. Don Nelson, Federal Compact Chair. Mr. Nelson introduced himself and reminded the attendees that, because the Administration was established by the US Congress, its meetings are subject to federal open meeting rules and regulations, though the ways these requirements have traditionally been fulfilled must be adjusted for a virtual meeting platform. He noted that both Kansas and Nebraska had made the login information for the virtual meeting publicly available. Mr. Nelson welcomed any members of the public who might be in attendance.

Mr. Nelson introduced the members of the Administration and confirmed the appointment of Tom Riley, Nebraska Compact Commissioner, who had submitted his credentials to Mr. Nelson. Mr. Nelson entered Mr. Riley's credentials into the official record of the meeting (Attachment A) and welcomed Mr. Riley to the Administration.

Introductions

Those confirmed in attendance were:

W. Don Nelson	Federal Compact Chair
Earl Lewis	Kansas Compact Commissioner; Chief Engineer, Kansas Department of Agriculture, Division of Water Resources
Tom Riley	Nebraska Compact Commissioner; Director, Nebraska Department of Natural Resources
Hannah Birge	Kansas Compact Advisor; The Nature Conservancy
Larry Moore	Nebraska Compact Advisor
Lizzie Hickman	Compact Secretary; Kansas Department of Agriculture, Division of Water Resources
Amy Zoller	Compact Treasurer; Nebraska Department of Natural Resources, Water Planning Division
Jeremy Gehle	Compact Engineering Committee Chair; Nebraska Department of Natural Resources, Water Administration Division Head
Kenneth Titus	Kansas Department of Agriculture, Chief Counsel
Tyler Smith	Kansas Department of Agriculture, Division of Water Resources, Topeka Field Office
Chris Beightel	Kansas Department of Agriculture, Division of Water Resources, Water Management Services Program Manager
Tom Stiles	Kansas Department of Health and Environment, Division of Environment, Bureau of Water Director
Scott Nelson	Little Blue Natural Resources District, General Manager
Tyler Goeschel	Little Blue Natural Resources District, Assistant Manager
J. Scott Sobotka	Lower Big Blue Natural Resources District, Assistant Manager
Craig Romary	Nebraska Department of Agriculture, Pesticide Program

Ryan Chapman	Nebraska Department of Environment and Energy, Planning Section Supervisor
Brian Barnes	Nebraska Department of Environment and Energy
Brandon Beethe	Nebraska Department of Environment and Energy
Zach Reid	Nebraska Department of Environment and Energy
Kris Reed	Nebraska Department of Natural Resources, Human Resources and Finance Division
Emily Rose	Nebraska Department of Natural Resources, Legal Counsel
Justin Hladik	Nebraska Department of Natural Resources, Lincoln Field Office Supervisor
Carrie Wiese	Nebraska Department of Natural Resources, Water Planning Division Assistant Manager
Andy Pedley	Nebraska Department of Natural Resources, Water Planning Division
John Thorburn	Tri-Basin Natural Resources District, General Manager
John Miller	Upper Big Blue Natural Resources District, Director
Dave Eigenberg	Upper Big Blue Natural Resources District, General Manager
Jack Wergin	Upper Big Blue Natural Resources District, Projects Department Manager
Marie Krausnick	Upper Big Blue Natural Resources District, Water Department Manager
Jason Lambrecht	US Geological Survey, Nebraska Water Science Center, Deputy Director for Hydrologic Observations

Approval of the Minutes of the 47th Annual Meeting

Lizzie Hickman, Compact Secretary, reported that an electronic copy of the initial draft Minutes of the 47th Annual Meeting had been provided to the Administration and to Kansas and Nebraska staff on April 8, 2021. Ms. Hickman incorporated corrections and provided a final draft of the minutes to the Administration on May 10, 2021. After the Compact Commissioners approved the minutes, they and the Compact Chair would be asked to sign the minutes where indicated. The Compact Chair would also sign the attached letter to the US President and Governors of Kansas and Nebraska. Due to the virtual format of the 48th Annual Meeting, Ms. Hickman planned to circulate the minutes electronically to obtain signatures. As there were no comments or questions, Ms. Hickman submitted the Minutes of the 47th Annual Meeting to the Administration for approval.

Earl Lewis, Kansas Compact Commissioner, moved to approve the Minutes and Report of the 47th Annual Meeting as submitted. Tom Riley, Nebraska Compact Commissioner, seconded the motion. There was no discussion. The motion passed unanimously.

Chair's Report

W. Don Nelson, Compact Chair, commented on the strangeness of the past year due to the ongoing COVID-19 pandemic. Mr. Nelson noted how much those present had learned since the previous (47th) Annual Meeting, conducted virtually during the first few months of the pandemic, about using available technology to conduct business remotely. He encouraged attendees to carefully research the available information regarding COVID-19 vaccination and expressed hope that the next (49th) Annual Meeting would be able to be conducted in person.

Mr. Nelson instructed those in attendance to use the Zoom Chat function to provide their names and affiliations for the attendance record of the meeting.

Kansas Report

State Overview Report

Earl Lewis, Kansas Compact Commissioner, began the Kansas report (Attachment B).

Mr. Lewis introduced himself as the new Chief Engineer of the Kansas Department of Agriculture, Division of Water Resources (KDA-DWR), as of November 2020. He also introduced Hannah Birge, newly appointed Kansas Compact Advisor.

The 2021 Session of the Kansas Legislature had ended the previous week. Only one bill regarding water issues was proposed and passed, which revised the Multi-Year Flex Account (MYFA) statute. MYFAs allow water users in groundwater-declining areas flexibility in the use of their authorized allocations over a five-year period. The revisions will allow irrigators with newer water rights to be eligible for MYFA permits.

The Kansas state budget was reduced this year due to reduced revenues over the last year, resulting from the ongoing COVID-19 pandemic. The Legislature enforced ten percent State General Fund (SGF) budget cuts for all state agencies. KDA-DWR uses SGF to fund personnel and operations.

In February 2021, a new Local Enhanced Management Area (LEMA) was designated in Wichita County in west-central Kansas. All irrigation water use in the Wichita County LEMA will be limited to allocations leading to about a 15% reduction in historical water use, on average, over the next five years. The two other active LEMAs in the state have been successful in reducing water use in northwest Kansas. KDA-DWR also continues to work with local water users to develop Water Conservation Areas (WCAs), which restrict water use in exchange for greater flexibility in the use of a suite of water rights. About 86,000 authorized irrigated acres in Kansas are currently enrolled in WCAs, leading to an estimated annual water use reduction of about 12,000 acre-feet.

In January 2021, Audubon of Kansas filed litigation against Kansas and the federal government related to Quivira National Wildlife Refuge (Quivira NWR) in south-central Kansas. Quivira NWR is a federal wildlife refuge managed by the US Fish and Wildlife Service (FWS) within the US Department of the Interior. FWS owns a 1957 surface water right which provides Rattlesnake Creek streamflows to supply the wetlands at Quivira NWR. Agricultural irrigation in the Rattlesnake Creek basin is intensive, with some 1,500 groundwater irrigation rights in the basin upstream of the Quivira NWR diversion, mostly junior in priority to the FWS water right. The current lawsuit focuses on the impairment of the FWS water right due to upstream groundwater diversion for irrigation and the alleged inaction of the federal and state governments to remedy the impairment. The litigation is still in its early stages; Kansas has filed its first motion, and the local Big Bend Groundwater Management District (GMD) No. 5 has intervened.

Current discussions of water quality issues in Kansas are focused on southwest Kansas, in the Arkansas River basin upstream of Garden City, KS, where Arkansas River water crossing the state line from Colorado contains concerning concentrations of sulfates and uranium, with impacts on irrigation, domestic, and municipal water use. Last year, the Kansas Department of Health and Environment (KDHE) provided an opportunity for domestic well owners to have their water quality tested for free. The Kansas Geological Survey, Kansas Water Office (KWO), and Southwest Kansas GMD No. 3 are also collaborating to collect water quality data to fill knowledge gaps regarding the extent of impacts of contaminated Arkansas River surface water on groundwater quality. KDHE is also initiating a program to sample domestic well water quality in northwest Kansas in the upper Republican River basin, also regarding potential uranium contamination in that region.

Following 2019 flooding, Kansas continues to work with partners in Nebraska, Iowa, and Missouri, as well as the US Army Corps of Engineers (USACE), on strategies to lessen damages of future Missouri River flooding. Flood planning and mitigation remains a topic of interest and discussion in most of

eastern Kansas. In central Kansas, flooding has led to rising groundwater levels, flooding homes in some communities.

Sedimentation continues to be the largest challenge for management of Tuttle Creek Reservoir. Ongoing efforts focus on stabilizing streambanks upstream of the reservoir to reduce the rate of sedimentation by keeping the sediment from migrating. As expected for a flood year, 2019 also saw high sedimentation in the reservoir; 8% of Tuttle Creek Reservoir's storage capacity was lost in 2019 alone. The KWO and USACE are working together to develop a pilot project evaluating the potential for water injection dredging which, if successful, would cause accumulated sediment to pass downstream of the dam. A portion of the funding needed for the pilot project was allocated in the state budget this year, but the pilot project is not yet fully funded. If viable for removing sediment from a reservoir, water injection dredging could be much more cost effective than traditional dredging.

Tom Riley, Nebraska Compact Commissioner, asked Mr. Lewis whether the lack of sediment in the Tuttle Creek Reservoir outflow had led to increased downstream erosion. Mr. Lewis replied that there was some increased erosion immediately downstream of the reservoir in the Big Blue and Kansas Rivers.

Topeka Field Office Report

Chris Beightel, Water Management Services Program Manager for KDA-DWR, continued the Kansas report (Attachment C) on behalf of Katie Tietsort, Water Commissioner for the Topeka Field Office (TFO) of KDA-DWR, who was unable to attend.

After a wetter than normal 2019, climate conditions were normal or a bit drier than normal in 2020. The Big Blue River Compact (Compact) area received normal or slightly less than normal precipitation. Thus far in 2021, climate conditions have been normal or a bit wetter than normal. Regarding temperature, conditions have been slightly warmer than normal in the Compact area both in 2020 and thus far in 2021. The Standard Precipitation Index, which attempts to normalize several climatic variables, is normal thus far in 2021 within the Compact area.

No minimum desirable streamflow (MDS) criteria for water administration were met in the Big Blue River basin in 2020 or thus far in 2021. After flooding in 2019, 2020 streamflows were more consistent with the historical average. Attachment C contains hydrographs of Big Blue and Little Blue River streamflows; Mr. Beightel deferred to the US Geological Survey (USGS) Report, to be given later in the meeting, for more details regarding recent streamflows in the Big Blue River basin. In the Little Arkansas River basin in south-central Kansas, nine water rights were administered for MDS from September 2020 through February 2021. Water administration orders were issued in the upper Neosho River basin to protect water supply for the City of Emporia, KS; these were active from September 2020 through April 2021. The USACE conducted stilling basin projects at John Redmond and Toronto Reservoirs in October 2020. Successful coordination and flexibility among the USACE, water users, and KDA-DWR allowed the project to be completed in a timely manner while still meeting the needs of downstream water users.

KDA-DWR issued two Notices of Non-Compliance (NONC) in the Compact area in 2020. One NONC was for groundwater wells lacking water level measurement tubes and well logs, while the other was issued to a surface water irrigator who failed to install a water flow meter. Thus far in 2021, KDA-DWR has issued two Cease and Desist (CD) Orders in the Compact area; both were to surface water irrigators who failed to install water flow meters. No civil penalties have been issued in the Compact area thus far in 2021. Attachment C contains maps of all NONCs, CD Orders, and civil penalties issued throughout Kansas for the past five years; not many were in the Compact area.

There was little new water right development in the Compact area in 2020. Thus far in 2021, there has been a significant increase in water right applications received by KDA-DWR statewide, as agricultural commodity prices increase and the economy begins to recover from the COVID-19 pandemic. Within the

TFO area alone, KDA-DWR staff have assisted with 74 applications in 2021 to date: 46 applications for new water rights or permits and 28 applications to change existing water rights.

TFO staff have been working through a field work backlog caused by COVID-19 travel restrictions. This backlog has been completed in about a quarter of the counties in the TFO area.

In 2020, the TFO moved locations. Due to this planned move, the TFO has been pursuing an initiative in recent years to scan the paper files and supporting documents for all water rights in their area of responsibility. Though this massive endeavor is still underway, over two-thirds of all active water right files in the TFO area have now been scanned, allowing TFO staff to work almost entirely remotely with no loss of productivity. KDA-DWR is investigating the logistics of implementing similar initiatives in the other three KDA-DWR field offices to increase the agency's resiliency and flexibility.

The most recent Lake Level Management Plan for Tuttle Creek Reservoir was approved in fall 2020. The new plan introduces no significant changes, and the focus remains the support of fish spawning and wildlife habitat. Attachment C contains a table of management elevations.

The KWO, Kansas Department of Wildlife and Parks, and the USACE are collaborating on a Kansas River basin study to investigate the actions needed to extend the usable lives of reservoirs in the Kansas River basin, reduce flood risk, and increase infrastructure benefits.

Mr. Beightel thanked Tyler Smith of the TFO for his assistance in compiling Attachment C.

Kansas Compact Advisor Comments

Hannah Birge, Kansas Compact Advisor, introduced herself to the Administration and provided some background on her work for The Nature Conservancy as Director of Agriculture, working with producers and other stakeholders, mostly in Nebraska, to implement soil health and water quality projects.

Ms. Birge stated that she sees great potential for the Administration as a vehicle to promote further agricultural water quality projects throughout the Big Blue River basin. She expressed a desire to learn from other members of the Administration and explore areas of mutual interest among the individuals and agencies represented, which could lead to implementation of future projects.

Nebraska Report

State Overview Report

Tom Riley, Nebraska Compact Commissioner, began the Nebraska report (Attachment D).

Mr. Riley introduced himself as the new Director of the Nebraska Department of Natural Resources (DNR). He mentioned that, as his hometown is Crete, NE, he grew up in the Big Blue River basin. Mr. Riley noted the importance of in-person conversations and "water cooler discussions" to collaboration and innovation and expressed hope that future Compact meetings might be conducted in person.

Mr. Riley noted that DNR is in the middle of the process of moving office locations. The new DNR office will be completed later this year. Meanwhile, most DNR staff continue working remotely; others are temporarily located in the DNR field offices. Like KDA-DWR, DNR has not observed any loss in productivity due to staff working remotely.

Mr. Riley thanked KDA-DWR for the work they have done and continue to do in support of the Compact and the Administration. He also extended thanks to all other natural resource entities and agencies who work in the Big Blue River basin, including the Nebraska Department of Environment and Energy.

2020 water supply within the Big Blue River basin was adequate. Precipitation was between 90 and 125 percent of normal, though many precipitation events were intense and short in duration, with implications

for future water planning as the typical behavior of precipitation events changes. Due to adequate water supply, there was no administration in the Big Blue River basin in 2020, and all Compact target streamflows were met. Precipitation appears to be in the normal range in the Compact area so far in 2021 as well. The uppermost portions of the basin (the headwaters) have received 150 percent or more of normal precipitation.

The Water Planning Division of DNR continues to work with the 23 Natural Resources Districts (NRDs) in Nebraska to develop Integrated Management Plans (IMPs) across the state. A new voluntary IMP was adopted in the Little Blue River basin in 2020, including the Little Blue River basin portion of the Tri-Basin NRD. Outside the Compact area, the Middle Niobrara NRD also adopted a voluntary IMP in 2020.

2020 was the first reporting year for the Republican River Basin-Wide Plan, which went into effect in 2019. This plan was designed to encourage measurable progress toward hydrologic goals over a 25-year period. The Upper Platte River basin has a Basin-Wide Plan for the over-appropriated portions of the basin which proceeds in ten-year increments. A primary goal of this plan is to work with water users to reduce water use in over-appropriated areas to acceptable levels. DNR continues to work towards and coordinate with the regional NRDs on the development of a Basin-Wide Plan for the Lower Platte River basin. This involves modeling efforts, like those used in other regions of Nebraska, which use Airborne Electromagnetic (AEM) data to characterize groundwater availability and flow more accurately. This information can then be used to improve groundwater models and make better water planning decisions.

Within the Compact area, the voluntary IMPs recently approved in the Little Blue River basin represent an important step in coordination and communication between DNR and the NRDs. Water quality concerns are a key focus of planning efforts in the Compact area and the rest of Nebraska. Water quantity and water quality are interconnected such that water planning efforts must consider them both when setting goals.

DNR's online voluntary water use reporting tool has proven critical to DNR's efforts to gather information regarding how water is used across the state in order to make better water management decisions. More and more water users throughout the state, as they realize the value of providing DNR with accurate water use data, have begun using the online tool.

Thus far during the 2021 Session of the Nebraska Legislature, there has not been much activity related to water issues. The Nebraska budget has been signed by the Governor; there were no budget cuts affecting DNR. One water-related bill has been passed recently, to initiate a flood mitigation study and incorporate the results into the State Flood Hazard Mitigation Plan currently under development. The purpose of the Plan is to help the state better evaluate flood conditions and issues across Nebraska. This legislation was prompted by flooding events in 2018, but planning to manage extreme events such as drought and flooding must happen before those events occur to be effective. The Nebraska Legislature will reconvene later in the year to address the impacts of redistricting across the state.

In Nebraska, a Water Sustainability Fund (WSF) is available for relevant water quality and water quantity projects and studies. In 2020, six new project applications totaling over $8 million were approved by the Nebraska Natural Resources Commission (NRC). Those interested in more information about new and past WSF-funded projects should see the link provided in Attachment D. There are several WSF-funded projects in the Big Blue River basin, including three groundwater recharge projects in the Little Blue NRD and the development of allocation software for the Upper Big Blue NRD.

There are many smaller dams in the Compact area; the Nebraska Dam Inventory records 621 dams in the Big Blue and Little Blue River basins. In 2020, DNR conducted 173 dam inspections in the Compact area, of which 13 were for high hazard potential structures. Mr. Riley noted that DNR has experienced difficulties keeping their Dam Safety Section fully staffed, which is also true of KDA-DWR. Lack of staff has not kept DNR from conducting all inspections in a timely manner. Another obstacle to dam safety that

DNR staff have noticed is the difficulty in convincing owners of small dams to conduct preemptive management and maintenance to prevent future problems.

Earl Lewis, Kansas Compact Commissioner, asked about the accuracy of AEM groundwater level measurements. Mr. Riley replied that the AEM data is fairly accurate with regards to aquifer properties when it can be matched with well location data, considering that it is a wide-scale data collection effort conducted by helicopter. In the areas where it has been conducted, AEM data collection has resulted in useful supplementary knowledge for DNR and the NRDs that can be incorporated into models and other decision-making tools. Recent AEM data collection efforts have been funded by the WSF.

Mr. Lewis confirmed that KDA-DWR has experienced some of the same difficulties as DNR with regards to Dam Safety Section staffing and inspections. He asked how many of the dams inspected by DNR were of concern for failure or had maintenance needs. Mr. Riley replied that, thankfully, none of the high hazard potential structures in Nebraska were in poor condition. However, a significant portion of smaller, lower-hazard structures need some degree of maintenance. The DNR Dam Safety Section Chief has developed a good system to prioritize inspections in light of the Section's current staffing needs. DNR is investigating ways to incentivize more monitoring and maintenance on the part of small dam owners.

Water Administration Report

Justin Hladik, DNR Lincoln Field Office Supervisor, continued the Nebraska report (Attachment E).

Mr. Hladik reported that there was no water administration in 2020 in either the Big Blue or Little Blue River basins in Nebraska.

The Little Blue River basin in Nebraska consists of approximately 2,752 square miles containing about 245 irrigation permits and 139 storage rights. In Water Year (WY) 2020, the basin was significantly drier in the upper reaches, where precipitation was about 80 to 90 percent of normal, than in the portions close to the Kansas state line, where precipitation sometimes exceeded 125 percent of normal. Overall, 2020 streamflows in the Little Blue River were higher than the historical average at the state line. Attachment E contains tables and graphs of streamflow statistics at the USGS state line gages (the Little Blue River at Hollenberg, KS and the Big Blue River at Barneston, NE). Precipitation events from late May to early August 2020 maintained state line streamflows above minimum target values for the entire irrigation season, after which streamflows began to decline until the end of WY2020 due to a period of dryness. The Little Blue River basin began WY2021 in a brief period of drought. Due to adequate water supply, no surface water administration on the Little Blue River was necessary in 2020.

Conditions were much the same in the Big Blue River basin in Nebraska, which consists of about 4,450 square miles with 814 irrigation permits and 373 storage rights. Precipitation varied across the basin: 80 percent of normal in the upper reaches of the basin and 90 to 125 percent of normal closer to the state line. State line streamflows remained above minimum target values for the entire irrigation season before declining in the last months of WY2020. WY2020 state line streamflows in the Big Blue River were generally higher than the historical average.

Reaching some portions of the Compact area to inspect pumping sites was challenging in 2020 due to consistent rainfall.

Lower Big Blue Natural Resources District (NRD) Report

Scott Sobotka, Assistant Manager of the Lower Big Blue NRD (District), presented the District report (Attachment F) on behalf of Dave Clabaugh, Manager of the District, who was unable to attend.

The District continues rehabilitating and performing maintenance on over 270 existing flood control and grade stabilization structures. The oldest flood control structure in the District was completed in the 1950s, and the newest only a few years ago.

In connection with these flood control projects, the District maintains ten public use areas. In recent years, the District has worked to improve three of these public use areas and the surrounding watersheds through a community-based planning process involving local landowners and stakeholders, leading to the installation of conservation practices as well as in-lake improvements to address water quality concerns such as sedimentation, phosphorus, atrazine, and E. coli. Using this process, the District is nearing completion on the rehabilitation of the Cub Creek 12A public use area located just southwest of Plymouth, NE. In this watershed, the District has focused on improving reservoir water quality through the installation of several conservation practices. The Wilber #1 dam rehabilitation project near Wilber, NE, which focused on structure upgrades, was also recently completed. The City of Wilber will now manage the 20-acre public use area and plans to develop an outdoor classroom by the lake for a nearby high school. The District has also completed its Little Indian 15A rehabilitation project, which began in 2019. Due to the presence of a four-lane highway downstream, the dam at this site was reclassified from significant to high hazard potential, requiring safety modifications including the widening of the emergency spillway and replacement of the principal spillway pipe.

The District continues to use principal spillway tube inserts in its structure maintenance projects to repair rusted and leaking corrugated metal pipes. Installation of these inserts does not require any dam excavation, reducing both the cost and safety risk of dam maintenance. In the past year, the District installed inserts in three dams, one of which was located in the Upper Big Blue NRD.

The District is working to complete its Voluntary IMP in collaboration with DNR. A stakeholder group has been discussing goals and objectives to include in the plan.

The District is seeking to update their Groundwater Rules and Regulations, which were last updated in 2014 to include rules related to permitting criteria and a water flow meter requirement for new irrigation wells. In contrast, this round of updates mostly seeks to update language and definitions.

The District is working with other regional NRDs on the Blue Basin Groundwater Model Study, an effort led by Marie Krausnick, Water Department Manager for the Upper Big Blue NRD.

The District's spring 2021 static groundwater level measurements revealed another year of increased water levels. On average, water levels across the district have increased by 0.6 feet since spring 2020 and are about one foot above the District's 1982 baseline levels. The District measures 93 irrigation wells, 43 monitoring wells, and 32 Compact wells. Water levels in the Compact wells have increased by about 0.65 feet since last spring.

A National Water Quality Initiative (NWQI) area was approved last year within the lower Turkey Creek basin near the towns of Wilber and De Witt, NE. NWQI is a program of the US Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS). Water quality impairments of concern in this area are atrazine, E. coli, and nitrates. Plans to address these concerns will be developed in collaboration with the NRCS. An assessment of the watershed is currently in progress. The planning process slowed last year due to the COVID-19 pandemic, but the District hopes that it will be able to resume this fall.

The District has also received funding from the Watershed and Flood Protection Operations (WFPO) Program of the NRCS to evaluate the Little Indian Creek watershed in northern Gage County, NE. The project aims to improve flood control for the City of Beatrice, NE at the outlet of the watershed, as well as for agricultural lands.

The District has received about $800,000 in additional funding for water quality and water quantity projects in the form of multiple grants from the Nebraska Environmental Trust. Two grants have been awarded to support cost-sharing for water flow meters, allowing the District to double its cost sharing percentage to about 50 percent. These two grants would allow the District to provide cost-share on the installation of flow meters on about 25 percent of the high-capacity wells in the District. A third grant provides funding to address water quality concerns, particularly regarding nitrates.

Mr. Sobotka also invited all those in attendance to the District's annual Youth Fishing and Casting Derby and Free Family Fishing Day.

Little Blue Natural Resources District (NRD) Report

Scott Nelson, the new General Manager of the Little Blue NRD (District), presented the District report (Attachment G). Tyler Goeschel, Assistant Manager of the District, was also present.

The District has received WFPO funding from the NRCS for watershed projects in the 32-Mile Creek basin northwest of Hastings, NE. The main project focus is flood protection improvements for the towns of Kenesaw and Juniata, NE, but other project elements address groundwater recharge and water quality.

The Sandy Creek NWQI Project in the vicinity of the towns of Bruning, Alexandria, and Carleton, NE focuses on working with landowners to implement agricultural best management practices (BMPs) for water quality improvement.

A District-wide project aims to track the movement of nitrates through the vadose zone. A similar project was conducted five years ago, and a follow-up study was completed in the past year.

The District Board of Directors has prioritized promotion of wellhead protection programs to communities within the District. About six towns within the District have very high nitrate levels in their water supply.

The District is working to repair the Bowman Springs Ranch 3-D structure southeast of Hebron, NE, which has experienced such severe face erosion that it is now in jeopardy of breaching. The District also recently completed a renovation project at Crystal Lake near the Village of Ayr, NE. The Nebraska Game and Parks Commission is planning a renovation project at the Alexandria State Lakes Recreation Area.

Mr. Nelson plans to lead the District in pursuing outside funding for projects, with support from the District Board of Directors.

Earl Lewis, Kansas Compact Commissioner, asked about the nitrate levels in the water supplies of small municipalities within the District and what the District is doing to assist with mitigation. Mr. Nelson mentioned a currently ongoing project working with the City of Fairbury, NE, where nitrate levels have reached or exceeded ten parts per million. The District is investigating the possibility of establishing a new five-well wellfield northwest of Fairbury, to be funded by $8 million from USDA Rural Development. Nitrate levels in the area under investigation range from zero to three parts per million, and water quantity is adequate to supply both Fairbury and a local rural water district which also needs additional water supply. The District has secured project funds and is currently working to purchase land for the wellfield. Many other small communities in the District struggle with elevated nitrate levels in their water supply; most of these have wellfield protection areas established. They generally cannot afford expensive treatment plants to remove nitrate from drinking water, so they must rely on strategies to prevent nitrate from entering groundwater. Mr. Lewis mentioned that there are also some 200 communities in Kansas where nitrate levels in water supply are increasing.

Upper Big Blue Natural Resources District (NRD) Report

Dave Eigenberg, General Manager of the Upper Big Blue NRD (District), began the District report (Attachment H). He began by recognizing the 17 members of the District Board of Directors for all their work, with special recognition for John Miller and Larry Moore, who were present. He also recognized the four District staff members present.

Marie Krausnick, District Water Department Manager, continued the District report.

The District issued 59 well construction permits in 2020. As of January 2021, there are about 12,200 irrigation wells in the District.

The District has completed their spring groundwater level measurements. Water levels have increased slightly, about 0.35 feet higher than in spring 2020. Current water levels are about 9.13 feet above the level that District rules indicate as an allocation trigger. Attachment H contains a map of interpolated groundwater level changes, both increases and declines, across the District.

Attachment H also contains a time-series plot of annual average spring groundwater levels beginning in 1961. The District's water quality rules primarily examine the change in water levels between spring seasons, using the spring 1978 water level as a baseline and allocation trigger. Should water levels fall below the allocation trigger, District rules would be used to assign allocations to water users. A reporting trigger above the allocation trigger prompts the District to certify irrigated acres. Groundwater levels declined below the reporting trigger in 2005. At that time, the District was also beginning to require water flow meters on all new and replacement high-capacity wells.

After the reporting trigger level was reached in 2005, certification of irrigated acres began in 2006. The District relies solely on county assessors, who assess producers' irrigation taxes, for this information. As of January 2021, there were over 1.2 million irrigated acres within the District. This was an increase from 2020, although most of the increase is due to improved data accuracy.

In 2007, once irrigated acres had been certified, the District began requiring annual reporting of groundwater use. Water flow meters became mandatory on all high-capacity wells in 2016. Previously, producers had been allowed to report water use using pumping rate and hours pumped. In 2020, the average pumping within the District was 5.7 inches. Attachment H includes a bar chart of average annual pumping since 2007, along with three- and five-year groundwater use averages. The averaging periods correspond to allocation durations. Should water levels fall below the allocation trigger, water users will initially be granted an allocation of 30 inches over three years. If, at that time, water levels are still below the allocation trigger, five-year allocations of 45 inches will be established.

Groundwater quality, primarily nitrate concentrations, remains a major concern within the upper Big Blue River basin. The District is split into 12 management zones where water quality samples are taken either annually or every three years, depending on the median nitrate level. A map included in Attachment H shows zones of Phase II or III Management, where dedicated wells are sampled annually for water quality; wells in Phase I Management zones are sampled according to a three-year rotation. The District's rules and regulations for groundwater quality trigger when the nitrate level reaches seven parts per million for Phase II Management and ten parts per million for Phase III Management.

A University of Nebraska-Lincoln (UNL) study in the Hastings, NE area aims to shed light on arsenic, selenium, and uranium concentrations in groundwater samples, and particularly whether changing nitrate levels in groundwater formations might be triggering the natural release of those elements. For the last three years, the District has periodically sampled for these elements, as well as for nitrate, in the nine dedicated monitoring wells throughout the District, to observe fluctuations in concentrations throughout the pumping and recharge seasons.

Since the drought of 2012, the District has observed an increased number of Dakota Aquifer wells being constructed in the eastern region of the District. The District has started a monitoring program using these wells, and the resulting data is shared with the well owners. The purpose of the program is to gain a better understanding of the water quality of the Dakota Aquifer and the impacts of the application of Dakota Aquifer water to the land surface.

The District has been approached by the UNL Medical Center (UNMC) to conduct a two-year study in partnership with them on the effects of nitrate and other agricultural chemical concentrations in drinking water on incidences of pediatric cancer. Nebraska has the seventh-highest rate of pediatric cancer in the US, and the District has one of the highest rates in Nebraska. The study will be a domestic well sampling program of 50 locations in the District which have historic data on nitrate in drinking water and are in

close proximity to confirmed cases of pediatric cancer. A control set of 50 wells in areas without confirmed diagnoses of pediatric cancer has also been selected. The District will sample from these wells multiple times throughout the year, and UNMC will analyze the samples for nitrate, atrazine, arsenic, uranium, and uranium decay products.

The District continues to partner with the City of York, NE for Project GRoW (Growing Rotational crops on Wellfields), a soil health demonstration in which the District farms 140 acres, including the city's wellfield, while the city farms about 200 additional acres using more conventional agricultural practices. This is the fourth year of a five-year project; the District hopes that, at the end of the project, the city will allow the District to farm the remaining 200 acres to further promote soil health, cover crops, and diverse crop rotations. The project includes educational programming while maintaining profitability for the city. The District has attempted to reach out to other communities within the District to implement similar projects in additional locations, but unfortunately, most communities in the District do not own all the land on and adjacent to their wellfields. However, the project has been a great success leading to further opportunities.

Because of their work with Project GRoW, the District was approached by The Nature Conservancy two years ago to partner with them on a project to teach producers about more sustainable agricultural practices. At that time, the District, in partnership with UNL Extension, wanted to promote the idea of inter-seeding cover crops with cash crops. The District has finished the first year of this project and is coordinating for the second year, in which ten producers will be participating.

The Nature Conservancy also approached the District with an opportunity to partner with local producers, as well as private and public (both state and federal) entities, to prioritize soil health and soil carbon. In 2020, The Nature Conservancy was awarded Resource Conservation Partnership Program (RCPP) funds from the NRCS for this Nebraska Soil Carbon Project. The goal of the project is to partner with 100 producers in the District and the Central Platte NRD to implement soil health practices on 100,000 acres. Three practices of focus are cover crops, no-till, and diverse crop rotations. The first round of producer signups began May 1, 2021, with considerable producer interest.

The Nebraska Agricultural Water Management Demonstration Network program has been active since 2005 and is still heavily utilized by producers in the District. The District offers discounts to producers who purchase Watermark sensors, ETgages, data loggers, and handheld readers from the District.

The NRDs within the Big Blue River basin have partnered with DNR to develop a cutting-edge Blue River Basin Groundwater Model, which will hopefully be complete by summer 2021.

The District continues to partner with communities to develop Wellhead Protection Area Plans and source water protection plans. Some funding designated towards source water protection was used to fund Project GRoW.

Starting in fall 2021, the District will partner with the UNL Water Center on a vadose zone study that will focus on a few of the District's groundwater quality management areas each year. A member of District staff plans to use the results of the study to develop a graduate thesis.

In 2017, the District began a municipal water system assistance program, in which the District provides financial assistance to public water systems which struggle with nonpoint source contamination. Projects funded thus far include constructing new domestic wells and connecting them to existing municipal systems.

Jack Wergin, District Projects Department Manager, continued the District report (Attachment H).

About two years ago, the District began developing a Water Quality Management Plan (WQMP) for the entire District. A large group of stakeholders from throughout the District assisted in selecting a target

area no larger than 20 percent of the District. The Beaver Creek watershed, and specifically Recharge Lake, was selected as a five-year focus area. The stakeholder group selected buffer strips and cover crops as implementation measures of interest. After the District-wide WQMP was accepted, the District formed another, smaller stakeholder group within the chosen target area, who also identified cover crops and buffer strips as practices of interest. Once the final report of the target area stakeholder group is received, the District will use the information to apply for funding to begin implementing practices.

The District's Land Treatment Program has obligated cost-share funding for 37 soil and water conservation projects in Fiscal Year (FY) 2021. These projects can be terraces, sediment control basins, waterways, or tree plantings and must be approved by the NRC. Approved projects are then selected for funding by the District Board of Directors. Funding sources include the Nebraska Soil and Water Conservation Program and District revenues. Project participation has increased greatly from FY2019, when projects could not be constructed due to wet conditions.

The District offers financial assistance for the Nebraska Department of Agriculture's Nebraska Buffer Strip Program. The District provides cost-share funds for vegetative buffer strips along wetlands, streams, and lakes which are adjacent to cropland. In FY2020, the District cost-share funded 22 buffer strip projects. About 175 acres were enrolled, with cost-share rates dependent on soil type and whether the adjacent cropland is irrigated.

In 2017, the District began a Variable Rate Irrigation (VRI) Pilot Program. VRI projects can add speed, nozzle, or zone control to irrigation pivots; all VRI projects in the District thus far have been for speed control. In FY2021, the District cost-share funded one VRI project. As this is a pilot program, projects are limited to one per landowner. 16 projects have been cost-share funded since the program began.

In 2016, the District began their Private Dams Program, offering landowners within the District cost-share funds to rebuild dams that have failed or are at high risk of failure. The NRCS assists this program by providing designs and construction oversight. One dam was completed in FY2021, while landowners canceled two other potential projects. 15 dam projects have been cost-share funded since the program began.

High hazard potential structures are required to have an Emergency Action Plan in case of failure and to hold a tabletop emergency exercise every five years. In February 2021, the Hastings Northwest Flood Control Structure located just north of the Hastings, NE airport, which is the only high hazard potential dam in the District, was the focus of an emergency exercise held by the city of Hastings, the Adams County Emergency Management Agency, and DNR. The exercise was well-attended by local authorities. The organizers stressed that high hazard potential classification is not indicative of a dam with a high likelihood of failure, but rather the homes and businesses which would be flooded if the dam failed.

The District assists with the maintenance of 47 dams. The Lower Big Blue NRD assisted with the installation of a spillway tube insert in a District dam. Two other dam maintenance projects are ongoing. The District has been working to address minor dam maintenance issues discovered during inspections. They have also been installing riprap on and around dams to mitigate erosion, as was observed during the 2019 flooding.

Nebraska Compact Advisor Comments

Larry Moore, Nebraska Compact Advisor, commented that he has been working in soil and water management for 50 years and is excited about the current opportunities. Mr. Moore believes that, through the NRD system in Nebraska, the tools are in place to manage water quantity when needed, and that great efforts are being made toward improving water quality as well. Now that more producers are sharing more information, it has become clear that they are doing more to manage nitrate than was once thought, and they are willing to cooperate with the NRDs. Three of the largest seed companies in the world produce stock in the Big Blue River basin, and they encourage their seed growers to implement cover

crops. Younger, rising generations of producers do not think there is anything strange about managing for water quantity and quality; tools such as water flow meters and soil moisture sensors seem normal to them. Mr. Moore expressed hope that next year's meeting of the Administration can be held in-person.

To conclude the Nebraska report, Tom Riley, Nebraska Compact Commissioner, expressed appreciation for the efforts of the NRDs and other partners of DNR and echoed previous comments that water quality improvement projects and conjunctive water quality and quantity management will continue to become more common in the Big Blue River basin.

Secretary's Report

Lizzie Hickman, Compact Secretary, presented the Secretary's report.

Ms. Hickman stated that the current process for developing the Minutes and Annual Report has been working well, so she plans to implement it again this year. She briefly described that process and requested that those who had presented reports during the meeting provide her with electronic copies of their written reports to be both included as attachments to the 48th Annual Report and made publicly available on KDA-DWR's Big Blue River Compact webpage. Ms. Hickman thanked the Nebraska delegation, who were hosting the Zoom meeting, for recording the meeting. Once the Annual Report has been signed, it will be made available for the states to post publicly on their websites. If any members of the Administration would like a printed copy of the Annual Report, they may request that once the Report has been signed.

Ms. Hickman provided her contact information and a link to the KDA-DWR Big Blue River Compact webpage in the Zoom chat.

Ms. Hickman stated that she had received the credentials for both the Kansas and Nebraska Compact Commissioners (Attachment A).

Treasurer's Report and Budget

Amy Zoller, Compact Treasurer, presented the Treasurer's report (Attachment I). Elements of Attachment I included a written outline of Compact financial activities, an overview of the current year's finances, a multi-year budget analysis, and the annual independent accountants' financial review report.

Ms. Zoller began by presenting an overview of Compact finances during FY2021. Income came from state assessments and interest. In 2015, annual state assessments were raised from $8,000 per state to $9,500 per state. Expenses included USGS state line gages, groundwater observation wells in the Lower Big Blue NRD, and the annual accountants' review. The expense of the accountants' review had not yet been incurred as of the meeting date but was expected before the end of FY2021.

The multi-year budget analysis includes three past years of actual income and expenses (FY2018-2020), the actual to date and estimated remaining income and expenses for the current year (FY2021), a proposed budget for the upcoming year (FY2022), and a projected budget for the year following (FY2023). The proposed budget expenses for FY2022 added a three percent increase to regular expenses to account for potentially increased costs. Expenses for printing, postage and office supplies, and miscellaneous expenses were included in the FY2022 proposed budget, though those expenses have not been incurred for several years. In the past, the Administration has voted to retain those expense items in the budget. The same procedure was used to develop the projected FY2023 budget. Ms. Zoller commented that the running Compact account balance has increased by about $9,000 since she began serving as Treasurer in 2016, shortly after state assessments were increased.

US Geological Survey (USGS) Report

Jason Lambrecht presented the USGS report (Attachment J).

Mr. Lambrecht commented that the mission of the USGS is to provide impartial, high-quality, timely, publicly available hydrologic data, so he was glad to see USGS data utilized in the state reports. The USGS operates six stream gages within the Big Blue River basin, including the Compact state line gage on the Big Blue River at Barneston, NE, which has 88 years of record. The oldest stream gage in the basin is the Big Blue River gage at Beatrice, NE, with over a hundred years of record. The USGS operates five stream gages within the Little Blue River basin, including the Compact state line gage on the Little Blue River at Hollenberg, KS, with only 46 years of record. The oldest stream gage in the basin is the Little Blue River gage at Fairbury, NE, with 98 years of record. These stream gages collect data every 15 minutes, which is delivered to the USGS webpages every hour via satellite. Data are provisional until review and approval by the USGS, which typically takes 100 to 150 days after collection.

The information in Attachment J concerns WY2020 (October 1, 2019 to September 30, 2020). During WY2020, USGS staff took 12 field discharge measurements at the Barneston gage and 14 at the Hollenberg gage. Typically, the USGS aims to take about ten field measurements at each gage per year, but they take additional measurements during periods of particularly high or low flow. At low flow, the USGS takes special care to ensure that the data is accurate, because administration could be prompted to protect Compact target flows.

WY2020 annual mean discharge at both the Barneston and Hollenberg gages was slightly above the overall historic average but only about half that of WY2019. Peak flows for the entire period of record are 50,000 ft^3/s from 1941 for the Big Blue River at the Barneston gage and 59,200 ft^3/s from 2015 for the Little Blue River at the Hollenberg gage.

The USGS installed a radar gage at the Hollenberg gage in June 2020 as part of a statewide effort to, as budget permits, install radar gages at all USGS gaging stations to collect redundant data. During the 2019 floods, there were many sites with redundant sensors where that redundancy allowed data from those extreme events to continue being collected when one sensor failed. Sensor redundancy also allows the USGS to verify the accuracy of high and low flows.

Turkey Creek is a major tributary of the Big Blue River in Nebraska. Last year, the USGS was faced with a lack of funding for the Turkey Creek gage near DeWitt, NE. The Lower Big Blue NRD and partners have taken over a large share of the funding of that gage so that it can continue to operate. Many local stakeholders were concerned by the prospect of the gage being discontinued.

Mr. Lambrecht encouraged those in attendance to explore the new USGS Water Dashboard, a web-based map application of all 13,500 USGS gages in the nation, including Alaska, Hawaii, and Puerto Rico.

Legal Committee Report

Emily Rose, Compact Legal Committee member for Nebraska, reported that the Legal Committee received no special assignments from the Administration over the last year, so they had nothing to report.

Engineering Committee Report

Jeremy Gehle, Compact Engineering Committee (Committee) Chair, gave the Committee report (Attachment K). The Committee received no special assignments from the Administration over the past year. Mr. Gehle had worked with Kansas members Lizzie Hickman and Katie Tietsort to develop the written Committee report. He thanked those who had already reported on streamflow in the Big Blue River basin during the state and USGS reports. Mr. Gehle also thanked the Lower Big Blue NRD for supplying groundwater data.

The Committee reviewed the wells located in the regulatory reaches of the Big Blue and Little Blue River basins in Nebraska and found no additions or removals. The Committee developed a new map of the regulatory reaches, including irrigation wells subject to Compact administration and Lower Big Blue NRD observation wells; the map can be found in Attachment K.

Water Quality Committee Report

W. Don Nelson, Compact Chair, reported that the Compact Water Quality Committee (Committee) had met very recently. Tom Stiles, Committee member for Kansas, gave the Committee report (Attachment L). The Committee meeting was well attended by representatives from both states and the NRDs. Mr. Stiles thanked Ryan Chapman for compiling notes from the meeting (as Attachment L).

Both states must submit an integrated report, an inventory of impaired waters, to the federal government every two years. Nebraska's 2020 integrated report is currently under review by Region 7 of the US Environmental Protection Agency (EPA). In the past, typical impairments in the Big Blue River basin in Nebraska have predominantly been E. coli and atrazine in streams and nutrients, as well as mercury in fish tissue, in lakes. As a result, Nebraska has approved Total Maximum Daily Loads (TMDLs) for bacteria and atrazine on most stream reaches in the basin, as well as phosphorous and sediment TMDLs on Big Indian Lake. Mr. Stiles noted that Nebraska is one of the nation's leaders in proposing alternative impairment management plans to TMDLs, which accomplish much the same purpose but do not follow the protocols required by the Clean Water Act. Due to the predominance of nonpoint source pollution in creating and perpetuating these impairments, the use of watershed plans, as described in the NRD reports, is a principal element of this alternative approach that Nebraska has advocated to address impairments in the basin and across the state.

In contrast to nonpoint sources, point sources are defined as those which must obtain a permit from the state to be allowed to discharge pollutants into the Waters of the US. About 100 facilities are permitted to discharge into Big Blue River basin streams in Nebraska; 12 of those are major facilities, meaning they discharge over one million gallons per day. Conversely, in Kansas, there are 24 municipalities, along with industrial facilities, with point source discharge permits, but none are considered major. Thus, much of the point source influence in the basin comes from larger municipalities on the Nebraska side of the state line.

Section 319 of the Clean Water Act governs nonpoint source activities, which are principally carried out through nine-element management plans. The NRDs in the basin have been very active in developing and implementing watershed plans. Generally, these plans focus on bacteria and atrazine abatement in surface water; on nitrate in groundwater, along with fringe pollutants that might be accompanying the nitrate, such as selenium and uranium; on sediment removal and rehabilitation in lakes; on wetland restoration; and on assessment of the vadose zone with an emphasis on nitrate. The NRDs have also undertaken to address the effects of sediment on lakes and streams with projects such as installation of in-stream weirs.

Kansas's most recent integrated report was approved in April 2020. The Kansas inventory of impaired streams is dominated by nutrients (especially phosphorous), sediment, bacteria, and atrazine, with some fringe issues such as copper. Assessment of Kansas stream biology shows widespread impairment of aquatic communities, likely a result of not only pollutant introduction, but also stream habitat disruption. In summer 2020, the EPA approved Kansas TMDLs for phosphorous in the Big Blue and Little Blue River basins; Kansas noted that, based on the hydrologic and land use characteristics of the basins in both states, a significant portion of this impairment likely originates in Nebraska.

Unlike Nebraska, Kansas has chosen to use TMDLs to identify and manage pollutants in impaired surface waters. This results in initiatives to reduce nutrient loading in Kansas waters. Point sources are encouraged to implement technology that will reduce nutrient concentrations in discharge. The Kansas equivalent of watershed plans are WRaPS (Watershed Restoration and Protection Strategy) groups. There

is a longstanding WRaPS group which is focused on Tuttle Creek Lake, especially atrazine and sediment in the lake and atrazine in the upstream streams. Regarding nonpoint sources of nutrient pollution, the Clean Water State Revolving Fund of the EPA has been used to finance cover crop projects, which many view as a long-term solution for soil health, carbon sequestration, and water quality improvement. Cover crops also help retain sediment and nutrients on croplands. Stream stabilization projects have also been promoted and implemented in a partnership between KDHE, KWO, and KDA's Division of Conservation, mostly above Tuttle Creek Lake, with the aim of reducing sediment loads to the reservoir. The Regional Advisory Committees (RACs) oversee this work and ensure that it is consistent with the goals of the State Water Plan. The RACs direct and advise the Kansas Water Authority on the use of funds for water conservation and management, including water quality projects. Dan Howell, a member of the Committee for Kansas, is also a member of the Kansas (River) RAC, which includes the Big Blue River basin.

As mentioned in the Kansas report, the KWO estimates that almost half of the conservation storage in Tuttle Creek Lake has been lost to sedimentation. They are investigating several ways to abate or mitigate sedimentation in Kansas reservoirs. Traditional dredging is costly and not very resilient, as the next extreme event can easily replace the removed sediment. Innovative methods to reclaim conservation storage which are under investigation include, in partnership with the USACE, water injection dredging, which fluidizes settled sediments, allowing them to flow through the dam outlet and vacate the reservoir. This method has only previously been used in harbors, marinas, and navigation channels and has never been attempted in a reservoir. Considerations include downstream impacts, cost, and resiliency of recovered storage.

Mr. Stiles mentioned that the Committee believes that private sector investments and carbon credits provide many opportunities to fund implementation of practices to improve soil health, which begets water quality improvement and, potentially, improved agricultural yields.

Old Business

W. Don Nelson, Compact Chair, thanked all those who had worked to make the 48th Annual Meeting of the Administration a success, particularly those who set up the Zoom conference call and developed reports.

New Business

W. Don Nelson, Compact Chair, welcomed a motion to approve the proposed budget for FY2022. Tom Riley, Nebraska Compact Commissioner, made the motion. Earl Lewis, Kansas Compact Commissioner, seconded the motion. There was no discussion. The motion passed unanimously.

The Nebraska delegation offered a Resolution (Attachment M) in honor of Gordon "Jeff" Fassett, previously Director of DNR and Nebraska Compact Commissioner. Mr. Nelson read the Resolution.

Committee Membership and Special Assignments

Earl Lewis, Kansas Compact Commissioner, reported that Kansas would like to maintain its current delegation. Tom Riley, Kansas Compact Commissioner, reported that there were no changes to the Nebraska delegation either.

Mr. Lewis proposed that there might be an opportunity for Kansas and Nebraska to increase their cooperation under the auspices of the Compact between Annual Meetings. He asked for discussion of an assignment to the Compact Water Quality Committee that they evaluate or develop a bi-state application for federal funding to address some of the water quality concerns that have been reported during the meeting. Mr. Lewis suggested that a funding application from an entity like an interstate compact such as this might be very well received at the federal level. Mr. Riley concurred and stated that funding sources

will likely increasingly require management of both water quality and quantity. He agreed that it would be appropriate for the Water Quality Committee to investigate a potential joint effort of the states to seek federal funding.

Mr. Lewis moved to assign the Water Quality Committee the task to evaluate opportunities for bi-state partnership, under the auspices of the Compact, to seek federal funds to address the concerns identified during the meeting. Mr. Riley seconded the motion. There was no discussion. The motion passed

The Committee membership is as follows:

Budget Committee – Amy Zoller (NE), Lizzie Hickman (KS)
Legal Committee – Emily Rose (NE), Kenneth Titus (KS)
Engineering Committee – Jeremy Gehle (NE), Katie Tietsort (KS), Lizzie Hickman (KS)
Water Quality Committee – Dan Howell (KS), Annette Kovar (NE), Marty Link (NE), Craig Romary (NE), Tom Stiles (KS)

Adjournment

Both State Compact Commissioners once again thanked all those who assisted with the meeting, presented reports, and cooperate to maintain and improve the Big Blue River basin. Earl Lewis, Kansas Compact Commissioner, moved to adjourn the meeting. The meeting was adjourned.

Earl D. Lewis Jr., Kansas Commissioner

Tom Riley, Nebraska Commissioner

W. Don Nelson, Compact Chair

Attachment A

NEBRASKA

Good Life. Great Water.

DEPT. OF NATURAL RESOURCES

Pete Ricketts, Governor

May 6, 2021

W. Don Nelson,
Federal Chair
Kansas-Nebraska Big Blue River Compact
2430 S. Canterbury Lane
Lincoln, NE 68512

Re: Credentials for Tom Riley

Dear Mr. Nelson

Pursuant to Article III, Paragraph 3 of the Rules and Regulations of the Kansas-Nebraska Big Blue River Compact Administration, the State of Nebraska hereby files this letter with the Secretary of the Administration, which sets forth the credentials of Thomas Riley, Director of the Nebraska Department of Natural Resources (Department).

Thomas Riley, P.E., was appointed by Governor Pete Ricketts as Director of the Department on November 1, 2020 and shall serve as a permanent appointee in this position.

Mr. Riley brings a wealth of experience in water resources planning and environmental engineering to the Department. He is duly authorized to exercise all duties and powers granted to the Director of the Department, including the official charged with the duty to administer the laws of the State of Nebraska pertaining to water rights. Therefore, in accordance with Article III, 3.2 of the Compact, Mr. Riley shall serve as the ex officio member of the Compact Administration for the State of Nebraska.

Sincerely,

Jesse Bradley

Assistant Director

Former Interim Director and Ex Officio Member of the Compact

Nebraska Department of Natural Resources

Tom Riley, P.E., Director

Department of Natural Resources

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P.O. Box 94676
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Mike Beam, Secretary

Laura Kelly, Governor

May 6, 2021

W. Don Nelson
Federal Chairman
Kansas-Nebraska Big Blue River Compact
2430 S. Canterbury Lane
Lincoln, Nebraska 68512

Re: Credentials for Earl D. Lewis, Jr.

Dear Mr. Nelson:

Please accept this letter as evidence that Earl D. Lewis, Jr., P.E. was appointed as Chief Engineer of the Division of Water Resources for the State of Kansas on November 1, 2020.

Mr. Lewis is duly authorized to exercise all powers granted to the chief engineer and likewise, is required to fulfill all duties placed upon the chief engineer. Such duties include serving as an ex-officio member of the Big Blue River Compact pursuant to K.S.A. 82a-529.

I trust Mr. Lewis will faithfully serve the State of Kansas and the compact administration as may be required.

Sincerely,

Michael M. Beam
Secretary of Agriculture

Attachment B

Big Blue River Compact
State Report
Earl Lewis, PE
May 13, 2021

Legislation

The 2021 legislative session has been relatively quiet related to water issues. One bill related to the Multi-year Flex Accounts passed this year that allows for newer water rights to be eligible for the program as well.

The recently passed budget includes a 10% cut in the state general fund for all state agencies in response to reduced revenues from COVID. SGF is typically used for personnel and operations.

Water Conservation

In February of this year, final approval was given to implementation of a local enhanced management area, or LEMA, in Wichita County in West Central Kansas. The LEMA reduces water use by about 15% throughout the county for the next five years. This builds on other LEMAs in previous years in NW Kansas. We continue to have Water Conservation Areas developed with around 86,000 acres currently enrolled saving around 12,000 acre-feet per year.

Litigation

In January, the Audubon of Kansas filed suit against the state and federal government over lack of water right administration related to the Quivira National Wildlife Refuge in South Central Kansas. This is a long-standing issue with a senior water right at the refuge at the bottom end of the Rattlesnake Creek basin and approximately 1,500 junior groundwater irrigation wells upstream

Water Quality

The state continues to look at areas of deteriorating water quality including for Uranium in Southwest and Northwest Kansas. The Kansas Geological Survey is sampling groundwater in the Arkansas River Valley and Kansas Department of Health and Environment is sampling domestic wells in the Upper Republican

Flooding

The 2019 flood continues to focus efforts in Kansas. We continue to work with our partners in Nebraska, Iowa, and Missouri on Missouri River flooding. In Kansas, we still see interest in most of our eastern basins on looking at additional flood reduction efforts, and in a couple places, we are seeing requests for help with high groundwater levels in low lying areas near some rivers.

Tuttle Creek sediment and water injection dredging

Sedimentation continues to be the major concern with Tuttle Creek Lake. During the 2019 flood, approximately 8 percent of the storage was lost to sediment in a single year. The Kansas Water Office continues to work the Corps of Engineers so seek a pilot project to implement a water injection dredging

project to pass additional sediment through the reservoir. A portion of the funding for the demonstration project was provided in the recently passed state budget.

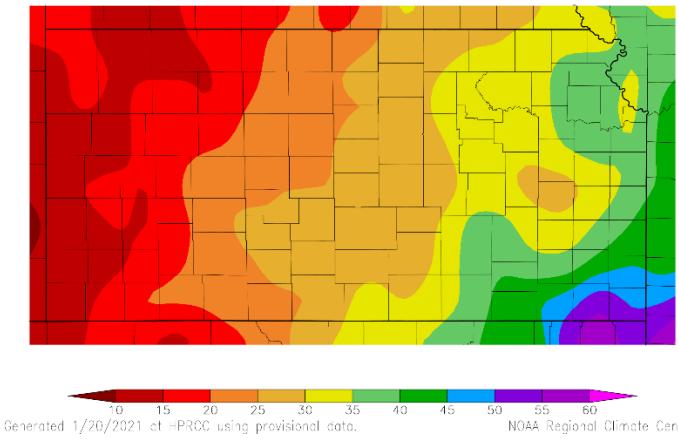
Attachment C

Kansas- Nebraska Big Blue River Compact Meeting May 13, 2021
Report by Kansas Department of Agriculture- Division of Water Resources
Topeka Field Office- Katherine A. Tietsort

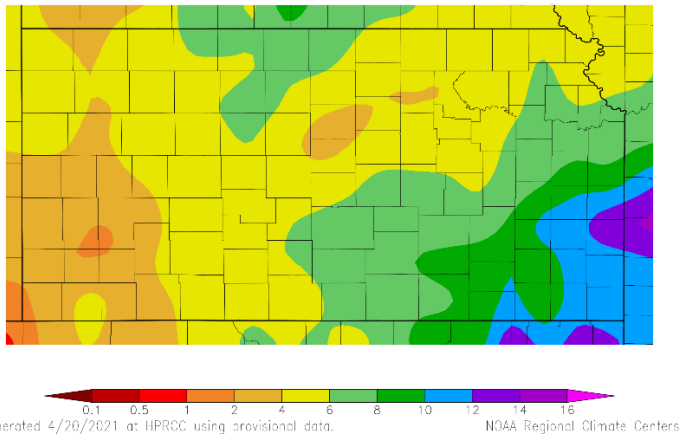
Climatic Conditions- Precipitation & Temperatures

Precipitation has been mostly uniform across the basin during the 2020 calendar year although that reflects a rather wide variance from normal. The High Plains Regional Climate Center reported between 25 and 35 inches of precipitation in calendar year 2020 across the entire Big and Little Blue River basin area in Kansas, including the tributary basins. This represents 80 to 110% of normal precipitation for the year. Precipitation ranged from about 3 inches greater than normal to 6 inches below normal, for the year. So far this year, the portion of the basin in Kansas has received 4 to 6 inches of precipitation, which is normal to 3 inches above normal precipitation.

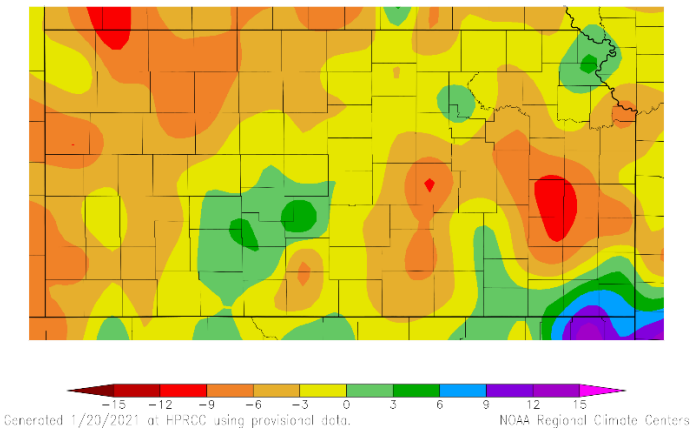
Precipitation (in)
1/1/2020 – 12/31/2020



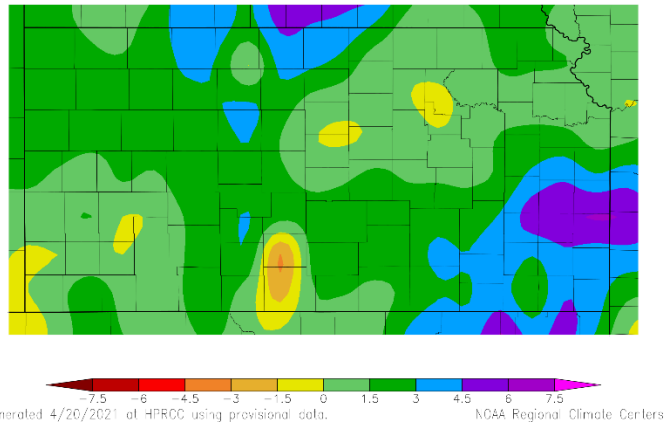
Precipitation (in)
1/1/2021 – 3/31/2021



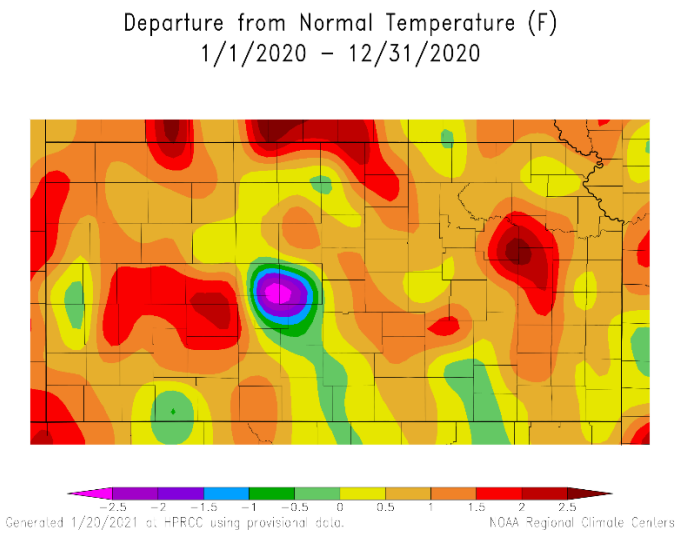
Departure from Normal Precipitation (in)
1/1/2020 – 12/31/2020

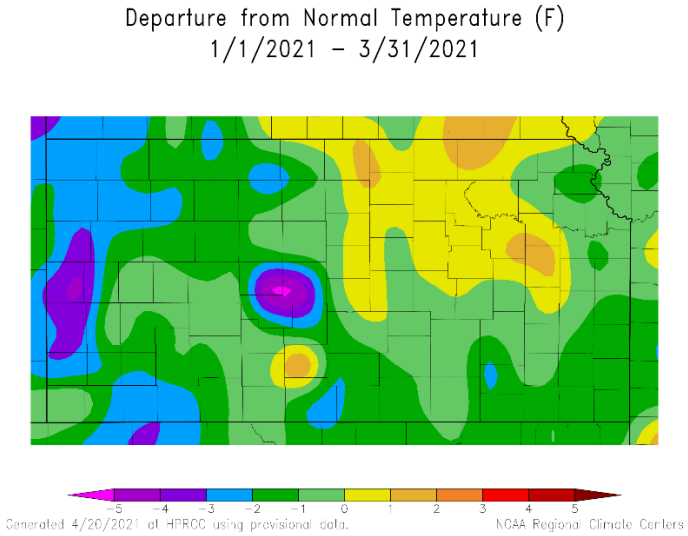


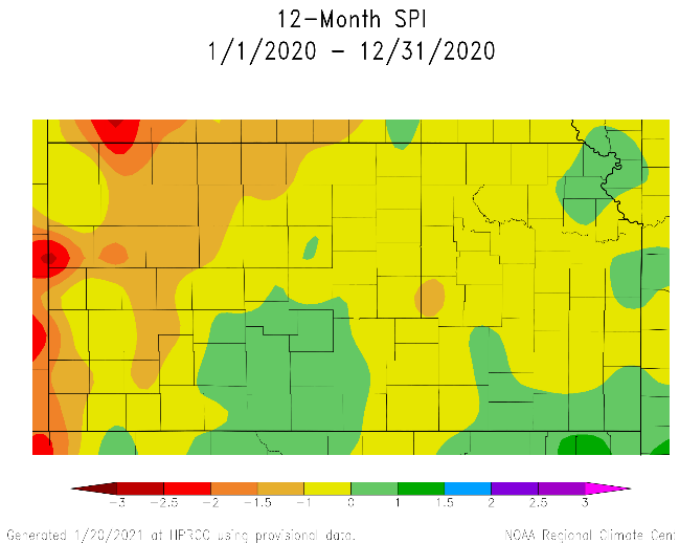
Departure from Normal Precipitation (in)
1/1/2021 – 3/31/2021

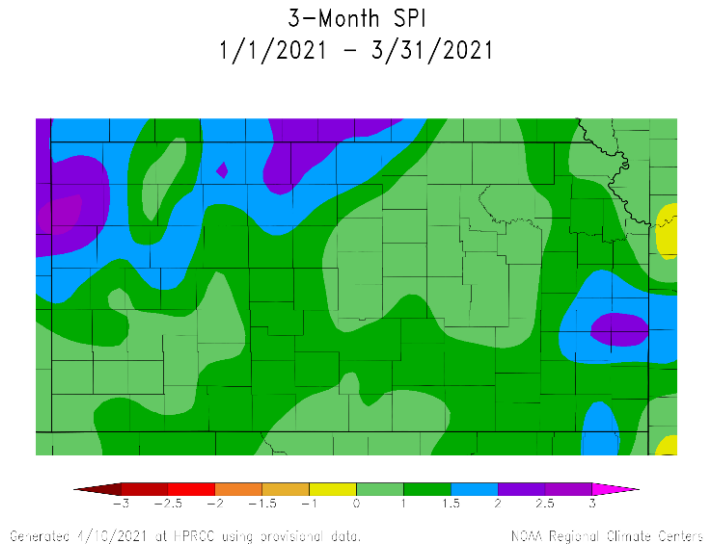


Temperatures for the calendar year 2020 ranged from 0.5 degree colder to 1.5 degree warmer. So far in 2021, temperatures have ranged from 1 degree cooler to 2 degrees warmer. We are seeing the trend from last year continue, which is reflected in the Standardized Precipitation Index. The Standardized Precipitation Index (SPI) is a statistical method for assessing conditions based solely on rainfall data that is independent of average precipitation values. SPI works well because it takes rainfall data represented by a Gamma distribution, fits it into a bell curve, and then computes the data to show values independent of location and range of values so that different seasons and climate areas are all represented equally. The SPI showed a generally normal trend for the last year, which is continuing into this spring. Both time frames are in the near normal category, which is up to .5 either side of zero on the scale. Ranges greater than 1 either direction on the scale mark moderate drought and moderate wet conditions.









Streamflow and Administration Within the Big Blue Compact Basin

Statistics reflect 36 years of data at Marysville (Big Blue) and 62 years of data at Barnes (Little Blue).

In 2020, and in early 2021, streamflow reflected peak runoff periods that occurred in spring then again through the summer at both gages. Interestingly, the peak runoff events appear to have occurred a little later in the summer season in 2020 than the statistical values indicate they normally occur.

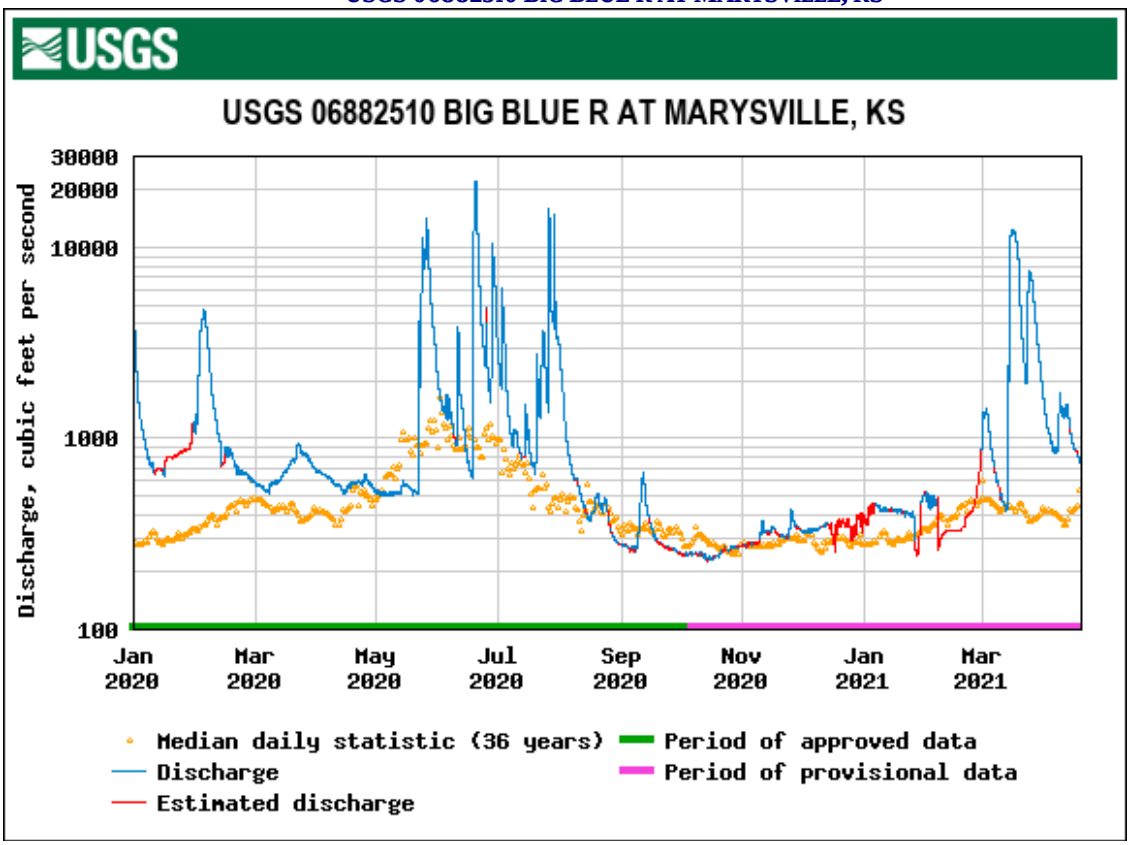
We did not trigger Minimum Desirable Streamflow (MDS) criteria within the Basin and MDS administration of junior rights did not occur in the basin or tributary basins in 2020 nor in 2021 to date.

Minimum Desirable Streamflows (cfs)

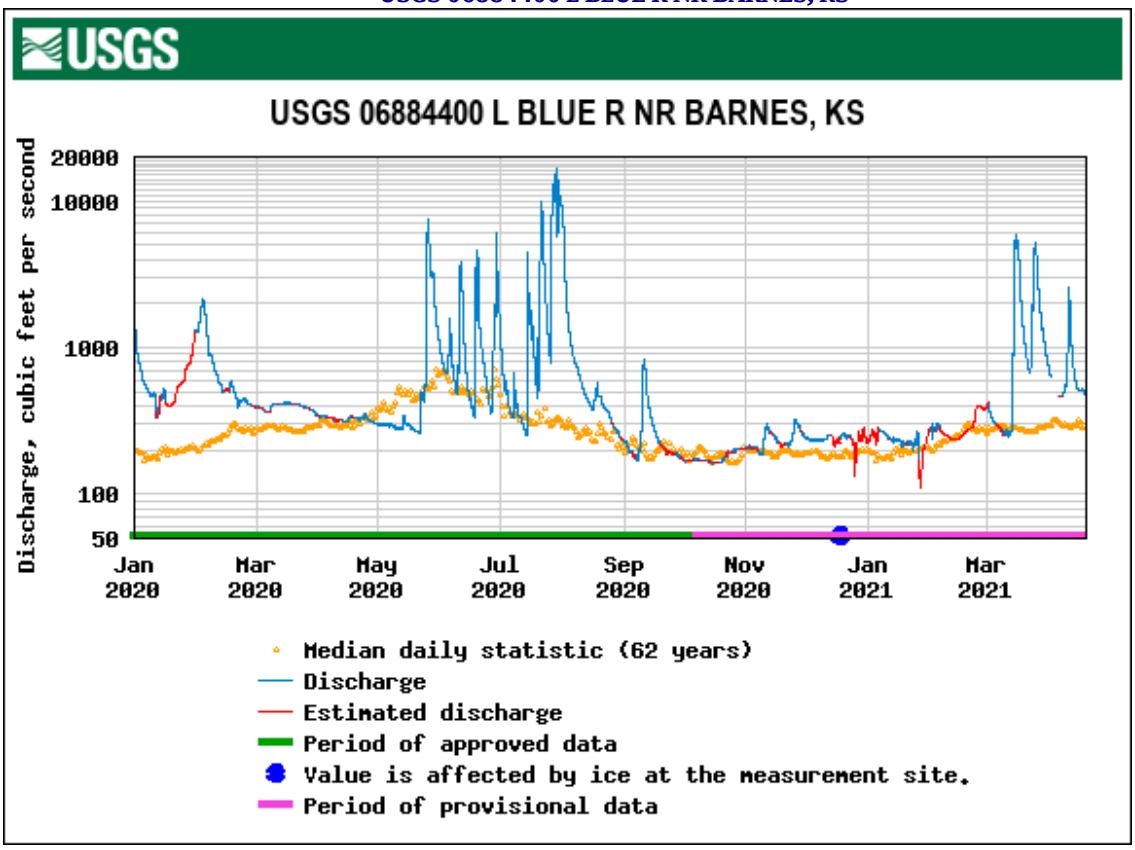
Watercourse	Month											
	J	F	M	A(a)	M(a)	J(a)	J	A	S	O	N	D
Big Blue												
Marysville	100	100	125	150	150(d)	150(d)	80	90	65	80	80	80
Little Blue												
Barnes	100	100	125	150	150(d)	150(d)	75	80	60	80	80	80

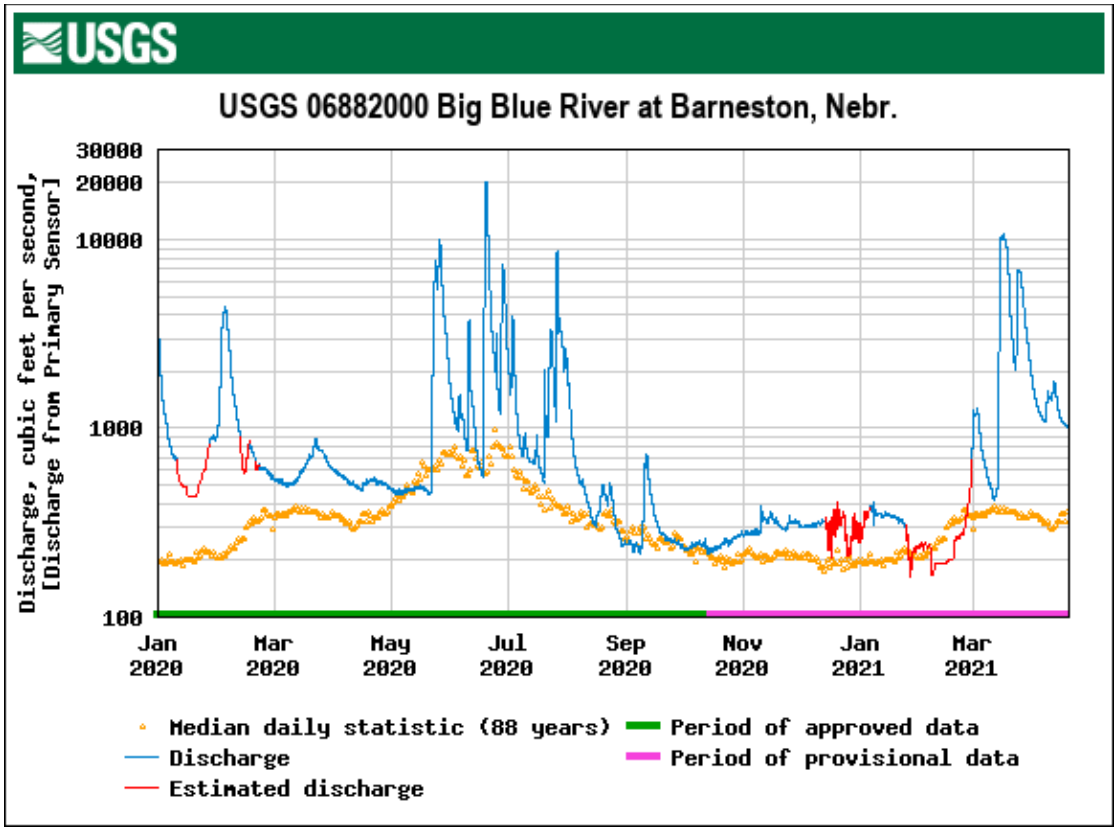
(d) Subject to the stateline flows contained in the Blue River Compact.

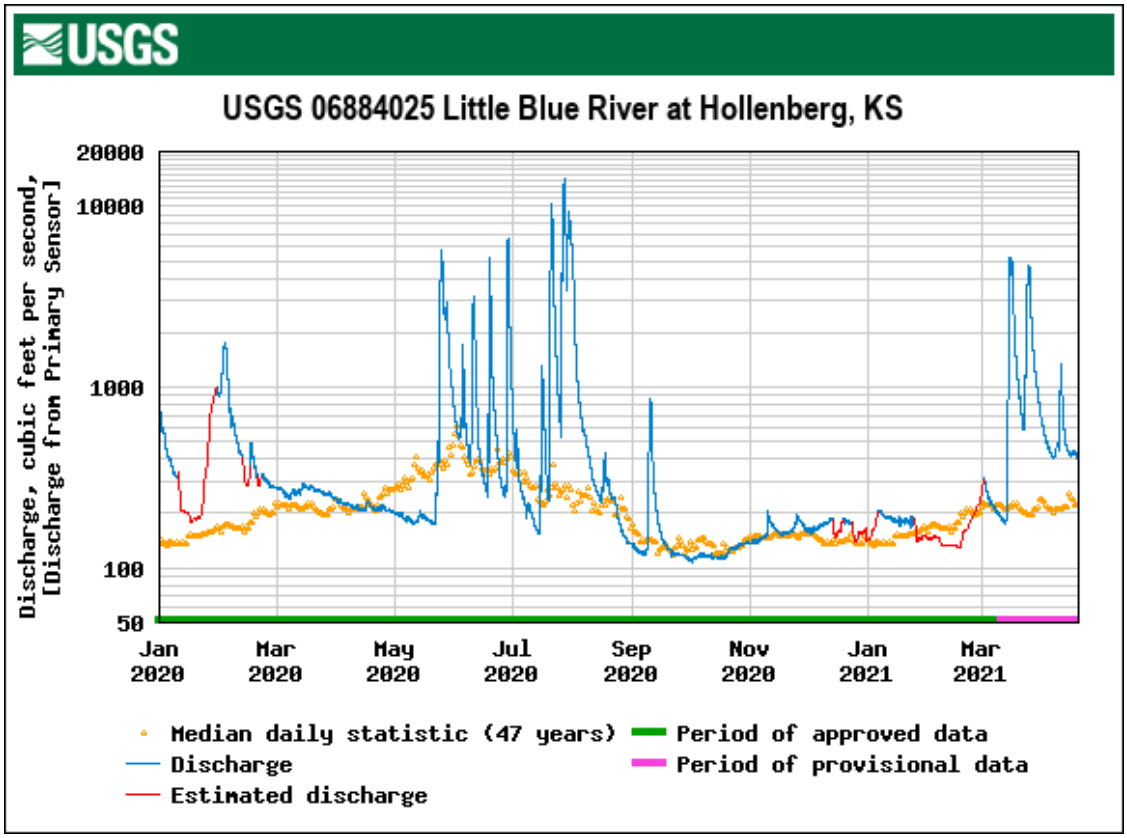
USGS 06882510 BIG BLUE R AT MARYSVILLE, KS



USGS 06884400 L BLUE R NR BARNES, KS







The compact gages at Barneston and Hollenberg reflected more normal conditions throughout 2020 as well. For the period of 1/1/2021 through today, flows remained sufficient to avoid any administration in the Big Blue River, Little Blue River, Mill Creek, or Black Vermillion River, basins, as stated above.

Administration Activities

After an unusual 2019 in which no administration occurred statewide, 2020 was a more normal year with administration activities noted below.

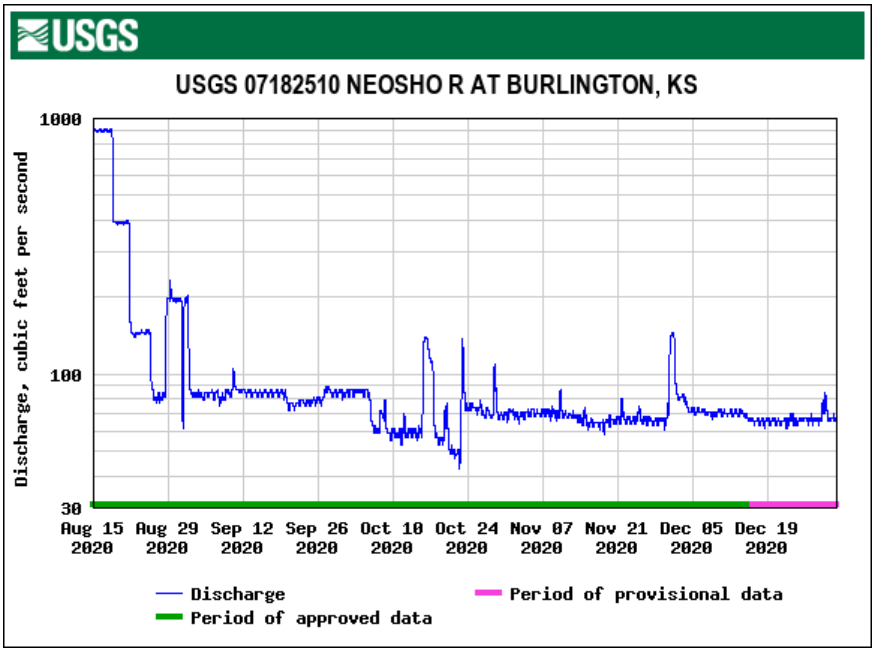
In 2020, a total of 9 water right files were administered for Minimum Desirable Streamflow (MDS) in Kansas, as follows:

MDS Stream	Administration Began	Administration Ceased	Files Administered
Little Arkansas River	September 28, 2020 (Above Alta Mills)	February 5, 2021	9

In 2021, no water right files have been or are being administered for MDS in either the Topeka Field Office area or the Compact area. Statewide, the only MDS administration which has occurred in 2021 was the continuation of the 2020 administration on the Little Arkansas River, which was rescinded in February 2021. Pursuant to K.S.A. 82a-706b, KDA-DWR protects water released from storage in Federal Reservoirs. In 2020 and so far in 2021, a total of 87 water rights were administered in Kansas for Protection as follows:

Stream	Administration Began	Administration Ceased	Files Administered
Neosho River	September 8, 2020	April 30, 2021	10
Verdigris River, Fall River, and Elk River	October 16, 2020	November 20, 2020	77

While no administration occurred in the Compact Basin, the southern half of the Topeka Field Office territory struggled with flows on and off in 2020, particularly from late summer on. We administered the upper Neosho between Council Grove Reservoir and the City of Emporia with Orders Protecting Releases for the City of Emporia from the Marketing pool of the Council Grove Reservoir and water quality releases from September 8, 2020 through April 30, 2021. This Order was issued to owners of 10 files that divert in that stretch. Flows have finally recuperated on the upper end of this system allowing us to rescind the orders. Additionally, we worked closely with our water right holders and the Tulsa USACE on a stilling basin dewatering and inspection at John Redmond Reservoir in fall and also at Toronto Reservoir. The project at Redmond occurred in late October when recreational diversions normally start to peak and we worked closely in partnership with the Corps, water right holders and the energy sector to minimize and mitigate impacts to our users. It was really a success story all around since we managed to keep what we needed or about 80-90 cfs flowing through the states bypass line from Redmond to downstream of the stilling basin to satisfy water right diverters during the project; many users pushed back diversion to make this work and the Corps minimized inspection time to a very brief dewatering.

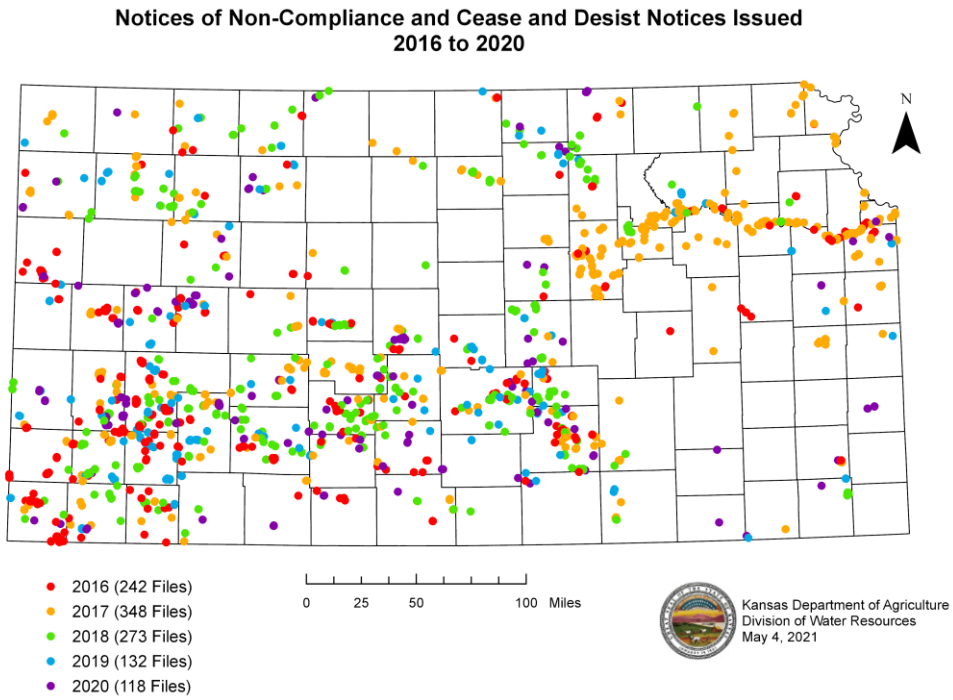


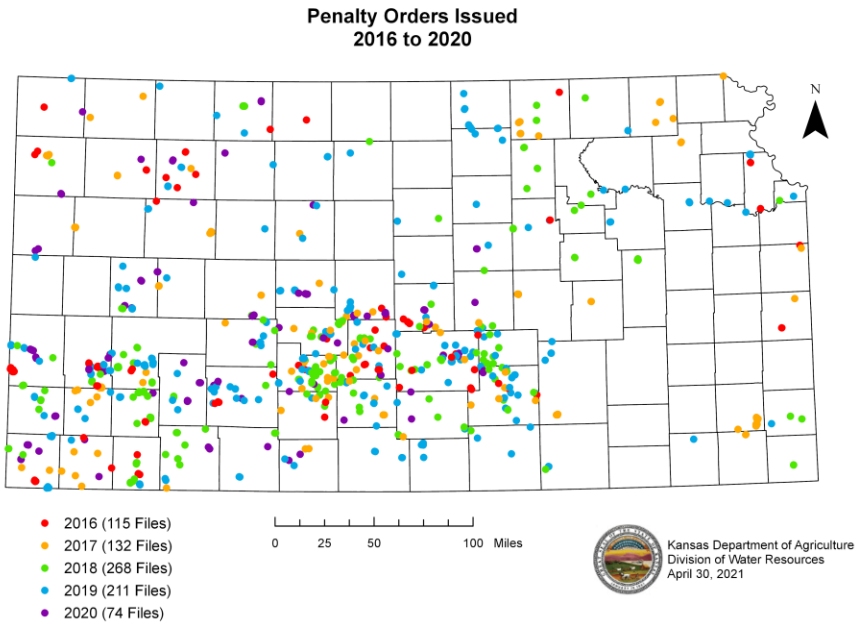
We have reported a number of times on the Lower Republican River Stakeholder group that has worked to establish a Special Irrigation District. Although bylaws were instituted and the Board was put in place, additional progress has not occurred. The necessary legislation to authorize the District was not introduced in this session. The main challenge for this group is obtaining permanent storage space. To obtain this storage space in Harlan reservoir, the USACE would need to do a reallocation study or be otherwise addressed.

Compliance & Enforcement Activities

In 2020, KDA-DWR sent Notices of Non-Compliance (NONC) or Cease and Desist (CD) Notices on 18 files in the Topeka Field Office area (eastern Kansas) and 118 files statewide. 2 NONCs were issued in the Compact area. One was for a groundwater irrigation right for wells lacking water level measurement tubes and well logs. The other was for a surface water irrigation right for failure to install a water flowmeter. The Topeka Field Office issued 2 penalty orders in 2020 to a PWS with recurrent water use reporting issues. No penalty orders were issued in the Compact area in 2020. Statewide, DWR issued penalties on 74 water right files in 2020. Thus far in 2021, 2 CDs have been issued in the Compact area. Both were for surface water irrigation rights for failure to install a water flowmeter. Thus far in 2021, no penalty orders have been issued in the Compact area.

With COVID-19 impacting some of our activities, the Topeka Field Office has shifted to focusing on working through all files needing any type of investigation/inspection regardless of the reason or rank of the priority of the work by county, starting with some of our more isolated counties. Staff have primarily worked in 18 of the 44 TFO countues. We have completely wrapped up work in about 10 counties. So far in 2021, we've issued 2 overpumping penalties and 2 water use reporting penalties (not in this basin) and 22 formal cease and desist orders, 2 in this basin discussed above. The formal cease and desist orders are going out to long term non-users who were previously issued informal Notices of Non-Compliace Cease Diversion for lack of metering on non-used files to get formal orders in place that carry penalties if violated as we work through the files in their county. We are seeing ownership changes occurring or owners are creating henceforth files in peripheral areas.





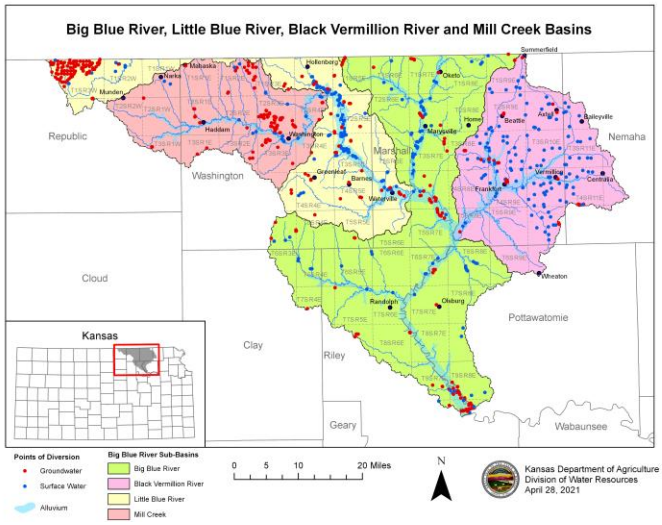
The Department of Agriculture paper filing fee of $20 per file for the required annual water use report remained in effect despite COVID-19. This fee is waived for online filers.

New Development

In 2020, KDA-DWR received 8 new applications (5 for appropriated water rights, 2 for temporary permits, and 1 for a term permit) within the Compact area. This is much less than the 20 applications received in 2019 (13 for appropriated water rights, 5 for temporary permits, and 2 for term permits) within the Compact area. In 2021 so far, KDA-DWR has received 11 new applications (6 for appropriated water rights, 4 for temporary permits, and 1 for a term permit) within the Compact area.

In 2020, KDA-DWR approved 6 applications (2 for appropriated water rights, 2 for temporary permits, and 2 for term permits) within the Compact area. This is much less than the 15 applications approved in 2019 (9 for appropriated water rights, 5 for temporary permits, and 1 for a term permit) within the Compact area. In 2021 so far, KDA-DWR has approved 6 applications (2 for appropriated water rights and 4 for temporary permits) within the Compact area.

We are seeing a significant surge related to new and change applications being submitted thus far in 2021 and our TFO staff have assisted with a total of 74 applications to date- 46 new and 28 change applications.



TFO Activities

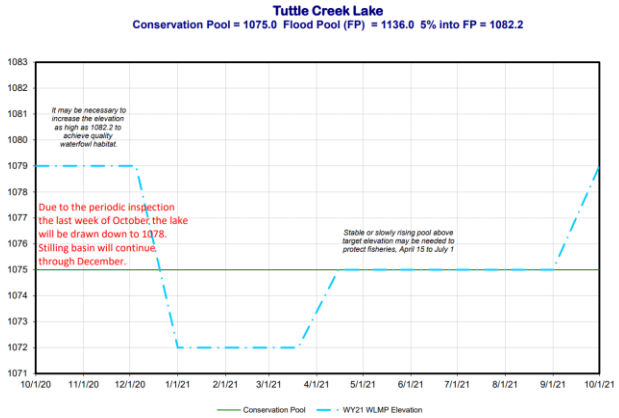
As reported above, we focused our work primarily in 18 of our 44 counties. We have worked through every meter repair/replace check, new or change approval check including term permits, problem file checks, suspect water report reading file and any other issues in each of these counties. These checks consist of fixing GPS for the diversion wells or pump sites, checking and noting equipment, inspecting the meter installation, reviewing reported water use for agreement with the readings taken during our inspection and any customer communication or guidance needed. Our field inspection person has focused on key rate tests.

COVID-19 Operations at the TFO

As reported last year, the TFO was days into a planned move from the South Topeka Agriculture Lab building (also moved to Manhattan next to headquarters) to a location in West Topeka when we received word that the state would be shutting down for 2 weeks due to the COVID-19 pandemic. Our move to electronic files has allowed our office to work nearly entirely remotely over the last 14 months. We have two-thirds of all our files scanned now and during the remote work time, which is currently ongoing, we are able to completely do our work electronically. We again as of this month have a scanning person working that we hope will complete this major project over the next 12 months. One person staffs our office to take main line calls and transfer calls to staff, to collect and deliver mail, and address any customers who may show up at the office with an appointment. Our productivity has been high.

Tuttle Creek Reservoir

Lake Level Management plans were approved in fall of 2020, again as per the previous version approved. The main focus is support of spawning fish and wildlife habitat.



	Time	Elevation	Comment
TUTTLE CREEK LAKE	Oct 1 – Dec 5	1079-1082.2	Attract migrating waterfowl, achieve quality habitat
	Dec 5- Jan 1	1072	Reduce ice damage potential and provide water storage, then hold through Mar 20
	Mar 20 – Apr 15	1075	Rise to reach top of conservation pool and enhance boating then hold through Sep 1
	Apr 15 – July 1	1082.2 max	Evacuate flood water to enhance crappie population. Protect tern and plover nests on the Kansas River
	July 1 – Sep 1	1075	Maintain conservation pool to re-vegetate shoreline. Consideration for navigation.
	Sep 1 – Sep 30	1079	Rise to inundate wetland habitat and attract migrating waterfowl

Kansas River Basin Study

The Kansas River Reservoirs Flood and Sediment Study underway in the greater Kansas basin is ongoing. This study is designed to determine what actions are needed in the basin to extend the life of the reservoirs. The plan is to determine and then take steps to reduce flood risk and increase infrastructure benefits, improve sediment management, mitigate drought, improve water supply availability restore essential ecosystem and enhance water quality and recreation. At this time, the KWO, KDWP&T and USACE are conducting public scoping and outreach meetings to address drought and water supply, sediment management and reservoir sustainability, ecosystem restoration and management, flood risk management, and recreation. The study is expected to take 3-5 years and recommendations are expected in May of 2023. As part of this project, the group is looking at a possible idea of establishing a small pond in the Reservoir for the Access District discussed above.

Attachment D

Nebraska State Report
Big Blue River Compact Annual Meeting

May 13, 2021

Welcome

I would like to welcome everyone who is joining us online today for the 2021 Big Blue River Compact annual meeting. For the second year we're holding this meeting by video conferencing due to the COVID pandemic. We are hopeful and optimistic that next year, we will be able to meet in person once again.

I would also like to extend thanks to the Kansas Department of Agriculture for the work they do in the Basin and for the help they provide in the administration of the Compact. I would also like to thank all of the natural resources entities, agencies, and producers who continue to work to protect the water resources of the Big Blue River Basin.

Water Supply Conditions

In the 2020 water year, the water supply conditions were more than adequate for both the Big Blue and the Little Blue River Basins in Nebraska. The precipitation was between 90% and 125 percent of normal for the year in both Basins. As a result, there were no calls for surface water administration, and all target flows pertaining to the Blue River Compact were met.

The 2021 water year to date indicates that both the Little Blue and Big Blue basins have received at least normal precipitation with areas in the headwaters of both basins having received between 150% and 200% of normal precipitation.

Overview of Statewide Water Planning

The Water Planning Division continued to collaborate Nebraska's twenty-three natural resources districts (NRDs) on integrated water management across the state. Significant achievements in 2020 included adoption of new voluntary Integrated Management Plans (IMPs) for the Little Blue River Basin portion of Tri-Basin NRD and the Middle Niobrara NRD, initiation of the first Republican River Basin-Wide plan, and the roll out of a new Decision Support System for determining when excess flows are available in the Upper Platte River Basin.

In addition, the Water Planning Division worked with Republican Basin NRDs on updates to their IMPs and with NRDs in the Niobrara, Blue, and Nemaha basins on development of voluntary IMPs. When these voluntary IMPs are complete, all of the NRDs in the state will have integrated management plans in place. The Department also continued implementation of existing IMPs for 19 NRDs in the Upper and Lower Platte, Republican, Niobrara, Blue and Missouri Tributaries Basins.

Basin-wide Planning

Twenty-twenty marked the first year of reporting for the Republican River Basin-Wide Plan, which became effective in March 2019. The plan was developed with a twenty-five-year planning outlook that includes measurable hydrologic objectives to monitor progress towards goals and objectives. In 2020 two Basin-wide meetings were held. The first meeting was held in February to discuss activities in the Basin from 2014-2018, and the second meeting was held in November to review activities from 2019. As part of the goals and objectives for the plan, the Department has partnered with the National Drought Mitigation Center at the University of Nebraska Lincoln, and the four Republican River Basin NRDs to begin planning a drought scenario exercise for the Basin.

The second 10-year increment basin-wide plan for the over-appropriated portions the Upper Platte River Basin was initiated in September 2019 and was the product of a three-year collaborative planning process between the five Upper Platte NRDs, the Department and a diverse stakeholder advisory committee. An important part of this planning process was to utilize technical analyses and stakeholder input to adjust and adapt the first increment goals for the second 10-year increment plan. Efforts to convert several models that are used throughout the Upper Platte Basin began as the Platte Over Appropriated Committee (POAC) beings to look forward to the 2023 Robust Review. The Robust Review analyzes the hydrological impacts of new or expanded permitted activities within the Basin. The year was capped off with the finalizing of the Platte River DSS public website and web-based dashboard, which provides streamflow and excess flow information in near real-time on the Platte River.

Work and coordination also continued towards implementation of the Lower Platte River Basin Water Management Plan. This basin-wide plan was developed voluntarily by the seven Lower Platte River Basin NRDs along with the Department and was adopted in 2018 and provides a 5-year accounting framework to track Lower Platte Basin stream depletions at a sub-basin and NRD scale. Ongoing modeling efforts in the Basin seek to use Airborne Electromagnetic (AEM) data to help more accurately describe groundwater availability and flow. The Department and the Lower Platte Basin Coalition have been working with HDR to develop a Basin-wide drought planning table-top exercise that is based off the triggers in the Lower Platte River Drought Contingency Plan. The tabletop exercise is to be held in summer, 2021.

Integrated Water Management in the Blue River Basins

Integrated management planning in the Little Blue and Big Blue River Basins has continued to progress since our last Compact meeting.

Little Blue River Basin Planning

In mid-April of 2020, Tri-Basin NRD's voluntary IMP for the portion of the district in the Little Blue River Basin became effective and implementation continued for the Little Blue NRD's voluntary IMP. The Department views the Little Blue Basin IMPs as an important first step in improved coordination and communication between NRDs, leading to more

holistic water management across the basin. Both IMPs have action items to promote data sharing, cooperative development of data and tools, collaborative research/studies, and resolution of data discrepancies between the NRDs.

Big Blue River Basin Planning

IMP development continued to progress in the Upper Big Blue River Basin. As we reported last year, the IMP process for the Upper Big Blue NRD is unique as it is the first time that the Department, the Nebraska Department of Environment and Energy and a NRD have coordinated development of both a water quality plan and water quantity plan. This was essentially accomplished by holding a collaborative public participation process to concurrently develop goals and objectives for both a 319 water quality plan and a voluntary IMP. Voluntary IMP writing, a public hearing process and adoption of the Upper Big Blue NRD are subsequent steps slated for 2021.

Progress was also made on voluntary IMP development for the Lower Big Blue NRD. The first two stakeholder meetings for the plan were hosted by HDR, Inc. via video conferencing and were well attended. An additional stakeholder meeting is planned for 2021, with a public hearing process and adoption of the voluntary IMP also possible in 2021.

Voluntary Water Use Reporting

To compliment integrated management planning activities, the Department continues to utilize our voluntary online water use-reporting tool that is currently being used by water users throughout the State of Nebraska. We continue to be pleased with these response rates, which shows interest from the community in collaborative monitoring of surface water use. The Department will continue requesting this data across the State moving forward.

Legislative Updates

The ninety–day, First Session of the 2021 Legislature Is scheduled to conclude June 10, 2021. No bills directly affecting water resources management in the Basin are pending. However, one bill pertinent to the Basin was enacted by the Nebraska Legislature since the last compact meeting. Sections of LB632, effective Nov. 14, 2020 and codified as *N.R.S.* §§61-225 to 61-229, require the Department to evaluate the flood issues that occurred in 2019 and identify cost-effective flood mitigation strategies for incorporation into a free-standing addition to the State Flood Hazard Mitigation Plan of the Nebraska Emergency Management Agency. Work on developing the plan has begun at this time and completion is required by July 1, 2022.

Water Sustainability Funds

The Nebraska Water Sustainability Fund, established in 2014, accepted its sixth round of applications in July 2020. The Department reviewed all of the applications and moved seven forward to the Nebraska Natural Resources Commission. The Commission

approved six of those applications, which resulted in over $8.1 million dollars of new funding for water sustainability projects and studies.

Sponsors of projects that were previously approved by the Commission, submit annual reports that briefly describe project status, accomplishments, and plans for the next year. The annual reports are available to the public on the Commission's website, which we will provide in our written report (https://nrc.nebraska.gov/water-sustainability-fund-reports). The seventh round of applications for the Water Sustainability Fund must be submitted between July 16 and July 31, 2021. The Commission is anticipating that over $12.8 million will be available for new applications.

Three groundwater recharge projects have been completed in the Little Blue NRD, when combined, they received over half of a million dollars in Water Sustainability Funds. In addition, the Fund supports a major project for Nitrate and Uranium mitigation in the City of Hastings, Nebraska; the funded amount of this project is well over four million dollars. The Upper Big Blue NRD was awarded $105,000 for, and has developed, water use allocation software. Our written report provides a table that summarizes these four Water Sustainability Fund projects located within the Blue River Basins.

Table 1. Summary of Water Sustainability Fund projects in the Blue River Basin

Water Sustainability Fund Projects in the Little Blue and Big Blue River Basins					
Year Funded	*Project Score*	*Project Number*	*Applicant*	*Project Title*	*Funded Amount*
2015	47	4117	City of Hastings (Utilities)	Aquifer Storage and Restoration Nitrate and Uranium Control Project, Hastings, Nebraska	$4,410,000
2016	42	4146	Little Blue NRD	Instream Weir Stabilization/Recharge Pilot Project	$100,979
2016	42	4147	Little Blue NRD	Low-head Embankment Stabilization/Recharge Pilot Project	$100,153
2017	44	5197	Little Blue NRD	LBNRD Oxbow Reconnections for Groundwater Recharge	$389,820
2019	47	5241	Upper Big Blue NRD	UBBNRD Allocation Software	$105,000

Dam Safety

The Nebraska Dam Inventory contains 621 dams located within the Little Blue and Big Blue River Basins that undergo periodic inspections by the Department. In 2020, the Department conducted 173 dam inspections throughout these areas, including all 13 high hazard potential structures. The most common reoccurring problems found at dam sites were large trees and rodent holes in the embankments; wave erosion; and rusted, corrugated metal pipe conduits running through the dams.

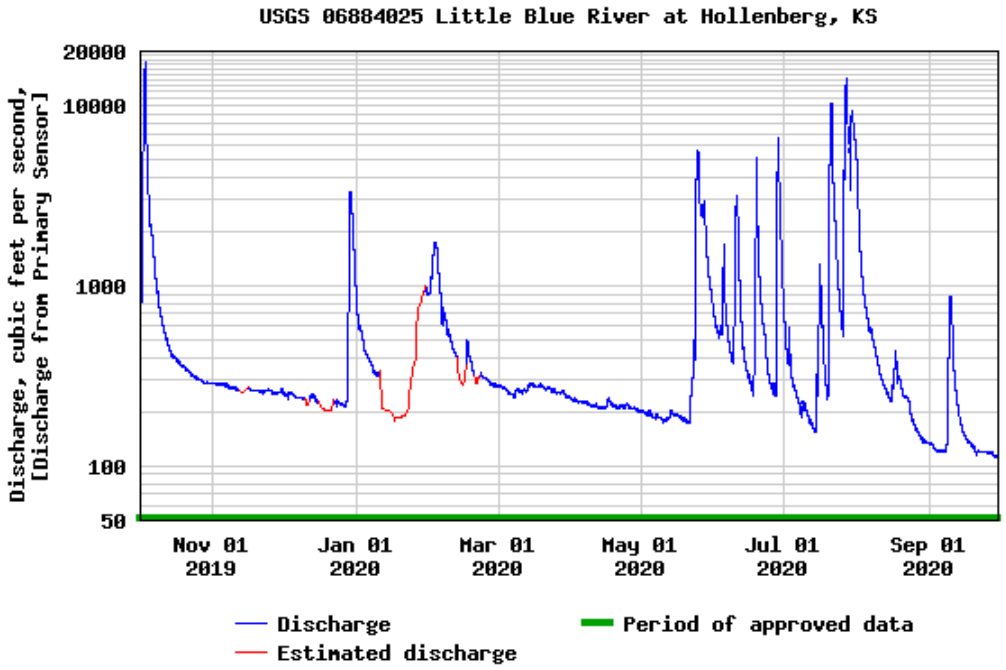
Conclusion

I would like to thank Kansas for continuing the partnership to work together to proactively manage waters the Blue River Basin. I will now turn it over to Justin Hladik who will give a report on Nebraska water administration, which will be followed by the NRD reports.

Attachment E

Hollenberg totals

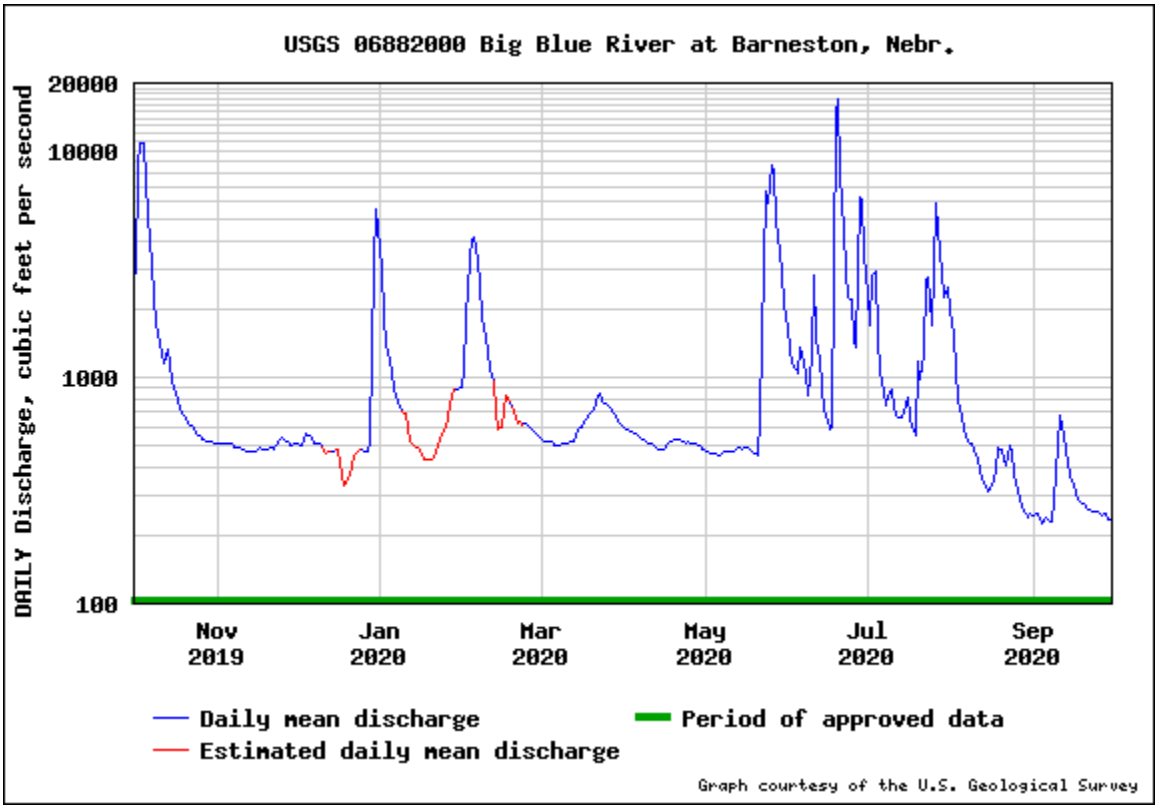
Day	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020
Total	39,970	8,002	13,020	12,600	15,960	8,229	6,548	23,220	28,499	64,620	18,180	5,293
Mean	1,288	267	420	407	550	265	218	749	950	2,085	587	176
Max	11800	285	2770	967	1660	286	239	4850	4320	11000	5200	770
Min	287	252	205	181	279	241	204	177	265	158	136	112
Ac-ft	79,280	15,870	25,829	25,000	31,660	16,320	12,989	46,050	56,520	128,200	36,070	10,500



The Little Blue Basin in Nebraska is approximately 2,752 square miles and contains 245 irrigation permits and 139 storage rights. In the 2020 water year, the basin was significantly drier in the upper reaches than it was in the lower end of the basin upstream of the state line. Precipitation in the upper reaches totaled less than 25 inches in areas which is around 80-90% of normal. Parts of the lower half of the basin saw precipitation totals in excess of 40 inches, which is over 125% of normal. Overall, flows ran higher than average at the state line with the daily mean about 172 cfs greater in the 2020 water year than the running average. The daily mean for the 2020 water year was about 667 cfs and the daily average since 1974 is about 495 cfs. From the end of May to the beginning of August the basin saw multiple rain events move through the area which kept stateline flows well above the minimum target for the entirety of irrigation season. With the exception of one or two minor rain events, August and September were mostly dry and the daily flows at the state line continued trending down for the remainder of the water year. The lowest daily mean flow of the 2020 water year was 112cfs. This happened on the last day of September which as we now know lead to a brief period of drought to kick off the 2021 water year. Because of the sufficient amount of rainfall that fell in the area we did not do any surface water administration on the Little Blue Basin in the 2020 water year.

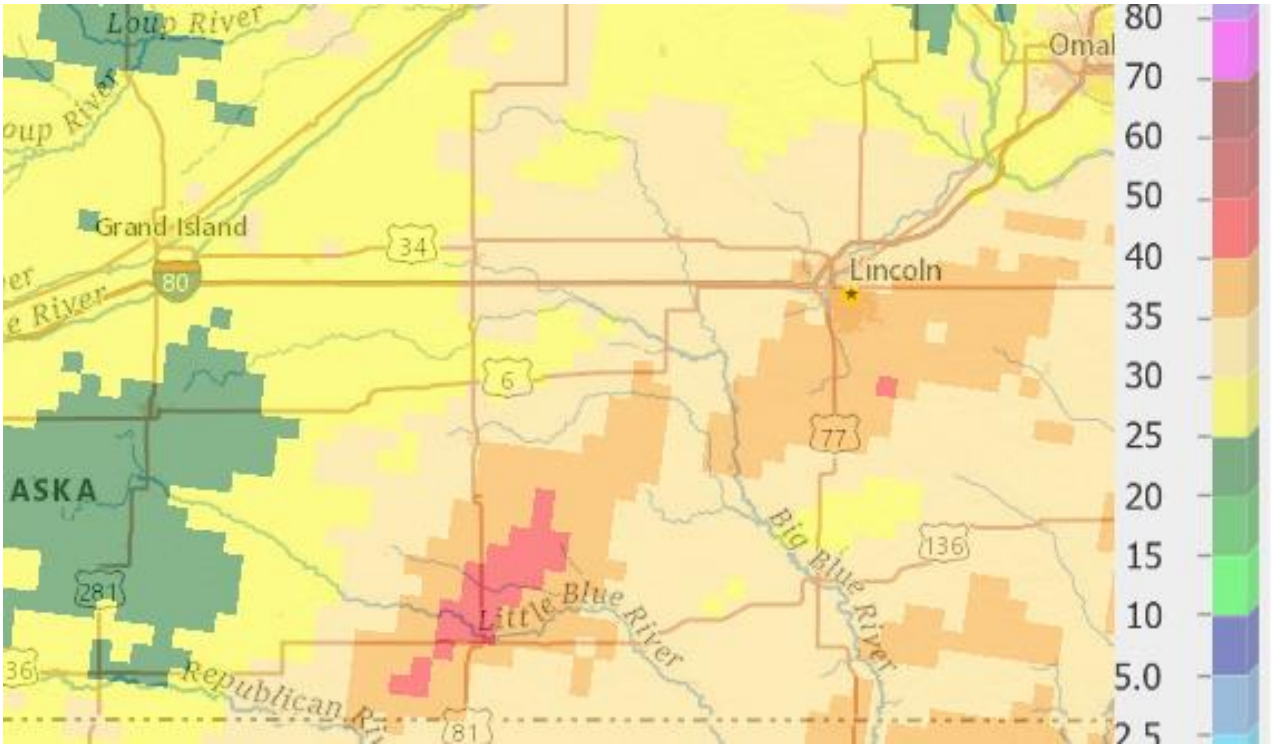
It was the same story for the Big Blue river basin in Nebraska for the 2020 water year, we did not have any surface water administration. There is an additional 814 surface water irrigation permits and 373 storage permits in this basin which encompasses about 4,447 square miles. The headwaters on the western side had the least amount of rain with around 80% of the normal amount during this water year. The remainder of the basin received 30-40 inches, or anywhere between 90% to 125% of the average rainfall. The state line flows stayed above the minimum target for the entire water year with multiple rain events moving through the basin during May, June and July. Just like the Little Blue basin, the flows trended down at the state line gaging site near Barneston the last two months of the water year with the lowest flow recorded in September 2020 which was 227cfs. The daily mean for the Big Blue River at Barneston was 1,189 cfs which is higher than the running average of about 862cfs.

It was challenging to get to all areas of the basin to check pump sites in 2020 year due to the consistent rainfall but that's not a problem that you will often find me complaining about. I'll welcome rain in all forms and and hopefully this year we can concentrate on the pump sites we didn't get the chance to check in 2020

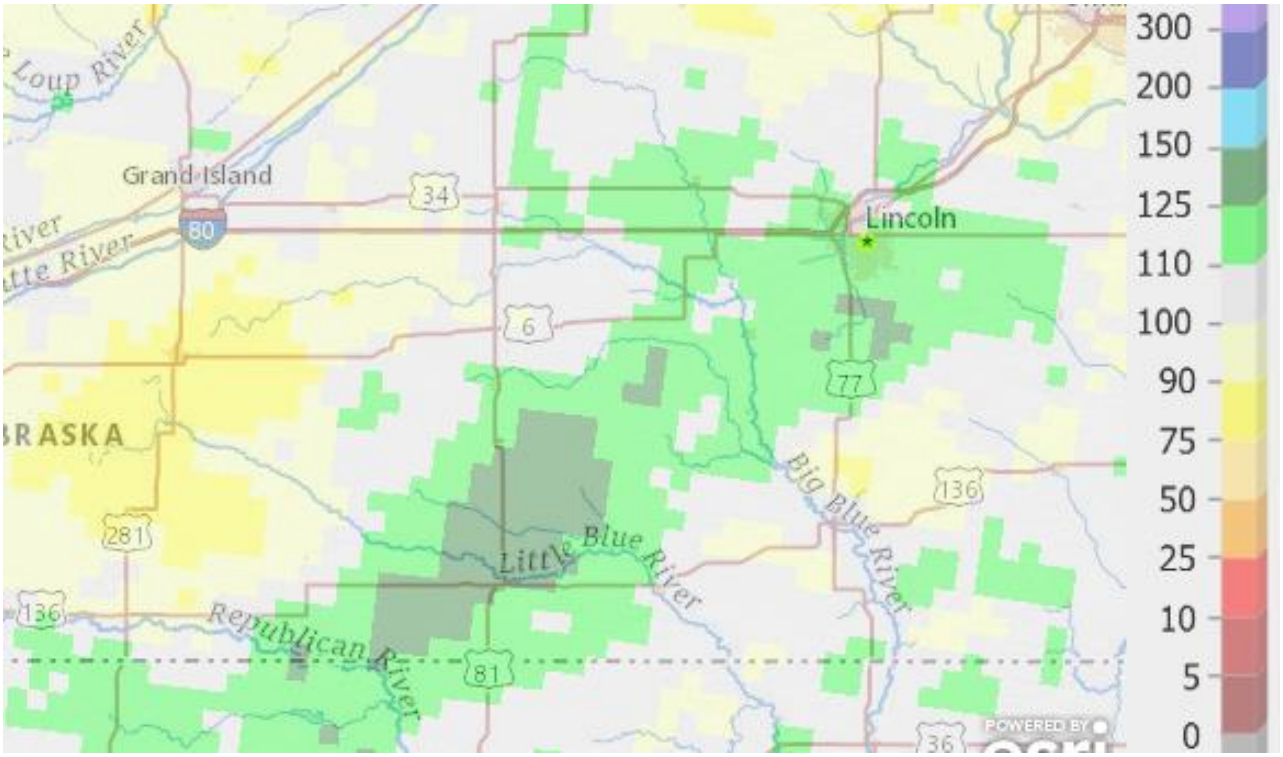


Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	2019	2019	2019	2020	2020	2020	2020	2020	2020	2020	2020	2020
Mean	2,258	496	856	798	1,318	618	524	1,827	3,046	1,687	525	307
Max	10900	537	5590	3020	4210	855	601	8760	17100	5840	1980	675
Min	514	471	335	431	549	497	476	451	584	552	241	227
Ac-ft	138,800	29,509	52,650	49,070	75,780	38,010	31,160	112,300	181,200	103,700	32,300	18,270

Total observed precip



Percent of total precip



Attachment F

Lower Big Blue NRD 2021 Annual Report to the Blue River Compact Annual Meeting May 13, 2021

As the Watershed Capital of Nebraska we continue to work on rehabilitating existing flood control structures and preforming ongoing maintenance projects. We have 270 flood control and grade stabilization structures in the district to maintain. The oldest flood control project in the district was completed in the 1950s and the newest just a few years ago. As part of these flood control projects the district also maintains 10 public use areas. Over the past several years the district through a community based planning process, has worked with the landowners and stakeholders of 3 public use area watersheds to install conservation practices and complete in lake improvements to address water quality concerns such as sedimentation, phosphorus, atrazine and ecoli.

The District through this same process is nearing completion of the rehabilitation of Cub Creek 12A public use area this spring. With the accomplishment of the installation of conservation practices in the watershed the District focused on improving the reservoir water quality conditions. This project includes sediment removal, installation of jetties to increase travel time of water to the beach area, the creation of wetlands, and shoreline stabilization.

The Wilber #1 dam rehabilitation project was also recently completed. This project is located in the town of Wilber and involved upgrades to the structure. The lake was dredged, and a safety berm and sand diaphragm was installed. The NRD again worked with a stakeholders group. The City of Wilber will now maintain the 20 acre area and has developed walking trails, a shelter, and fishing access points. This area is located near the High School, future plans include development of an outdoor classroom.

Little Indian 15A, a rehabilitation project, which began in 2019 has been completed. We are actually just waiting to make sure we have a good stand of grass before we close out the project. The hazard classification was changed to high hazard which meant the emergency spillway needed to be widened and a new principal spillway pipe needed to be installed.

The LBBNRD continues to use principal spillway tube inserts, which allow for repair of rusted and leaking corrugated metal pipe. The inserts do not require excavation of the dam and are therefore much more economical to use. This past year the LBBNRD assisted the UBBNRD with the installation of an insert, in addition to two of our own.

The LBBNRD is in the middle of completing a Voluntary Integrated Management Plan with the NDNR. A stakeholder group has been discussing goals and objectives to be included in the plan. The joint agency plan will provide a framework to manage hydrologically connected surface water and groundwater.

The LBBNRD is currently reviewing our Groundwater Rules and Regulations. These went into effect in 2014. They included rules that new Irrigation wells are required to meet certain criteria in a scoring system before a permit can be issued. And all new wells must be equipped with a flow meter. Most new recommended changes will be minor to improve and clarify language and definitions.

The Lower Big Blue NRD, in collaboration with three other NRDs and NDNR, continue work on the Blue Basin Groundwater Model Study. Marie with the Upper Big Blue has been leading this effort.

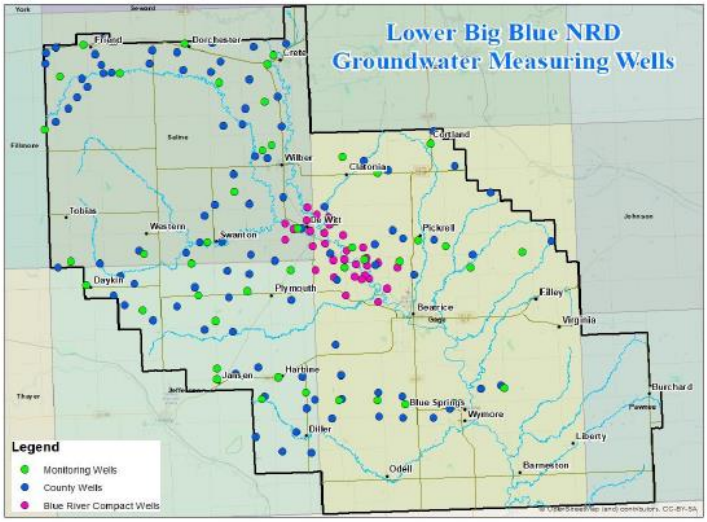
The Spring of 2021 static water level measurements again showed increases from a year ago. The Spring water levels have increased by .60 feet from the Spring of 2020. Groundwater levels are currently over one feet above our 1982 baseline levels. The LBBNRD measures 93 irrigation wells and 43 dedicated monitor wells across the district. The LBBNRD also measures 32 wells for the Blue River Compact. The Compact wells increased .65 feet from last spring.

A National Water Quality Area Initiative (NWQI) was approved last year in the Lower Turkey Creek drainage. Water quality impairments to be addressed are E. Coli, Atrazine and nitrates. A watershed assessment is currently in progress. Strategies to resolve water quality problems will be coordinated with NRCS.

The LBBNRD has recently received USDA Watershed and Flood Prevention Operations Funding, WFPO, to evaluate the Little Indian watershed in northern Gage County. The project aims to reduce flood damage to the City of Beatrice and agricultural lands, improve flood resiliency, stabilize streambanks and examine recreation opportunities.

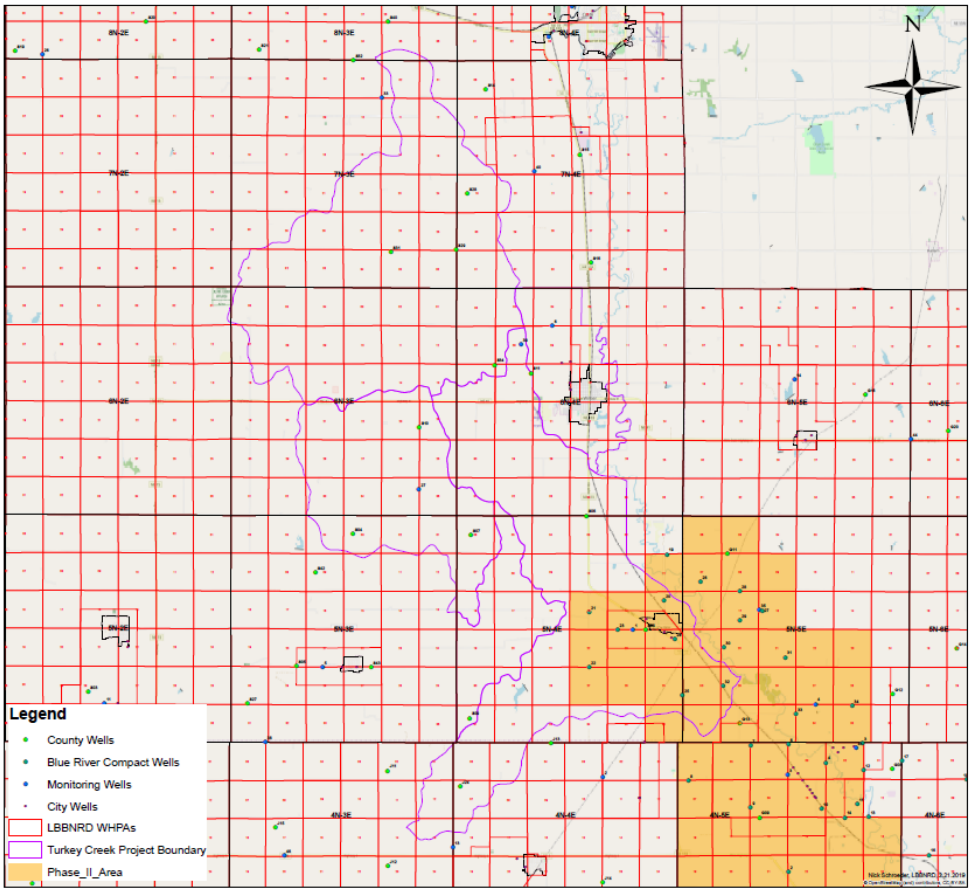
The Lower Big Blue NRD has received three grants from the Nebraska Environmental trust. The three grants will provide nearly $800,000 in additional funding to the NRD for water quality and quantity efforts. The first grant awarded is within the Phase II Quality Area-in the Beatrice and DeWitt Area. A second grant will service the Diller/Odell area. These grants are focused on providing additional cost share for flow meters within these areas. The grants allow the district to double flow meter cost share to $1,200 or 50% of the actual cost for wells within the project area. The two grants will provide additional cost share for one-quarter of the high-capacity wells within district. The third grant will provide funding to address nutrient loading and nitrates. A watershed assessment is currently in progress.

Wells	Number of Wells	Water Level Change From Spring 2020 to Spring 2021	Water Level From Baseline
Gage County	27	0.06	2.73
Jefferson County	24	1.03	-1.02
Saline County	42	0.59	2.30
Dedicated Monitoring Wells	45	0.65	3.03
Blue River Compact Wells	32	0.65	-1.84
District-Wide	170	0.596	1.04

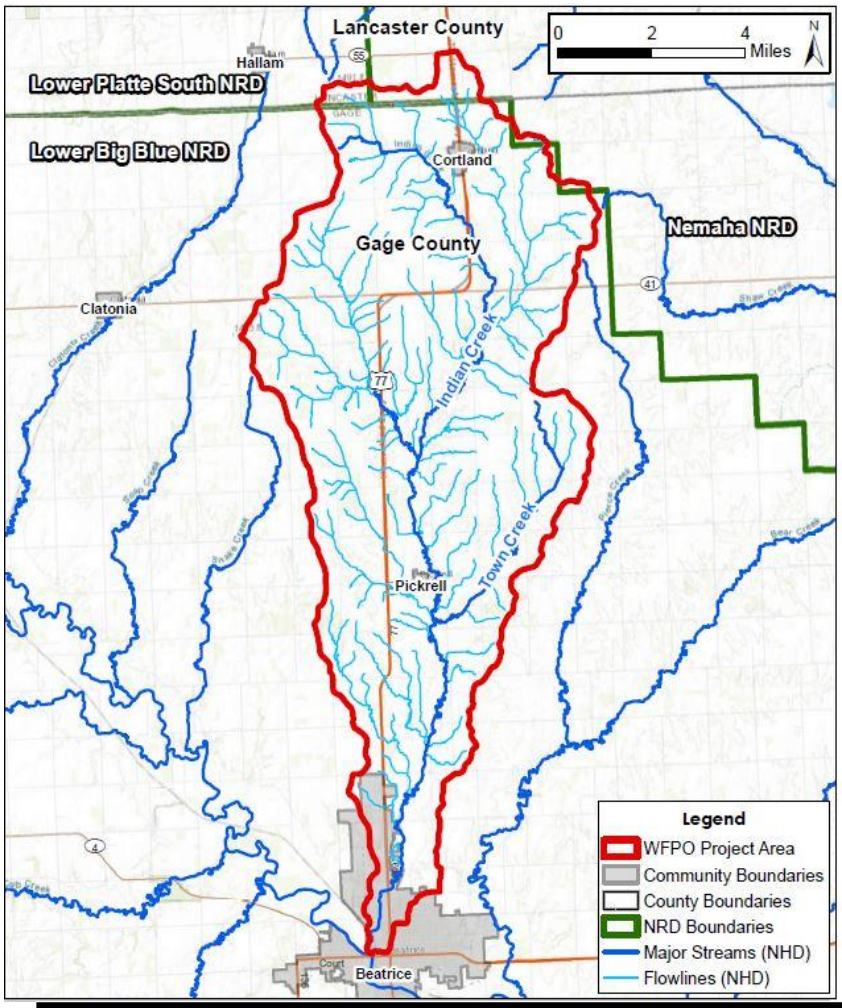


Lower Big Blue
Natural Resources District

A National Water Quality Area Initiative (NWQI) was approved last year in the Lower Turkey Creek drainage. Water quality impairments to be addressed are E. Coli, Atrazine and nitrates. A watershed assessment is currently in progress. Strategies to resolve water quality problems will be coordinated with NRCS and a producer advisory council. (Appendix 2)



Appendix 2



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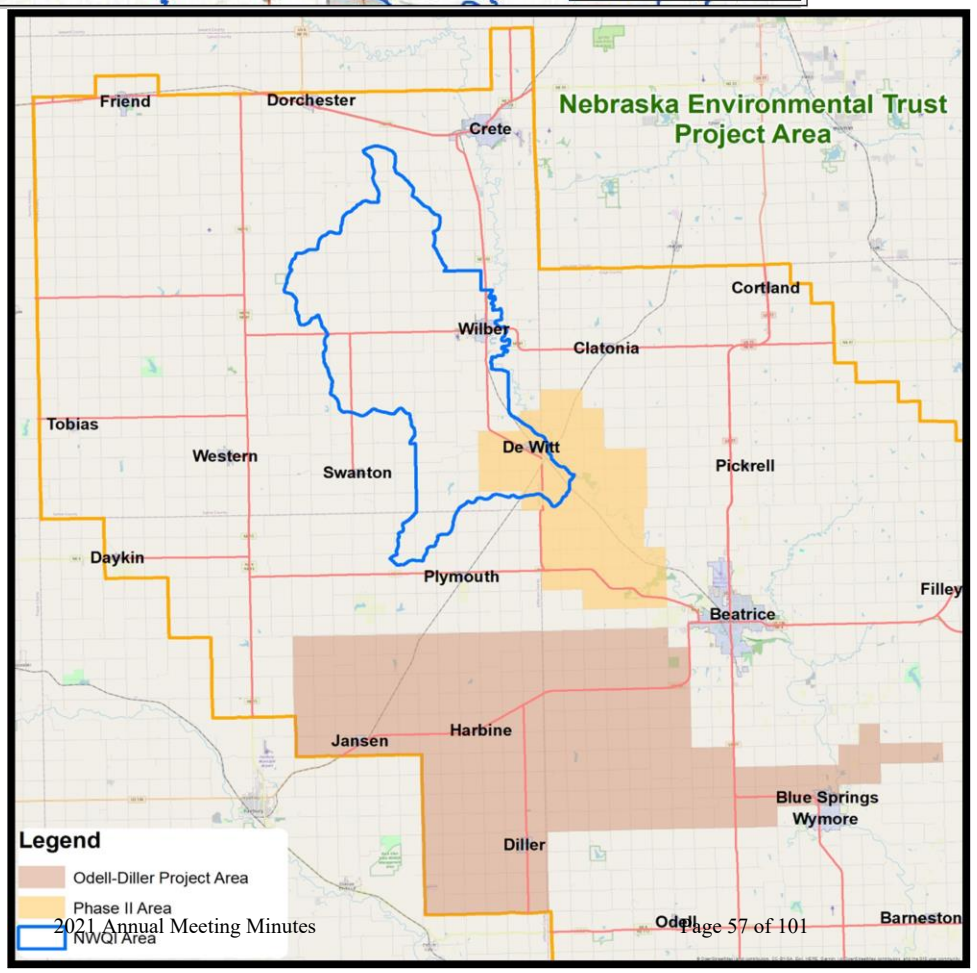


Attachment G

Little Blue NRD Blue River Compact Report
Scott Nelson, General Manager
May 13, 2021

Crystal Lake Renovation Project

The Crystal Lake renovation project, located near the Village of Ayr, was recently completed that will enhance stream water quality, restore 13 acres of aquatic habitat and provide outdoor recreation opportunities to the public such as fishing and observing wildlife.

32-Mile Creek WFPO Watershed Project

The Little Blue NRD is working with the Lincoln NRCS office on a WFPO watershed project aimed at improving stream water quality, increasing ground water recharge and providing additional flood protection to the communities of Kenesaw and Juniata. The project aims to improve the structural integrity of an existing flood control dike above Kenesaw, provide incentives to landowners to implement best management farming practices, construct in-stream weirs, construct a dry-cell detention basin above Juniata and the construction of a new sediment basin above Prairie Lake.

Sandy Creek Water Quality Initiative Project

The Little Blue NRD and NRCS continue to promote this program by working with landowners in the Bruning, Alexandria and Carleton areas to implement best management practices to improve soil health, improve water quality and prevent soil erosion.

Vadose Zone Project

The Little Blue NRD is working with EA Engineering on a district-wide vadose zone project studying the movement of nitrates within the vadose zone. Soil samples collected at Identical site locations in 2015 and 2020 are currently being compared to help with future management decisions involving the application of nitrogen fertilizers.

Wellhead Protection Areas

The Little Blue NRD continues to work with municipal water suppliers towards implementing safety measures to protect ground water quality and quantity.

Bowman Springs Ranch 3-D Watershed Dam Repair

The Little Blue NRD recently completed repairs to the Bowman Springs Ranch 3-D structure located 5 miles north of the Village of Hubbard. This structure is one of 30+ PL-566 structures built within the District. The District will continue to operate, maintain and repair these structures on an as-needed basis.

Alexandria State Lakes Renovation Project

The Nebraska Game and Parks Commission is in the planning phase to renovate several small lakes at Alexandria State Lakes Recreation Area. Sediment removal, lake deepening and fishery renovation are the key components of the project.

This concludes the Little Blue report.

Attachment H

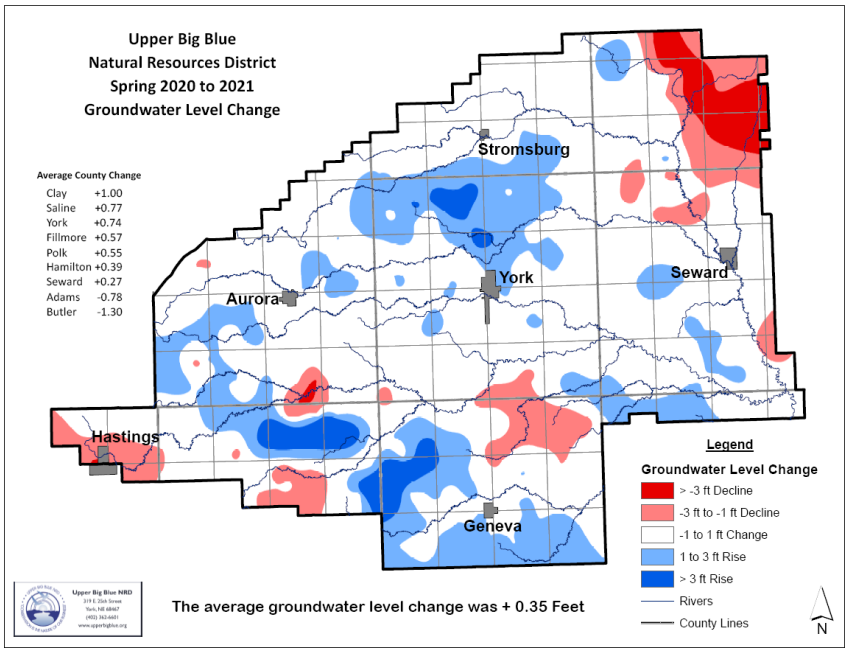
Blue River Compact (BBRC) Annual Meeting
Blue River Compact Report - Upper Big Blue NRD (UBBNRD)
Marie Krausnick, Water Department Manager
Jack Wergin, Projects Department Manager
May 13, 2021

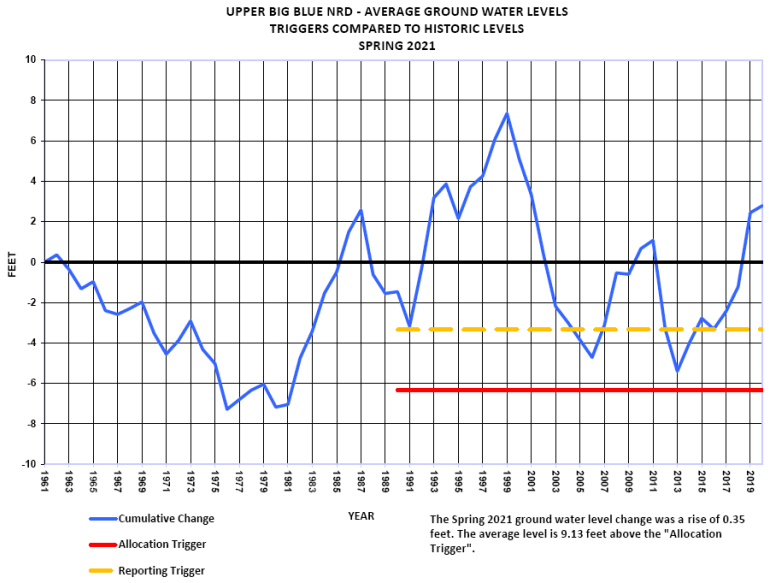
Well Drilling Activities

Fifty-nine permits were issued for irrigation wells (22 new & 37 replacements) during the 2020 calendar year. In January 2021, there were 12,200 irrigation wells in the District.

Groundwater Level Changes

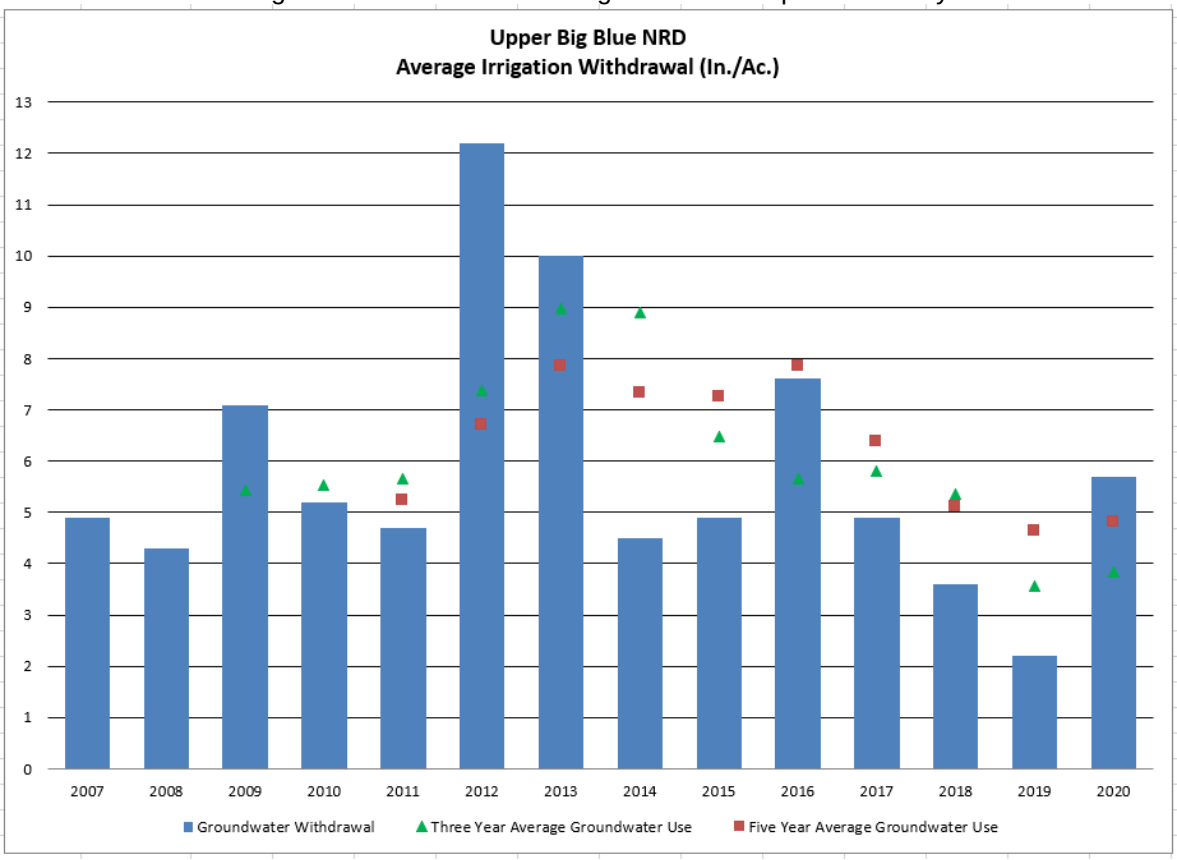
The average groundwater level change for the District from spring 2020 to spring 2021 was a rise of 0.35 feet. The spring 2021 groundwater level is 9.13 feet above the District's allocation trigger level.





Certified Irrigated Acres
Mandatory reporting of irrigated acres and other water uses began in 2006. As of January 1, 2021, there were 1,241,880 groundwater irrigated acres certified by the NRD. This represents an increase of 2,379 acres since January 1, 2020.

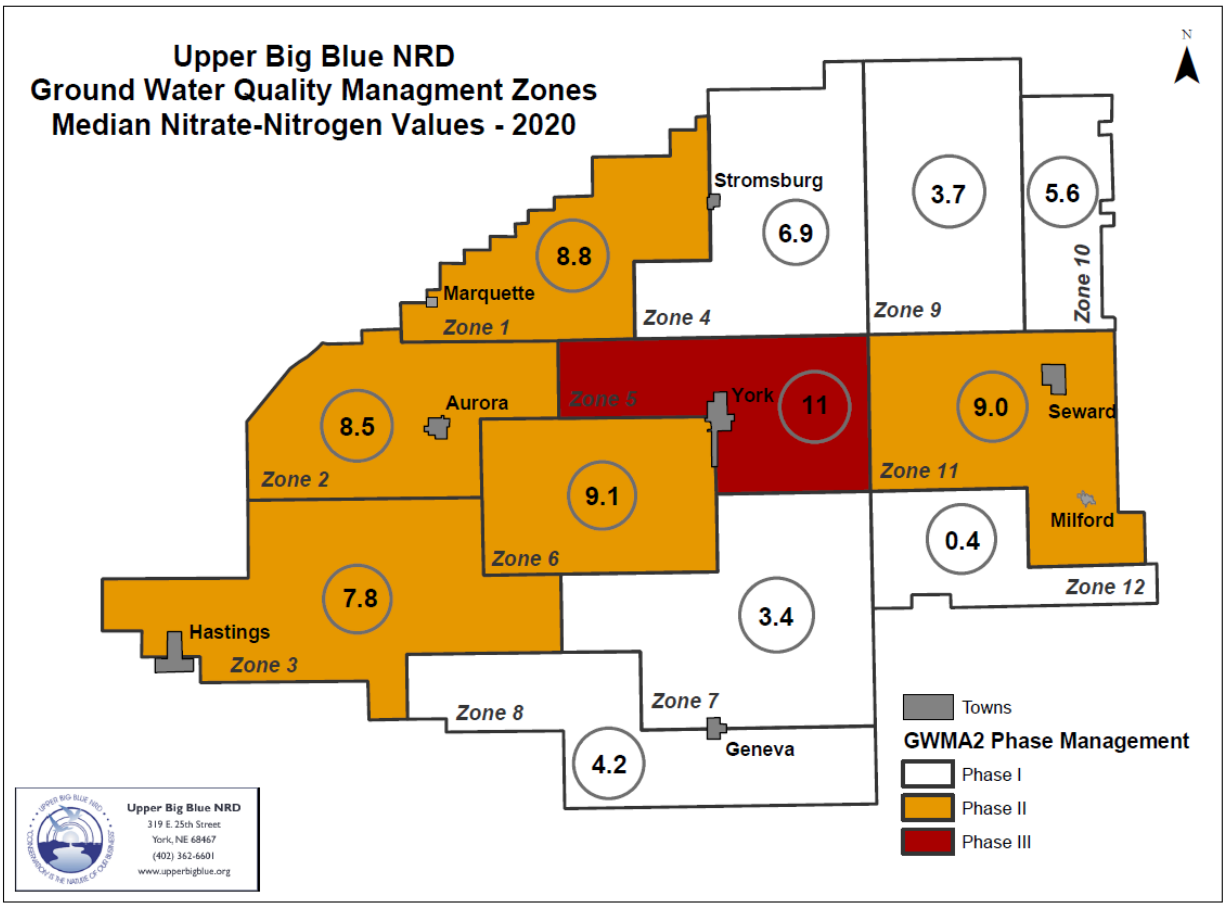
Groundwater Withdrawal
Mandatory reporting of groundwater withdrawal began in 2007. 2020 was the 13th year that groundwater withdrawal reports were required in the District. Metering became mandatory on all wells effective January 1, 2016. Staff has inventoried all flowmeter installations and are now conducting routine inspections as needed. The average groundwater withdrawal for irrigation in 2020 was 5.7 inches per acre. The graph below shows the average annual withdrawal for irrigation over the past thirteen years.



Groundwater Quality

Nitrate
The District is divided into twelve management zones for groundwater quality management. The primary groundwater quality management concern is nitrate. Five zones are currently designated Phase II Management Areas and one (Zone 5) is designated a Phase III Management Area. Phase II & III Management Areas require farm operators to attend a training session on best management practices related to fertilizer and irrigation management. It also requires deep soil sampling, irrigation scheduling and annual BMP reports. Farm operators in Phase II & III must schedule irrigation using soil moisture sensors in at least one field. In a Phase III Management Zone anhydrous ammonia fertilizer applied from November 1st through February 29th must include a nitrification inhibitor. The timing of application of nitrogen fertilizers is restricted District wide. There are currently over 1,073 farm operators in the District required to attend

nitrogen management training. The District is also working with the City of Hastings and the Little Blue NRD on a special water quality management area to address nitrate contamination in the Hastings Wellhead Protection Area.



Arsenic, Selenium and Uranium

Natural groundwater contaminants such as arsenic, selenium and uranium occur in many areas. These chemicals are associated with sediments in the aquifer as well as the unsaturated zone above the aquifer. Recent groundwater quality investigations near Hastings, Nebraska as well as other parts of the mid-west indicate that these naturally occurring contaminants may be released into the groundwater as a result of increased agriculture chemical contamination such as nitrate. The District is continuing to partner with the University of Nebraska to develop a monitoring program for arsenic, selenium and uranium. ***See more under UNMC Project.***

Dakota Aquifer

In 2016 the District started a water sampling program for the Dakota aquifer. The Dakota is used in the eastern part of the District for domestic wells where other sources are very limited. High commodity prices and drought conditions in 2012 and 2013 prompted construction of irrigation wells in the Dakota. Concerns have been raised over the impact that Dakota aquifer irrigation wells may have on the domestic groundwater supply. The quality of water in the Dakota can be “hit and miss” as to suitability for domestic and irrigation uses. It is unclear to what degree further development of the aquifer could impact water quality or domestic supplies to existing wells.

University of Nebraska Medical Center (UNMC) Project

Over a minimum of two years, the District, in partnership with UNMC, will periodically collect drinking water samples to determine seasonal variability in contaminant concentrations which may be impacted by

fluctuations in the water table due to irrigation. Samples will be taken in April/May (pre-irrigation), June/July (during irrigation) and October/November (after irrigation) at up to 50 locations selected on the basis of proximity to known cases of pediatric cancer and the willingness of the homeowner to provide access to collect seasonal samples. The collection of samples will occur parallel to a survey to learn about the occupants, well history, well construction if known, and any radon measurements collected in the home. UNMC will evaluate the water samples for conventional water quality parameters (conductivity, solids, pH, etc.) as well as nitrate, atrazine, arsenic, uranium and uranium decay products.

Project Grow
Project GROW is a collaborative demonstration project between the City of York and the UBBNRD. It focuses on three areas of interest: a soil health demonstration, an awareness of the importance of pollinator habitat and a community garden for the citizens of York. The District is farming 140 acres of the City wellfield with a rotation of cover crops to promote soil health. This is the fourth growing season of the project. Not only is the District seeing success in GROW, but the City and citizens are taking notice to our work to protect groundwater quality, promote soil health practices, all while maintaining profitability.

The Nature Conservancy Cover Crop Interseeding Project
The UBBNRD, the Nature Conservancy, and University of Nebraska Extension have partnered on a project demonstrating soil health/sustainable agriculture practices. The partners are working with local producers from all corners of the District to interseed cover crops into growing cash crops to improve soil organic matter, increase water infiltration, provide weed suppression, and to improve overall soil health. In 2021, ten producers are participating in this demonstration. We are in year two of this three-year project with the hopes of extending the program another two years.

Nebraska Agricultural Water Management Demonstration Network
This program encourages producers to improve irrigation scheduling using Etgages and Watermark sensors to determine crop water needs. The Etgage simulates crop water use through evaporation through a ceramic and green canvas membrane. Watermark sensors are used to measure soil moisture in a nearby field to confirm the ETgage's accuracy. This program began in the UBBNRD in 2005 with a collaborative effort with the University of Nebraska Extension and 18 collaborators. The program is now being implemented in several NRDs and with over 2,000 collaborators. The District sells this equipment to irrigators at a reduced cost to encourage adoption of irrigation scheduling practices.

Groundwater Modeling
The District, in cooperation with the Lower Big Blue, Little Blue, Tri-Basin NRDs and the Department of Natural Resources are partnering in the development of a transient Blue River Basin Groundwater Model that can not only answer the question of interconnection between surface and groundwater, but other management questions NRDs ask when reviewing their groundwater management plans. These efforts are in the final stages of calibration with possible delivery by July 2021.

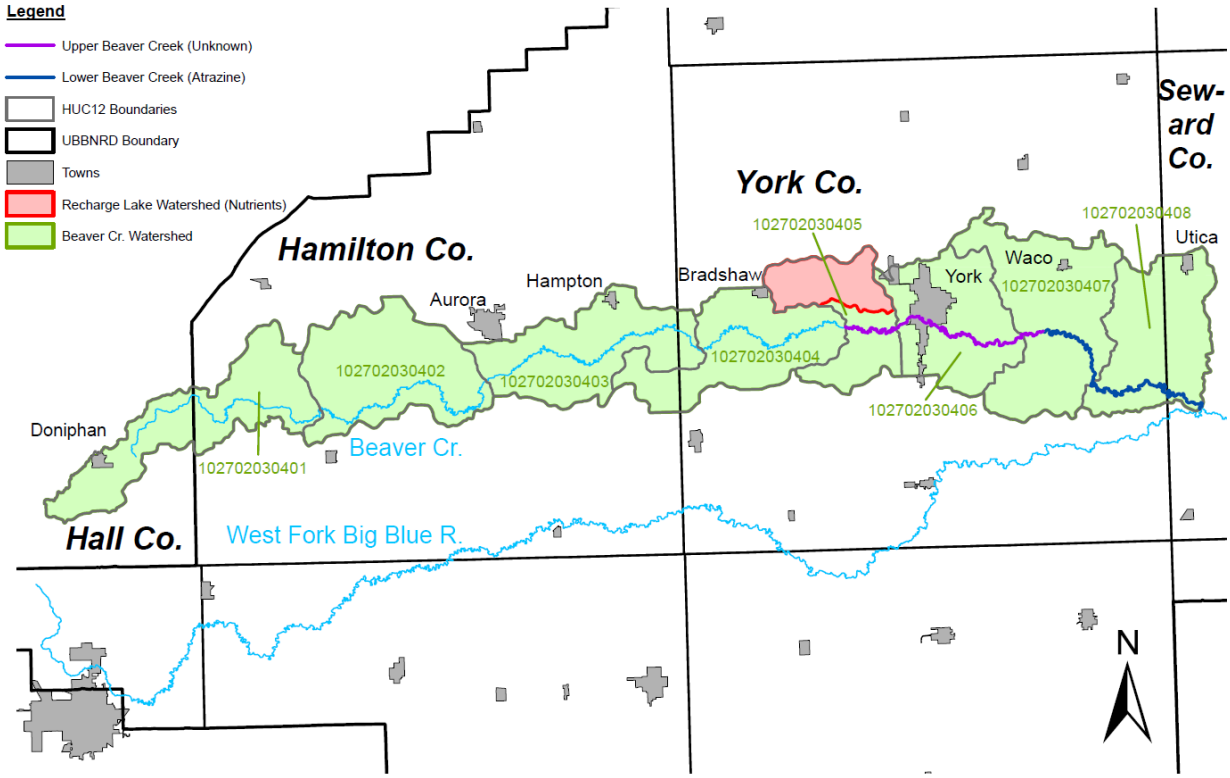
Wellhead Protection Planning
The District continues to assist communities to develop Wellhead Protection Area (WHP Area) Plans. The District also assists communities with implementation of some plan components. These include water sample collection and analysis from rural wells and soil samples collected from the unsaturated zone for nitrates.

Vadose Zone Study
The UBBNRD is partnering with the University of Nebraska Water Center on a five-year district wide vadose zone study based on our Groundwater Quality Management Areas.

Municipal Water System Assistance Program
Municipal water quality is important to the UBBNRD. In 2017 the district began partnering with public water systems to provide financial support to address non-point source contamination.

Water Quality Management Plan

The Water Quality Management Plan (WQMP) has been accepted by Environmental Protection Agency (EPA) and the UBBNRD Board of Directors. Phase I of the Water Quality Management Planning process allowed the District to form a stakeholder group comprised of landowners and other interests from both the Recharge Lake and Beaver Creek watersheds. This stakeholder group assisted in identifying conservation practices that landowners/operators would be willing to implement to address the impairments in both priority areas. After stakeholder discussion, it was decided that filter/buffer strips and cover crops were the most acceptable practices. Phase II of the planning effort will utilize recommendations and feedback from the stakeholders to develop a more robust program to get conservation practices on the ground in both priority areas.



Resource Conservation Partnership Program (RCPP)

In 2020, the Nature Conservancy was awarded RCPP funds for the 'Nebraska Soil Carbon Project'. The project is a collaboration with the Natural Resources Conservation Service, Upper Big Blue NRD, Central Platte NRD, Ecosystem Services market Consortium, Cargill, Target, and McDonald's. The goal is to partner with 100 producers to install soil health practices on 100,000 acres of central Nebraska cropland over five years. Farmers who enroll will be compensated for adopting cover crops, no-till, and/or diverse rotations.

Soil and Water Conservation Cost-share Assistance

Through the Districts Land Treatment Program, the District obligated funding for 37 soil and water conservation projects with a total cost share of $176,180.79 in FY2021. Funded projects included terraces, sediment control basins, waterways, pasture plantings, and tree plantings for windbreaks & enhancing wildlife. Funding sources for the Land Treatment Program included $75,203.89 from the Nebraska Soil and Water Conservation Program and $100,976.90 from local NRD property tax revenues. This is a 43% increase in obligations from FY2020. Interest in land treatment projects continue to increase from 2019 when projects were lower primarily due to the weather conditions.

Nebraska Buffer Strip Program
Through the Nebraska Department of Agriculture, the District administers the Nebraska Buffer Strip Program. This program provides cost share funds for landowners to establish vegetative buffer strips along shorelines of wetlands, streams, and lakes. Funding comes from a fee assessed on all pesticides registered for use in Nebraska. In FY2020 the District administered 22 buffer strip contracts which provided a total cost share of $31,183.17.

Variable Rate Irrigation Pilot Program
The District began a Variable Rate Irrigation Pilot Program in 2017. With over 10,000 center pivots the District believes that VRI can have a significant impact water use efficiency and may provide water savings. In FY2021 the District funded 1 VRI project with a total District contribution of $2,116.75. Though the first 5 years of this program the District has funded 16 VRI projects with a total cost share of $43,754.26 (average cost share of $2,734.64).

Private Dams Program
Through District's Private Dams Program, the District provides planning, design, and financial assistance for the construction or reconstruction of dams located on private property. In FY2021 the District provided cost share assistance for 1 dam with a total $50,000.00 of District funds. Construction of 2 other dams were canceled by the landowners. Through the first five years of the program the District has provided assistance for 15 dams with an average cost share of $20,820 per dam.

Hastings NW Dam – Emergency Exercise
On February 10, 2021, the Upper Big Blue NRD, working with the City of Hastings, the Adams County Emergency Management Agency, and the Nebraska Department of Natural Resources, held a tabletop exercise for the Hastings NW Flood Control Structure. Hastings NW Dam is a high hazard dam located just north of the Hastings airport. Other agencies participating in the exercise included the Adams County Sheriff's Office, the Adams County Roads Department, and the Hastings Police Department.

Visit our Website
You can learn all about the District's programs and activities at www.upperbigblue.org.

Attachment I

REPORT OF THE TREASURER TO THE
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
May 13, 2021

1. Current Year Overview (**Attachment A**)
   a. Our beginning balance for FY2021 was $26,250.49. Since that time, we have had income from the State Assessments and interest which total $19,032.52.
   b. Our expenses thus far have been $16,252.00 for USGS Stateline gages, and $680.00 for the Lower Big Blue NRD observation wells.
   c. The balance on hand is $28,351.01.
   d. Our only estimated expenditure for the remainder of the FY2021is $1000.00 for our annual accountants' review, and we estimate an interest income of $7.00.
   e. Thus, our estimated end-of-year balance is $27,358.01.

2. Budget Analysis of FY2018 to FY2023 (**Attachment B**)
   a. The first three columns show the actual expenditures and income for FY2018 to FY2020.
   b. The FY2021 budget is divided into two columns to show expenses and income to date, and estimated expenses and income through June 30, 2021.
   c. The column highlighted in yellow is the proposed budget for FY2022. We continue to add 3 percent to Stateline gages expenditures to allow for increased costs. We have allowed $1000 for the annual accountants' review and $700 for observation wells. We continue to include line items for postage, printing and miscellaneous costs. Our expected balance at the conclusion of FY2022 is $27,568.45.
   d. The final column shows the projected budget for FY2023. We don't anticipate any major changes in our operating budget. We estimate that our balance will be $27,276.70 at the close of FY2023.

3. Annual Accountants' Review (**Attachment C**).
   a. We have included the documents from FY2020 Annual Accountants' Review as Attachment C.

Attachment A: Current Year Overview

May 13, 2021

BEGINNING BALANCE: July 1, 2020		**$ 26,250.49**
INCOME: as of May 13, 2021		
State Assessments	$ 19,000.00	
Interest Income	$ 32.52	
TOTAL INCOME		$ 19,032.52
EXPENSES: as of May 13, 2021		
USGS - Stateline Gages	$ 16,252.00	
Printing Annual Report	$ -	
Lower Big Blue Natural Resources District - Observation Wells	$ 680.00	
Dana Cole - Review	$ -	
TOTAL EXPENSES		$ 16,932.00
BALANCE ON HAND:		**$ 28,351.01**
ESTIMATED EXPENDITURES THROUGH JUNE 30, 2021		
Annual Accountants' Review	$ 1,000.00	
Printing Annual Report	$ -	
Postage and Office Supplies	$ -	
Miscellaneous	$ -	
TOTAL ESTIMATED ADDITIONAL EXPENDITURES		$ 1,000.00
ESTIMATED INCOME THOUGH JUNE 30, 2021		
Interest Income (May and June)		$ 7.00
ESTIMATED BALANCE AS OF JUNE 30, 2021		**$ 27,358.01**

	FY 2018	FY 2019	FY 2020	FY 2021		FY 2022	FY 2023
	Actual 7/1/17 to 6/30/18	Actual 7/1/18 to 6/30/19	Actual 7/1/19 to 6/30/20	Actual 7/1/20 to 4/23/2021	Estimated 4/24/2021 to 6/30/21	**Proposed 7/1/21 to 6/30/22**	Projected 7/1/22 to 6/30/23
EXPENDITURES							
Operations							
USGS - Stateline Gages	$ 15,925.00	$ 16,039.00	$ 16,198.00	$ 16,252.00	$ -	$ 16,739.56	$ 17,241.75
LBBNRD - Observation Wells	$ 680.00	$ 680.00	$ 680.00	$ 680.00		$ 700.00	$ 700.00
Water Quality Committee	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual Report - Printing	$ -	$ -	$ -		$ -	$ 200.00	$ 200.00
Annual Accountants' Review	$ -	$ 950.00	$ 3,800.00	$ -	$ 1,000.00	$ 1,000.00	$ 1,000.00
Postage and Office Supplies	$ -	$ -	$ -	$ -	$ -	$ 100.00	$ 100.00
Miscellaneous Expenses	$ -	$ -	$ -	$ -	$ -	$ 100.00	$ 100.00
Total Expenses	$ 16,605.00	$ 17,669.00	$ 20,678.00	$ 16,932.00	$ 1,000.00	$ 18,839.56	$ 19,341.75
INCOME & CARRY OVER							
Assessments (Both States)	$ 19,000.00	$ 19,000.00	$ 19,000.00	$ 19,000.00	$ -	$ 19,000.00	$ 19,000.00
Interest earned	$ 52.14	$ 100.85	$ 74.31	$ 32.52	$ 7.00	$ 50.00	$ 50.00
Carry Over from Prior Year	$ 23,975.19	$ 26,422.33	$ 27,854.18	$ 26,250.49	$ -	$ 27,358.01	$ 27,568.45
Total Income and Carry Over	$ 43,027.33	$ 45,523.18	$ 46,928.49	$ 45,283.01	$ 7.00	$ 46,408.01	$ 46,618.45
Ending Balance	$ 26,422.33	$ 27,854.18	$ 26,250.49	$ 28,351.01	$ 27,358.01	$ 27,568.45	$ 27,276.70

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION

FINANCIAL STATEMENTS

INDEPENDENT ACCOUNTANTS' REVIEW REPORT

JUNE 30, 2020

DANA F. COLE & COMPANY LLP
CERTIFIED PUBLIC ACCOUNTANTS

DANA F. COLE
& COMPANY LLP
CERTIFIED PUBLIC ACCOUNTANTS

INDEPENDENT ACCOUNTANTS' REVIEW REPORT

To the Board of Directors
Kansas-Nebraska Big Blue River Compact Administration
Lincoln, Nebraska

We have reviewed the accompanying cash basis financial statements of Kansas-Nebraska Big Blue River Compact Administration (a nonprofit organization), which comprise the statement of cash receipts and disbursements for the year ended June 30, 2020, and the related notes to the financial statement. A review includes primarily applying analytical procedures to management's financial data and making inquiries of management. A review is substantially less in scope than an audit, the objective of which is the expression of an opinion regarding the financial statements as a whole. Accordingly, we do not express such an opinion.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of this financial statement in accordance with the cash basis of accounting; this includes determining that the cash basis of accounting is an acceptable basis for the preparation of financial statements in the circumstances. Management is also responsible for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement whether due to fraud or error.

Accountant's Responsibility

Our responsibility is to conduct the review engagement in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the American Institute of Certified Public Accountants. Those standards require us to perform procedures to obtain limited assurance as a basis for reporting whether we are aware of any material modifications that should be made to the financial statements for them to be in accordance with the cash basis of accounting. We believe that the results of our procedures provide a reasonable basis for our conclusion.

Accountant's Conclusion

Based on our review, we are not aware of any material modifications that should be made to the accompanying financial statement in order for it to be in accordance with the cash basis of accounting.

Basis of Accounting

We draw attention to Note 1 of the financial statements, which describes the basis of accounting. The financial statements are prepared in accordance with the cash basis of accounting, which is a basis of accounting other than accounting principles generally accepted in the United States of America. Our conclusion is not modified with respect to this matter.

Supplementary Information

The accompanying supplementary information included in statement of cash receipts and disbursement - compared to budget is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from, and relates directly to, the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the review procedures applied in our review of the basic financial statements. We are not aware of any material modifications that should be made to the supplementary information. We have not audited the supplementary information and do not express an opinion on such information.

Dana Cole + Company, LLP

Lincoln, Nebraska
March 9, 2021

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
YEAR ENDED JUNE 30, 2020

RECEIPTS	
Kansas contribution	9,500
Nebraska contribution	9,500
Interest	82
Total receipts	19,082
DISBURSEMENTS	
Surface and ground water investigations	16,878
Auditing and accounting services	3,800
Total disbursements	20,678
DECREASE IN CASH	(1,596)
CASH, beginning of year	27,886
CASH, end of year	26,290

See accompanying notes to financial statements.

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
NOTES TO FINANCIAL STATEMENTS

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Organization and Nature of Activities

The Kansas-Nebraska Big Blue River Compact Administration is an interstate administrative agency established, upon adoption of rules and regulations pursuant to Article III (3,4) of the Kansas-Nebraska Big Blue River Compact on April 24, 1973, to administer the Compact.

The Administration is incorporated as an organization exempt from income tax under Code Section 501(c)(3) of the Internal Revenue Code.

Basis of Presentation

The financial statements of the Administration have been prepared on the cash receipts and disbursements basis method of accounting. Therefore, investments, receivables and payables, long-lived assets, accrued income and expenses, and amortization and depreciation, which may be material in amount, are not presented. These financial statements are not intended to present the financial position, results of operations, or cash flows in conformity with accounting principles generally accepted in the United States of America.

Function

The major function of the Administration is to establish "such stream-gauging stations, ground water observation wells, and other data collection facilities as are necessary for administrating the Compact."

The purpose of the Compact is to:

a. Promote interstate comity between the state of Kansas and Nebraska.
b. To achieve equitable apportionment of the waters of the Big Blue River Basin between the two states and to promote orderly development thereof.
c. To encourage continuation of the active pollution-abatement programs of the waters of the Big Blue River Basin.

NOTE 2. SUBSEQUENT EVENT

In preparing the financial statements, the Administration has evaluated events and transactions for potential recognition or disclosure through March 9, 2021, the date the financial statements were available to be issued.

SUPPLEMENTAL INFORMATION

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS - COMPARED TO BUDGET
YEAR ENDED JUNE 30, 2020

	Budget	Actual	Variance Favorable (Unfavorable)
RECEIPTS			
Kansas contribution	9,500	9,500	
Nebraska contribution	9,500	9,500	
Interest	50	82	32
Total receipts	19,050	19,082	32
DISBURSEMENTS			
Surface and ground water investigations	18,700	16,878	1,822
Auditing and accounting services	900	3,800	(2,900)
Printing annual report	200		200
Postage and supplies	100		100
Miscellaneous	100		100
Total disbursements	20,000	20,678	(678)
DEFICIENCY OF RECEIPTS UNDER DISBURSEMENTS	(950)	(1,596)	(646)

See accompanying notes to financial statements.

Attachment J

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT REPORT
U.S. Geological Survey—Water Year 2020

The U.S. Geological Survey (USGS) continues to operate two streamflow gaging stations for the Compact Administration—Big Blue River at Barneston, NE (06882000), and Little Blue River at Hollenberg, KS (06884025). An electronic data logger (EDL) at each station automatically records streamflow stage every 15 minutes. Every hour, these instantaneous values are transmitted via satellite to USGS offices, where they are used to compute preliminary values of instantaneous and daily discharge that are immediately posted to the USGS National Water Information System (NWIS) website (addresses shown below). Before the data are finalized, updates and revisions are made as needed, based on a series of quality checks and reviews. Finalized values of daily discharge and daily gage height, along with associated summary statistics are published annually on a site-by-site basis on the NWIS web page (address shown below).

During water year (WY) 2020 (October 1, 2019 to September 30, 2020), periodic visits were made to the stations to maintain and calibrate the sensing and recording equipment, make discharge measurements, and download the data directly from the EDLs, as a backup to the satellite-telemetered data. The discharge measurements were used to determine shifts from the stage-discharge relations (rating curves) that were then used to convert stage values to corresponding values of discharge.

For each of the State delegations and the Compact chairman, copies of the WY 2020 published data (manuscript, discharge daily values, statistics tables, and daily discharge hydrograph) from the NWIS web page are attached for each station. These water-year summaries (PDF files) are available online within the NWIS site page for each of the streamgages, along with data for other streamgages for the Nation. Also attached are plots of the annual mean discharges for the periods of record, and plots of the daily discharges for WY 2020 compared to those for the median daily statistic for each day of the year.

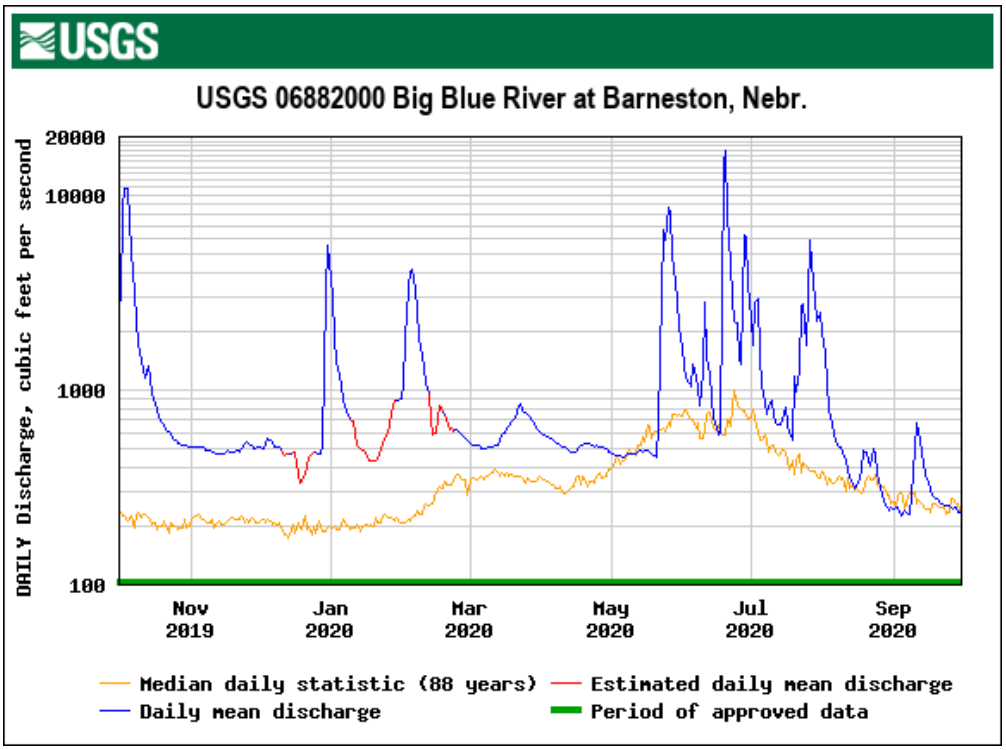
Current (real-time) and historical data on surface water, groundwater, and water quality for the Nation can be accessed and downloaded via the Water Resources of the United States website (https://www2.usgs.gov/water/) or from the Nebraska Water Science Center website (https://www.usgs.gov/centers/ne-water). All unit values of discharge data and all daily values of discharge can be accessed using the NWIS web, as well as all unit values and daily values of gage height since October 2007.

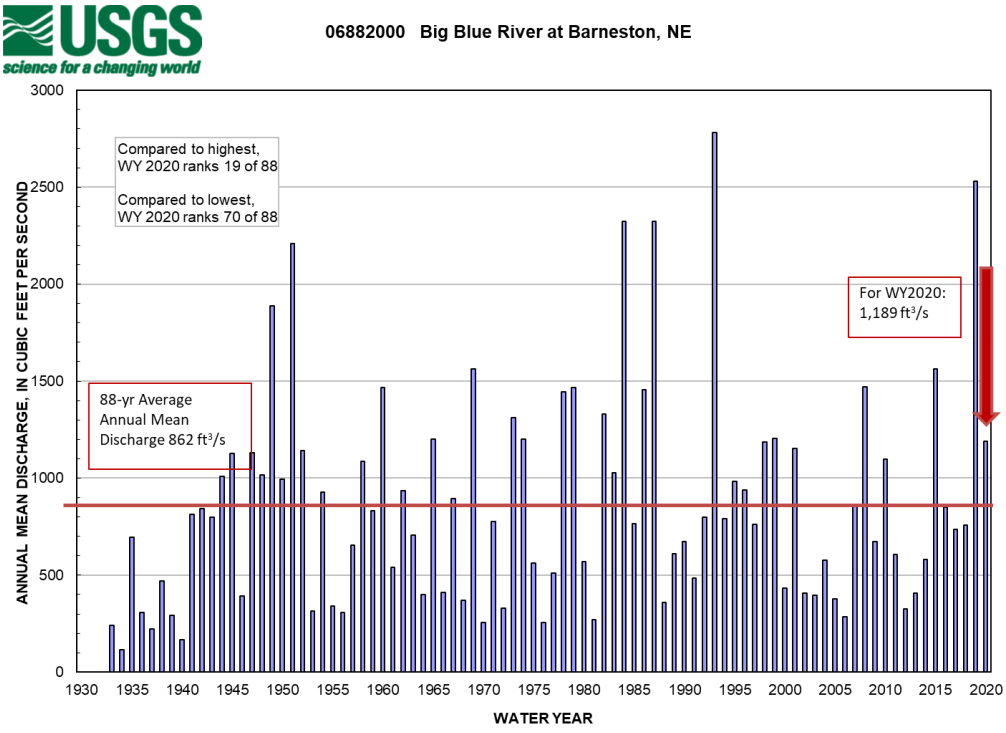
Jason Lambrecht
Deputy Director, Hydrologic Observations Chief

U.S. Geological Survey, Nebraska Water Science Center
5231 S. 19th St., Lincoln, NE 68512-1271
(jmlambre@usgs.gov)
402-328-4124 (office), 402-416-2363 (mobile)

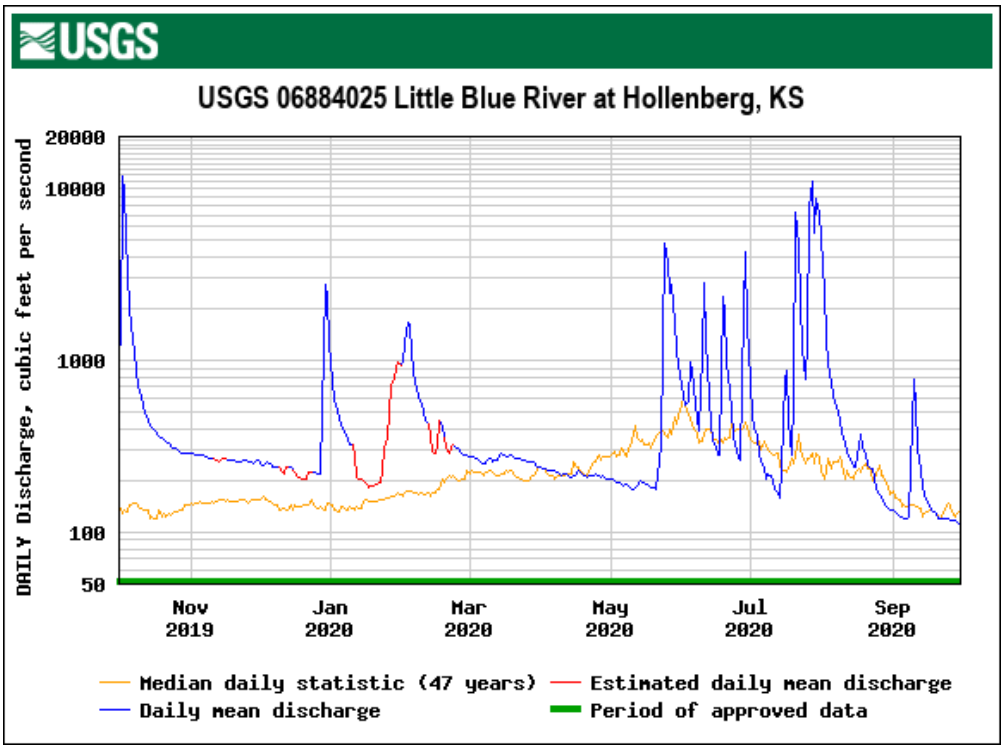
May 4, 2021

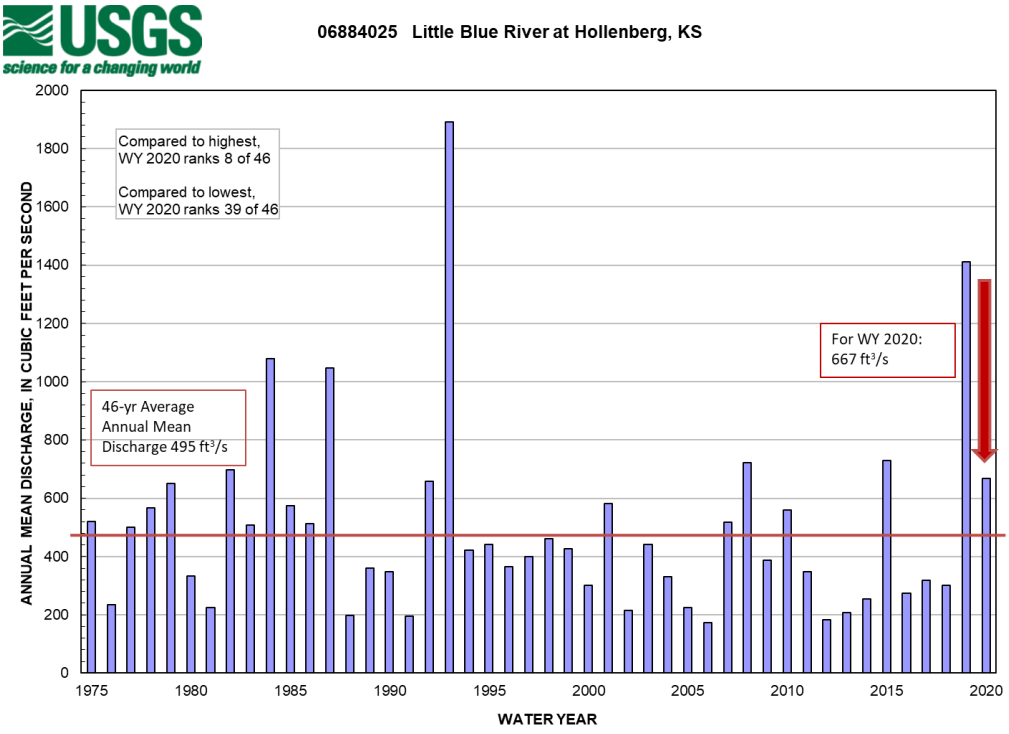
For station **06882000 Big Blue River at Barneston**, 12 discharge (and stage) measurements, ranging from 228 ft³/s (3.73 ft stage) to 17,200 ft³/s (20.10 ft stage), were made during WY 2020. The annual mean discharge of 1,189 ft³/s was 2.1 times less than that of the WY 2019 mean of 2,529 ft³/s; and 1.4 times higher than the new historical mean of 862 ft³/s for WYs 1933–2020 (88 years of record). The maximum and minimum daily discharges were 17,100 ft³/s on June 20, 2020 (peak of record daily was 50,000 ft³/s on June 9, 1941); and 227 ft³/s on September 4, 2020.





For station **06884025 Little Blue River at Hollenberg**, 14 discharge (and stage) measurements, ranging from 127 ft³/s (2.16 ft stage) to 14,200 ft³/s (13.61 ft stage), were made during WY 2020. The annual mean discharge of 667.1 ft³/s was 2.1 times less than that of the WY 2019 mean of 1,411 ft³/s; and 1.3 times higher than the new historical mean of 495 ft³/s for WYs 1975–2020 (46 years of record). The maximum and minimum daily discharges were 11,800 ft³/s on October 2, 2019 (peak of record daily was 39,300 ft³/s on July 26, 1992); and 112 ft³/s on September 30, 2020.





USGS Water-Year Summary 2020

06882000 Big Blue River at Barneston, Nebr.

LOCATION - Lat 40°02'41", long 96°35'14" referenced to North American Datum of 1983, in NE 1/4 NW 1/4 sec.24, T.1 N., R.7 E., Gage County, NE, Hydrologic Unit 10270202, on right bank just downstream of bridge on State Highway 8, 0.6 mi southwest of Barneston, 1.3 mi upstream from Plum Creek, and 4.3 mi upstream from Nebraska-Kansas State line.

DRAINAGE AREA - 4,447 mi² of which 77 mi² probably is noncontributing.

REVISIONS HISTORY - WSP 896: 1932, 1935. WSP 1919: Drainage area.

SURFACE-WATER RECORDS

PERIOD OF RECORD - May 1932 to current year.

GAGE - Water-stage recorder with satellite telemetry. Datum of gage is 1,162.20 ft above sea level. Prior to June 9, 1941, water-stage recorder at site 0.3 mi downstream at datum 1.56 ft higher. June 9 to Nov. 17, 1941, non-recording gage, and Nov. 18, 1941 to Sept. 30, 1979, water-stage recorder at site 0.7 mi upstream at datum 2.0 ft higher.

REMARKS - Accuracy of records for water years prior to 2014 are noted in the individual Annual Data Reports for those water years. For water years 2014 onward, records fair to good except for estimated daily discharges, which are poor, unless otherwise noted.

EXTREMES FOR PERIOD OF RECORD - Maximum peak flow, 57,700 ft³/s, June 9, 1941, gage height, 34.30 ft, at site datum then in use.

U.S. Department of the Interior
U.S. Geological Survey

Suggested citation: U.S. Geological Survey, 2021, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed [May 4, 2021], https://nwis.waterdata.usgs.gov/nwis/wys_rpt?dv_ts_ids=&93783&adr_begin_date=2019-10-01&adr_end_date=2020-09-30&site_no=06882000&agency_cd=USGS

DISCHARGE, CUBIC FEET PER SECOND
YEAR 2019-10-01 to 2020-09-30
DAILY MEAN VALUES
[e, Value has been estimated.]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	2019	2019	2019	2020	2020	2020	2020	2020	2020	2020	2020	2020
1	2,860	509	510	3,020	1,070	535	601	477	1,620	2,290	1,980	243
2	8,710	511	500	1,890	1,840	525	590	468	1,340	1,700	1,550	251
3	10,800	510	519	1,390	3,360	525	582	458	1,150	2,810	1,060	249
4	10,900	511	560	1,180	4,120	522	571	456	1,080	2,960	794	227
5	7,320	511	553	1,040	4,210	518	563	465	1,050	1,510	667	232
6	5,150	506	535	889	3,320	503	552	453	1,370	1,060	594	241
7	3,220	494	515	790	2,560	503	544	455	1,170	859	537	228
8	2,270	488	515	729	1,860	497	531	466	1,020	750	511	229
9	1,740	485	506	705	1,490	507	517	469	837	823	511	285
10	1,420	482	485	e688	1,290	507	508	473	1,220	880	471	497
11	1,260	475	e464	e593	1,090	512	512	473	2,830	735	430	675
12	1,150	472	e468	e523	957	522	501	472	1,460	683	387	609
13	1,340	474	466	e500	e703	523	489	476	1,200	669	362	478
14	1,140	471	474	e494	e590	558	483	485	894	669	327	413
15	969	472	477	e490	e595	585	477	483	717	704	313	366
16	846	480	e477	e452	e711	602	476	489	637	811	316	332
17	778	485	e367	e433	e826	627	511	485	584	665	352	306
18	718	484	e335	e431	790	649	517	481	595	597	384	290
19	673	482	e342	e434	740	691	521	468	14,800	552	487	279
20	648	484	e374	e437	e700	705	530	462	17,100	1,180	483	275
21	631	490	e399	e445	e625	716	532	451	8,080	975	430	264
22	610	483	e454	e495	e633	831	533	670	4,390	1,280	405	259
23	590	495	e472	e527	608	855	525	3,130	2,950	2,720	497	256
24	566	532	482	e569	620	783	511	6,660	2,270	2,760	456	256
25	549	537	476	e602	608	761	519	5,950	2,200	1,690	377	253
26	535	527	472	e670	596	755	513	8,760	1,450	2,920	311	252
27	533	517	466	e762	581	731	513	8,070	1,350	5,840	287	247
28	524	503	520	882	566	699	507	4,930	6,310	3,570	268	250
29	520	500	3,180	893	549	665	496	3,590	6,200	2,910	249	237
30	519	509	5,590	877		634	483	2,910	3,500	2,250	241	234
31	514		4,590	910		617		2,090		2,480	248	
Total	70,000	14,879	26,540	24,740	38,210	19,160	15,709	56,630	91,370	52,300	16,280	9,213
Mean	2,258	496	856	798	1,318	618	524	1,827	3,046	1,687	525	307
Max	10900	537	5590	3020	4210	855	601	8760	17100	5840	1980	675
Min	514	471	335	431	549	497	476	451	584	552	241	227
Ac-ft	138,800	29,509	52,650	49,070	75,780	38,010	31,160	112,300	181,200	103,700	32,300	18,270

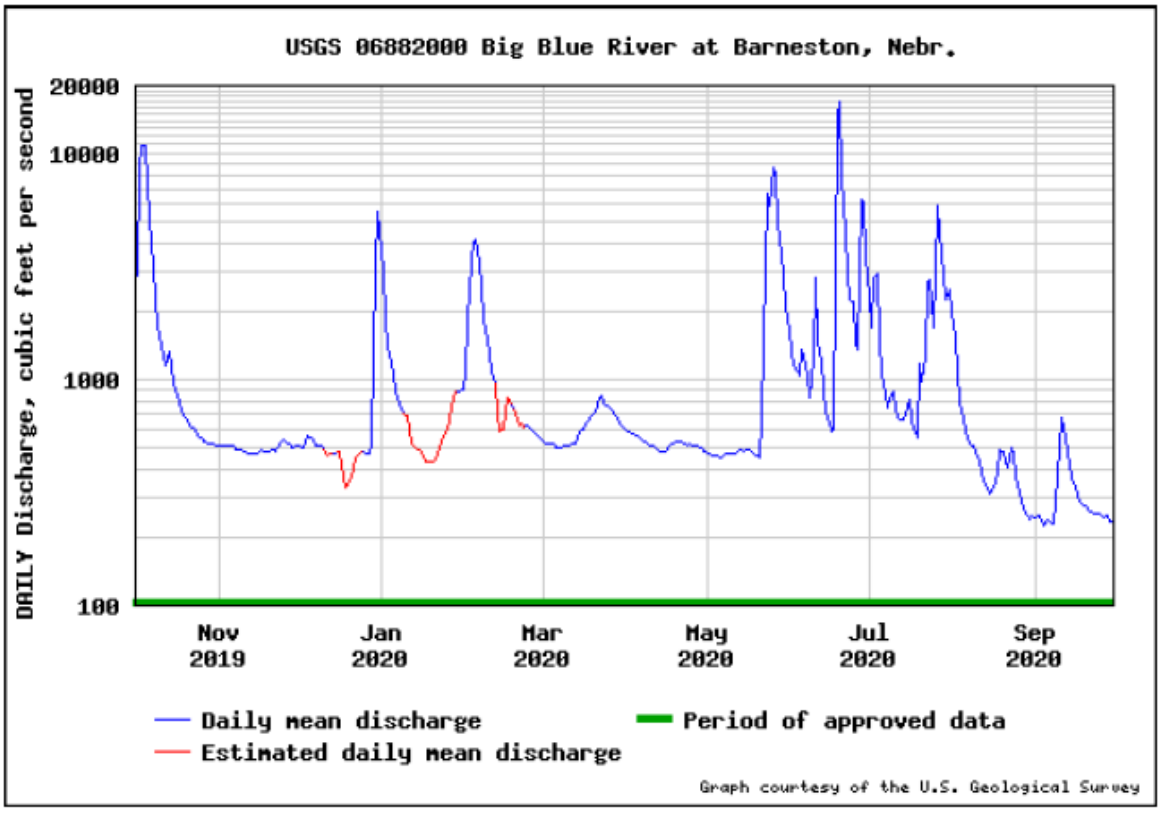
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2020, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	592	309	288	302	600	1,269	810	1,418	2,103	1,236	703	704
Max	7,451	1,526	2,731	1,596	2,876	10,560	5,280	5,207	10,460	12,270	5,227	3,420
(WY)	(1974)	(1999)	(2019)	(1973)	(1984)	(1979)	(1984)	(1995)	(1951)	(1993)	(1954)	(1989)
Min	61.5	77.5	87.4	67.6	116	137	132	96.0	69.3	30.7	21.1	50.6
(WY)	(1941)	(1937)	(1977)	(1937)	(1940)	(1968)	(1934)	(1934)	(1934)	(1934)	(1934)	(1939)

SUMMARY STATISTICS

	Water Year 2020		Water Years 1933 - 2020	
Annual total	435,000			
Annual mean	1,189		861.9	
Highest annual mean			2,781	1993
Lowest annual mean			115.0	1934
Highest daily mean	17,100	Jun 20	50,000	Jun 09, 1941
Lowest daily mean	227.0	Sep 04	1.00	Nov 30, 1945
Annual 7-day minimum	236.7	Sep 02	15.1	Aug 03, 1934
Maximum peak flow	20,400	Jun 19	57,700	Jun 09, 1941
Maximum peak stage	22.97	Jun 19	34.30[a]	Jun 09, 1941
Annual runoff (cfsm)	0.267		0.194	
Annual runoff (inches)	3.64		2.63	
10 percent exceeds	2,839		1,770	
50 percent exceeds	537.0		287.0	
90 percent exceeds	359.0		110.0	

[a] Gage height at different site and(or) datum



USGS Water-Year Summary 2020

06884025 Little Blue River at Hollenberg, KS

LOCATION - Lat 39°58'49", long 97°00'17" referenced to North American Datum of 1983, in NE 1/4 SW 1/4 sec.8, T.1 S., R.4 E., Washington County, KS, Hydrologic Unit 10270207, on right bank just downstream from bridge on county road, 0.6 mi west of Hollenberg, 1.8 mi downstream from Nebraska-Kansas State line, and at mile 43.1.

DRAINAGE AREA - 2,752 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD - March 1973 to February 1974 (discharge measurements only), March 1974 to current year.

GAGE - Water-stage recorder with satellite telemetry. Datum of gage is 1,216.10 ft above sea level.

REMARKS - Accuracy of records for water years prior to 2014 are noted in the individual Annual Data Reports for those water years. For water years 2014 onward, records good except for estimated daily discharges, which are poor, unless otherwise noted. Discharge measurements made prior to 1974 water year are published in table of miscellaneous sites in WDR NE-73.

EXTREMES OUTSIDE PERIOD OF RECORD - A gage height of 23.07 ft, present datum, from floodmark, discharge not determined, occurred October 12, 1973.

EXTREMES FOR PERIOD OF RECORD -

Maximum peak flow, 59,200 ft³/s, May 7, 2015, gage height, 22.97 ft, site and datum then in use.

U.S. Department of the Interior
U.S. Geological Survey

Suggested citation: U.S. Geological Survey, 2021, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed [May 4, 2021], https://nwis.waterdata.usgs.gov/nwis/wys_rpt?dv_ts_ids=&93795&adr_begin_date=2019-10-01&adr_end_date=2020-09-30&site_no=06884025&agency_cd=USGS

DISCHARGE, CUBIC FEET PER SECOND
YEAR 2019-10-01 to 2020-09-30
DAILY MEAN VALUES
[e, Value has been estimated.]

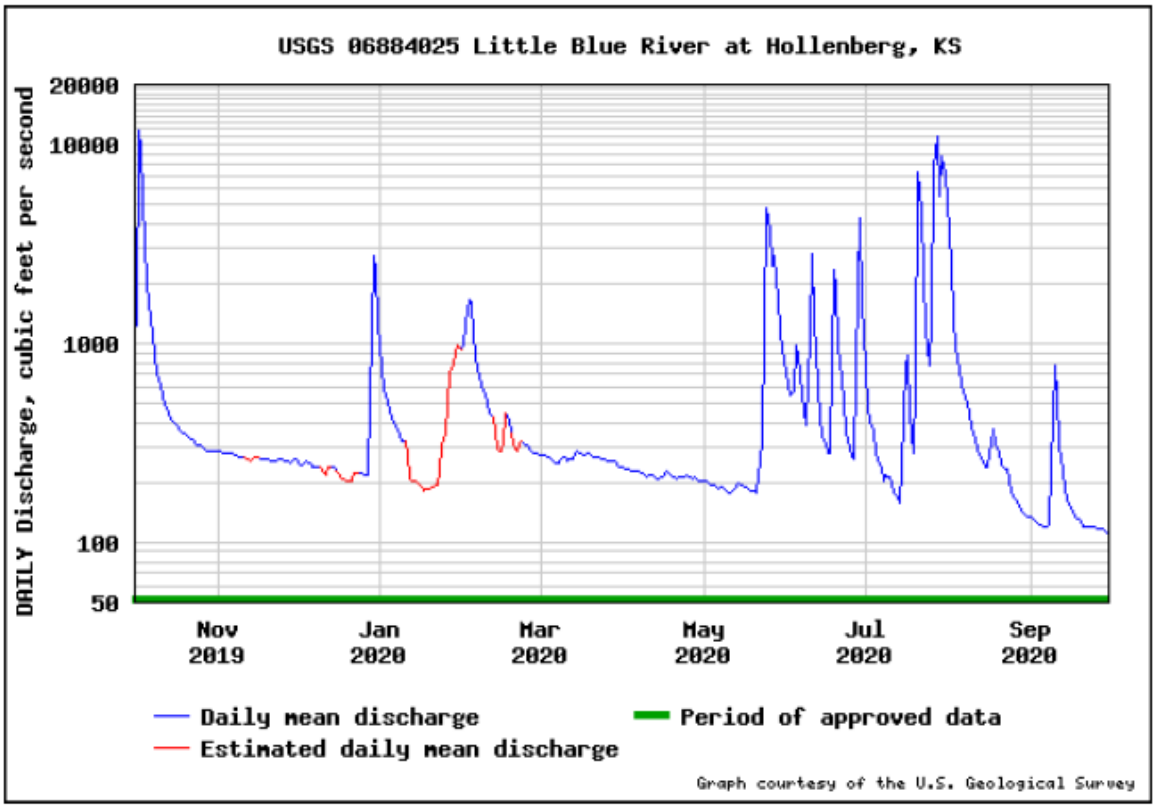
Day	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020
1	1,220	285	250	755	979	278	239	203	729	764	5,200	134
2	11,800	285	246	595	1,260	276	232	202	615	472	2,540	132
3	9,380	283	253	547	1,660	275	233	197	543	404	1,330	127
4	3,170	281	255	459	1,570	270	229	196	569	360	948	123
5	2,060	281	249	418	1,090	262	228	196	974	283	748	122
6	1,590	281	242	394	722	254	226	188	877	257	617	121
7	1,100	277	240	367	703	250	226	185	565	233	569	121
8	868	272	239	338	609	249	224	189	443	205	497	124
9	711	271	237	324	546	263	218	185	391	219	439	232
10	615	270	e229	321	495	266	215	181	1,060	211	383	770
11	542	266	e220	e276	446	257	216	178	2,800	195	327	549
12	486	e260	e238	e208	422	264	216	183	1,290	179	295	299
13	443	e259	242	e206	e357	261	213	185	619	168	276	228
14	417	e262	237	e203	e296	277	210	199	420	158	259	185
15	403	e271	229	e201	e285	286	212	195	350	234	242	163
16	389	269	e222	e192	e317	282	213	193	311	784	238	150
17	375	264	e210	e181	450	277	231	189	282	870	319	142
18	360	262	e207	e185	408	275	225	185	284	433	375	136
19	355	263	e205	e186	357	284	218	182	2,360	282	305	130
20	344	260	e205	e188	e312	277	214	180	1,900	625	284	128
21	338	259	e206	e191	e289	270	210	177	947	7,210	247	119
22	327	257	e223	e195	e311	269	211	211	655	4,660	242	121
23	318	259	223	e228	320	270	214	324	501	2,150	235	121
24	309	262	223	e306	310	262	213	1,210	364	1,180	203	119
25	305	261	221	e356	305	262	219	4,850	297	779	179	119
26	299	255	218	e497	295	256	213	3,720	266	1,310	165	118
27	293	256	217	e713	284	256	209	2,460	265	7,580	157	117
28	289	252	497	e797	284	257	211	2,740	1,930	11,000	150	117
29	290	258	2,770	e883	279	256	206	1,660	4,320	5,530	141	114
30	288	261	2,310	e967		247	204	1,150	1,570	8,710	138	112
31	287		1,260	928		241		924		7,180	136	
Total	39,970	8,002	13,020	12,600	15,960	8,229	6,548	23,220	28,499	64,620	18,180	5,293
Mean	1,288	267	420	407	550	265	218	749	950	2,085	587	176
Max	11800	285	2770	967	1660	286	239	4850	4320	11000	5200	770
Min	287	252	205	181	279	241	204	177	265	158	136	112
Ac-ft	79,280	15,870	25,829	25,000	31,660	16,320	12,989	46,050	56,520	128,200	36,070	10,500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2020, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	350	212	205	185	291	648	446	857	981	829	489	371
Max	2,163	1,113	1,646	577	1,059	3,816	2,379	2,638	4,654	9,014	2,572	1,696
(WY)	(1987)	(1997)	(2019)	(1984)	(1993)	(1993)	(1987)	(2015)	(2015)	(1993)	(1985)	(2018)
Min	45.3	81.1	87.2	74.0	89.1	118	117	103	151	68.1	51.5	32.0
(WY)	(1992)	(1992)	(2013)	(2018)	(2018)	(1981)	(2018)	(2018)	(1981)	(2013)	(2012)	(1991)

SUMMARY STATISTICS

	Water Year 2020		Water Years 1974 - 2020	
Annual total	244,200			
Annual mean	667.1		494.8	
Highest annual mean			1,891	1993
Lowest annual mean			172.9	2006
Highest daily mean	11,800	Oct 02	39,300	Jul 26, 1992
Lowest daily mean	112.0	Sep 30	24.2	Sep 12, 2012
Annual 7-day minimum	116.6	Sep 24	26.0	Sep 06, 2012
Maximum peak flow	17,500	Oct 03	59,200	May 07, 2015
Maximum peak stage	15.03	Oct 03	23.07	Oct 12, 1973
Annual runoff (cfsm)	0.242		0.179	
Annual runoff (inches)	3.30		2.43	
10 percent exceeds	1,213		823.4	
50 percent exceeds	270.0		191.0	
90 percent exceeds	179.7		96.6	



Water Year 2020 Discharge Measurements

Site #	Meas. #	Meas. Date & Time	Meas. Used	Meas. Party	Meas. Agency	Gage Height	Discharge	Meas. Rating
06882000	1482	10/2/2019 12:05	Yes	BHI/JTC	USGS	7430	13.44	Fair
06882000	1483	11/18/2019 10:10	Yes	BHI	USGS	504	4.44	Fair
06882000	1484	12/18/2019 13:03	Yes	BHI	USGS	319	4.07	Fair
06882000	1485	2/6/2020 9:55	Yes	KEK	USGS	3320	8.66	Fair
06882000	1486	3/3/2020 13:39	Yes	BHI	USGS	539	4.53	Fair
06882000	1487	4/20/2020 12:58	Yes	KEK	USGS	532	4.46	Fair
06882000	1488	5/27/2020 8:54	Yes	NDS	USGS	8710	14.34	Fair
06882000	1489	6/19/2020 11:10	Yes	LWN/MJA	USGS	17000	20.10	Fair
06882000	1490	7/27/2020 10:02	Yes	BHI	USGS	7320	14.01	Fair
06882000	1491	7/28/2020 11:25	Yes	BHI	USGS	3660	9.16	Fair
06882000	1492	8/31/2020 8:51	Yes	BHI	USGS	241	3.77	Fair
06882000	1493	10/15/2020 11:02	Yes	BHI	USGS	228	3.73	Fair
06884025	597	10/2/2019 13:49	Yes	BHI/JTC	USGS	12600	12.96	Fair
06884025	598	11/18/2019 12:20	Yes	BHI	USGS	256	2.57	Fair
06884025	599	12/18/2019 11:03	Yes	BHI	USGS	207	2.44	Poor
06884025	600	2/6/2020 11:36	Yes	KEK	USGS	706	3.37	Fair
06884025	601	3/3/2020 11:43	Yes	BHI	USGS	271	2.55	Fair
06884025	602	4/21/2020 10:57	Yes	KEK	USGS	206	2.44	Fair
06884025	603	5/27/2020 10:24	Yes	NDS	USGS	2510	5.75	Fair
06884025	604	6/11/2020 12:10	Yes	KEK	USGS	2930	6.32	Fair
06884025	605	6/24/2020 12:10	Yes	BHI/KEK	USGS	377	2.83	Fair
06884025	606	7/21/2020 16:30	Yes	BHI	USGS	9100	11.12	Fair
06884025	607	7/28/2020 9:23	Yes	BHI	USGS	14200	13.61	Fair
06884025	608	8/31/2020 10:51	Yes	BHI	USGS	131	2.21	Fair
06884025	609	9/23/2020 13:01	Yes	BHI	USGS	127	2.16	Fair

Attachment K

REPORT OF THE ENGINEERING COMMITTEE
TO THE
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION

May 13, 2021

The engineering committee was not given any special assignments from the Compact Administration and did not meet during the past year. The United States Geological Survey (USGS) and the Lower Big Blue Natural Resources District (LBBNRD) provided the 2020 data for this report.

Review of Streamflow Data

The Compact sets forth the following streamflow targets at the stateline gaging stations:

	Big Blue River	Little Blue River
May	45 cfs	45 cfs
June	45 cfs	45 cfs
July	80 cfs	75 cfs
August	90 cfs	80 cfs
September	65 cfs	60 cfs

During the May through September time period of the 2020 water year (October 1, 2019 through September 30, 2020) there were no shortages for Compact target flows. The mean daily streamflow at the Barneston gage on the Big Blue River (Exhibit A) and the Hollenberg gage (Exhibit B) on the Little Blue River exceeded target flows throughout the year.

Real-time and historical data for these gaging stations can be found at the following websites:
Big Blue River – http://waterdata.usgs.gov/ne/nwis/uv/?site_no=06882000
Little Blue River – http://waterdata.usgs.gov/ne/nwis/uv/?site_no=06884025

Review of Groundwater Data

The Lower Big Blue Natural Resources District provided the groundwater levels (Exhibit C) for the Big Blue Basin near Beatrice.

Review of Wells in the Regulatory Reaches

Exhibit D is a listing of the active irrigation wells within the regulatory reaches. There were no new wells drilled in the Big Blue River regulatory area and no new wells drilled in the Little Blue River regulatory area during this reporting period.

Respectively Submitted,

Jeremy F. Gehle, Chair
Nebraska

Elizabeth Hickman
Kansas

SUMMARY STATISTICS

	Water Year 2020		Water Years 1933 - 2020	
Annual total	435,000			
Annual mean	1,189		861.9	
Highest annual mean			2,781	1993
Lowest annual mean			115.0	1934
Highest daily mean	17,100	Jun 20	50,000	Jun 09, 1941
Lowest daily mean	227.0	Sep 04	1.00	Nov 30, 1945
Annual 7-day minimum	236.7	Sep 02	15.1	Aug 03, 1934
Maximum peak flow	20,400	Jun 19	57,700	Jun 09, 1941
Maximum peak stage	22.97	Jun 19	34.30[a]	Jun 09, 1941
Annual runoff (cfsm)	0.267		0.194	
Annual runoff (inches)	3.64		2.63	
10 percent exceeds	2,839		1,770	
50 percent exceeds	537.0		287.0	
90 percent exceeds	359.0		110.0	

[a] Gage height at different site and(or) datum

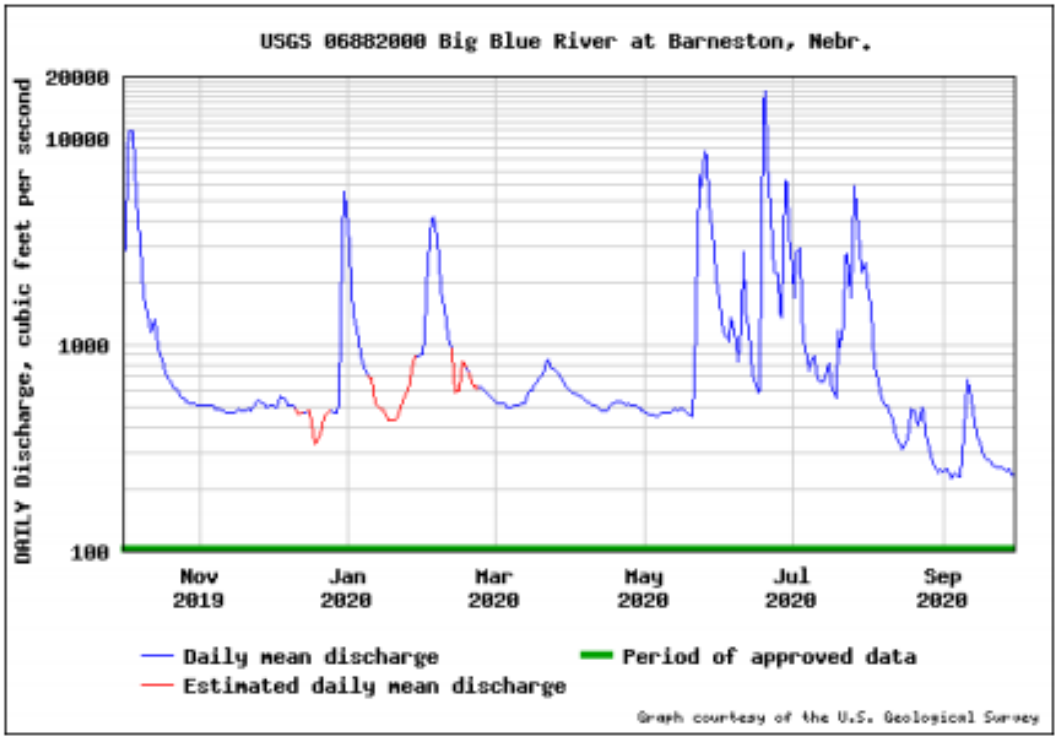


Exhibit A

SUMMARY STATISTICS

	Water Year 2020		Water Years 1974 - 2020	
Annual total	244,200			
Annual mean	667.1		494.8	
Highest annual mean			1,891	1993
Lowest annual mean			172.9	2006
Highest daily mean	11,800	Oct 02	39,300	Jul 26, 1992
Lowest daily mean	112.0	Sep 30	24.2	Sep 12, 2012
Annual 7-day minimum	116.6	Sep 24	26.0	Sep 06, 2012
Maximum peak flow	17,500	Oct 03	59,200	May 07, 2015
Maximum peak stage	15.03	Oct 03	23.07	Oct 12, 1973
Annual runoff (cfsm)	0.242		0.179	
Annual runoff (inches)	3.30		2.43	
10 percent exceeds	1,213		823.4	
50 percent exceeds	270.0		191.0	
90 percent exceeds	179.7		96.6	

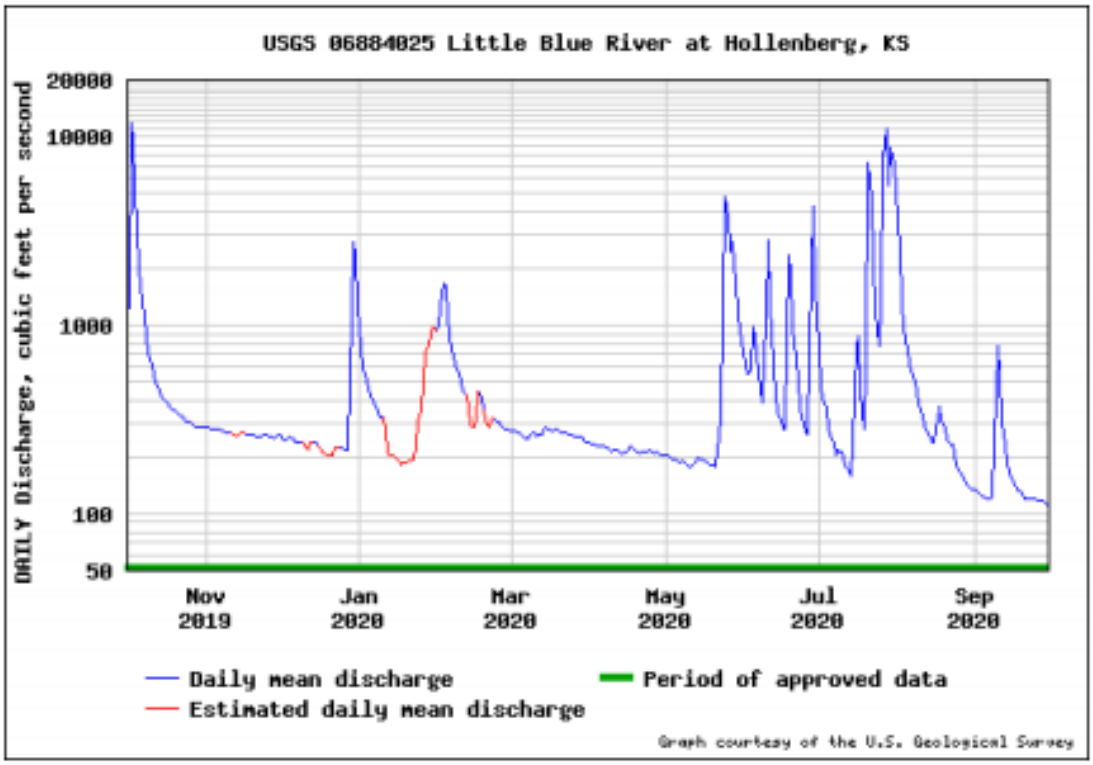
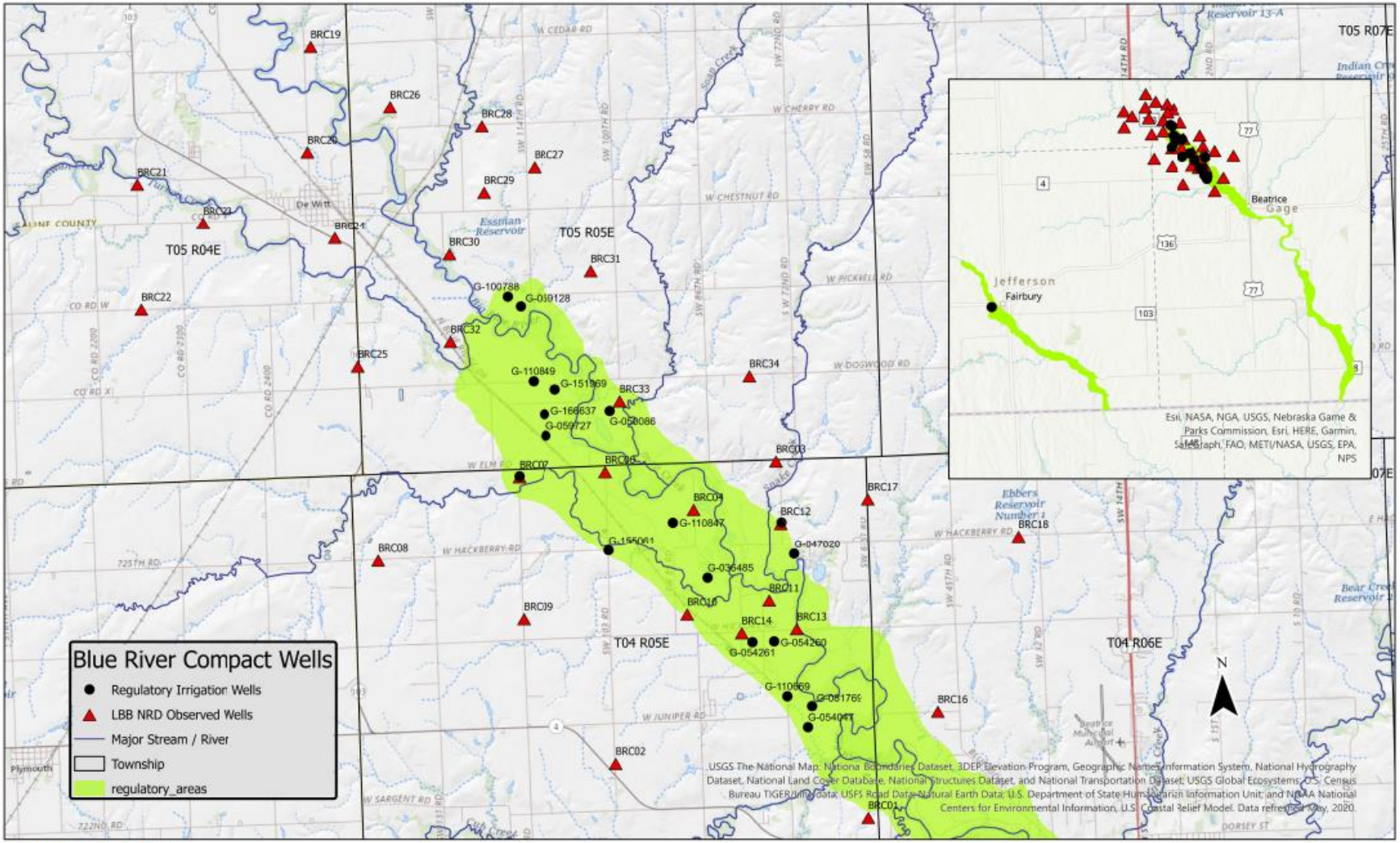


Exhibit B

Compact Monitoring and Regulatory Irrigation Wells in the Big Blue River Basin



NEBRASKA
Good Life. Great Water.
DEPT. OF NATURAL RESOURCES

BIG BLUE RIVER COMPACT STATIC WATER LEVELS 2020

LEGAL	SECT	SITE	TYPE	Spring 2020	Fall 2020
4N-5E	2	AAAA	OW	91.01	92.75
4N-5E	2	DDAA	IW	15.54	18
4N-5E	4	BBBC	IW	17.87	17.72
4N-5E	9	CBCC	IW	69.96	69.74
4N-5E	10	DDAA	IW	24.62	27.1
4N-5E	11	DACA	IW	15.51	16.7
4N-5E	14	ABBB	IW	11.70	14.85
4N-5E	25	AACD	IW	15.61	16.71
5N-4E	12	ABBA	IW	17.09	18.71
5N-4E	13	BADD	IW	13.50	15.21
5N-4E	23	BABB	IW	15.58	16.87
5N-4E	24	AACD	IW	16.80	18.11
5N-5E	7	CADD	IW	59.21	62.24
5N-5E	20	BCCD	IW	18.45	19.49
5N-5E	21	DDBB	IW	52.51	55.7
5N-5E	29	CBBB	IW	11.65	12.43
5N-5E	33	AADD	IW	16.87	18.15

OW - OBSERVATION WELLS

IW - IRRIGATION WELLS

Exhibit C

Big Blue River Regulatory Area Wells					
Registration Number	Location T-R-S	Completion Date	Depth (FT)	Registration Pumping Capacity (GPM)	Filing Date
G-036485	4N-5E-11BC	3/28/1972	82	750	4/24/1972
G-038314	4N-5E-2DD	1/16/1973	188	1,300	1/29/1973
G-047820	4N-5E-12BB	11/1/1975	117	1,200	12/4/1975
G-050086	5N-5E-33AD	5/26/1976	123	800	6/9/1976
G-054047	4N-5E-24BB	3/1/1976	84	800	1/6/1977
G-054260	4N-5E-14AA	6/1/1974	70	800	1/14/1977
G-054261	4N-5E-14AB	5/2/1970	70	800	1/14/1977
G-056152	4N-5E-4BB	4/14/1977	91	1,000	5/11/1977
G-059128	5N-5E-29AA	4/25/1977	60	400	1/4/1978
G-059727	5N-5E-33CB	4/19/1978	91	1,200	4/20/1978
G-081769	4N-5E-13CD	4/22/1994	65	250	6/24/1994
G-100788	5N-5E-29AB	3/19/1999	65	500	6/2/1999
G-110669	4N-5E-13CC	7/12/1995	64	375	6/29/2001
G-110847	4N-5E-3DA	5/4/1979	82	800	7/2/2001
G-110849	5N-5E-29DD	4/30/1983	102	800	7/2/2001
G-151969	5N-5E-33BB	12/11/2008	112	800	1/20/2009
G-155061	4N-5E-10BB	12/4/2009	98	800	1/27/2010
G-166637	5N-5E-33BC	03/20/2013	120	1,200	3/28/2013

Little Blue River Regulatory Area Wells					
Registration Number	Location T-R-S	Completion Date	Depth (FT)	Registration Pumping Capacity (GPM)	Filing Date
G-058158	2N-2E-16AD	8/15/1977	29	650	9/6/1977

Exhibit D

Attachment L

Big Blue River Compact – Water Quality Committee Meeting
5/10/2021 - 12:30-2:30 - via Zoom

W Don Nelson, Compact Chair wdonnelson@gmail.com
Dan Howell, Marshall County, Farmer-Rancher
Josh Olson, KWO, Hydrology & Evaluation josh.olson@kwo.ks.gov
Tom Stiles, KDHE, Bureau of Water thomas.stiles@ks.gov
Amanda Reed, KDHE, Watershed Management amanda.reed@ks.gov
Michelle Probosco, KDHE, Planning & Standards michelle.probasco@ks.gov
Scott Nelson, LBNRD, General Manager snelson@littlebluenrd.org
Tyler Goeschel, LBNRD, Assistant Manager tgoeschel@littlebluenrd.org
Craig Romary, NDoA, Pesticides craig.romary@nebraska.gov
Ryan Chapman, NDEE, Planning & Aid ryan.chapman@nebraska.gov
Tara Anderson, NDEE, WQS tara.anderson@nebraska.gov
Brian Barnes, NDEE, 303d & TMDL brian.barnes@nebraska.gov
Brandon Beethe, NDEE, 319 brandon.beethe@nebraska.gov
Zach Reid, NDEE, 319 zach.reid@nebraska.gov

NDEE Updates

- Integrated Report (IR) – 2020 IR is under review by EPA R7. Maps and tables with specific impairments were shared and discussed. There are 101 stream segments in the basin in NE and 43 lakes. Of those, 33 stream segments are impaired and 30 lakes are impaired. Most common impairments include *E. coli* (recreation) and atrazine (aquatic life) in streams and total nitrogen, total phosphorus, and mercury (fish consumption advisor) in lakes.
- Total Maximum Daily Load (TMDL) – Approved TMDLs for *E. coli* and atrazine is most of the stream segments and a total phosphorus and sediment TMDL for Big Indian Lake.
- National Pollutant Discharge Elimination System (NPDES) permits – There are roughly 100 permitted facilities in the basin in NE including 12 Major Dischargers (>1 MGD flow).
- Section 319 (Nonpoint Source) activities – Three 9-element management plans and associated projects:
    - LBNRD - district-wide, accepted 9-element basin management plan in place since 2018. Priority areas where projects are either initiated or are ongoing include:
        - Crystal Lake, Ayr, NE - Serve as a watershed management demonstration site, focusing on NPS. Completed rehabilitation of Crystal Lake, including sediment removal, wetland development, reseeding, and park improvements.
        - Big Sandy Watershed - Currently an NWQI area. 319 and NRD funds will supplement cost-share provided through EQIP. Focus is on impairments *for E. coli* and Atrazine, with concurrent benefits of reducing soil and nutrient loss.
        - Vadose Zone Assessment (NRD-wide) - Follow up with vadose zone assessment after initial study was done approximately 5 years ago. Goal is to track nitrate improvement under various land use and conservation practices.
        - Rainwater Basins Wetland Renovation - Ducks Unlimited, in conjunction with RWBJV, is renovating 4 public wetlands including land treatment in the upland drainage area.
    - UBBNRD - district-wide, accepted 9-element watershed management plan and a Voluntary Integrated Management Plan (VIMP). Priority areas in the 9-element plan include Recharge Lake near York (impaired for nutrients) and the West Fork of the Big

Blue (impaired for Atrazine). Special emphasis for Public Outreach will be given to nitrate in groundwater, in particular, working with individual communities on addressing NPS pollution in Wellhead Protection Areas.
        - UBBNRD is currently developing a project implementation plan for Beaver Creek and Recharge Lake watersheds. This included a recently hosted a open house in York to discuss the Water Quality Management Plan with Targeted Stakeholder groups.
    - LBBNRD - 9-element basin management plan in place, effective 2013.
        - Turkey Creek – NWQI partnership with LBBNRD, NDEE, NRCS and the city of Wilber for Turkey Creek (impaired for Atrazine and E. coli) and City of Wilber's Wellhead Protection Area (groundwater nitrate).
        - LBBNRD is nearing the completion of a 319 project to rehabilitate Cub Creek 12A reservoir. The project is scheduled to be completed by August 2021.

Little Blue NRD updates

- NRCS BMPs for flood control (NRCS WFPO Project - Improve flood control and drainage to K-Dike to better protect the Village of Kenesaw)
- 319 – instream weirs to slow water down above Kenesaw & Juniata
- 319 Prairie Lake Project – in lake improvements and construction of a sediment basin above the lake
- Bowman Springs Ranch Site 3-D PL566 structure repair southeast of Hebron
- G&P renovation project at Alexandria State Lakes
- Plan to focus on WHP programs with communities

KDHE Updates

- 303(d) Listings
    - Nutrients (phosphorus), sediment, bacteria, atrazine in both Big and Little Blue watersheds at the state line; Copper impairment in the Little Blue watershed at the state line and above Tuttle Creek; biological impairments abound
    - Alachlor in Tuttle Creek no longer an impairment
- TP TMDLs for Big and Little Blue watersheds approved July 2020
    - ~ 80% of loads entering Tuttle Cr Reservoir via Big Blue R originate in Nebraska
- TMDLs developed to apply nutrient limits at discharging facilities versus adopting nutrient criteria
    - Kansas would like to discuss with Nebraska possible nutrient reduction from major dischargers
- 319 Program
    - Focusing on Atrazine, Bacteria, and sediment (from water storage standpoint)
    - Lots of work on soil health through 319 watershed plan as well as several external efforts to increase adoption including $3.5M SRF loan for seeding equipment as well as a state funded Kansas Reservoir Protection Initiative for about $0.5M per year for cover crop implementation.
    - Additionally, working with the Kansas Water Office, Kansas Department of Agriculture, Kansas Forest Service on streambank stabilization projects above the reservoir utilizing $1.5M annually from Clean Water State Revolving Fund and state funding.
    - KS has a Kansas Basin Regional Advisory Committee that serves the Kansas Water Authority to guide planning and project priorities – Dan Howell. Dan sits on this committee as well as the Kansas RAC.

KWO update

- Water Injection Dredging potential project, Josh Olson
    - 46% of Tuttle Creek Storage lost to sediment
    - Previous projects to dredge other reservoirs both costly and limited in resilancy
    - WID never been attempted on a reservoir, Corps interested in piloting project at Tuttle Creek
    - Considerations remain as to downstream impacts, resiliency of recovered storage and costs

Producer update

- Discussion focused on focus on soil organic matter and water infiltration rate, Dan Howell. Potentially tie this to farm programs/payments.

Attachment M

RESOLUTION OF THE KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
HONORING
Gordon “Jeff” Fassett

WHEREAS, Mr. Gordon “Jeff” Fassett served as a Representative of the State of Nebraska on the Kansas-Nebraska Big Blue River Compact Administration from 2016 to 2019; and

WHEREAS, Mr. Fassett has voluntarily elected to resign as Director of the Nebraska Department of Natural Resources and from the Kansas-Nebraska Big Blue River Compact Administration; and

WHEREAS, Mr. Fassett did faithfully and diligently serve on the Compact Administration and its Committees as the Representative of the State of Nebraska providing excellent representation and positive input and attitude.

NOW THEREFORE, BE IT RESOLVED, that the Kansas-Nebraska Big Blue River Compact Administration does hereby acknowledge and express its appreciation for the contributions of Jeff Fassett to this Administration and extends to him the best wishes for continued good health and happiness in all of his future endeavors; and

BE IT FURTHER RESOLVED, that this resolution be entered into the records of the 2021 Annual Compact Commission Meeting Minutes and the 2021 Annual Report and that the Compact Secretary be instructed to send a copy of the Annual Report to Mr. Fassett.

Entered this 13th day of May, 2021, at the Annual Meeting of the Kansas-Nebraska Big Blue River Compact Administration in Manhattan, Kansas.