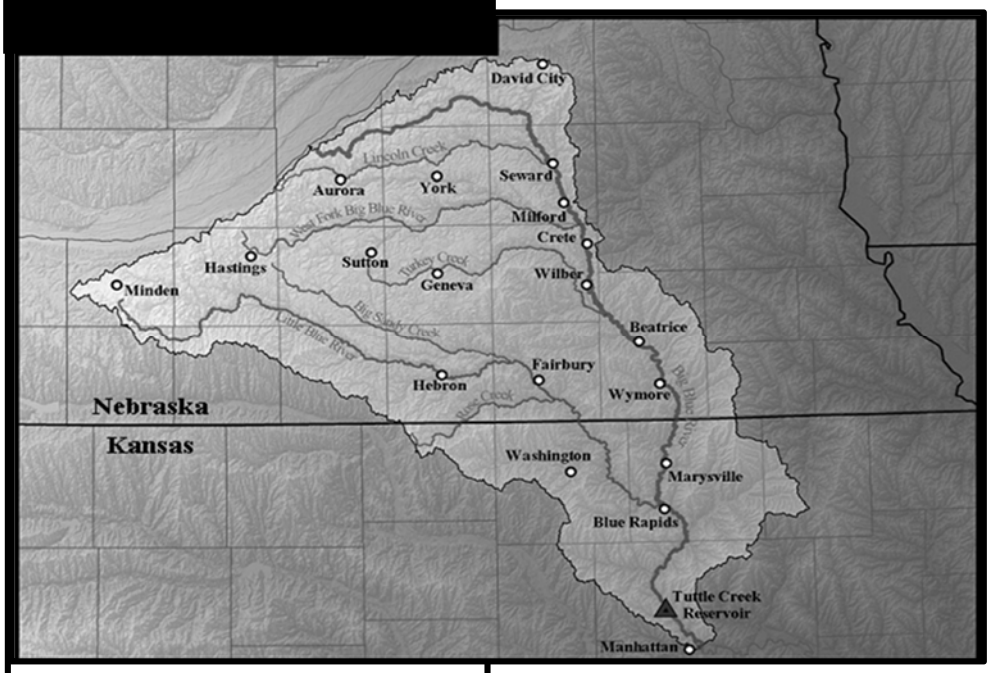
KANSAS-NEBRASKA
BIG BLUE RIVER COMPACT

FORTY SECOND
ANNUAL REPORT



FISCAL 2015

Manhattan, KS
May 13, 2015

KANSAS – NEBRASKA BIG BLUE RIVER

COMPACT ADMINISTRATION

May 18, 2016

The Honorable Barack H. Obama
President of the United State of America

The Honorable Sam Brownback
Governor of Kansas

The Honorable Pete Ricketts
Governor of Nebraska

Pursuant to Article VIII, Section of the Rules and Regulations of the Kansas-Nebraska Big Blue River Compact Administration, I submit the Forty Second Annual Report. The report covers the activities of the Administration of the Compact for the Fiscal Year 2015 while I was the presiding Federal Chairman.

Respectfully,

W. Don Nelson

Federal Compact Chairman

Table of Contents

April 15, 2015

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

Jim Schneider, Acting NE Commissioner
Kansas-Nebraska Big Blue River Compact
301Centennial Mall South, 4th Floor
P.O. Box 94676
Lincoln, NE 67508

Sharon Schwartz, Kansas Advisor
Kansas-Nebraska Big Blue River Compact
2051 20th Road
Washington, KS 66968

Larry Moore, Nebraska Advisor
Kansas-Nebraska Big Blue River Compact
215 Donegal
Aurora, NE 68818

Dear Compact Members:

Kansas is hosting the annual meeting of the Big Blue River Compact Administration on May 13th, 2015 at 9:30 a.m. The meeting will be held at the Offices of the Kansas Department of Agriculture, located at 1320 Research Park Drive, Manhattan Kansas.

A tentative agenda has been included with this meeting notice. If there is anyone who you believe should be aware of this meeting that did not receive notice, please inform them.

Sincerely,

David W. Barfield, P.E.
Chief Engineer

PC via e-mail: Marty Link, Annette Kovar, Rich Reiman, Dan Howell, Tom Stiles, Katie Tietsort, Robert Large, Chris Beightel, Greg Foley, Galen Beiry, John Turnbull, Dave Clabaugh, Daryl Anderson, Mike Onnen, Jason Lambrecht, Kent Askren, Jeremy Gehle, LeRoy Sievers, Melissa Mosier, Mandi Maser, Craig Romary, Curt Inbody, Bob Lorenz, Darrel Rains

Kansas-Nebraska Big Blue River Compact Administration
42nd Annual Meeting

May 13, 2015
9:30 am
Kansas Department of Agriculture
1320 Research Park Drive
Manhattan, KS

AGENDA

1. Call to Order
2. Introductions and Announcements
3. Minutes of and the Forty First Annual Meeting and Report
4. Chairman's Report
5. Nebraska Report
6. Kansas Report
7. Secretary's Report
8. Treasurer and Budget Report
9. United States Geologic Report
10. Legal Committee Report
11. Engineering Committee Report
12. Water Quality Report
13. Resolutions Recognizing Former Compact Members
14. Old Business
15. New Business
16. Committee Membership and Special Assignments
17. Adjourn

MINUTES OF THE 42nd ANNUAL MEETING
OF THE
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION

Call to Order

The Forty-Second annual meeting of the Kansas-Nebraska Big Blue River Compact Administration was held on May 13, 2015 in the Kansas Department of Agriculture Office in Manhattan, Kansas. The meeting was called to order at 9:30 am by Compact Chairman, W. Don Nelson.

Mr. Nelson asked if there were any additions, suggestions or changes needed to the proposed agenda (Attachment A). Mr. David Barfield with Kansas proposed two changes. The first was to request the Kansas report be moved ahead of Nebraska's to allow Rep. Schwartz to participate prior to her early departure due to legislative duties. The second change requested was to add an opportunity for public remarks before we adjourn. These were adopted by the Administration. Mr. Nelson indicated that while he was informed by legal counsel that the Administration is not subject to the Kansas open meeting laws, that the administration will still conform to them.

Mr. Nelson introduced himself and suggested that those in attendance introduce themselves.

Introductions

Those in attendance were:

W. Don Nelson	Compact Chairman
Tim Freed	Nebraska Department of Natural Resources
Curt Inbody	Nebraska Department of Natural Resources
Kayla Sharp	Nebraska Department of Natural Resources
Kathy Benson	Nebraska Department of Natural Resources
Jen Rae Wang	Nebraska Department of Natural Resources
Mike Onnen	Little Blue Natural Resources District, General Manager
Rodney DeBuhr	Upper Big Blue Natural Resources, Assistant District General Manager
Marty Link	Nebraska Department of Environmental Quality
Tom Stiles	Kansas Department of Health and Environment
Larry Moore	Nebraska Compact Advisor
Jim Schneider	Acting Director of Nebraska Department of Natural Resources
Rachel Herpel	Nebraska Water Center at the University of Nebraska
Robert Large	Chief Council for Kansas Department of Agriculture
Katie Tietsort	Topeka Field Office Water Commissioner, Kansas Department of Agriculture, Division of Water Resources
Sharon Schwartz	Kansas State Representative, Kansas Compact Advisor
David Barfield	Chief Engineer, Kansas Department of Agriculture, Division of Water Resources
Jason Lambrecht	United States Geological Survey
Dave Clabaugh	Lower Big Blue Natural Resources District, General Manager
Jeremy Gehle	Nebraska Department of Natural Resources, Data Collection
Bob Lytle	Compact Secretary, Kansas Department of Agriculture, Division of Water Resources
Greg Foley	Director of Conservation, Kansas Department of Agriculture
Trever Ahring	Kansas Groundwater Management District #3
Chris Beightel	Kansas Department of Agriculture, Division of Water Resources

Jesse Bradley Nebraska Department of Natural Resources

Approval of the Minutes of the 41st Annual Meeting

Compact Chairman Nelson noted that he was not at the previous annual meeting and inquired if any additions or corrections to the minutes were needed. Hearing none, a motion was made and seconded for the adoption of the minutes of the 41st annual meeting of the Big Blue River Compact. The motion was passed.

Chairman's Report

Mr. Nelson indicated in his report that he had spent a fair amount of time getting acquainted with the previous chairman and others in the Basin. He was able to participate in the meeting of the water quality committee in Beatrice, Nebraska, spent time acquiring information from three Nebraska Natural Resources Districts, collected data related to Basin metrics, and studied Basin maps.

Mr. Nelson publishes the Prairie Fire newsletter, a monthly policy newsletter that was launched in June 2007.

Kansas Report

David Barfield, gave the Kansas Report and provided a handout (Attachment A). He began the report by indicating he would discuss some items and other members of the Kansas delegation would provide additional report information.

In October 2013, Kansas Governor Sam Brownback challenged the Kansas Water Authority, the Kansas Water Office and Kanas Department of Agriculture to craft a 50-year vision for the state to improve water management and have a more sustainable future within the state of Kansas. The Vision has happened in two parts; the first was to identify a statewide vision. The two dominant issues were, managing and extending the life of the Ogallala Aquifer which is in decline, and extending the life of our reservoirs in eastern Kansas which are losing capacity due to siltation. One of the guiding principles is that local solutions are the best. For the second part of the Vision process, the state was divided into 14 planning regions where about 10 individuals per planning region were recruited to take the lead in developing regional goals.

On Legislative issues, Mr. Barfield highlighted three bills related to water. In 2012, legislation was passed to allow for the creation of Local Enhanced Management Areas (LEMAs) that allow Groundwater Management Districts to work with stakeholders in areas of decline to develop local plans to reduce use. Some stakeholders expressed interest in specific plans and a more expedited process than the LEMA requires. This year's Legislature passed a law allowing for the creation of Water Conservation Areas (WCAs), and we are now working on implementation and providing materials. WCAs allow a group of water right holders to develop a process for moving a reduced quantity of water around in their area more effectively, and maximize economic value of the reduced use. KDA is also working on a bill for Multi-Year Flex Account participants to be able to carry-over unused water to the next application period instead of losing it. Another bill being considered would allow the Chief Engineer to allow the use of augmentation as a solution to impairments rather than relying solely on reductions in use.

Kansas Advisor, Representative Sharon Schwartz elaborated on the augmentation bill, that a lot of people hoped that it could happen all across the state. It was pretty controversial because people thought augmentation might be required of them. The legislative committee compromised to keep it in the Rattlesnake Creek basin to see if it works there, with the intent of expanding augmentation's availability

to other areas as needs arise. Representative Schwartz asked Greg Foley, Director of Conservation, to provide information about watersheds. He explained that 404 permitting process in EPA region 7 changed three years ago requiring perpetual easements. Kansas Department of Agriculture (KDA) became a third party easement holder of these easement to assist in the process as the EPA would not allow watershed districts to hold them.

Representative Schwartz discussed the money awarded to Kansas from Kansas v. Nebraska concerning the Republican River Compact. Kansas statute defines how litigation money is to be used, requiring the majority of the award to go to the Attorney General to recover costs of the litigation, with little left go to the stakeholders in the Republican River Basin. The Legislature is working on a proviso in the budget to get more of the award money to the people who were without water through the years to pay for irrigation improvements.

Representative Schwartz presented information on the WRAPS program and provided handouts (Attachment B). Stream bank stabilization efforts are underway in the Big Blue Basin. Two million dollars was requested for stream bank stabilization but only $750,000 was ultimately put in the budget and another $400,000 was taken from other budget line items. Pictures were provided showing where shoring up and restoration work had been done along with maps indicating three locations with issues and loss of storage at Tuttle Creek Reservoir.

David Barfield added to his report on the Republican River. On the 2010 litigation, Kansas, Nebraska and Colorado have been working hard to resolve separate disputes that have arisen. The states have been meeting monthly and have made great progress.

Katie Tietsort provided a handout to accompany her report (Attachment C). She reported that last year Kansas administered minimum desirable stream (MDS) flows in the Little Blue River on August 4th and on the Big Blue River starting on August 5th. The basin has since had some rain and KDA-DWR has been able to issue some stays. In 2014 KDA-DWR did administer quite a few basins statewide. 604 MDS orders were initiated last year to protect water assurance district water and water marketing contract holders, basically water supply and water quality water coming out of federal reservoirs. Thus far, in 2015 there are already 241 MDS orders out.

Kansas's compliance and enforcement program continues. In the Big Blue River Basin KDA-DWR administered against the owners of four water rights. They were pretty small overall, two were civil penalties that moved into suspension related to over-pumping. There were a couple of additional penalties. The Division has sealed meters. If an owner finds themselves in a repeat violation situation, KDA-DWR can order that their meter be sealed in place to their diversion works. Kansas has 37 cease diversion orders in place to people who are not pumping and who chose not to install meters when the meter order went out within the Compact area.

There have been 21 new appropriations, a couple of new term and temporary permits in the compact area – 11 groundwater, 10 surface water, 2 public water, and 9 irrigation. There continues to be an influx of small ponds being permitted, some are non-jurisdictional. These folks tend to pump from surface water streams in the off-season – October 1 through June 30 – and rely on the water stored in their small ponds for use July 1 through September 30.

Last year September 22, a significant meter order involving 1,020 points of diversion was issued on the Kansas River. Only about 300 have not installed meters. They have until December 2016 to have this done. KDA-DWR has been working to get inspections done. Tuttle Creek Reservoir and several other Kansas reservoirs are operating under a temporary deviation from the US Army Corps of Engineers, storing 5% into the flood pool. KDA-DWDR had accumulated a backlog of pending applications,

particularly when the drought term permitting program was going. Last year at this time there were 200+ applications pending in the eastern third of the state. Now there are only 123 pending.

Nebraska Report

Jim Schneider gave the Nebraska report. The year 2014 was an improvement over the year 2013 generally moving from the majority of the basin being in drought to essentially none. The precipitation was generally above average, the temperature was generally below average, with one period of water administration.

Nebraska currently has 13 integrated management plans in place. These are joint plans between the Department and local Natural Resources Districts.

Nebraska is now initiating the development of basin-wide plans, the first is in the Republican River Basin, as required by legislation that was passed last year (LB1098). The process started with a stakeholder meeting and additional meetings are scheduled out through June. Basin-wide plans are also being initiated in the Lower Platte River Basin and the Niobrara River Basin. The Upper Platte River Basin already has a basin-wide plan and will start work on another increment of that plan in 2016, to be completed by the end in 2019.

LB1098 also established a water sustainability fund, to be funded at $11 million a year. There are eight goals: 1) to provide financial assistance to programs, projects, or activities that increase aquifer recharge, reduce aquifer depletion and increase streamflow, 2) mediate or mitigate threats to drinking water, 3) promote the goals and objectives of approved integrated management plans or groundwater management plans, 4) contribute to multiple water supply management goals, including flood control, reducing threats to property damage, agricultural uses, municipal and industrial uses, recreational benefits, wildlife habitat, conservation and preservation of water resources, 5) assist municipalities with the cost of constructing, upgrading, developing and replacing the sewer infrastructure facilities as part of a combined sewer overflow, 6) provide increased water productivity and enhanced water quality, 7) use the most cost effective solutions available, and 8) comply with interstate compacts' decrees, interstate contracts and agreements and federal law.

DNR is still working towards finalization of new rules for the evaluation of hydrologically connected groundwater and surface water area for the purpose of making fully appropriated designation as necessary. We anticipate a hearing in the next few months.

DNR wants to thank Kansas for their partnership we have been able to develop over the past ten months on Republican River issues.

Curt Inbody continued with Nebraska's water administration report with a handout (Attachment D). As climatic conditions improved this past year, surface water administration efforts were less extensive than the previous two years. In the Little Blue Basin there were 249 irrigation permits and 132 storage rights closed from July 23 until August 11. In the Big Blue Basin, 833 irrigation and 359 storage rights were closed from July 29 to August 11.

Larry Moore, Nebraska Compact Advisor, added his comments to Nebraska's report. He noted that if Nebraska were a separate country, it would be the ninth in irrigated area. He commended those in the room for their work on water management in the basin. While there has been some friction between the surface and groundwater users, this has seem to be mostly a period of growing pains, with things improving over time.

Lower Big Blue NRD Report

Dave Clabaugh gave his report on the Lower Big Blue NRD. For the Big Blue River Compact, LBBNRD monitors 32 wells in the Blue River Basin located within a mile of the River. In those wells, LBBNRD has seen declines averaging approximately 7 feet. The District's groundwater rules and regulations are based on a 1982 baseline level. The District's rules and regulations require certain actions when District water levels fall 5 feet below this baseline for three consecutive years. They are approaching this threshold. Last year the District revised their rules and regulations, instituting a scoring or ranking system to determine where new irrigation wells will be allowed based on depth of aquifer and other factors. Finally, the District experienced major flooding this spring, with 14 of 19 dams in the Swan Creek watershed seeing water flowing through their emergency spillways.

Little Blue River NRD Report

Mike Onnen with Little Blue River NRD gave a brief report. Mike provided a handout with his report (Attachment E). He reported that they continue in the third year of a project with the Twin Valley Weed Management District to clear the Little Blue River to enhance the flow and keep water in the middle of the channel. The District approved 131 permits last year including 34 replacement wells and 18 wells tied in a series. The average irrigation water application for 2014 crop year was 6.1". Wateruse reporting will be required this year, it is anticipated that a much more representative look at total pumpage will emerge next year. The District adopted new groundwater rules and regulations in May 2014. Due to shortage of meters installers, the deadline for Northeast Quarter Sections wells to be metered was extended. They also extended the deadline to certify acres due to GIS database consolidation taking longer than anticipated. Last year the District sampled 1,794 wells for water quality and found the average is nearly 8.48 ppm of nitrate. The District has declared two more sub-areas as high nitrate areas. The District is developing a watershed plan, looking at quantity and quality needs for both ground and surface water for the coming 20-25 years. The District is doing a number of dam rehabilitations with nine dams submitted for assessments by the NRCS under the Watershed Dam Rehabilitation Program.

Upper Big Blue NRD Report

Rod DeBuhr provided a report for the Upper Big Blue NRD. His report is Attachment F. The District issued 163 new well permits. They now have 12,135 irrigation wells in the District. The District has been certifying irrigated acres since 2006 and as of January 2015 there were over 1.2 million acres certified. Average water use for irrigation in the District for 2014 was 4.6" per acre. Revision to the District's groundwater rules and regulations went into effect this past year, establishing High Risk Groundwater Areas. The District started a project to sample for naturally occurring contaminants in the groundwater. The District also started a project called CROP-TIP designed to show producers methods to reduce groundwater withdrawals and reduce leaching nitrate through improvements in irrigation methods.

Secretary's Report

Copies of the 41st annual report for the 2014 annual meeting held in Beatrice, Nebraska were made available. There was discussion on whether there would be a way to streamline the process to develop annual minutes but no decision was made.

Treasurer and Budget Report

Kayla Sharp provided handouts of the Treasurer's Report and Budget Report Analysis (Attachment G). At the end of the fiscal year, the balance was approximately $18,000, down $1,800 from the previous year. In addition to reviewing the year's income and expenditures, the Administration reviewed the budget analysis which shows a downward trend in end-of-year balances over time. This led to a

discussion of when state assessments should be increased. It was moved to increase the state assessments from $8,000 to $9,500 beginning July 1, 2015. It was seconded and adopted.

United States Geological Survey Report

Jason Lambrecht of the U.S. Geological Survey provided his report (Attachment H). The USGS operates two streamflow gaging stations for the Compact Administration. For water year 2014 USGS made 16 measurements at Barneston and 13 at Hollenberg. Overall, both sites were well below the historical median daily discharge this year.

Legal Committee Report

There was no legal report at the meeting.

Engineering Committee Report

A report was submitted and provided to all in attendance (Attachment I) by Jeremy Gehle. He indicated that much of his information was previously covered throughout reports already given. In 2014, flows on the Big Blue River near Barneston were below target flows for 12 days, and below target flows on the Little Blue River near Hollenberg for 17 days.

Water Quality Report

The committee met last week in Beatrice, NE. Both states have been active in crafting the TMDLs will allow waters to regain and re-attain water quality standards. For both states, *E.coli* bacteria has been the focus. Both Little Blue and Big Blue are targeting phosphorus for TMDL development in 2019. Attached is information provided and discussed at the meeting concerning Atrazine concentrations and an increase in total phosphorus (Attachment J). This year Nebraska became the first state to adopt EPA's newly recommended criteria for ammonia. Kansas plans to follow suit with final adoption slated for early 2017. Nebraska has five projects under Section 319 Non-point Source Activities and planning. Kansas is implementing BMPs through its WRAPS watershed group.

Resolutions Recognizing Former Compact Members

The following resolutions were moved, seconded and unanimously approved by the Compact Administration:

A Resolution of Appreciation honoring Gary Mitchell for his service to the Compact for 12 years (Attachment K).

A Resolution of Appreciation honoring Ken Regier for his service to the Compact for 23 years (Attachment L).

A Resolution of Appreciation honoring Brian Dunnigan for his services to the Compact for 6 years (Attachment M).

Old Business

There is no old business of the Administration.

New Business

The next meeting will be May 18th, 2016 at Kansas Department of Agriculture

Committee Membership and Special Assignments

There are no changes to the existing assignments.

It was moved to adjourn, and seconded. Meeting adjourned.

W. Don Nelson, Compact Chairman

Gordon "Jeff" Fassett, Nebraska Commissioner

David W. Barfield, Kansas Commissioner

Attachment A

Report of the Kansas Commissioner
to the
BIG BLUE RIVER COMPACT ADMINISTRATION
at the
2015 Annual Meeting
Manhattan, Kansas
May 13, 2015

1. **Transition to Manhattan** – The Kansas Department of Agriculture moved into its new office in Manhattan, Kansas during June 2014. Our new building is a significant improvement to our previous facilities and allows us to improve our working relationships with the Agriculture community. As part of our move, 100,000's of documents were imaged.

2. **Water Vision process:** In October 2013 Governor Brownback issued a call to action to his Administration to develop a long-term plan for the future of water in Kansas. He specifically charged the Kansas Dept. of Agriculture, the Kansas Water Office and Kansas Water Authority to take the lead in crafting the water vision for the state. After an extensive stakeholder outreach process, including more than 500 events and more than 15,000 participants, a final draft of the Vision was presented to the Governor in November 2014. The Vision outlines the strategies and specific action items, arranged in the categories of Water Conservation, Water Management, Technology and Crop Varieties and Additional Sources of Supply, to ensure a reliable long-term water supply for the state.

   Regional Goal Teams: A guiding principle of the Vision is that locally driven solutions have the highest opportunity for long-term success. With that in mind, the Vision outlines a process for water supply goals to be established by regions by stakeholders as a means for measuring success and implementing the Vision. A Regional Goal Leadership Team consisting of 9 to 11 individuals per region has been identified by the Kansas Water Authority to represent 14 planning areas. For the past three months, each team participated in a public scoping process in their region and developed draft goals for their region based on public input and available resource condition information. These teams will present the draft goals to the Kansas Water Authority on May 20th.

3. **Legislation:** The following legislative initiatives were proposed in the Vision and we anticipate successful adoption by the Kansas Legislation this Session.
   - A Water Conservation Area (WCA) is a designated area with an approved management plan developed by a water right owner or group of water right owners with the consent of the chief engineer to reduce water withdrawals while maintaining economic value via water right flexibility.
   - Multi-Year Flex Account (MYFA) Carry Over would allow MYFA participants who re-enroll in a new MYFA to carry over any unused quantity in the amount of up to one year's allocation. In addition, applicants would be allowed to apply for a change in place of use of up to 10 acres or 10% of the place of use if someone wants to go to a more efficient system.
   - Augmentation can be formally recognized as a tool that the Chief Engineer can use as part of an order to rectify impairment. This tool only applies to the Rattlesnake Creek Basin.

4. **Regulations:** With the focus on the transition of our new headquarters office to Manhattan, the water vision processes, and seeking to reduce processing backlogs, no significant regulatory changes were made in the past year.

5. **Climate Conditions:** Katie Tietsort's report provides an overview of climatic conditions in the basin in Kansas. While we continue to have shortages, 2014 and 2015's return to near normal conditions is a relief from recent extreme years.

Attachment B

Long Vision for the Future of Water Supply in Kansas – Draft II
Reservoir Sedimentation At-a-Glance Guide

Pg 8: OVERVIEW

There are many challenges to managing reservoir supplies, such as: protecting the reservoirs from losing storage from sedimentation, identifying a method to pay for additional storage as well as operation and maintenance costs, increasing storage at key reservoirs to regain storage already lost to sedimentation and reducing or eliminating the Corps releases of water from Kansas River reservoirs to support navigation on the Missouri River. This is a practice of marginal benefit to the nation and detrimental to Kansas interests. Actions currently underway to secure, protect and restore reservoir water supply include watershed restoration and protection activities such as streambank stabilization, reallocation of storage and removal of sediment through dredging.

Pg. 22: INCREASE ADOPTION OF WATERSHED PRACTICES THAT REDUCE FUTURE WATER SUPPLY LOSS

RESERVOIR ACTION ITEMS

PHASE I-1. Prioritize and implement targeted funding in priority watersheds by working with local, state and federal conservation programs and partnerships

- Utilize existing groups such as conservation districts and KSRE to promote programs and initiatives
- Build on the success of Watershed Restoration and Protection Strategy (WRAPs) plans and engage expertise of stakeholder leadership teams
- Increase utilization and adoption of BMPs by working with local leaders
- Target construction and maintenance of watershed structures that provide the highest sediment reduction in priority watersheds through Watershed Districts

2. Develop a detailed monitoring strategy to assess current & ongoing sediment inflow into public water supply reservoirs

- Prioritize basins that will need assessment
- Identify all components of the monitoring strategy, including bathymetry and inflow stream sediment monitoring network
- Define a strategy to identify particular sub-basins that contribute the most significant loading rates

PHASE II - 1. Continue and enhance support of research of Best Management Practices (BMPs)

- Focus additional resources to assure installed BMPs are maintained
- Develop a BMP guide that is geared for urban and rural communities that also addresses economic benefits of conservation
- Develop or utilize existing research to quantify the financial impact of in-field soil loss to agriculture and the impacts to water supply storage

2. Develop a budget to identify costs associated with monitoring, assessment and program implementation on a watershed-by-watershed basis

Pg. 38: IMPLEMENT RESEARCH-BASED TECHNOLOGY AIMED AT BETTER UNDERSTANDING OUR STATE'S WATER SUPPLY

RESERVOIR ACTION ITEMS

PHASE I -1. Collect sediment cores at federal water supply reservoirs to document continuing rates of sediment deposition

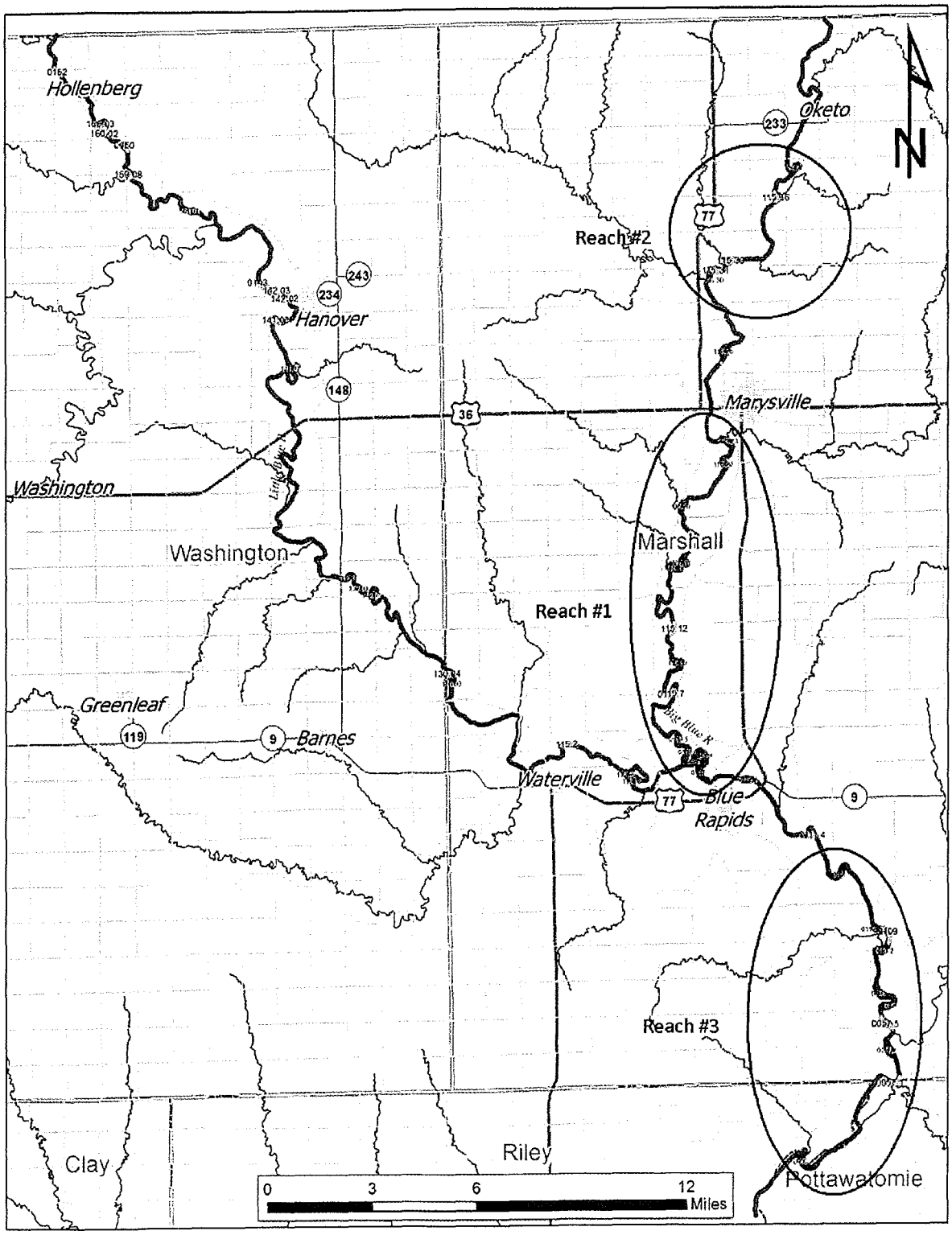
- Sediment core results would be compared with sonar derived water storage changes to develop the most accurate assessment of reservoir changes possible
- Sediment core samples could also be used to identify past and present sources of sediment from watersheds to assess and improve the effectiveness of erosion control measures

Pg. 51: ECONOMIC ANALYSIS – ADDITIONAL SOURCES OF SUPPLY

Studies that evaluate the economic costs and benefits of dredging versus other conservation practices that reduce soil erosion and gully formation will be expanded.

Typical stream site needing restoration

Completed stream restoration site



Top Eroding Streambanks: 1-30 Top Eroding Streambanks: 31-50

Tuttle Creek Watershed Restoration and Protection Strategy (WRAPS)
Big Blue River Stream and Riparian Restoration above Tuttle Creek Reservoir

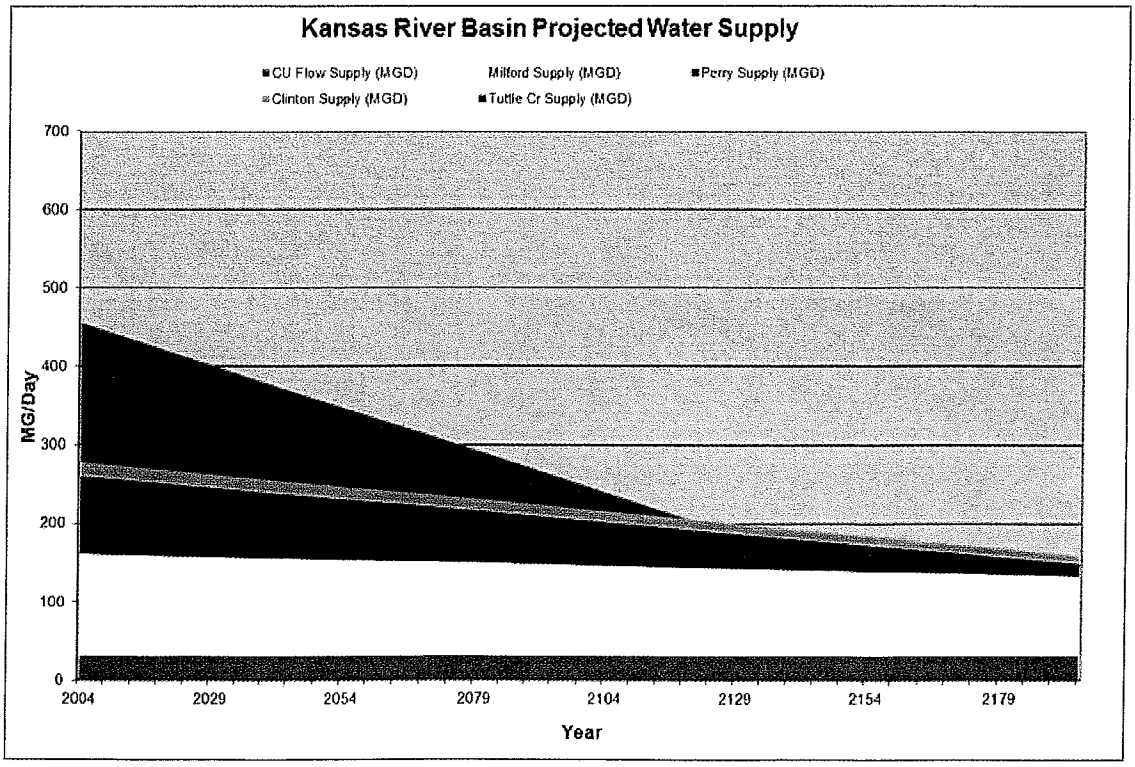
Kansas has purchased water supply storage in 14 federal reservoirs including Tuttle Creek. These reservoirs are an important source of water supply in Kansas, providing water in some manner to approximately two-thirds of the citizens of the state.

During droughts, most of the flow in the Kansas River is the result of releases from reservoir storage (Tuttle plus Milford plus Perry plus Clinton plus some natural flow component). As Tuttle Creek Reservoir's water supply storage capacity declines due to sediment accumulation in the reservoir's conservation pool, the amount of water that Tuttle can contribute declines over time. Most of the negative slope of the supply line in the graph below is the result of sediment accumulation in Tuttle Creek Reservoir.

Tuttle Creek currently has the largest water supply yield of the sources in the graph and has the highest rate of decline of water storage capacity. From a water supply perspective, reducing its rate of sediment accumulation is a primary concern to the state and the municipal and industrial surface water users in the corridor.

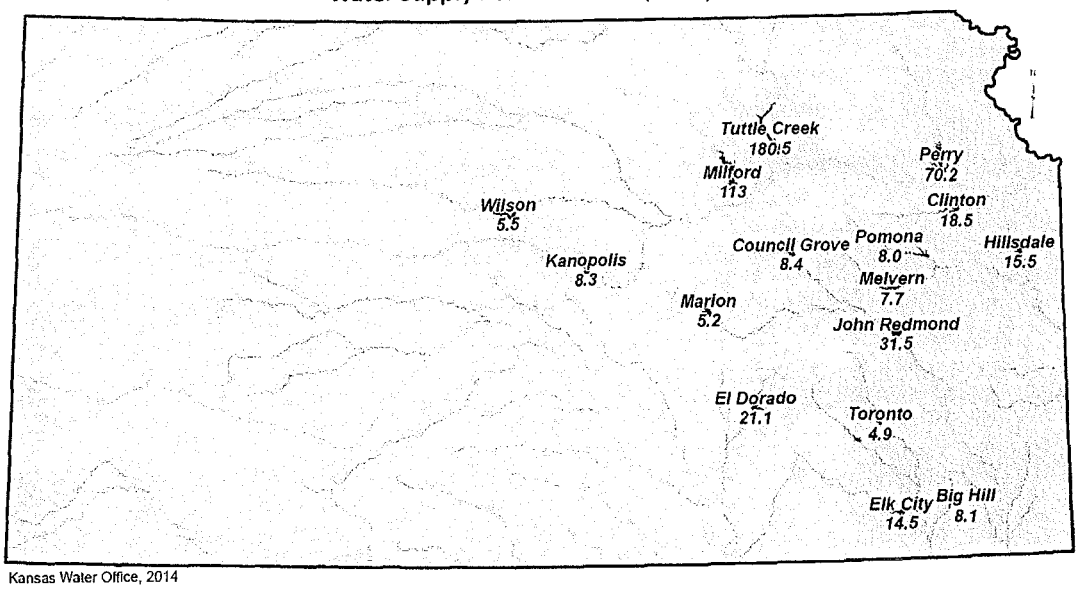
TUTTLE CREEK Reservoir SUMMARY:

- LARGEST water supply yield
- HIGHEST rate of decline of water storage capacity
- REDUCING sediment accumulation is a state priority
- CONCERN for municipal & industrial surface water users in corridor
- MOST of water released into the Kansas River during drought
- STREAMBANK stabilization funding is critical to reducing sedimentation
- ACTION is necessary now to ensure a reliable water supply into the future



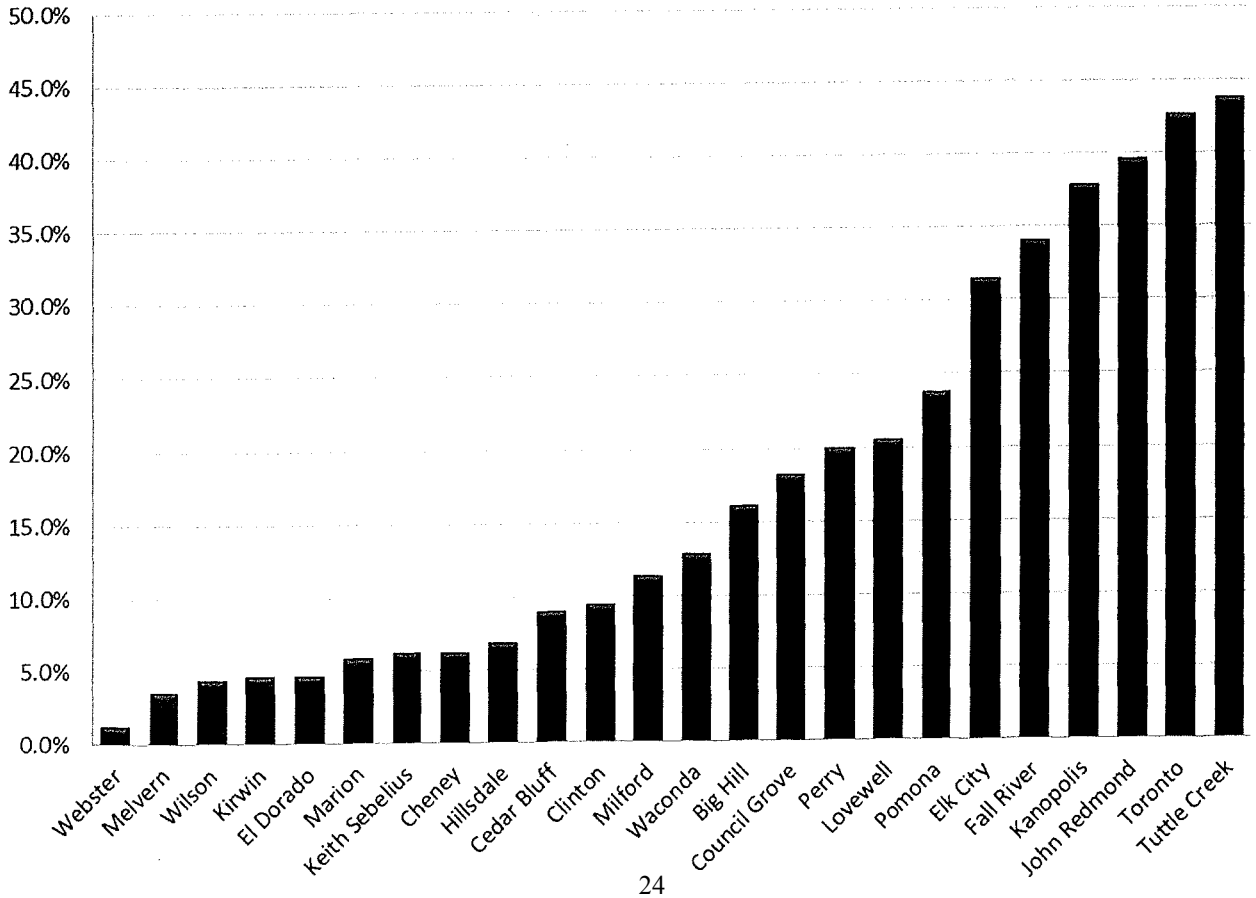
Tuttle Creek Reservoir was completed in 1962 for the purposes of flood control, water supply, water quality and recreation. The reservoir is located on the Big Blue River, and drains 10,000 square miles of grass and cultivated cropland. The Kansas Department of Health and Environment (KDHE) has identified impairments to ecosystem quality because of excessive sediment and nutrient loading into the reservoir.

Water Supply Reservoir Yield (MGD)



Kansas Water Office, 2014

Loss of Storage Capacity



Tuttle Creek Watershed Restoration and Protection Strategy (WRAPS)
Big Blue River Stream and Riparian Restoration above Tuttle Creek Reservoir

Goal: Protect water supply capacity in Tuttle Creek Reservoir.
Objectives:
1. Restore high priority areas of the Big Blue River known to contribute significant sediment loads
2. Stabilize up to 34,781 feet of streambank of the Big Blue River that contributes 215,214 tons of sediment into Tuttle Creek Reservoir each year
3. Restore riparian forest buffers adjacent to the streambank stabilization sites

Tuttle Creek WRAPS first priority is to implement the projects in Reach #1, a 12 mile section of the Big Blue River between Blue Rapids and Marysville. This has been identified as a high priority area for streambank stabilization to reduce sedimentation. All of these streambank sites were identified in the 2010 Kansas Water Office assessment. They contribute 104,111 tons of sediment each year into Tuttle Creek Reservoir. The total length of stream restored is estimated to be 16,061 feet. Erosion is reduced 85% after restoration is completed.

Site Number	Erosion (tons/yr.)	Erosion Rank #	Length (ft.)	Erosion Reduction after restoration (tons/yr.)	Cost
113	13,113	16	2,572	11,146	$183,892
115.7	6,998	39	1,618	5,948	$115,673
115.1	10,020	23	2,020	8,517	$144,396
115.12	7,187	38	1,688	6,109	$120,692
115.17	13,958	14	1,742	11,864	$99,600
115.18	14,527	13	1,791	12,348	$124,539
115.20	12,546	18	1,377	10,664	$98,430
115.22	10,253	22	1,101	8,715	$78,752
115.23	15,509	11	2,152	13,182	$153,842
Total	104,111		16,061	88,494	$1,119,816

Tuttle Creek WRAPS second priority is to implement the projects in Reach #3, a 12 mile section of the river south of Blue Rapids. These streambank stabilization sites are located on U.S. Corps of Engineer land. These sites produce 111,103 tons of sediment each year into the reservoir. Total length of stream restored for these sites is 18,720 feet.

Site Number	Erosion (tons/yr.)	Erosion Rank #	Length (ft.)	Erosion Reduction after restoration (tons/yr.)	Cost
056	14,663	12	4,820	12,463	$344,600
057.2	25,762	2	2,774	21,898	$198,360
0107	15,640	10	3,446	13,294	$246,143
0108	21,031	5	3,113	17,876	$222,587
0108.2	13,852	15	2,844	11,774	$203,346
0110	20,155	6	1,723	17,131	$123,211
Total	111,103		18,720	94,438	$1,338.247

The Kansas Water Authority (KWA) is requesting the Legislature approve **$2 million** from the State Water Plan to construct streambank stabilization projects above Tuttle Creek Reservoir. This request includes $1.2 million for the sites in Reach #1, and $800,000 to construct priority sites in Reach #3. These funds would restore **27,117 feet** of stream and reduce **186,699 tons** of sediment from reaching Tuttle Creek Reservoir each year. This is the equivalent of 18,669 dump trucks each carrying ten tons of sediment.

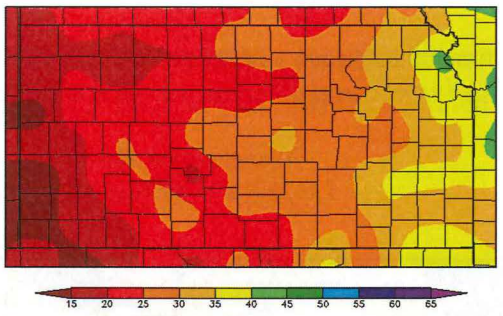
Attachment C

Kansas- Nebraska Big Blue River Compact Meeting 2015
Report by Kansas Department of Agriculture- Division of Water Resources
Topeka Field Office- Katherine A. Tietsort
May 13, 2015

Climatic Conditions- Precipitation & Temperatures

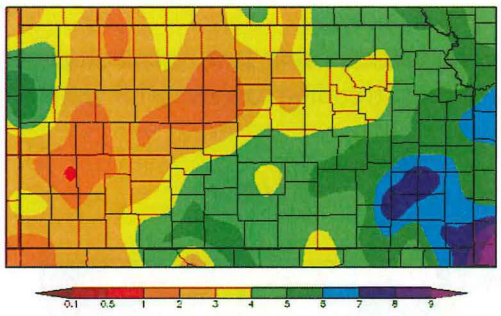
The High Plains Regional Climate Center reported between 20 and 35 inches of precipitation in calendar year 2014 across the entire Big and Little Blue River basin area in Kansas, including their tributary basins, the Mill Creek and Black Vermillion River and reported 2 to 5 inches so far this year through April 20. While this value compares to the 20 to 40 inches of precipitation in calendar year 2013, it is evident from the maps that drought conditions have moved into the Basin area from the west during 2014. Early 2015 precipitation maps indicate some relief. Percent of normal precipitation in 2014 ranged from 70 to 100% of normal and so far this year 50 to 100% of normal.

Precipitation (in)
1/1/2014 – 12/31/2014



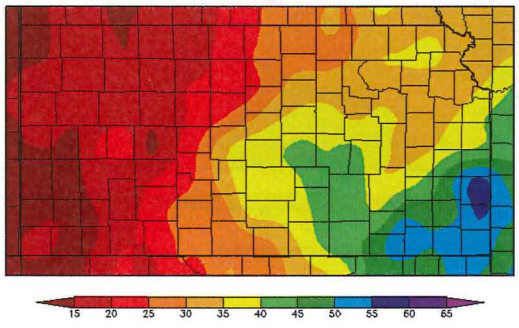
Generated 1/11/2015 at HPRCC using provisional data. Regional Climate Centers

Precipitation (in)
1/1/2015 – 4/20/2015



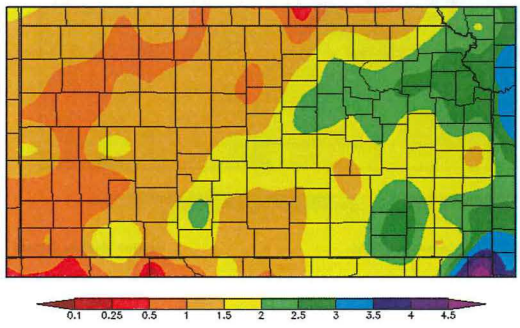
Generated 4/21/2015 at HPRCC using provisional data. Regional Climate Centers

Precipitation (in)
1/1/2013 – 12/31/2013



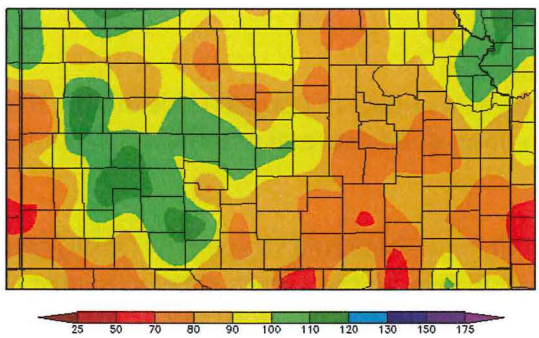
Generated 1/11/2014 at HPRCC using provisional data. Regional Climate Centers

Precipitation (in)
1/1/2014 – 3/31/2014



Generated 4/11/2014 at HPRCC using provisional data. Regional Climate Centers

Percent of Normal Precipitation (%)
1/1/2014 – 12/31/2014



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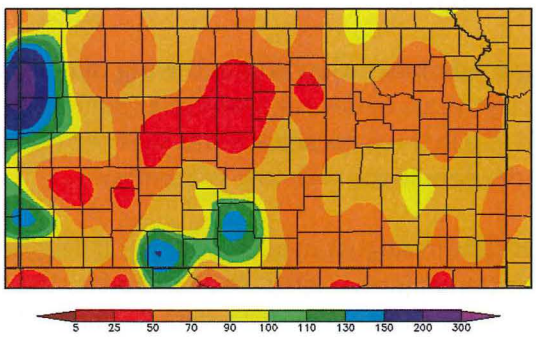
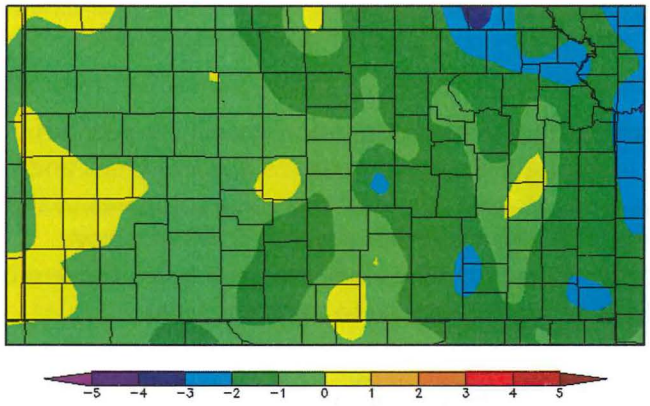
Percent of Normal Precipitation (%)
1/1/2015 – 4/20/2015



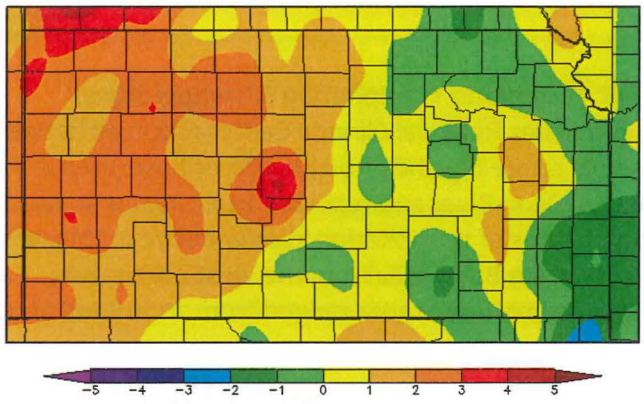
Generated 4/21/2015 at HPRCC using provisional data. Regional Climate Centers

Departure from Normal Temperature (F)
1/1/2014 – 12/31/2014



Generated 1/11/2015 at HPRCC using provisional data. Regional Climate Centers

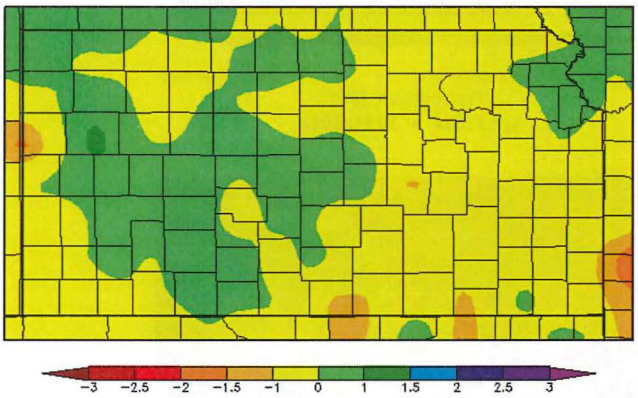
Departure from Normal Temperature (F)
1/1/2015 – 4/20/2015



Generated 4/21/2015 at HPRCC using provisional data. Regional Climate Centers

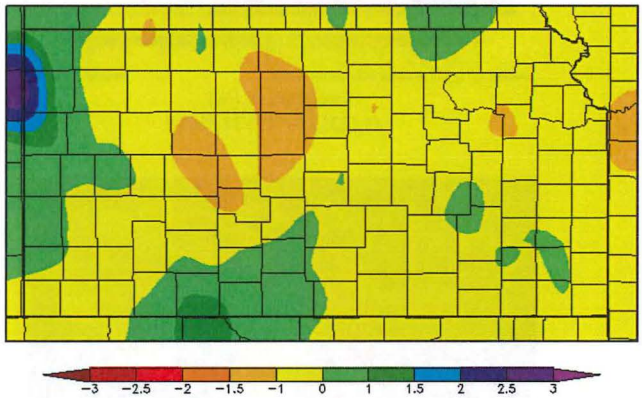
Temperatures for the calendar year 2014 remained generally normal to about 3 degrees cooler in this area. Temperatures have been trending towards a bit warmer this spring in comparison to the early months of 2014.

12-Month SPI
1/1/2014 – 12/31/2014



Generated 1/11/2015 at HPRCC using provisional data. Regional Climate Centers

Year-to-date SPI
1/1/2015 – 4/20/2015



Generated 4/21/2015 at HPRCC using provisional data. Regional Climate Centers

The Standardized Precipitation Index (SPI) (like the Palmer Drought Index (PDI) but considers only precipitation and not other factors) showed a slightly dryer trend for 2014, but is indicating a swing towards more normal conditions since January of 2015.

Streamflow and Administration Within the Big Blue Compact Basin

Statistic reflect 30 years of data at Marysville (Big Blue) and 56 years of data at Barnes (Little Blue). Streamflow both early and late in the peak season was well above median flows due to several runoff events, but mid-summer (August) saw dry conditions with low streamflow.

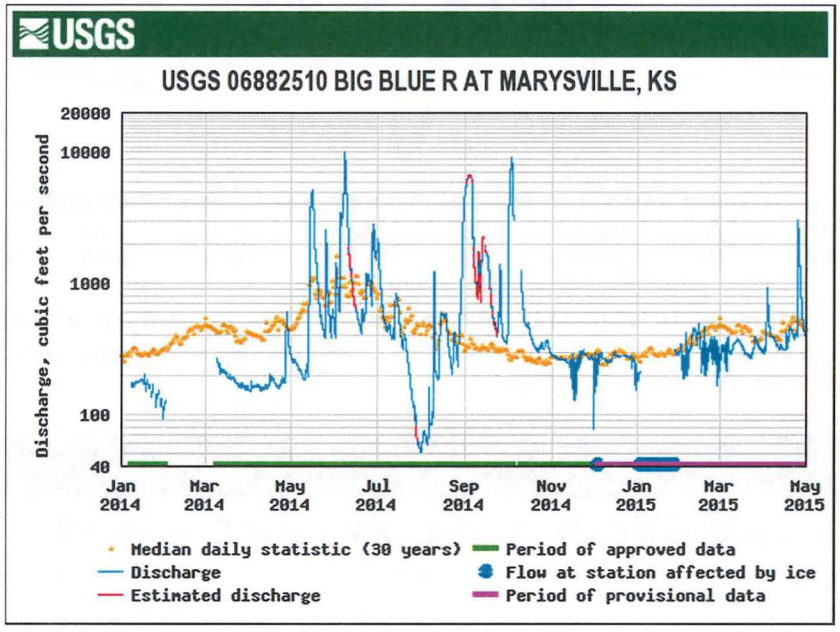
The low streamflow in August resulted in flows falling below Minimum Desirable Streamflow (MDS) criteria and MDS administration of junior rights was initiated on the Little Blue River to the Barnes gage on August 4, 2014 and on the Big Blue River to the Marysville gage (including Mill Creek) August 5, 2014. Both sets of orders were rescinded August 25, 2014, after a runoff event increased streamflow enough that temporary stays of the orders were granted to water right owners affected and then the orders were able to be rescinded. A total of 72 orders were issued to impacted water right owners, including temporary stay orders.

Minimum Desirable Streamflows (cfs)

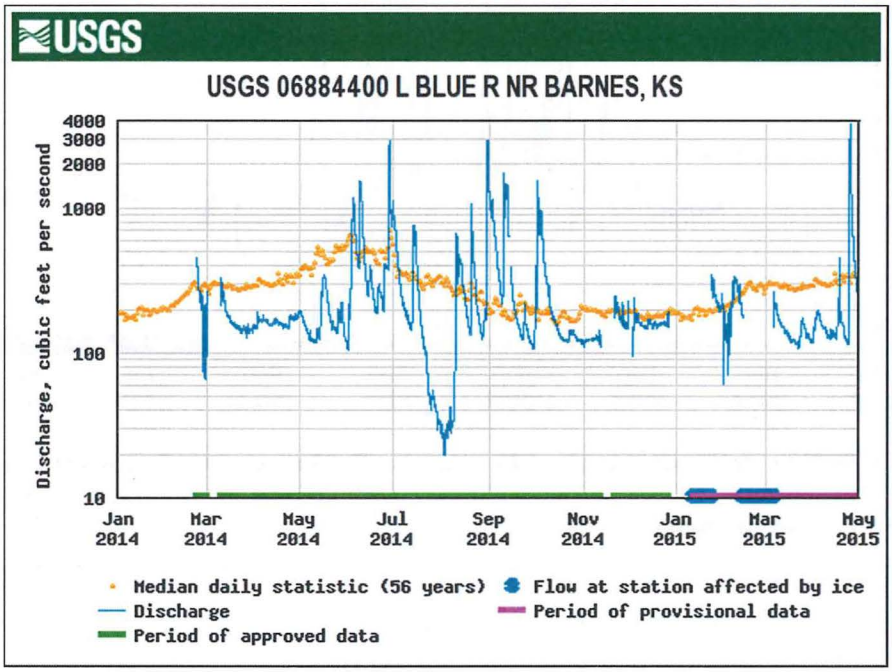
Watercourse	Month											
	J	F	M	A(a)	M(a)	J(a)	J	A	S	O	N	D
Big Blue												
Marysville	100	100	125	150	150(d)	150(d)	80	90	65	80	80	80
Little Blue												
Barnes	100	100	125	150	150(d)	150(d)	75	80	60	80	80	80

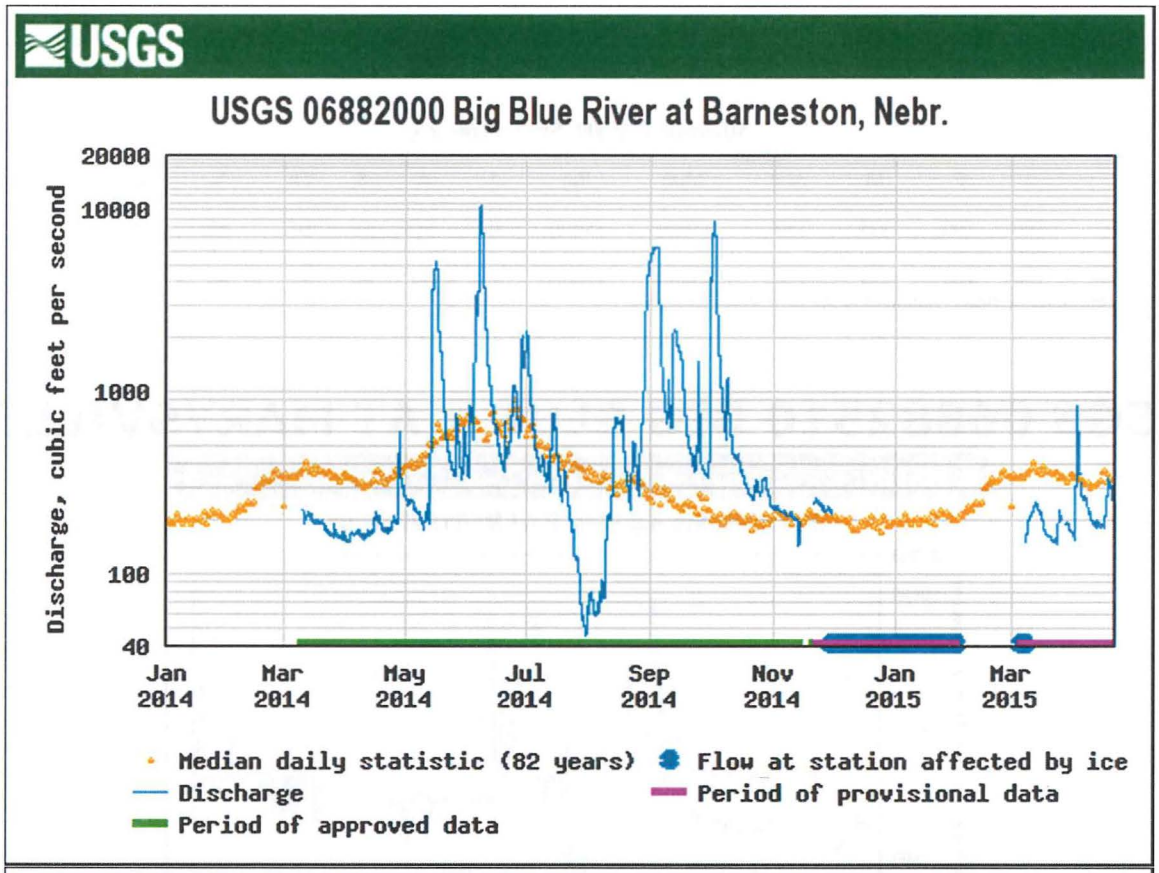
(d) Subject to the stateline flows contained in the Blue River Compact.

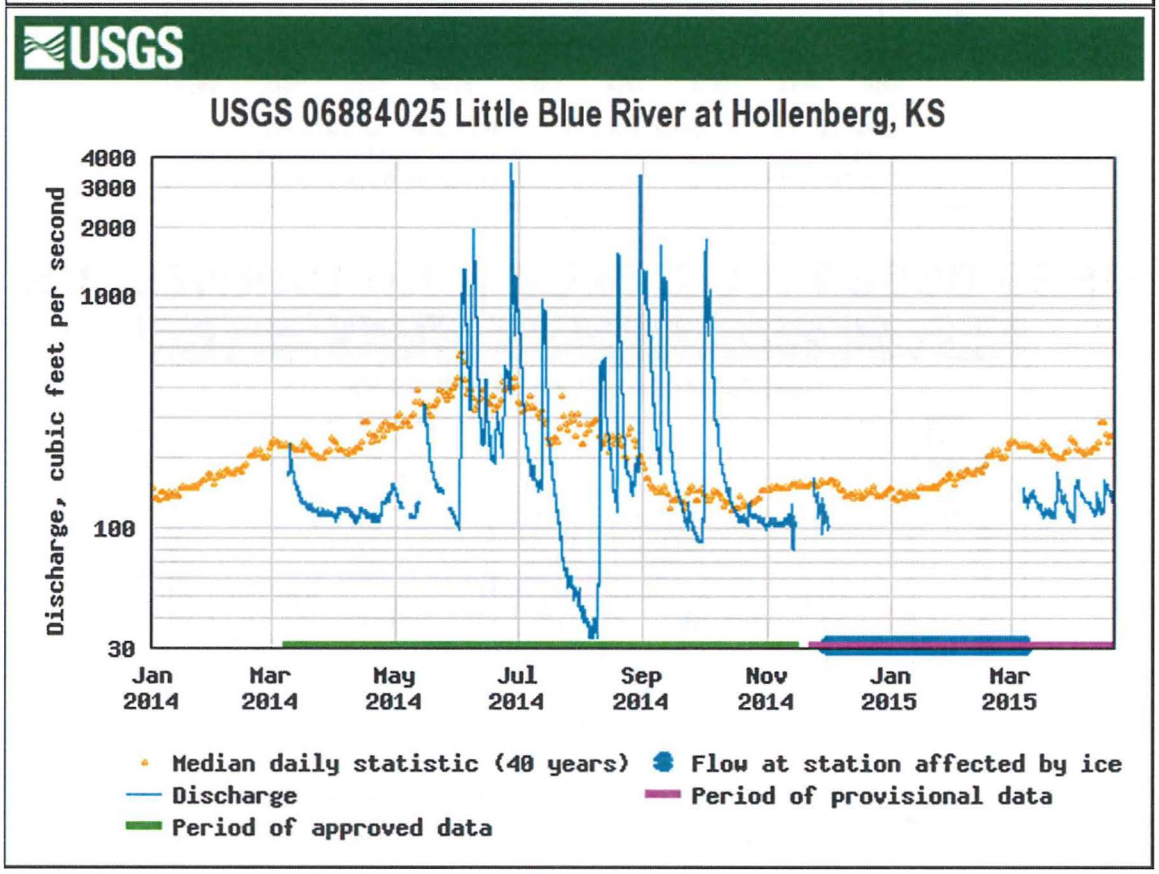
U8USGS 06882510 BIG BLUE R AT MARYSVILLE, KS



USGS 06884400 L BLUE R NR BARNES, KS







Compact gages at Barneston and Hollenberg reflected low streamflow in the mid-summer range as well, with lowest flows occurring in August. These flows were below compact values, therefore we were notified of compact restrictions in Nebraska on both the Little Blue and Big Blue Rivers in 2014.

Administration Activities

As reported previously, Minimum Desirable Streamflow (MDS) occurred on the Big Blue River at the Marysville U.S.G.S. gage and on the Little Blue River at the Barnes U.S.G.S. gage.

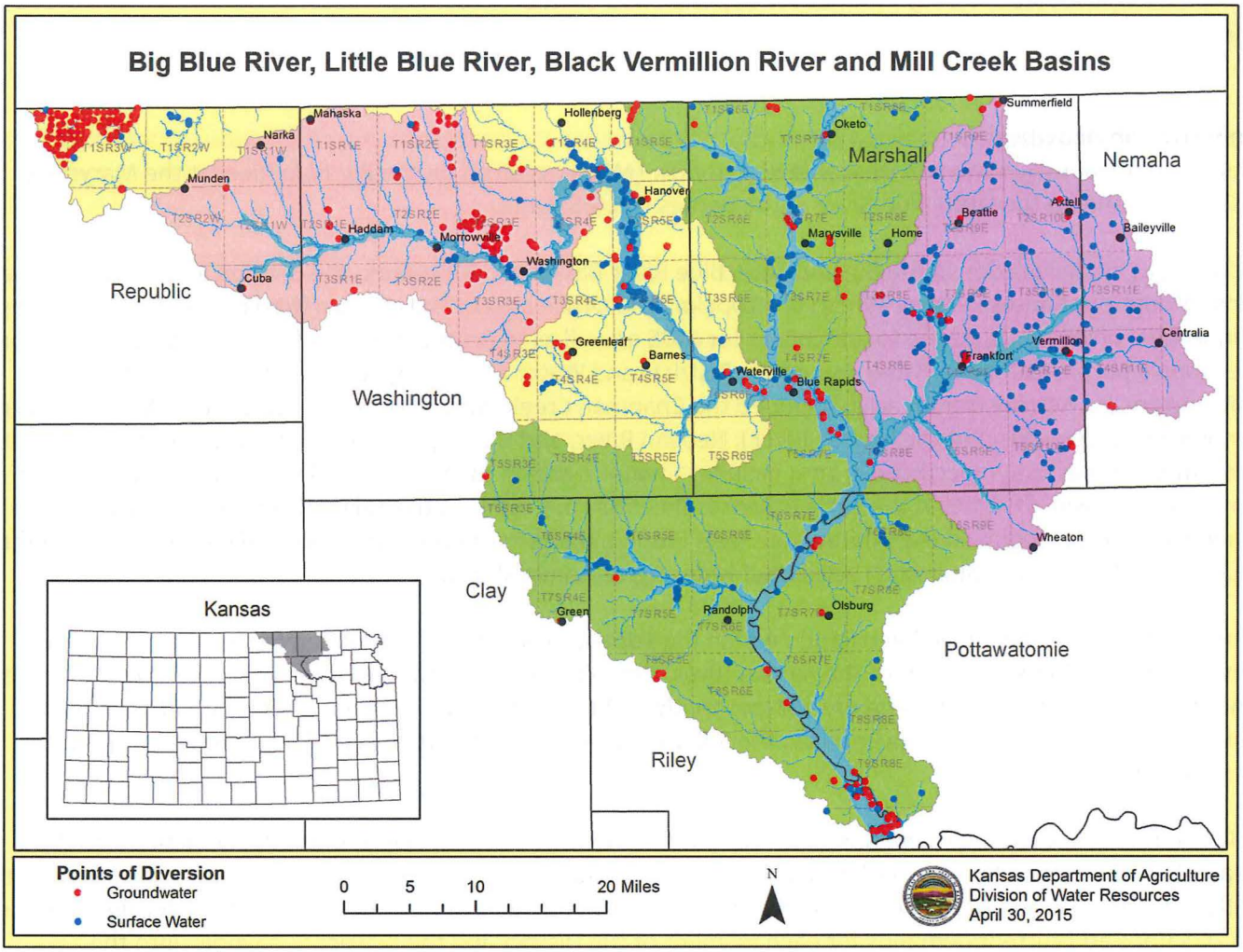
In addition to administration in the Big and Little Blue River Basins and Mill Creek, the Division administered other basins throughout Kansas in 2014. Within the Topeka Field Office area of the eastern third of the state of Kansas, 433 individual orders were issued to administer for MDS as well as to protect releases from federal reservoirs for water supply purposes for the Water Assurance Districts and Water Marketing Contract holders, and for water quality purposes. Administration areas included the Chapman Creek (Smoky Hill River sub-basin), Marais des Cygnes River, Mill Creek (sub-basin of the Kansas River), Neosho River, and the Republican River. Other areas state-wide where MDS administration occurred in 2014 include: 3 water rights in the Smoky Hill River basin, 32 rights in the Solomon River basin, 57 rights in the Little Arkansas River Basin, 7 rights in the Saline River Basin, 51 rights in the Walnut River Basin, 9 rights in the Whitewater River Basin, 5 rights in the Medicine Lodge River Basin, and 7 rights in the Chikaskia River Basin, totaling 171 additional water rights administered.

To date in 2015, 241 orders have been issued within the Topeka Field Office area related to the Republican River Basin and the Mill Creek sub-basin to the Kansas River. Ongoing administration is occurring within the Marais des Cygnes system and on the upper end of the Neosho River. Statewide administration at this time includes MDS Administration in the Smoky Hill River Basin, the Solomon River Basin, and the Saline River Basin, with 47 water rights affected.

The TFO was involved in 2014 in updating 2 of our 3 Water Assurance District Operations Agreements with the Kansas Water Office and the District Boards. Updates are done regularly on a 5-year schedule and allow the parties to reflect lessons-learned from various conditions, changes in reservoir capacities, and update water rights backed up, projections and current demands for each member of the District and the District as a whole, into the agreement.

Compliance & Enforcement

The Division initiated civil penalty and/or other enforcement action against the owners of 4 water rights in the basin in 2014. Two of these were civil penalties with full 2015 suspensions due to repeated overpumping. One was a civil penalty issued related to a broken seal on a DWR sealed meter. The final penalty was related to a biosecure stock facility not submitting required reports related to equipment, wells, and metering. There were 18 enforcement actions within the TFO area in 2014. Several of these cases resulted in Settlement Agreements. A total of 37 Notice of Non- Compliance Cease-Diversion Notices remain in place on water rights in this Basin area.



New Development

A small number of new requests occurred and a total of 21 new appropriation permits, 2 Term Permits, and 2 Temporary Permits were issued within the Compact area in Kansas in 2014. This represents a continued but slight increase in permit requests in the area. Of the new Appropriations, 11 are for groundwater and 10 are for surface water. The groundwater permits include two for public water suppliers and 9 for irrigation (one irrigation permit is for the watering of a school ball field). The surface water permits mainly relate to small ponds, which are used to provide an inch or two of water in drought to increase or save crop yields in the non-Big Blue River basin where the period July 1 through September 30 is restricted from diversion unless excessive flow occurs. Irrigators pump water from the stream into a pond and pump it into a small holding pond, or just capture runoff directly in the pond, to provide a limited quantity of water from storage during the restricted period to irrigate with. In total, 5 new permits were issued in the Big Blue River Basin, 5 in the Mill Creek Basin, and 11 in the Little Blue River Basin.

The two Temporary Permits were issued to a pipeline company for hydrostatic testing. One Term Permit was issued for dredging a small homeowners association lake and one Term Permit was issued for contamination remediation purposes.

Miscellaneous

While Kansas Department of Agriculture and the Division of Water Resources headquarters moved their offices to Manhattan, Kansas, last year, the TFO stayed in the same location at Forbes Field. However, due to U.S.P.S. changes (elimination of P.O. boxes at Forbes Field) and a changeover in telephone systems, contacts for the Field Office have all changed.

Our new contact info for the Topeka Field Office is:
Kansas Department of Agriculture
Division of Water Resources Topeka Field Office
6531 SE Forbes Ave, Suite B
Topeka, Kansas 66619
Telephone: (785) 296-5733
Fax: (785) 296-8298
During and post-transition, the Agency has moved to imaged document archival using DocuWare. Therefore, most of our records have been or are being scanned into the system and we have now moved to document imaging rather than hard copy of documents for all non-water right documents.

We reported previously that the Division had accumulated a rather large backlog of pending applications, particularly due to drought Term Permit options instituted as a result of the drought of recent years. Last year at this time, the TFO had over 200 applications pending and applicants were being advised it could be up to a year before their applications would be processed. Currently, the TFO has 123 pending applications, of which 48 are in active process and 75 have been processed and are awaiting either signature by the Chief Engineer or Structures Permitting. Processing time has significantly shortened and applications generally are in process within 3 months of the application being received.

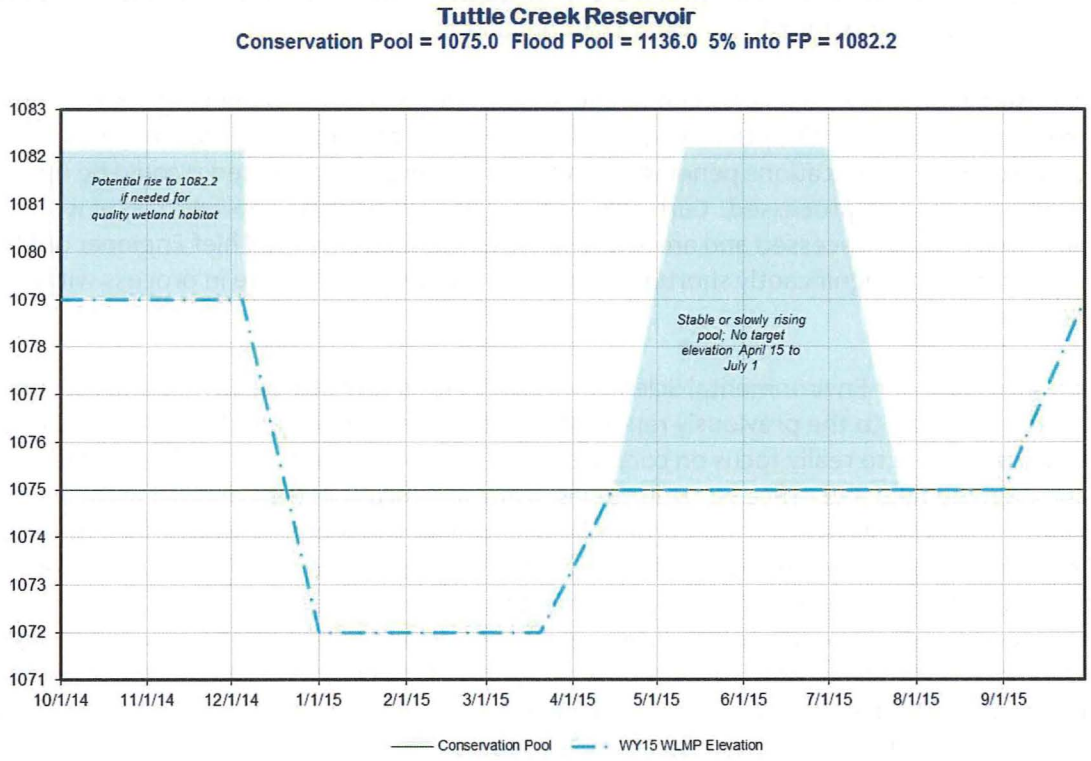
With a strong replacement of our Environmental Scientist in the Parsons satellite field office and seasoned staff in the Topeka Field Office, and due to the previously reported update to several of our administration systems (PerMis), the TFO has been able to really focus on core mission work over the last year and have made a significant dent in backlog and ongoing field and office work, including work specifically in the Compact area. As mentioned earlier, we completed all previously issued meter order compliance investigations. We are 4 files from completing all of the proposed certificates for every previously inspected file with a perfection deadline of December 31, 2014 or earlier. We have a total of 83 files that need to be field inspected and rate tested with perfection periods that end December 31, 2015 or earlier. We have 455 total field inspections to do and a total of 954 new and change approval compliance investigations to conduct. While we still have a significant number of inspections/investigations to complete, we have managed to dig ourselves out of a backlog that occurred over a decade when resources were at an absolute bare minimum in this office. We certainly hope conditions are favorable to continue our progress in the core mission work. This allows us to work with water right owners on new projects much closer to when they are put in place to ensure their compliance through understanding of the Kansas Water Appropriation Act rather than having to address problems a long time projects are put in place, which obviously allows for better service to our customers.

Metering

The Topeka Field Office Has completed all previously initiated meter order inspections. On September 22, 2014, the Kansas River Basin Meter Order was issued to the owners of 1,020 water rights within the Basin. These represented mostly water rights that have not had implicit meter orders issued previously. After we conducted a series of public meetings throughout the Basin that included presentations on metering from Division staff, meter vendors displaying acceptable meters and irrigation companies also having booths at the meetings and providing contacts and support for installation, we now have staff focused on these inspections and owners have until December 31, 2016 to comply. About 220 inspections have been completed so far.

Tuttle Creek Reservoir

Lake Level Management plans were approved in fall of 2014. The plan represents the identical plan submitted and approved over the last several years now. The main focus continues to be support of crappie, if and when possible, by intending to lessen the probability of untimely reservoir releases that adversely impact crappie spawning success.



	Time	Elevation	Comment
TUTTLE CREEK LAKE	Oct 1 – Dec 1	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
	Sep 1 – Sep 30	1079	Rise to inundate wetland habitat and attract migrating waterfowl

Attachment D

2015 Big Blue River Compact Administration Report

2014 Water Administration Activities in Nebraska

Conditions in 2014 showed substantial improvement from the previous year. The Little and Big Blue River Basins received above average precipitation through the spring and summer. Although July was abnormally dry, June and August brought widespread soaking rainfall. Statewide, the summer of 2014 ranked as one of wettest summers on record. Consequently, surface water administration efforts were less extensive than in the previous two years.

Little Blue Administration

The Little Blue's headwaters are near Minden and the river exits the state south of Fairbury. The basin encompasses some 2,700 square miles in all or parts of 10 counties. It has 249 irrigation permits and 132 storage rights.

On July 23rd, the flow on the Little Blue at Hollenberg fell below the compact target and 119 junior irrigation rights and 132 storage rights in the basin were closed. The 130 senior irrigators in the basin were allowed to continue operating, but were closely regulated. Rain in the basin caused the flow at Hollenberg to exceed the target on August 11th, allowing the basin to be opened to all junior irrigators and storage rights. The flow at Hollenberg exceeded the target flows for the remainder of the season and permits remained open through September 30th which is the end of the compact period for target flows.

Big Blue Administration

The headwaters of the Big Blue River are in Hamilton County, north of Aurora. At its farthest western extent, the basin's headwaters are northwest of Hastings. The Big Blue River exits the State south of Barneston, and continues to its junction with the Kansas River. The basin encompasses 4,450 square miles in all or parts of 15 counties, has 833 surface water irrigation permits and 359 storage permits.

On July 29th, closing notices were issued in the Basin to 399 junior irrigation rights and 359 storage rights. The 434 senior appropriators were closely regulated. Timely rain during the second week of August caused the flow at Barneston to exceed the target, and junior irrigation rights and storage rights were opened on August 11th. The flow at Barneston exceeded the target through the end of the administration period.

Concluding Thoughts

In general, the basin received above average rainfall and experienced below average summer temperatures producing favorable conditions for row crops and less stress on water supplies. DNR issued only one round of closing notices in each basin. Junior irrigators saw a significant reduction in days closed from the previous two years. By end of Water Year 2014 the entire basin had been removed from drought designation.
2015 reporting period opened with flooding in both basins and flows remain enhanced by last week's rainfall. In the Little Blue, flows at Hollenberg peaked over 57,000 CFS (22ft) on May 7th. In the Big Blue, flows at Barneston exceeded 37,000 CFS (28 ft, 8 feet over flood stage) on May 8th.

Attachment E

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT
Mike Onnen, General Manager
Little Blue Natural Resources District
MAY 13, 2015

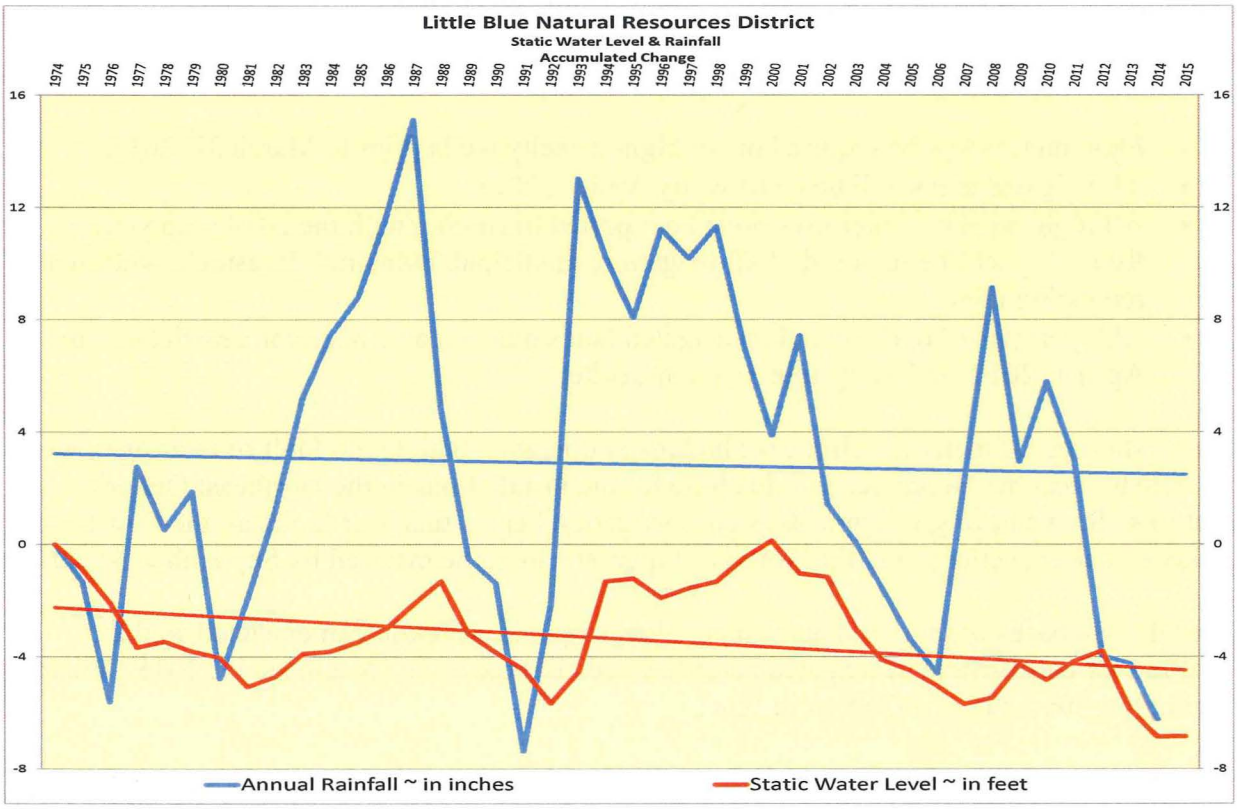
Update on Little Blue River Flow Enhancement Project

As reported last year, the Twin Valley Weed Management Area began clearing log jams and undercut trees along the river's banks in 2013 to improve channel flow and reduce bank erosion. Last summer, the TVWMA sprayed phragmities, salt cedar and some encroaching willows within the river's channel. They reported that they found more salt cedar than originally anticipated, so it is good that we get ahead of this invasive species.

This summer, plans are to go back to the areas sprayed to confirm control and to disk up root balls of the sandbar willows that were encroaching in the river channel, to try to keep the concentrated flow in the middle of the channel rather than directing flow against the banks where bank erosion could occur.

Groundwater Quantity Issues

The Little Blue NRD approved 131 well permits in 2014 of which 34 were replacement wells and 18 were wells to operate in series with an existing well. One well was drilled for each the BOR, Dept. of Ag and one municipality. So far in 2015 we have approved 19 well permits, five of which are replacements.



The chart above shows the variation in groundwater levels and rainfall over the past 40 years. You can see that the trend lines on both graphs are down slightly over the period.

Water Levels: The 2015 spring static water level readings were taken at 332 wells with the average change from 2014 of +0.01'. The highest readings were in the western part of the district where a little more rainfall was received, but widespread hail damage was also experienced.

Regarding irrigation applications last year, the average Little Blue NRD irrigation water application for the 2014 crop year was 6.1". Usage was reported on over 178,000 acres. The center pivot average was 5.6" and the gravity was 8.8". We had a few sub-surface drip systems report with an average of 6.1". With required reporting this year, we anticipate a much more representative look at total pumpage next year.

We have had more interest in drilling wells in the Dakota aquifer, particularly in the southeast portion of the District. Several irrigation wells and at least three livestock wells were drilled into the Dakota southeast of Fairbury. The wells seem to be holding up well and the water quality has been reasonably good. We did however have one farmer in an isolated aquifer area near Bruning who decided to drill into the Dakota to try to find irrigation water. The well he drilled was to a depth of 608' and was screened a various intervals between clay lenses to try to find the best location for water. However, water quality tests for the well indicated extremely high levels of sodium, chloride, electrical conductivity and total dissolved solids. The farmer has not decided what to do with the well, but we are now considering requiring decommissioning of the well as it poses some potential threat to the regional water supply if the steel casing or bentonite seals were to deteriorate.

Progress on Groundwater Rules and Regulations Compliance

The District's groundwater rules adopted in May of 2014 required:

- Flow meters will be required on all high-capacity wells prior to March 31, 2017.
- All irrigated acres will be certified by April 1, 2015
- All high-capacity water uses must be reported beginning with the 2014 crop year. Reporting will be required of all irrigation, municipal, industrial, livestock, wildlife and recreation uses.
- All operators of dryland and/or irrigated lands must receive operator certification by April 1, 2018, and every four years thereafter.

Due to shortage of meter installers, we had many operators that, by no fault of their own, were not able to meet the December 31st deadline for the installations in the Northeast Quarter Sections. So we have given operators until irrigation begins this year to install the flow meter in those quarter sections, and the Northwest quarters are to be metered by September 30, 2015.

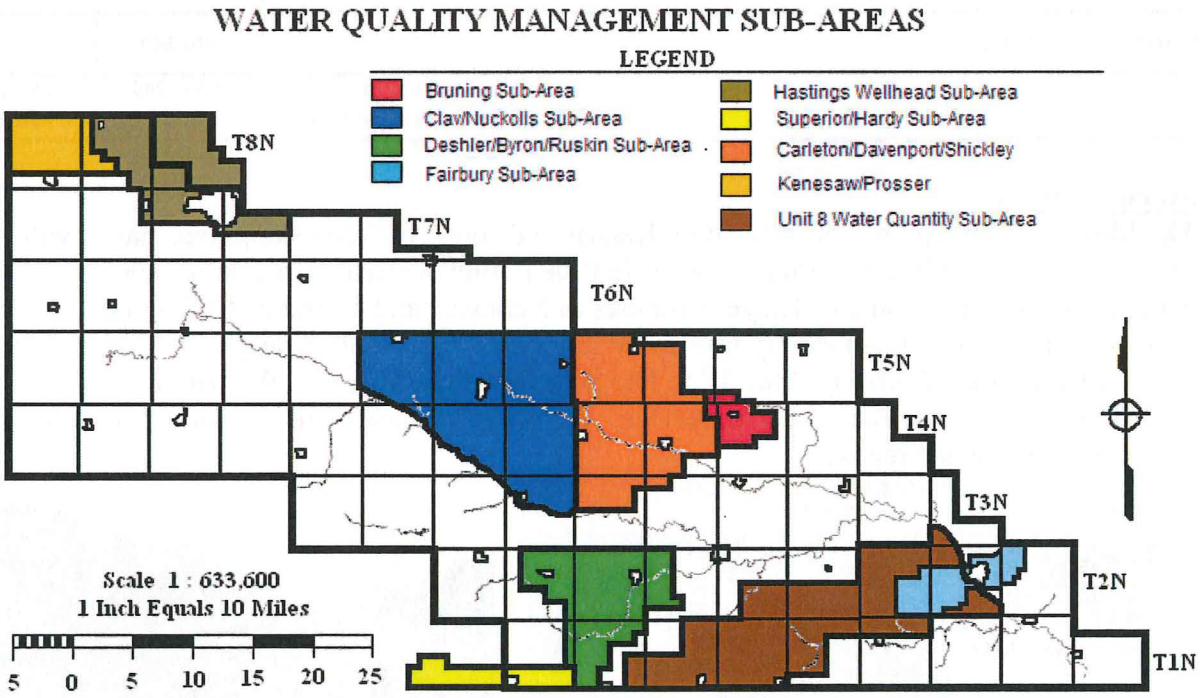
Our GIS database consolidation has much taken longer to develop than expected so the deadline for certification of irrigated acres has been backed up to December 31, 2015. We are hoping to initiate the certification in June.

Pumpage reporting has been received from all municipalities, wildlife and recreation uses. Securing the irrigation pumpage reports will be easier once certification of acres is underway.

Groundwater Quality

The NRD collected 1,794 water samples in 2014 with our average reading 8.48 ppm. We've started looking at the age of the wells to determine if well construction may play a role in higher nitrates. It appears that it may have as newer wells, with better construction standards, seem to be somewhat lower in nitrate levels. We believe that in older wells where the grout is more porous, contamination may be following the well casing to the aquifer. We continue to learn. Our area of focused sampling in 2015 will be Adams and Webster Counties.

With documentation of elevated readings above our trigger level, two more high nitrate areas were designated Level II Water Quality Sub-Areas in February, one near Kenesaw, Nebraska in the extreme northwest corner of the District, and one which includes the towns of Carleton, Davenport,and Shickley in the heart of the District. These areas are now required to do soil sampling, irrigation management and other BMPs and provide annual reports of farm activities. The map below shows all active water quality areas in the Little Blue NRD.

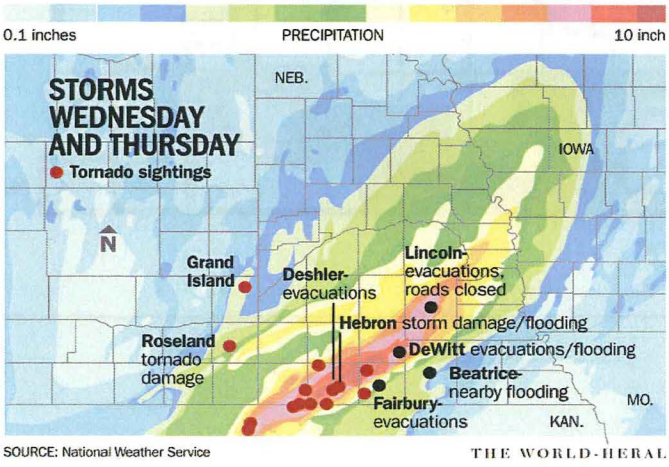


SUMMARY OF WATER QUALITY AREAS IN LITTLE BLUE NRD March 1, 2015

Area	Year Established	Purpose	Ave. Nitrate Level	Level of Mgmt	Size of Quality Area (Ac)	Size of Quantity Area (Ac.)
Bruning Sub-Area	1999	Nitrates	16.47 ppm	Level III	12,800	
Carleton/Shickley Sub-Area	2015	Nitrates	9.21 ppm	Level II	86,400	
Clay/Nuckolls Sub Area	2005	Nitrates	9.76 ppm	Level II	117,120	
Deshler/Byron/Ruskin Sub-Area	2002	Nitrates	10.81 ppm	Level II	58,880	
Fairbury Sub-Area	2002	Nitrates	8.72 ppm	Level III	21,210	
Hastings Wellhead Sub-Area	2012	Nitrates	8.45 ppm	Level II	61,440	
Kenesaw Sub-Area	2015	Nitrate	11.80 ppm	Level II	24,320	
Superior-Hardy SPA MA	1990	Nitrates	10.8 ppm	Level IV	20,480	
Aquifer < 10' Stay on Wells	2014	Limited Water				362,240
Unit 8 Sub Area - Stay Area	2006	Water Quantity		Level II		124,160
TOTAL LAND IMPACTED					**402,650**	**486,400**
			District Land Area		1,537,280	1,537,280
			% of District Land Area		**0.262**	**0.316**

Storm Damage

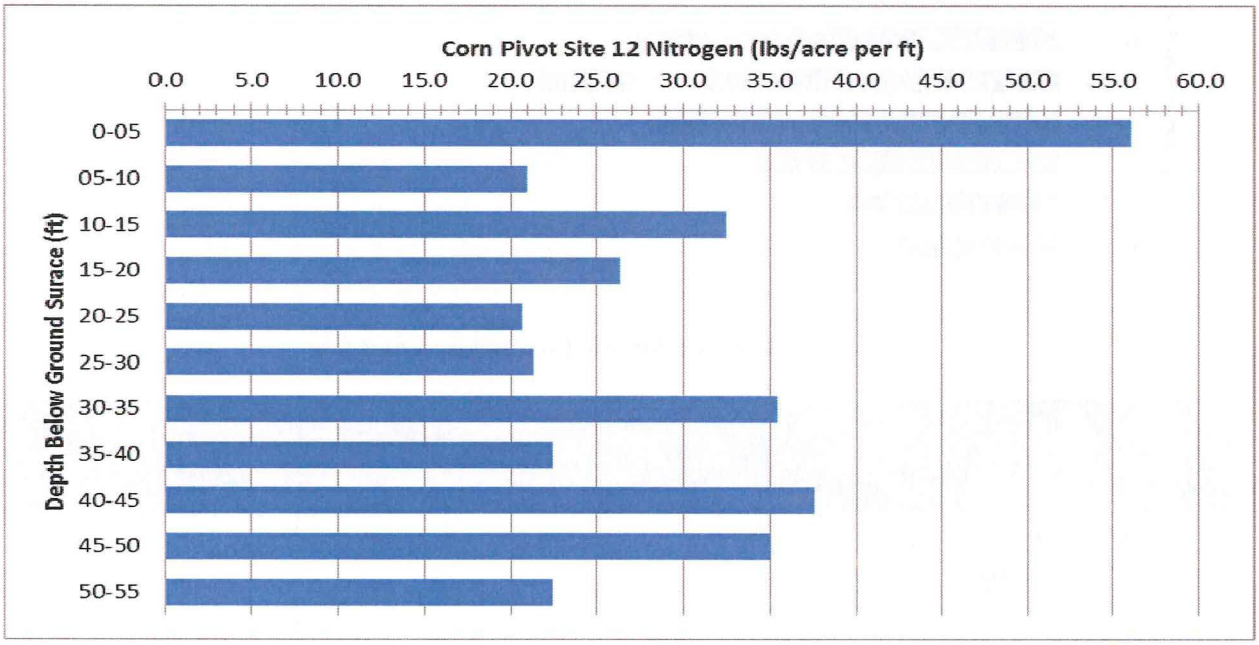
The May 6 – 7th storm events in northern Kansas and southern Nebraska played havoc with many private and public facilities. The Little Blue Public Water Project, which serves rural water needs for Jefferson and Thayer Counties in Nebraska and northern Washington County in Kansas, lost our 6" main supply line under the river. As a result, nearly 320 customers were without water from Thursday, May 7th to late Saturday night May 9th. We had to lay about ½ mile of temporary pipeline to restore service. We'll have to wait until dry conditions to assess the damage and make repairs.

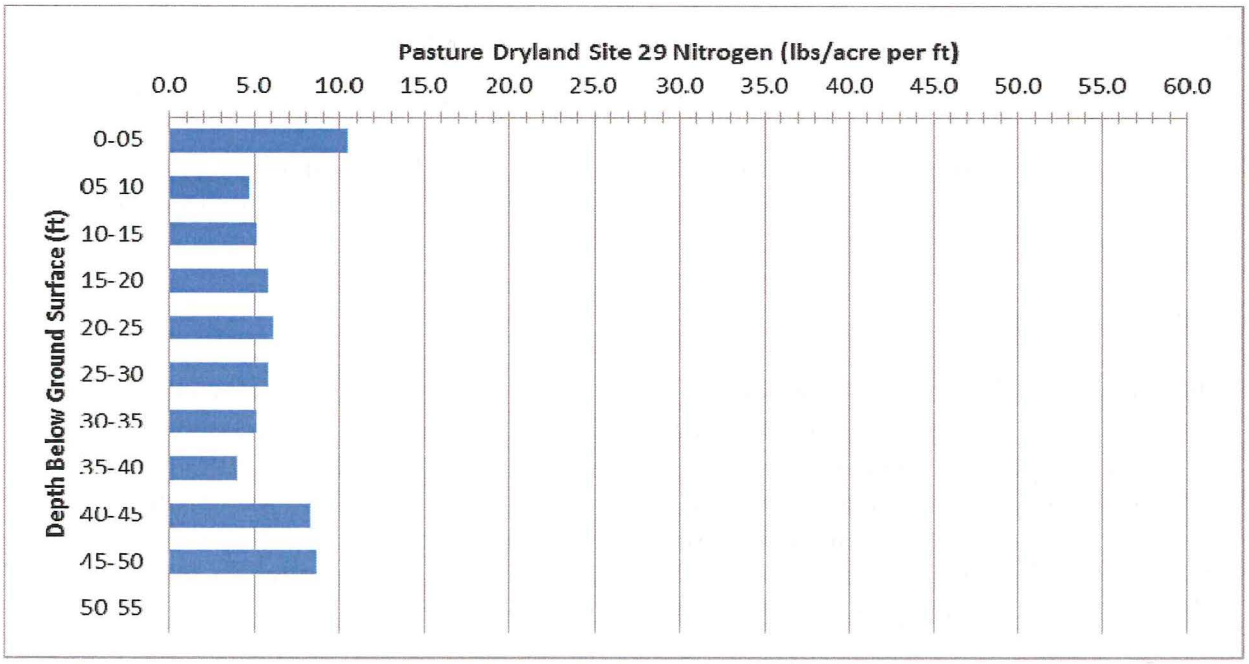


Watershed Planning

As mentioned last year, our NRD has initiated a Little Blue River Basin water planning effort to develop a 25 year plan for addressing various water issues, including both surface and groundwater quality and quantity. The plan, although focused primarily on water quality, should help us develop tools to pursue an integrated water management plan if the Board chooses to do so.

One of the first efforts was a deep soil coring of the unsaturated vadose zone to evaluate the success of our management activities over the past 10 years and try to determine the level of sub-soil nitrates and if nitrate loading of the soil profile is improving. What we've found is not particularly encouraging. Although perhaps some improvements have been made over the years, residual nitrates are still higher than we'd like to see and profile loading is still occurring. The sampling did vividly illustrate the benefits of alfalfa and CRP in cropping rotation to utilize available nitrates and reduce the affects of loading. The charts below give you a snapshot of the sampling results. Natural background soil nitrate levels are believed to be around 5 to 7 pounds per acre.





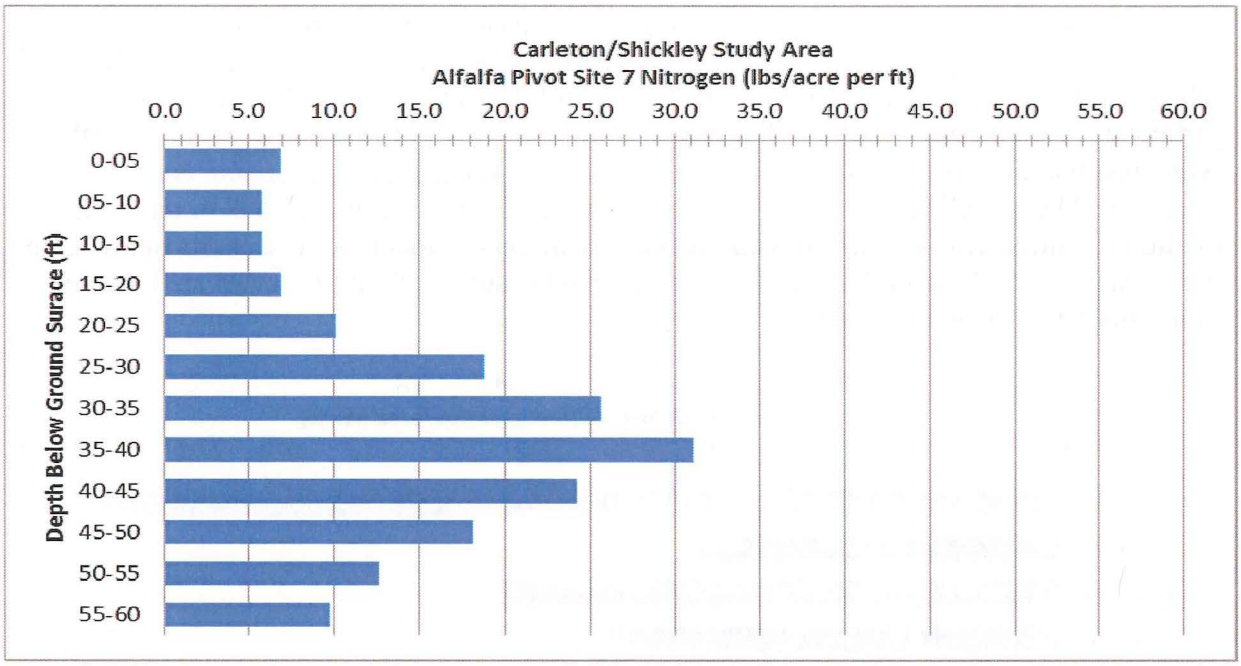


Table 1 – Average Nitrate Loading by Land Use

Land Use	Background Average Nitrate (lb/ac/ft)	Average N for Deep Borings (lb/ac/ft)	Average N for Shallow Borings (lb/ac/ft)
Dry Corn	5	7	9
Dry Soybeans	5	--	7
Irrigated Corn	5	18	14
Irrigated Soybean	5	12	12
Irrigated Alfalfa	5	10	5
CRP	5	12	3
Pasture	5	6	4

Based on the soil coring results, it is concluded that more needs to be done to educate producers about the opportunities to reclaim the nitrogen for future crops, and the impacts of soil residual nitrates on groundwater quality.

Dam Rehabilitations

The Little Blue NRD replaced the riser o Dam K of the 32-Mile Creek Watershed near Kenesaw in the summer of 2014. We have also submitted nine dams for assessments by the NRCS under the Watershed Dam Rehabilitation Program. The Little Blue NRD has 26 watershed flood control structures, six road dams and one flood control dike which we maintain. Many of the watershed dams were constructed in the 60's and 70's and are nearing their design life. The assessments will help to evaluate the condition of the structures and if rehabilitation is necessary to extend their life and usefulness.

Attachment F

Kansas-Nebraska Big Blue River Compact
Nebraska Report - Upper Big Blue NRD
Rod DeBuhr, Water Department Manager
May 13, 2015

Well Drilling Activities

One hundred sixty three permits were issued for irrigation wells (103 new & 60 replacements) in 2014. At the end of 2014 there were registered 12,135 irrigation wells in the District. This is an increase of 126 active irrigation wells compared to the end of 2013.

Groundwater Level Changes

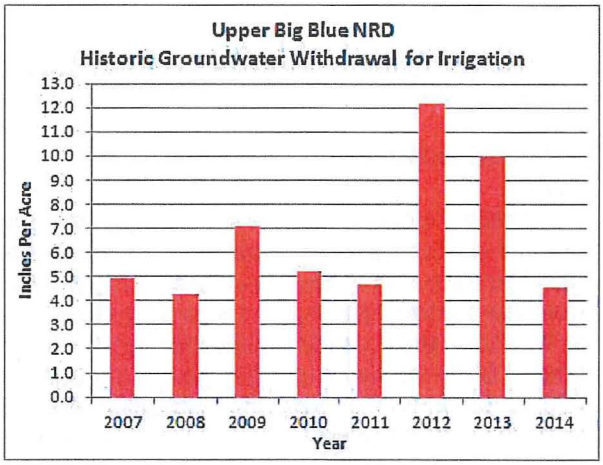
The average groundwater level change for the District from spring 2014 to spring 2015 was a rise of 1.42 feet. The attached map shows the area of greatest changes and the county averages. With this change, the average ground water level is 2.35 feet above the allocation trigger. Mandatory reporting of irrigated acres and other water uses began in 2006.

Certified Irrigated Acres

Mandatory reporting of irrigated acres and other water uses began in 2006.
As of January 1, 2015, there were 1,213,422 ground water irrigated acres certified by the NRD. This represents an increase of 11,396 acres since January 1, 2014.

2014 Groundwater Withdrawal

2014 was the eighth year that ground water withdrawal reports were required in the Upper Big Blue NRD. Metering is not required at this time, but will be mandatory on all wells effective January 1, 2016. Wells that are not metered must provide an estimate of pumping rate and time of operation. The average water withdrawal for irrigation in 2014 was 4.6 inches per acre.



High Risk Groundwater Area

A temporary stay on well construction was in effect in part of the District from April 17 through October 1, 2014. The stay was imposed in response to concerns expressed over rapid irrigation well development in parts of the NRD where the aquifer is marginal. This development raised concerns over conflicts with domestic and municipal water supplies as well as existing irrigation well pumping capacity.

Effective on October 1, 2014 the revisions to the District's Groundwater Management Area Rules and Regulations (Rule 5) went into effect. These revisions establish a **"High Risk Groundwater Area"** in parts of the District. A map of the High Risk Groundwater Area is shown below.

The following is a summary of the High Risk Groundwater Area requirements.

Well Spacing

New wells

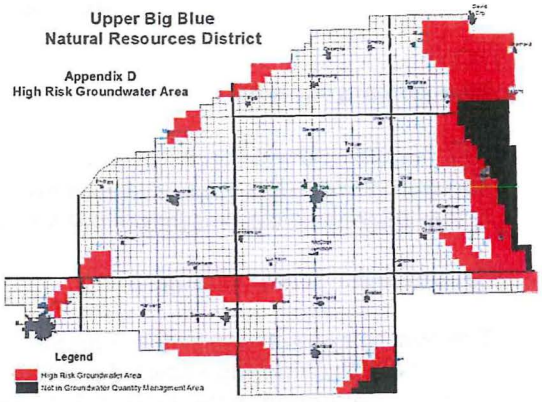
The well must be located at least 1,250 feet from and other high capacity well. This includes all high capacity wells under the same or different ownership.

The well must be located at least 1,250 feet from domestic wells under different ownership. This includes wells used for human consumption. It does not include livestock wells.

The well must be located at least 2 miles (10,560 feet) from municipal wells.

Replacement wells

When a well located less than 1,250 feet from another well or less than 2 miles from a municipal well is replaced, the replacement water well may be constructed no more than 50 feet closer to the other water well.



Limited Well Density

No more than 1 well shall be constructed on a tract, a part of a tract, or tracts of land that are 80 acres or less in size, with a maximum of 2 wells per 160 acres.

Each individual well that is commingled, combined, clustered, or joined with other wells in a series shall be considered a well.

Each existing well on a tract of land may be replaced.

Municipal and Domestic Well Conservation

Municipalities in the High Risk Groundwater Area shall adopt an administrative procedure that allows the municipality to require water conservation practices and restrict the water use of its customers.

New or replacement domestic water wells shall be constructed to such a depth that they are less likely to be affected by seasonal water level declines caused by other water wells in the same area.

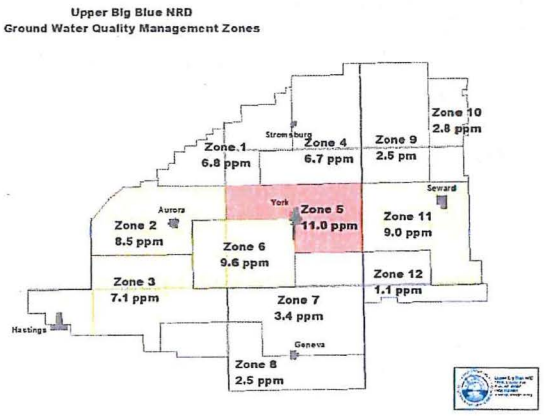
For more information concerning the High Risk Groundwater Area regulations, please contact the District office.

Groundwater Quality

Nitrate

The District is divided into twelve management zones for ground water quality management. The primary ground water quality management concern is nitrate. Four zones are currently designated a Phase II management area and one (Zone 5) was elevated to a Phase III management area. Phase II management requires 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. An added phase II requirement in 2012 is that each operator must schedule irrigation using soil moisture sensors in at least one field. In a phase III management zone all of the phase I and II requirements continue plus, anhydrous ammonia fertilizer applied from November 1st through February 29th must include a nitrification inhibitor. The rest of the district remains in phase I management for groundwater nitrates. Under phase I management the application of anhydrous ammonia may not occur until November 1, while application of dry and liquid nitrogen fertilizers must wait until March 1.

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

Potential groundwater contaminants such as arsenic, selenium and uranium occur in many areas. These constituents 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 Ag. Chemical contamination such as nitrate. The District completed the first year of a three project to sample wells in the District for these contaminants.

Dakota Aquifer
The District just 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. Recent high commodity prices and drought conditions have 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 if further development of the aquifer will impact water quality in existing wells.

CROP-TIP

CROP-TIP is an irrigation demonstration near York, Nebraska sponsored by The District and Cornerstone Bank. The purpose of the project is to show producers ways to reduce groundwater withdrawal and reduce nitrate leaching through improvements in irrigation methods. Soybeans were grown in the 20 acre demonstration field in 2014. In the spring of 2007 a subsurface drip irrigation system was installed on one-half of the project acres. The benefits of irrigation scheduling and the use of more environmentally friendly methods of fertilizer application, crop rotation and cover crops are also being demonstrated.

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 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 Upper Big Blue NRD 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 over 2,000 collaborators. The Upper Big Blue NRD is selling this equipment to irrigators at a reduced cost to encourage adoption of the scheduling practice. The data collected has been posted on the NRD's website. This year the University of Nebraska has an interactive website up and running to allow cooperators to post data directly to the website where it can be used by other irrigator.

Soil and Water Conservation Cost-share Assistance

In FY 2013-14 the District funded 48 soil and water conservation projects with landowners. These ranged from irrigation practices such as buried pipelines and conversion to subsurface drip irrigation to construction of terraces, waterways and planting of trees for windbreaks and wildlife. The funds totaling $90,489.09 came from the Nebraska Soil and Water Conservation Program ($85,489.09) and local NRD property tax revenue ($5,000.00).

Groundwater Modeling

The Upper Big Blue NRD contracted with a consulting firm to prepare a Blue Basin groundwater model to identify the hydrologic connection of the aquifer and the Blue River system. The District has completed fully transient sub-regional model in a portion of Seward County. The District is reviewing the model results. A decision has not yet been made on expanding the model effort to the entire District or River Basin.

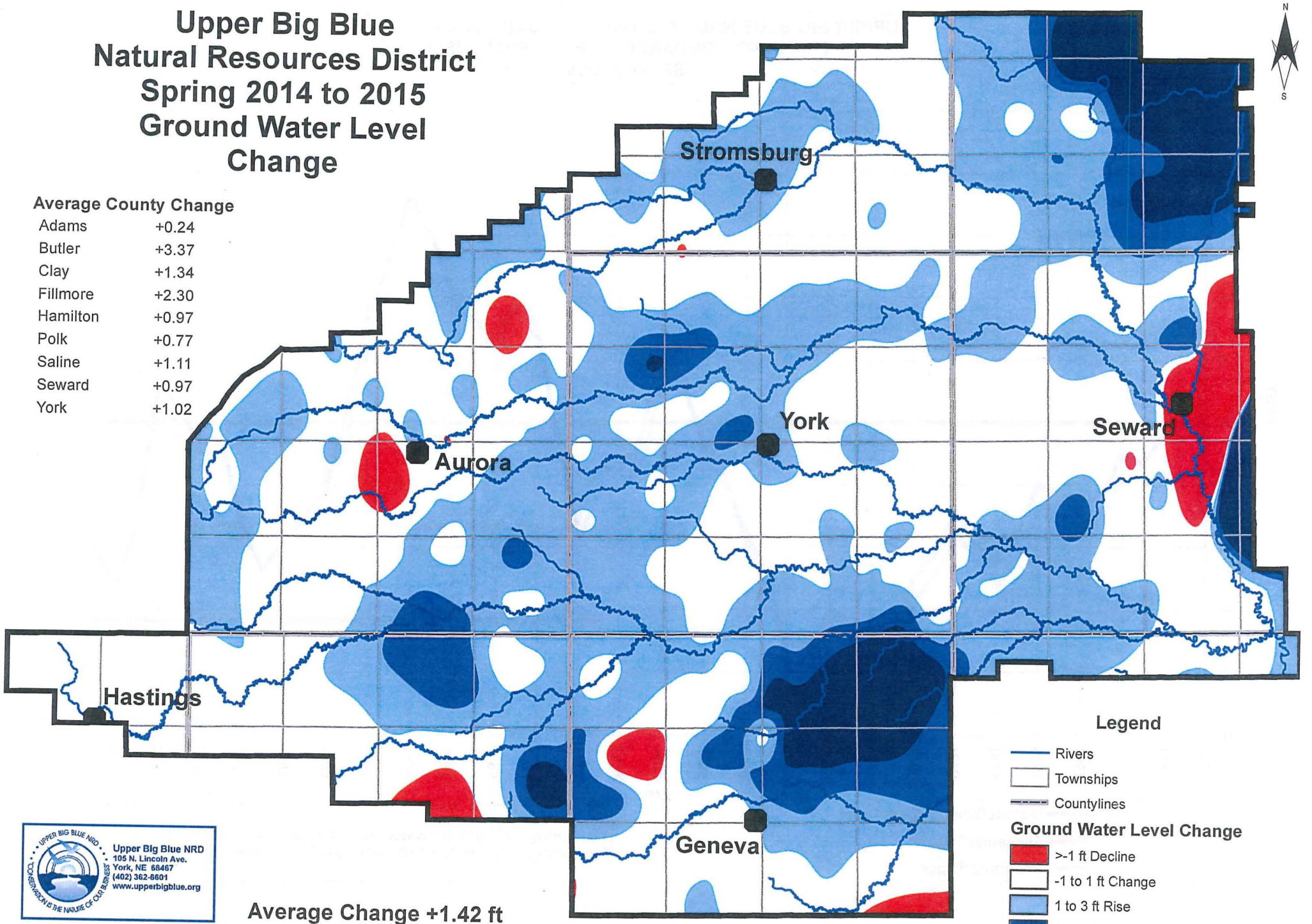
Wellhead Protection Planning

The District continues to assist communities to develop Wellhead Protection Area (WHPA) Plans. There are currently 26 communities that have approved WHPA 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 collection of the unsaturated zone for nitrates WHPA to evaluate potential for future contamination and potential public water well sites.

Visit our Website

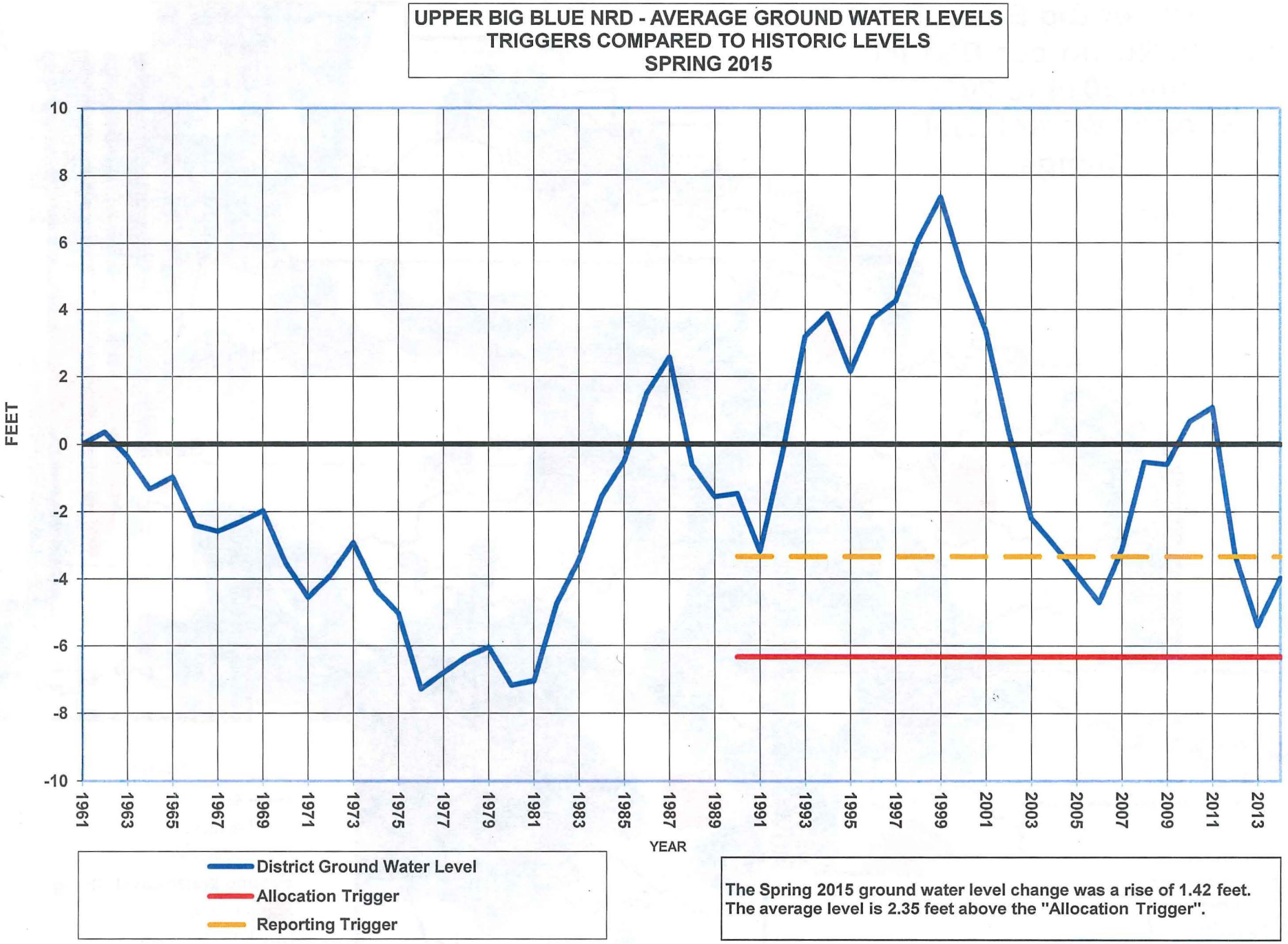
You can learn all about the District's programs and activities at www.upperbigblue.org.

Upper Big Blue Natural Resources District Spring 2014 to 2015 Ground Water Level Change



Upper Big Blue NRD
105 N. Lincoln Ave.
York, NE 68467
(402) 362-6601
www.upperbigblue.org

Average Change +1.42 ft


UPPER BIG BLUE NRD - AVERAGE GROUND WATER LEVELS
TRIGGERS COMPARED TO HISTORIC LEVELS
SPRING 2015
FEET
10
8
6
4
2
0
-2
-4
-6
-8
-10
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
YEAR
District Ground Water Level
Allocation Trigger
Reporting Trigger
The Spring 2015 ground water level change was a rise of 1.42 feet.
The average level is 2.35 feet above the "Allocation Trigger".

Attachment G

May 13, 2015

BBRCA Treasurer/Budget Report

- **First handout is the Treasurer's Report**
    - We are doing well overall for funds, with $20,280.74 on hand and we expect to end the year at around $18,483.74. (Down about $1,890 from the beginning year balance of $20,374.01).
    - We expect to receive an invoice for the FY12-13 and FY13-14 audit soon. The estimated cost of the audit is $1,600.00.

- **Second handout is our budget tracking document.**
    - **First two columns are closing the book on FY 13-14.**
        - The $1,600 budgeted for the Annual Audit was spent in the last fiscal year (FY 13-14).
        - $100 budgeted for Postage and Office Supplies and $100 budgeted for Miscellaneous Expenses were not spent.
        - The actual interest earned in FY 2013-2014 was lower than the budgeted amount due to a lower than expected interest rate.
    - **The next two columns show how the Compact Administration Budget has been spent this FY 14-15.**
        - The $15,269.00 payments to USGS was spent in the current fiscal year (FY 14-15)
        - The actual interest earned in FY 2014-2015 was lower than the budgeted amount due to a lower than expected interest rate.
        - The Annual Report Printing budget for the 2013 report was spent in the current fiscal year (FY14-15)
        - The audit payment was larger this year ($1,600.00 because it was for two fiscal years, FY12-13 and FY13-14. Payment for the audit was budgeted for FY12-14, but will not be made until this fiscal year (FY14-15).
    - **The next two columns are the budget for FY 15-16**
        - First set of numbers is what was estimated last year and the second set is what I propose we adopt today.
            - USGS – Expect to spend approximately 3% more each fiscal year. The proposed figure for this year is $16,500.00.
            - Due to increased printing costs, the proposed figure for the Annual Report Printing budget is $450.00.
            - The audit has been changed to a review. The proposed figure for this year is $870.00.

- The Lower Big Blue NRD for the observation wells will stay at $700.00.
- The budget reflects the declining interest rate on the BBRC account with an Interest Income estimate of $25.00 for FY15-16.
- With the state assessments staying at $8,000.00 per state per fiscal year, expect to see decreases in carryover each year.

- **The final column on the right is the estimated budget for FY 16-17**
  - As in the budget for FY 2015-2016, the USGS figure is higher due to the approximately 3% annual increase.
  - The estimated budget for the observation wells is $700.00.
  - The estimated budget for Annual Report Printing is $450.00.
  - The estimated budget for the Audit Review is $870.00.
  - $100 each for the Postage & Office Supplies and the Miscellaneous Expenses budgets will remain the same.

REPORT OF THE TREASURER
TO THE
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
May 13, 2015

Balance on Hand July 1, 2014	$ 20,374.01
State Assessments	$ 16,000.00
Interest Income through April 30, 2015	$ 15.73
Funds Available as of May 13, 2015	**$ 36,389.74**
Expenditures as of May 13, 2015	
USGS	$ (15,269.00)
Printing Annual Report	$ (160.00)
Lower Big Blue Natural Resources District	$ (680.00)
Dana Cole - Audit	$ -
Balance on Hand	**$ 20,280.74**
Estimated Expenditures through June 30, 2015	
USGS	$ -
Dana Cole - Audit	$ 1,600.00
Lower Big Blue Natural Resources District	$ -
Printing Annual Report	$ -
Postage and Office Supplies	$ 100.00
Miscellaneous	$ 100.00
Total Estimated Additional Expenditures	**$ 1,800.00**
Estimated Income through June 30, 2015	
Interest Income	**$ 3.00**
Estimated End of Fiscal Year Balance	**$ 18,483.74**

BIG BLUE RIVER COMPACT BUDGET ANALYSIS May 2015							
Column A	FY 2013-2014		FY 2014-2015		FY 2015-2016		FY 2016-2017
	Actual	Adopted May 2013	Estimate May 2015	Adopted May 2014	Estimate May 2014	Proposed May 2015	Estimate May 2015
EXPENDITURES							
Operations							
Stateline Gages	$ (15,143.00)	$ 15,550.00	$ 15,269.00	$ 16,000.00	$ 16,000.00	$ 16,500.00	$ 17,000.00
Observation Wells	$ (680.00)	$ 680.00	$ 680.00	$ 700.00	$ 700.00	$ 700.00	$ 700.00
Water Quality Committee	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual report - Printing	$ (561.74)	$ 200.00	$ 160.00	$ 450.00	$ 450.00	$ 450.00	$ 450.00
Annual Audit	$ (1,600.00)	$ -	$ 1,600.00	$ 1,600.00	$ 1,600.00	$ 870.00	$ 870.00
Postage and Office Supplies	$ -	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00
Miscellaneous Expenses	$ -	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00
Total Expenses	$ (17,984.74)	$ 16,630.00	$ 17,909.00	$ 18,950.00	$ 18,950.00	$ 18,720.00	$ 19,220.00
INCOME & CARRY OVER							
Assessments (Both States)	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00
Interest earned	$ 24.43	$ 25.00	$ 18.73	$ 25.00	$ 25.00	$ 25.00	$ 25.00
Carry Over from Prior Year	$ 22,334.32	$ 16,618.33	$ 20,374.01	$ 16,618.33	$ 13,693.33	$ 18,483.74	$ 15,788.74
Total Income and Carry Over	$ 38,358.75	$ 32,643.33	$ 36,392.74	$ 32,643.33	$ 29,718.33	$ 34,508.74	$ 31,813.74
Balance End of Year	$ 20,374.01	$ 16,013.33	$ 18,483.74	$ 13,693.33	$ 10,768.33	$ 15,788.74	$ 12,593.74

BIG BLUE RIVER COMPACT BUDGET ANALYSIS May 2015							
Column A	FY 2013-2014		FY 2014-2015		FY 2015-2016		FY 2016-2017
	Actual	Adopted May 2013	Estimate May 2015	Adopted May 2014	Estimate May 2014	Proposed May 2015	Estimate May 2015
EXPENDITURES							
Operations							
Stateline Gages	$ (15,143.00)	$ 15,550.00	$ 15,269.00	$ 16,000.00	$ 16,000.00	$ 16,500.00	$ 17,000.00
Observation Wells	$ (680.00)	$ 680.00	$ 680.00	$ 700.00	$ 700.00	$ 700.00	$ 700.00
Water Quality Committee	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Annual report - Printing	$ (561.74)	$ 200.00	$ 160.00	$ 450.00	$ 450.00	$ 450.00	$ 450.00
Annual Audit	$ (1,600.00)	$ -	$ 1,600.00	$ 1,600.00	$ 1,600.00	$ 870.00	$ 870.00
Postage and Office Supplies	$ -	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00
Miscellaneous Expenses	$ -	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00	$ 100.00
Total Expenses	$ (17,984.74)	$ 16,630.00	$ 17,909.00	$ 18,950.00	$ 18,950.00	$ 18,720.00	$ 19,220.00
INCOME & CARRY OVER							
Assessments (Both States)	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 19,000.00	$ 19,000.00
Interest earned	$ 24.43	$ 25.00	$ 18.73	$ 25.00	$ 25.00	$ 25.00	$ 25.00
Carry Over from Prior Year	$ 22,334.32	$ 16,618.33	$ 20,374.01	$ 16,618.33	$ 13,693.33	$ 18,483.74	$ 18,788.74
Total Income and Carry Over	$ 38,358.75	$ 32,643.33	$ 36,392.74	$ 32,643.33	$ 29,718.33	$ 37,508.74	$ 37,813.74
Balance End of Year	$ 20,374.01	$ 16,013.33	$ 18,483.74	$ 13,693.33	$ 10,768.33	$ 18,788.74	$ 18,593.74

Attachment H

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT REPORT
U.S. Geological Survey—Water Year 2014

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) 2014 (October 1, 2013 to September 30, 2014), 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 2014 published data (manuscript; discharge daily values; statistics tables; and discharge hydrograph) from the NWIS web page are attached for each station. These site-data sheets (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 2014 compared to those for the median daily statistic for each day of the year.

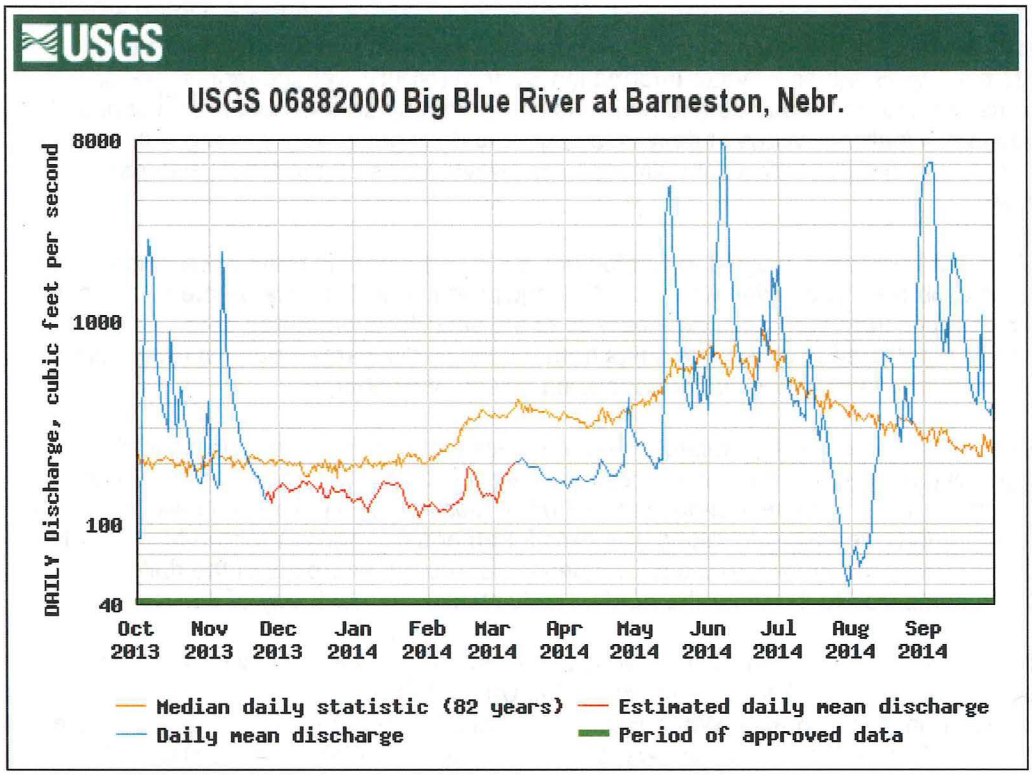
Current (real-time) and historical data on surface water, groundwater, and water quality for the Nation can be accessed and downloaded via the Water Resources for the United States website (http://water.usgs.gov/) or from the Nebraska Water Resources website (http://ne.water.usgs.gov/). Daily, monthly, and annual streamflow statistics are also available under "Surface Water" on the National site and under "Historical data: Streamflow" on the Nebraska site. All unit values of discharge data since October 2007 and all daily values of discharge can be accessed using the real-time options.

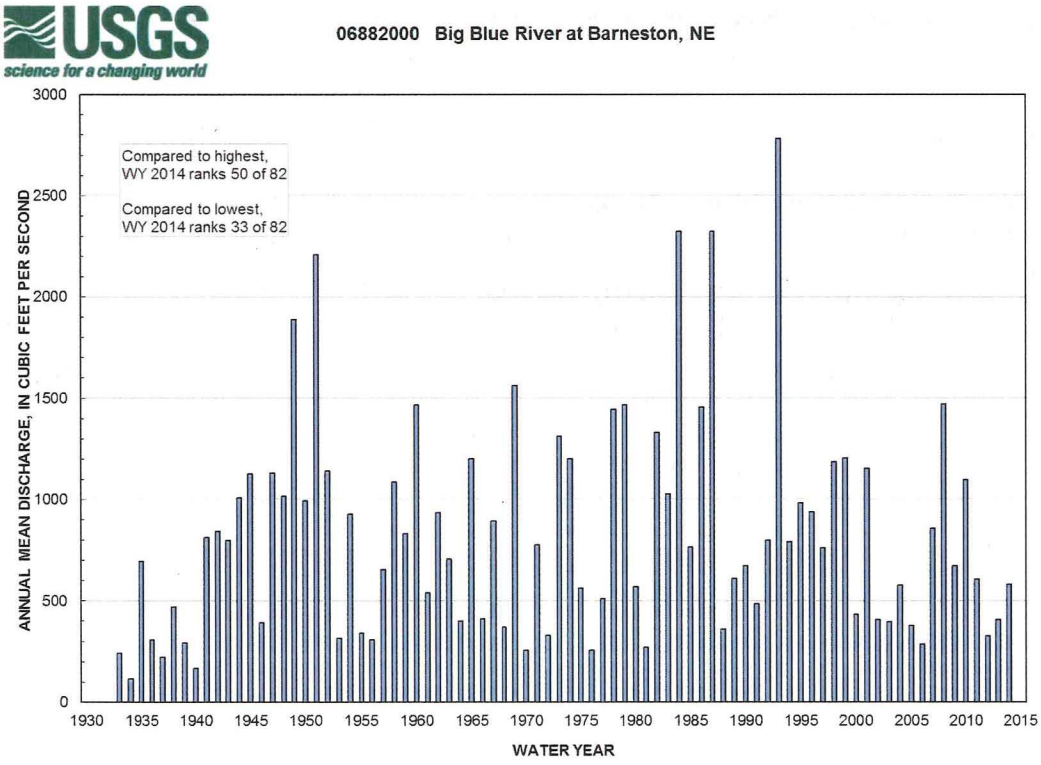
Jason Lambrecht
Chief, Hydrologic Data Section

U.S. Geological Survey, Nebraska Water Science Center
5231 S. 19th St., Lincoln, NE 68512-1271
(jmlambre@usgs.gov)
402-328-4124 (office), 402-328-4101 (fax), 402-416-2363 (mobile)

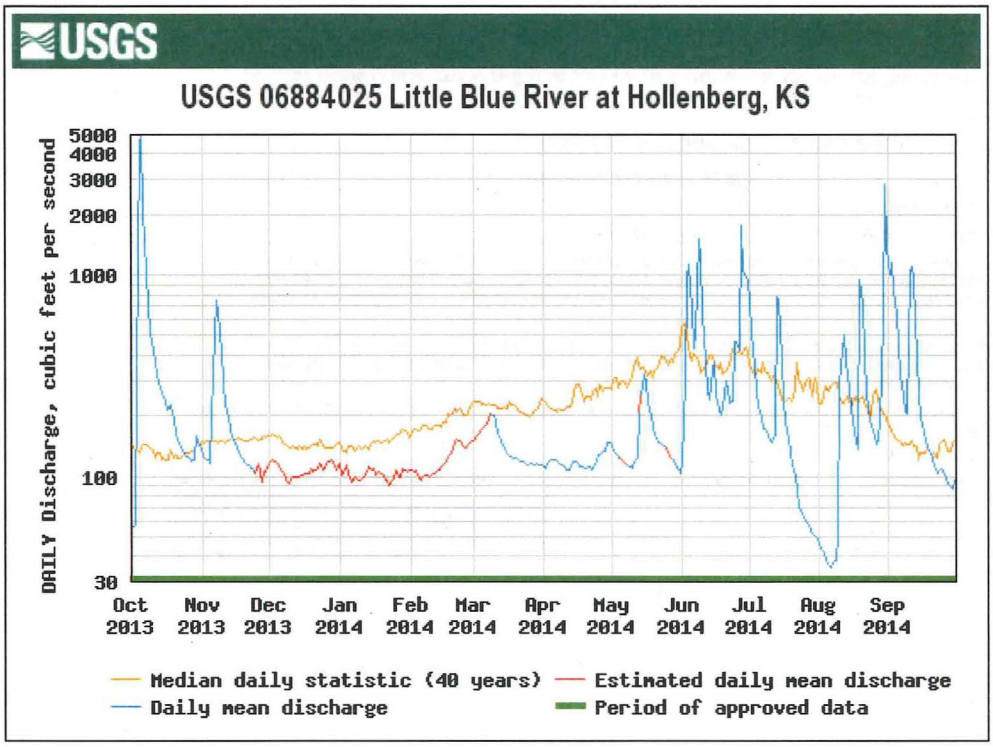
May 6, 2015

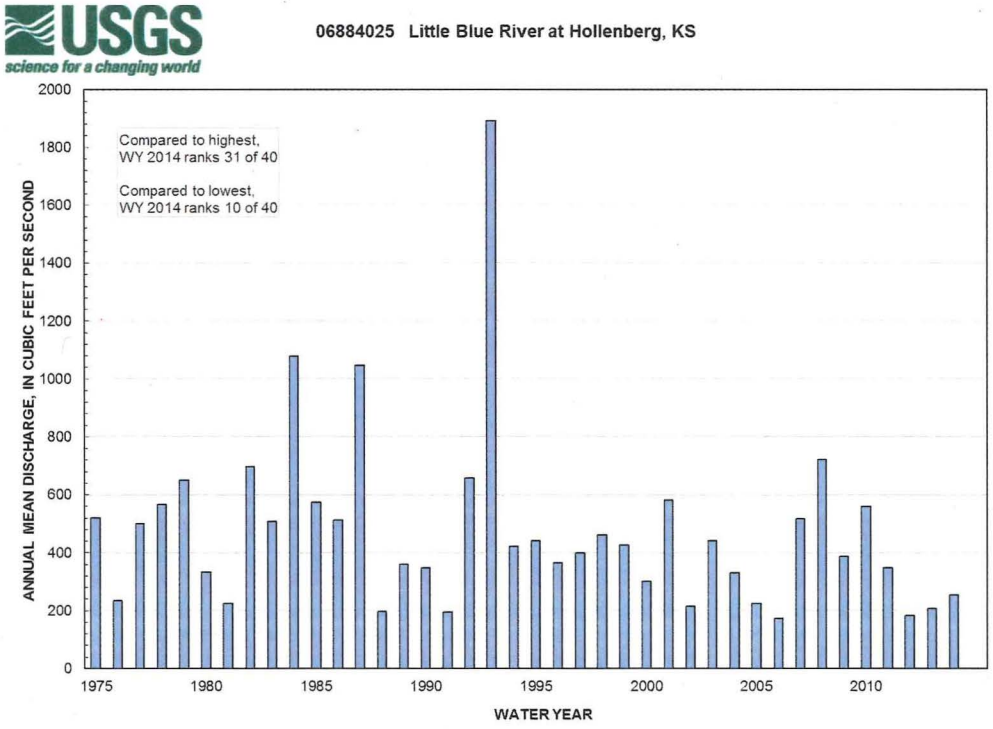
For **Big Blue River at Barneston**, sixteen discharge (and stage) measurements, ranging from 62.5 ft^3/s (3.05 ft) to 6,210 ft^3/s (11.43 ft), and six inspections were made during WY 2014. The annual mean discharge of 580 ft^3/s was 1.4 times greater than that of the WY 2013 mean of 407 ft^3/s; and 1.4 times less than the new historical mean of 832 ft^3/s for WYs 1933–2014 (82 years of record). The maximum and minimum daily discharges were 7,900 ft^3/s on June 7, 2014; and 49 ft^3/s on July 30, 2014.





For **Little Blue River at Hollenberg**, thirteen discharge (and stage) measurements, ranging from 52.2 ft^3/s (2.01 ft) to 1,260 ft^3/s (4.64 ft), and two inspections were made during WY 2014. The annual mean discharge of 254 ft^3/s was 1.2 times greater than that of the WY 2013 mean of 207 ft^3/s; and 1.9 times less than the new historical mean of 477 ft^3/s for WYs 1975–2014 (40 years of record). The maximum and minimum daily discharges were 4,880 ft^3/s on October 5, 2013; and 35 ft^3/s on August 6, 2014.





USGS Water-Year Summary 2014

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 mi^2 of which 77 mi^2 probably is noncontributing.

SURFACE-WATER RECORDS

PERIOD OF RECORD - May 1932 to current year.

REVISED RECORDS - WSP 896: 1932, 1935. WSP 1919: Drainage area.

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 ft^3/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, 2015, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed [May 6, 2015], at URL http://nwis.waterdata.usgs.gov/nwis/wys_rpt?dd_parm_cds=008_00060&adr_begin_date=2013-10-01&adr_end_date=2014-09-30&site_no=06882000&agency_cd=USGS

Water-Data Report 2014

06882000 Big Blue River at Barneston, Nebr. -- Continued

DISCHARGE, CUBIC FEET PER SECOND
YEAR 2013-10-01 to 2014-09-30
DAILY MEAN VALUES
[e, Value has been estimated.]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	2013	2013	2013	2014	2014	2014	2014	2014	2014	2014	2014	2014
1	85	245	e153	e128	e123	e138	154	255	366	1,880	68	5,540
2	84	183	e159	e130	e122	e133	151	241	749	1,160	77	6,020
3	316	159	e154	e132	e126	e128	160	252	670	801	69	6,180
4	1,040	148	e149	e134	e124	e149	166	246	1,720	591	61	6,200
5	1,750	157	e145	e128	e120	e165	165	231	2,820	474	67	4,890
6	2,580	2,230	e147	e120	e115	e173	167	217	3,570	427	67	1,790
7	1,990	1,590	e151	e115	e115	e176	173	214	7,900	377	79	1,150
8	1,450	770	e151	e125	e117	e185	168	202	7,350	408	80	875
9	705	550	e154	e131	e117	e192	163	188	3,840	402	100	717
10	497	498	e161	e135	e114	e197	162	187	2,190	342	170	989
11	409	413	e161	e141	e119	202	161	213	1,420	353	205	694
12	365	341	e155	e148	e125	203	165	209	1,090	325	214	1,620
13	325	294	e162	e157	e124	210	165	576	843	586	387	2,180
14	287	258	e158	e163	e126	207	169	3,220	661	731	702	1,960
15	889	234	e154	e160	e131	201	189	4,570	600	587	691	1,720
16	552	226	e150	e160	e133	192	205	4,690	508	420	670	1,580
17	345	212	e145	e155	e150	190	200	2,380	448	323	663	1,180
18	272	191	e158	e155	e184	192	192	1,710	403	261	589	833
19	475	182	e144	e160	e189	189	180	1,250	369	325	412	617
20	439	177	e136	e159	e185	190	173	828	507	343	332	512
21	337	171	e135	e151	e178	182	174	571	461	272	276	465
22	289	160	e142	e144	e168	174	172	474	577	229	256	408
23	246	153	e152	e129	e147	170	174	413	818	194	473	390
24	214	132	e145	e120	e140	165	191	369	1,080	159	467	456
25	192	e139	e143	e123	e136	164	195	376	954	123	339	1,070
26	174	e143	e145	e124	e140	164	191	666	691	119	309	452
27	162	e128	e147	e119	e137	169	335	525	912	91	582	372
28	158	e142	e146	e111	e141	161	418	398	1,800	63	745	356
29	178	e146	e135	e108		159	302	406	1,380	57	1,990	344
30	237	e154	e134	e118		159	275	600	1,790	49	3,580	392
31	407		e130	e125		161		452		55	4,870	
Total	17,450	10,530	4,601	4,208	3,846	5,440	5,855	27,130	48,490	12,530	19,590	51,949
Mean	563	351	148	136	137	175	195	875	1,616	404	632	1,732
Max	2580	2230	162	163	189	210	418	4690	7900	1880	4870	6200
Min	84	128	130	108	114	128	151	187	366	49	61	344
Ac-ft	34,610	20,880	9,126	8,346	7,628	10,790	11,610	53,810	96,170	24,850	38,860	103,000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2015, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	552	309	238	288	599	1,255	828	1,313	2,002	1,248	674	680
Max	7,451	1,526	851	1,596	2,876	10,560	5,280	5,207	10,460	12,270	5,227	3,420
(WY)	(1974)	(1999)	(1998)	(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)

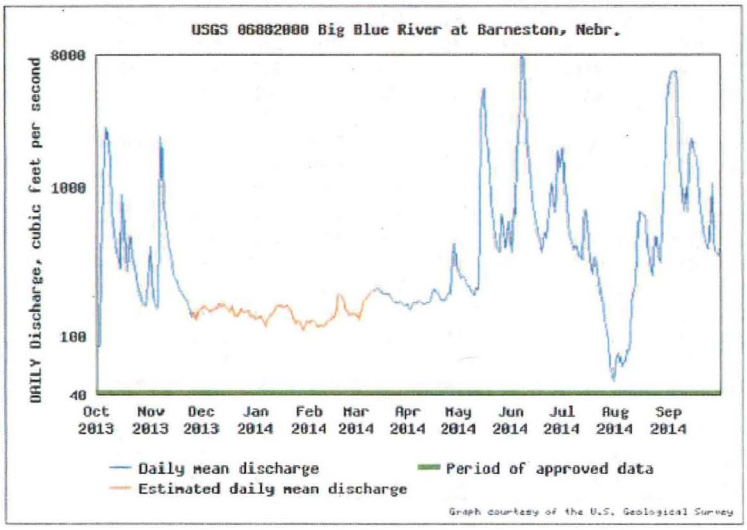
Water-Data Report 2014

06882000 Big Blue River at Barneston, Nebr. -- Continued

SUMMARY STATISTICS

	Water Year 2014		Water Years 1933 - 2015	
Annual total	211,600			
Annual mean	579.8		832.0	
Highest annual mean			2,781	1993
Lowest annual mean			115.0	1934
Highest daily mean	7,900	Jun 07	50,000	Jun 09, 1941
Lowest daily mean	49.0	Jul 30	1.00	Nov 30, 1945
Annual 7-day minimum	62.3	Jul 29	15.1	Aug 03, 1934
Maximum peak flow	10,500	Jun 07	57,700	Jun 09, 1941
Maximum peak stage	14.81	Jun 07	34.30[a]	Jun 09, 1941
Annual runoff (cfsm)	0.130		0.187	
Annual runoff (inches)	1.77		2.54	
10 percent exceeds	1,396		1,700	
50 percent exceeds	194.0		278.0	
90 percent exceeds	124.0		106.0	

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



U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

Short-Form Discharge Measurement Summary With Inspections

STATION NUMBER 06882000 Big Blue River at Barneston, Nebr. TYPE:Stream AGENCY USGS STATE 31 COUNTY 067

LATITUDE 400241 LONGITUDE 0963514 NAD83 DRAINAGE AREA 4447 CONTRIBUTING DRAINAGE AREA 4370.00 DATUM 1162.20 NGVD29

Date Processed:2015-05-06 13:07 By jmlambre

MEAS NO.	DATE	TIME	MADE BY	GAGE HEIGHT	DISCHARGE CFS	RATING	INDIC SHIFT	APPLD SHIFT	UNSFT SHIFT	SHIFT DIFF	GHT. DIFF	TIME CHG.	RATED	STATUS
1404	2013/10/28	1100 CDT	gsn	3.44	158	35.1	0.08	0.08	17.9	0.6	0.0	0.68	F	L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS: rock riffle control dwnstr approx 750-1000ft.														
MEASUREMENT REMARKS: Msmt did not compute properly in SxS Pro. Had to use the spreadsheet print out for Q, A, W and V.														
1405	2013/12/17	1230 CST	pab/ln	3.68	147	35.1	-0.20	0.02	-30.0	-32.3	0.0	0.75	F	L
CONTROL LOCATION: CONDITION: Ice cover														
CONTROL REMARKS: 100 percent ice at bridge 75 percent open 300 feet downstream														
INSP	2014/01/07	1137 CST	gsn	3.88										L
CONTROL LOCATION: CONDITION: Ice cover														
CONTROL REMARKS: 100% ice														
WWG : 06882000 REMARKS: td from rp = 2.29ft at 1137. rp1 elev 6.17ft. td at 1345 approx 2.30ft from rp1. td 2.33ft from rp1 at 1420.														
INSP	2014/01/08	1230 CST	gsn	3.89										L
CONTROL LOCATION: CONDITION: Ice cover														
CONTROL REMARKS: 100% ice cover														
WWG : 06882000 REMARKS: Used RP1 for outside reading. Tapedown reading from RP 2.28ft. RP1 elev 6.17ft.														
1406	2014/01/29	1030 CST	bhi	3.75	110	35.1	-0.40	0.00	-53.2	-53.2	0.0	1.25	P	L
CONTROL LOCATION: CONDITION: Ice cover														
CONTROL REMARKS: 100 percent ice														
MEASUREMENT REMARKS: For the 0.2/0.8 sections, I used the regular method and not the ice mode method. But I still put in the ice depths and used the effective depths. I used this method because in slower flow, the flowtracker will not remind you to add a 0.6 measurement in 0.2/0.8 ice mode.														
INSP	2014/03/03	1243 CST	bhi	3.67										L
CONTROL LOCATION: CONDITION: Ice cover														
CONTROL REMARKS: 100 percent ice														
WWG : 06882000 REMARKS: RP1 6.170-2.5td=3.67 Because of the ice, I had to use a level and and a folding ruler to tapedown from RP 1.														
1407	2014/03/12	1009 CDT	bhi	3.65	201	35.1	0.0	0.00	1.0	1.0	0.0	0.93	F	L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS: 100 percent open														
MEASUREMENT REMARKS:														
1408	2014/04/15	1114 CDT	gsn	3.54	184	35.1	0.06	0.06	12.2	0.5	0.01	0.65	F	L

CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS:
MEASUREMENT REMARKS: lost communication with streampro at station 182. Reconnected. lost data in SxS program, but all data was in Excel printout.

INSP 2014/05/14 1244 CDT mja/pjs L
CONTROL LOCATION: CONDITION:
CONTROL REMARKS:

1409 2014/05/14 1429 CDT MJA/PJS 8.29 3520 35.1 0.14 0.20 3.5 -1.4 0.05 0.3 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS:
MEASUREMENT REMARKS: MMT - Measured at the same time of Q-liner msmt.

1410 2014/05/14 1453 CDT MJA/PJS 8.33 3730 35.1 0.33 0.20 8.7 3.3 0.09 0.85 F L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS:
MEASUREMENT REMARKS: Tethered behind 15-pound sounding weight suspended by rope from downstream side of bridge.

1411 2014/05/15 1237 CDT LWN/MJA 9.54 4560 35.1 0.0 0.06 0 -1.3 0.02 0.58 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS:

1412 2014/05/16 1039 CDT gsn/pab 10.08 5040 35.1 -0.05 0.0 -1.0 -1.0 -0.03 0.55 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: bank vegetation, no debris in flow

INSP 2014/05/21 1041 CDT gsn/bhi L
CONTROL LOCATION: CONDITION:
CONTROL REMARKS:

INSP 2014/05/21 1344 CDT gsn/bhi 4.58 L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS:
WWG : 06882000 REMARKS: Original wwg reading at 13:44 was 4.64. With datum correction applied to original ww rdg, changes to 4.58 from levels on this day (5/21/2014).

1413 2014/06/11 1120 CDT gsn 5.94 1410 35.1 -0.12 -0.11 -5.4 0 -0.03 0.5 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS:
MEASUREMENT REMARKS: Mean stage changed from 5.94 to 5.99 based on observation of unit values in ADAPS on 6/12/2014 by JML.

1414 2014/07/16 1048 CDT bhi 4.33 426 35.1 -0.12 -0.12 -11.8 0 -0.02 1.2 F L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: see pics

1415 2014/07/24 1146 CDT gsn 3.44 160 35.1 0.09 0.09 19.4 -0.6 0.0 0.5 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS:

1416 2014/07/28 1137 CDT bhi/bjr 3.05 62.5 35.1 0.09 0.09 37.4 0.8 0.0 0.62 F L

CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: See pictures, rock riffle 500ft downstream.
MEASUREMENT REMARKS: Used tapedwon from RP1 for the measurement gage height.

1417 2014/09/03 1134 CDT gsn/vcw 11.43 6210 35.1 -0.28 -0.29 -4.8 0.2 0.02 0.38 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: mid channel on banks w/light to moderate bank vegetation(mostly grass).

1418 2014/09/03 1151 CDT gsn/vcw 11.44 6080 35.1 -0.41 -0.29 -6.9 -2.1 0.03 1.22 F L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: mid channel on banks w/light to moderate bank vegetation(mostly grass).

1419 2014/10/02 1015 CDT LWN 10.87 5730 35.1 -0.17 -0.29 -3.0 2.1 0.04 0.32 F L
CONTROL LOCATION: CONDITION: Light debris
CONTROL REMARKS: High water
MEASUREMENT REMARKS: 000 - Subsectioned off ensemble numbers 390 to 490 due to boat drifting. After the subsection distance made good was still approximately the same. (LWN)

USGS Water-Year Summary 2014

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.

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

Suggested citation: U.S. Geological Survey, 2015, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed (May 6, 2015), at URL http://nwis.waterdata.usgs.gov/nwis/wys_rpt?dd_parm_cds=006_00060&adr_begin_date=2013-10-01&adr_end_date=2014-09-30&site_no=06884025&agency_cd=USGS

Water-Data Report 2014

06884025 Little Blue River at Hollenberg, KS -- Continued

DISCHARGE, CUBIC FEET PER SECOND
YEAR 2013-10-01 to 2014-09-30
DAILY MEAN VALUES
[e, Value has been estimated.]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	2013	2013	2013	2014	2014	2014	2014	2014	2014	2014	2014	2014
1	56	125	e118	e117	e108	e149	111	141	115	743	45	1,010
2	57	124	e121	e101	e107	e153	110	133	300	516	43	1,160
3	324	121	e119	e108	e105	e159	118	128	973	357	41	844
4	4,580	117	e116	e114	e108	e166	120	124	1,130	262	38	645
5	4,880	197	e111	e103	e98	e170	120	e122	674	220	36	450
6	2,130	514	e106	e93	e96	e174	120	e118	433	195	35	321
7	1,030	750	e103	e96	e100	e181	119	e115	505	171	37	251
8	698	646	e96	e100	e101	e191	117	113	1,500	173	38	210
9	519	416	e92	e95	e101	e203	113	111	1,200	158	50	206
10	419	290	e96	e96	e100	202	112	110	650	150	284	1,020
11	366	228	e100	e98	e103	186	107	118	369	148	421	1,100
12	317	192	e100	e102	e104	162	108	124	264	161	500	949
13	273	171	e99	e106	e105	149	112	e207	238	779	374	382
14	254	155	e100	e111	e108	142	119	e249	341	750	269	247
15	248	144	e101	e107	e111	136	118	319	372	386	223	195
16	214	139	e103	e109	e114	129	115	287	250	234	186	166
17	216	131	e104	e102	e119	126	112	236	214	185	148	149
18	224	124	e103	e106	e124	125	111	197	200	154	136	139
19	190	118	e110	e103	e128	122	110	174	222	130	943	130
20	164	115	e105	e104	e135	122	110	159	298	114	718	122
21	150	113	e107	e96	e146	121	111	148	267	101	401	112
22	141	110	e110	e95	e152	118	108	146	232	85	253	104
23	134	110	e115	e90	e150	118	110	144	235	71	191	108
24	129	e104	e108	e95	e144	117	120	142	468	64	177	109
25	126	e107	e110	e98	e141	114	127	e138	467	62	168	102
26	123	e116	e116	e107	e139	116	128	e130	422	59	144	97
27	119	e94	e118	e100	e143	115	133	e123	1,780	57	152	92
28	121	e106	e121	e100	e146	114	134	120	1,050	53	184	88
29	159	e105	e117	e110		115	147	114	970	52	586	87
30	148	e115	e107	e108		113	148	108	935	50	2,840	95
31	139		e113	e106		114		103		49	1,340	
Total	18,650	5,897	3,345	3,176	3,336	4,422	3,548	4,701	17,070	6,689	11,000	10,690
Mean	602	197	108	102	119	143	118	152	569	216	355	356
Max	4880	750	121	117	152	203	148	319	1780	779	2840	1160
Min	56	94	92	90	96	113	107	103	115	49	35	87
Ac-ft	36,990	11,700	6,635	6,300	6,617	8,771	7,037	9,324	33,870	13,270	21,820	21,200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2015, BY WATER YEAR (WY)

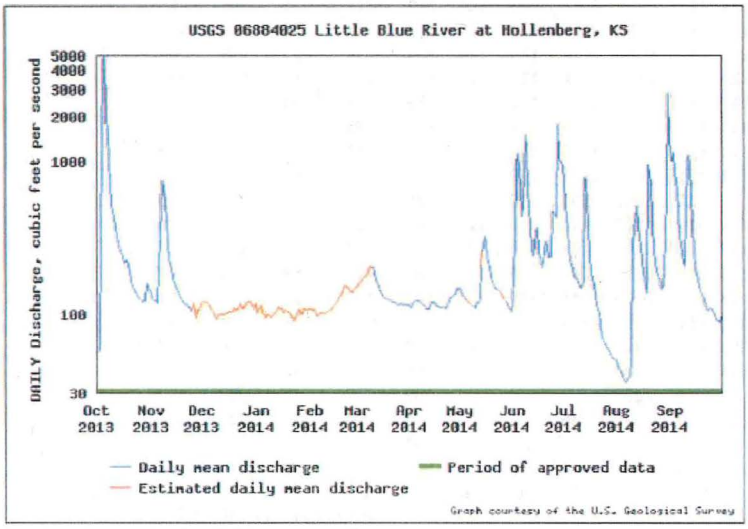
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	325	222	170	175	300	653	476	773	921	839	494	354
Max	2,163	1,113	424	577	1,059	3,816	2,379	2,302	4,373	9,014	2,572	1,320
(WY)	(1987)	(1997)	(1993)	(1984)	(1993)	(1993)	(1987)	(1995)	(1984)	(1993)	(1985)	(1977)
Min	45.3	81.1	87.1	90.0	116	118	118	109	151	68.0	51.5	32.0
(WY)	(1992)	(1992)	(2013)	(2013)	(1992)	(1981)	(2014)	(1992)	(1981)	(2013)	(2012)	(1991)

Water-Data Report 2014

06884025 Little Blue River at Hollenberg, KS -- Continued

SUMMARY STATISTICS

	Water Year 2014		Water Years 1975 - 2015	
Annual total	92,530			
Annual mean	253.5		476.4	
Highest annual mean			1,891	1993
Lowest annual mean			172.9	2006
Highest daily mean	4,880	Oct 05	39,300	Jul 26, 1992
Lowest daily mean	35.0	Aug 06	24.0	Sep 12, 2012
Annual 7-day minimum	38.3	Aug 02	26.0	Sep 06, 2012
Maximum peak flow	6,170	Oct 05	47,800	Jul 26, 1992
Maximum peak stage	9.20	Oct 05	21.21	Jul 26, 1992
Annual runoff (cfsm)	0.092		0.173	
Annual runoff (inches)	1.25		2.35	
10 percent exceeds	502.0		787.8	
50 percent exceeds	124.0		193.0	
90 percent exceeds	96.0		100.0	



U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

Short-Form Discharge Measurement Summary With Inspections

STATION NUMBER 06884025 Little Blue River at Hollenberg, KS TYPE:Stream AGENCY USGS STATE 20 COUNTY 201

LATITUDE 395849 LONGITUDE 0970017 NAD83 DRAINAGE AREA 2752 CONTRIBUTING DRAINAGE AREA DATUM 1216.10 NGVD29

Date Processed:2015-05-06 13:16 By jmlambre

MEAS NO.	DATE	TIME	MADE BY	GAGE HEIGHT	DISCHARGE CFS	RATING	INDIC SHIFT	APPLD SHIFT	UNSFT DIFF	SHIFT DIFF	GHT. CHG.	TIME	RATED	STATUS
515	2013/10/28	1251 CDT	gsn	2.35	119	10.1	-0.19	-0.19	-31.6	0	0.0	0.4	G	L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS: few sandbars														
516	2013/12/18	1126 CST	bhi	2.88	100	10.1	-0.79	-0.22	-72.2	-64.0	0.01	0.83	P	L
CONTROL LOCATION: CONDITION: Ice cover														
CONTROL REMARKS: 100 percent ice														
517	2014/01/30	1021 CST	bhi/lwn	2.96	108	10.1	-0.84	-0.21	-72.4	-65.2	-0.01	1.2	P	L
CONTROL LOCATION: 0 ft downstream CONDITION: Ice cover														
CONTROL REMARKS: 95 percent ice cover with some small open leads.														
518	2014/03/11	1011 CDT	bhi	2.62	181	10.1	-0.25	-0.24	-31.2	-1.6	0.0	0.67	F	L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS: 100 percent open														
519	2014/04/15	1318 CDT	gsn	2.40	121	10.1	-0.23	-0.24	-36.3	1.7	0.0	0.47	G	L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS: sandbars														
INSP	2014/05/07	0926 CDT	pab	2.32										L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS:														
WWG : 06884025 REMARKS:														
520	2014/05/14	1105 CDT	gsn/tpb	2.76	219	10.1	-0.27	-0.25	-30.3	-3.1	0.01	0.72	G	L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS: sandbars														
INSP	2014/05/27	1129 CDT	gsn/bhi	2.33										L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS: sandbars														
521	2014/06/05	1128 CDT	bhi/bkr	3.63	685	10.1	-0.01	-0.03	-0.6	1.6	-0.02	1.2	F	L
CONTROL LOCATION: CONDITION: Clear														
CONTROL REMARKS: See pictures.														

522 2014/06/11 1332 CDT gsn 3.05 332 10.1 -0.21 -0.19 -19.9 -2.6 -0.01 0.92 F L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: few sandbars
MEASUREMENT REMARKS: Adjusted adcp discharge manually using the average percent error of 3 stationary moving bed tests. Measured discharge was 292 cfs and adjusted discharge was 304 cfs. (GSN). Further adjustment by changing extrapolation from power/power to constant/no-slip. With extrapolation adjustment Measured Q = 280.814 + moving bed adjustmen (+11.386cfs) = 292.200cfs. (MJA)

523 2014/07/16 1314 CDT bhi 2.76 230 10.1 -0.24 -0.25 -26.8 1.8 -0.01 0.68 F L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: See pictures

524 2014/07/24 1001 CDT gsn 2.11 67.0 10.1 -0.16 -0.16 -36.8 -0.4 0.0 0.47 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: sandbars

525 2014/07/28 1326 CDT bhi/bjr 2.01 52.2 10.1 -0.13 -0.13 -35.7 -0.2 0.0 0.43 F L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: See pictures.

526 2014/09/02 1147 CDT gsn 4.64 1260 10.1 0.02 0.0 0.8 0.8 -0.05 0.56 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: no sandbars, bottom channel banks, slight veg
MEASUREMENT REMARKS: About halfway through the discharge msmt, communication link was lost and had to be reastablished. After bluetooth was reconnected, the msmt data did not record in SxS Pro, but all data was recorded correctly in the spreadsheet file.

527 2014/10/16 1043 CDT gsn 2.28 114 10.1 -0.14 -0.13 -25.5 -2.6 -0.01 0.43 G L
CONTROL LOCATION: CONDITION: Clear
CONTROL REMARKS: sandbars. main flow on right side channel at gage.

Attachment I

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

May 13, 2015

The engineering committee was not given any special assignments from the Compact Administration and did not meet during the past year. The 2014 data for this report were collected as provided by the United States Geological Survey (USGS) and the Lower Big **Blue** Natural Resources District (LBBNRD).

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 2014 water year (October 1, 2013 thru September 30, 2014) both basins fell below Compact target flows. The mean daily streamflow at the Barneston gage on the Big Blue River (Exhibit A) fell below the target a total of 12 days. The mean daily streamflow on the Little Blue River at the Hollenberg gage (Exhibit B) was below target flows for 17 days.

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 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

Robert F. Lytle Jr.
Kansas

SUMMARY STATISTICS

	Water Year 2014		Water Years 1933 - 2015	
Annual total	211,600			
Annual mean	579.8		832.0	
Highest annual mean			2,781	1993
Lowest annual mean			115.0	1934
Highest daily mean	7,900	Jun 07	50,000	Jun 09, 1941
Lowest daily mean	49.0	Jul 30	1.00	Nov 30, 1945
Annual 7-day minimum	62.3	Jul 29	15.1	Aug 03, 1934
Maximum peak flow			57,700	Jun 09, 1941
Maximum peak stage			34.30[a]	Jun 09, 1941
Annual runoff (cfsm)	0.130		0.187	
Annual runoff (inches)	1.77		2.54	
10 percent exceeds	1,396		1,700	
50 percent exceeds	194.0		278.0	
90 percent exceeds	124.0		106.0	

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

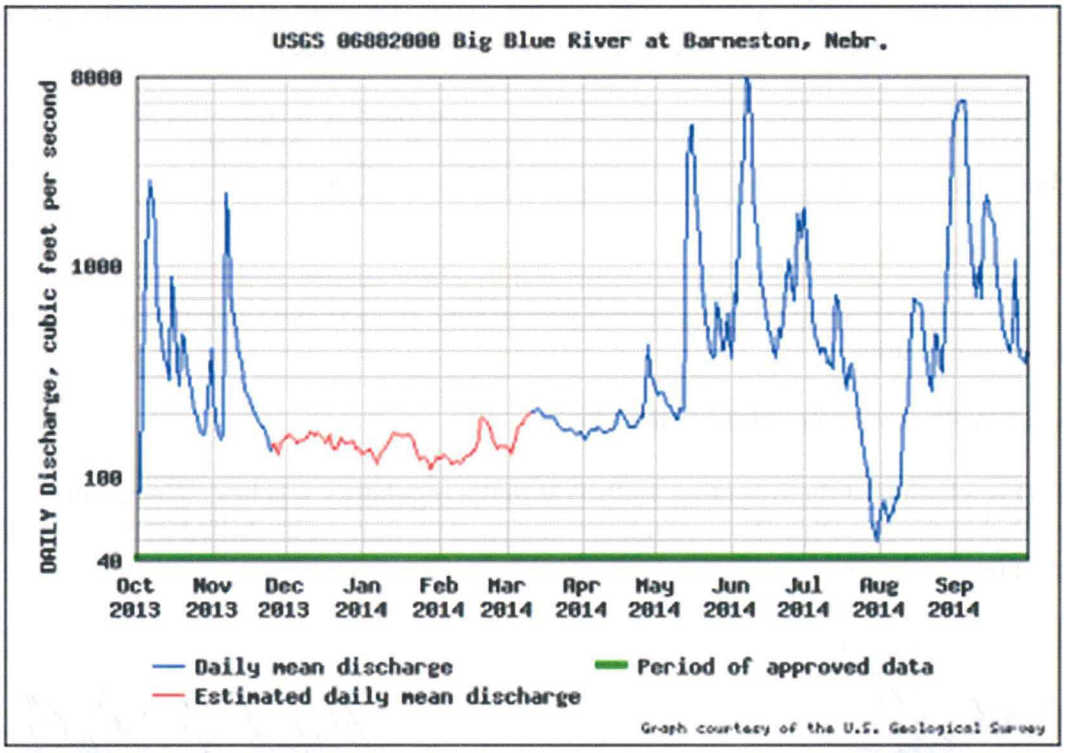


Exhibit A

SUMMARY STATISTICS

	Water Year 2014		Water Years 1975 - 2015	
Annual total	92,530			
Annual mean	253.5		476.4	
Highest annual mean			1,891	1993
Lowest annual mean			172.9	2006
Highest daily mean	4,880	Oct 05	39,300	Jul 26, 1992
Lowest daily mean	35.0	Aug 06	24.0	Sep 12, 2012
Annual 7-day minimum	38.3	Aug 02	26.0	Sep 06, 2012
Maximum peak flow	6,170	Oct 05	47,800	Jul 26, 1992
Maximum peak stage	9.20	Oct 05	21.21	Jul 26, 1992
Annual runoff (cfsm)	0.092		0.173	
Annual runoff (inches)	1.25		2.35	
10 percent exceeds	502.0		787.8	
50 percent exceeds	124.0		193.0	
90 percent exceeds	96.0		100.0	

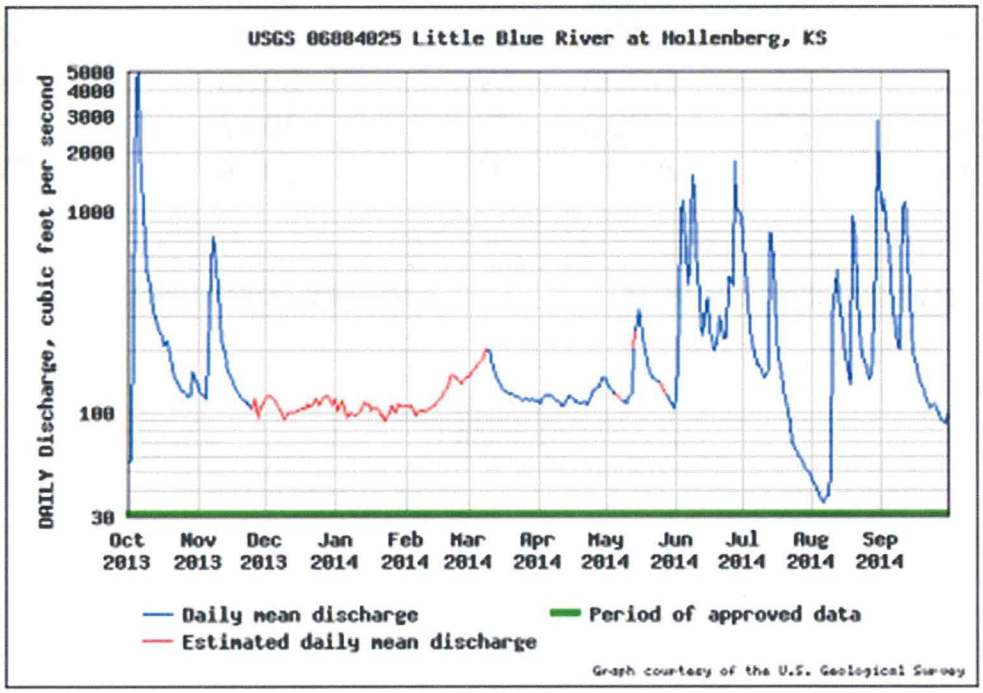


Exhibit B

BIG BLUE RIVER COMPACT STATIC WATER LEVELS 2014

LEGAL	SECT	SITE	TYPE	SPRING 2014	FALL 2014
4N-5E	2	AAAA	OW	97.6	96.80
4N-5E	2	DDAA	IW	20.58	19.86
4N-5E	4	BBBC	IW	22.68	22.74
4N-5E	9	CBCC	IW	75.71	74.55
4N-5E	10	DDAA	IW	29.9	30.75
4N-5E	11	DACA	IW	18.01	17.00
4N-5E	14	ABBB	IW	15.59	14.60
4N-5E	25	AACD	IW	21.78	21.83
5N-4E	12	ABBA	IW	20.55	19.79
5N-4E	13	BADD	IW	17.45	16.12
5N-4E	23	BABB	IW	17.09	17.40
5N-4E	24	AACD	IW	19.64	18.52
5N-5E	7	CADD	IW	64.37	63.96
5N-5E	20	BCCD	IW	20.49	20.08
5N-5E	21	DDBB	IW	59.69	59.97
5N-5E	29	CBBB	IW	16.17	16.34
5N-5E	33	AADD	IW	20.74	20.42

OW - OBSERVATION WELLS

IW - IRRIGATION WELLS

Exhibit C

Big Blue River Regulatory Area Wells					
Registration Number	Location T-R-S	Completion Date	Depth (FT)	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	3/20/2013	120	1,200	3/28/2013

Little Blue River Regulatory Area Wells					
Registration Number	Location T-R-S	Completion Date	Depth (FT)	Pumping Capacity (GPM)	Filing Date
G-058158	2N-2E-16AD	8/15/1977	29	650	9/6/1977
G-139240	2N-2E-9DD	0/0/1956	50	400	3/23/2006

Exhibit D

Attachment J

Report of Big Blue River Water Quality Committee to Big Blue River Compact Commission

May 13, 2015

Manhattan, Kansas

Kansas Department of Health and Environment staff met with staff from Nebraska Department of Environmental Quality, Nebraska Department of Agriculture and newly appointed Commissioner Nelson in Beatrice on May 6, 2015. The following highlights describe water quality conditions and activities in the Big and Little Blue River Basins.

Water Quality and TMDLs

Nebraska has completed TMDLs addressing atrazine on 18 stream segments and bacteria on 16 streams within the two basins, as well as phosphorus and sediment on Big Indian Reservoir. Another 16 stream waterbodies and 27 lakes have impairments needing TMDLs within the Big and Little Blue Basins.

Kansas has 18 TMDLs in the Big Blue Basin and 12 in the Little Blue Basin, mostly addressing stream atrazine and bacteria impairments, plus pesticide, eutrophication and siltation issues at Tuttle Creek Lake, Centralia Lake and Washington County State Fishing Lake. Another 32 impairments are currently listed by Kansas on waters within the two basins. The primary impairing pollutants are phosphorus and total suspended solids impacting the biology of the streams.

Kansas notes 16 delistings, mostly for lead and copper impairments which might coincide with dry conditions and lowered suspended solid concentrations. Kansas TMDLs for total phosphorus are slated for 2019. Other impairments won't be addressed until 2023 and beyond. Nebraska TMDLs are established in accord with local management districts' ability to implement the non-point reductions.

Water quality conditions in the past ten years indicate a general decrease in atrazine concentrations and an increase in total phosphorus. Total suspended solids, or sediment, appears to have decreased in the past 10 years because of best management practices and/or drought limiting runoff conditions.

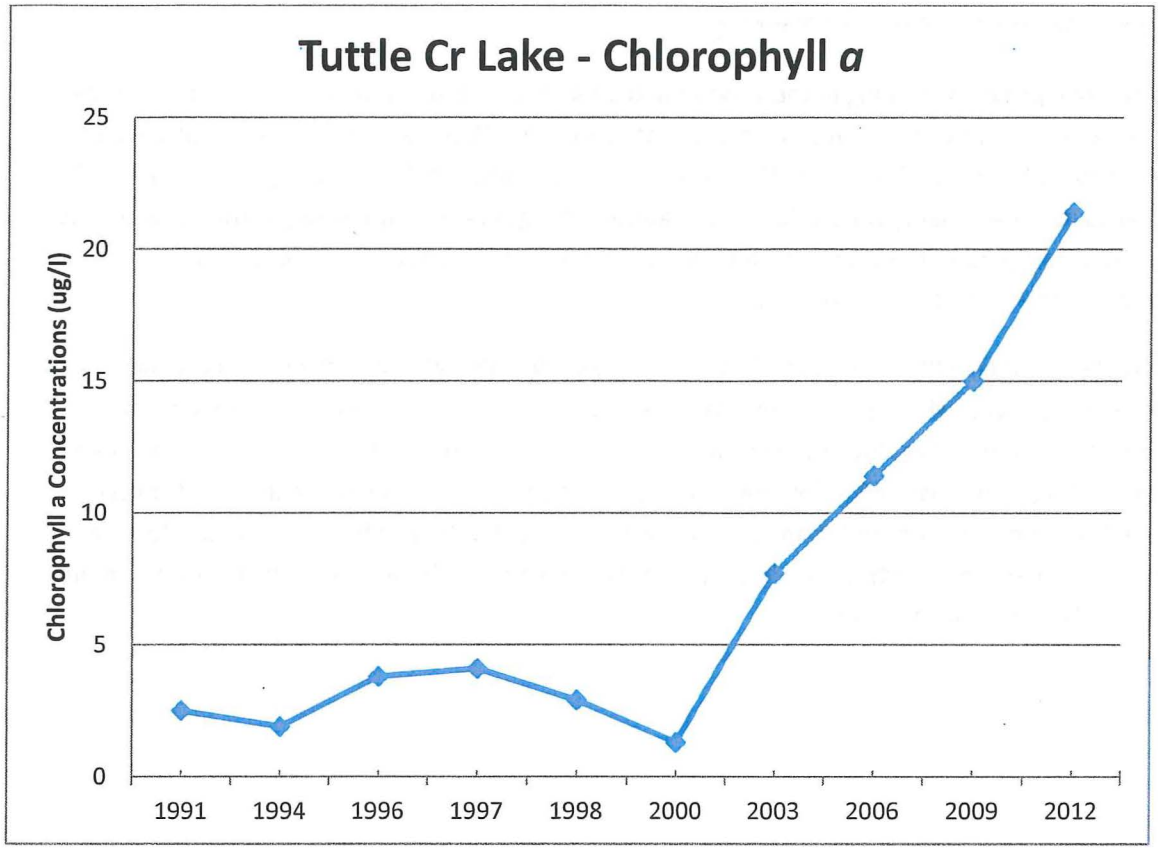
Stream Station	Atrazine % > 3ug/l 1990-2005	Atrazine % >3ug/l 2006-2015	TP Avg. 1990-2005 (mg/l)	TP Avg. 2006-2015 (mg/l)
Lower Big Blue – 10270205				
SC233 Big Blue River	19.6%	16.6%	0.854	0.952
SC240 Big Blue River	22.4%	12.5%	0.734	0.769
SC502* Fancy Cr	11.5%	40%	0.226	0.314
SC505 Black Vermillion R.	17.9%	12.5%	0.335	0.398
SC717* Horseshoe Cr	25%	42.9%	0.502	0.284
Lower Little Blue - 10270207				
SC232 Little Big Blue	12.1%	20.8%	0.534	0.584
SC507 Mill Cr	22.2%	26.1%	0.287	0.344
SC712* Rose Cr	50%	16.7%	0.907	0.646
SC741 Little Blue R	27.3%	22.2%	0.493	0.563

Stream Station	TSS Avg. 1990-2005 (mg/l)	TSS Avg. 2006-2015 (mg/l)	TSS Median 1990-2005 (mg/l)	TSS Median 2006-2015 (mg/l)
Lower Big Blue – 10270205				
SC233 Big Blue River	301	205	108	77
SC240 Big Blue River	392	267	117	64
SC502* Fancy Cr	69.6	150.6	42	28
SC505 Black Vermillion R.	220	242	60	42
SC717* Horseshoe Cr	196	45	117	12.5
Lower Little Blue - 10270207				
SC232 Little Big Blue	265	183	71.5	48
SC507 Mill Cr	163	178	60	45
SC712* Rose Cr	426	150	57	10
SC741 Little Blue R	236	240	103	45.5

Tuttle Creek Lake Conditions

Tuttle Creek Lake has seen a substantial reduction in ambient pesticide levels from the early 1990's. Phosphorus levels have risen slightly, while TSS concentrations are down somewhat. The somewhat alarming consequence to these conditions is light limitation in Tuttle Creek Lake may be lessened, allowing phytoplankton to take advantage of the rich nutrient base in the lake and begin to proliferate. Chlorophyll levels are increasing since 2000, hence, a revisit of the eutrophication TMDL may be in order along with the development of the stream phosphorus TMDLs in 2019.

Sampling Year	Atrazine (ug/l)	Alachlor (ug/l)	TP (mg/l)	TSS (mg/l)	Chl-a (ug/l)
1991	15	2.7	0.25	10	2.5
1994	16	3	0.14	18	1.9
1996	2	0.88	0.2	16	3.8
1997	0.3	1.3	0.2	11	4.1
1998	1.1	1.2	0.28	9	2.9
2000	1.5	0.16	0.19	6	1.3
2003	0.53	0.58	0.26	19	7.7
2006	1.3	0.1	0.2	10	11.4
2009	0.69	0.26	0.22	16	15
2012	1.0	0.1	0.26	10	21.4



Ammonia Criteria

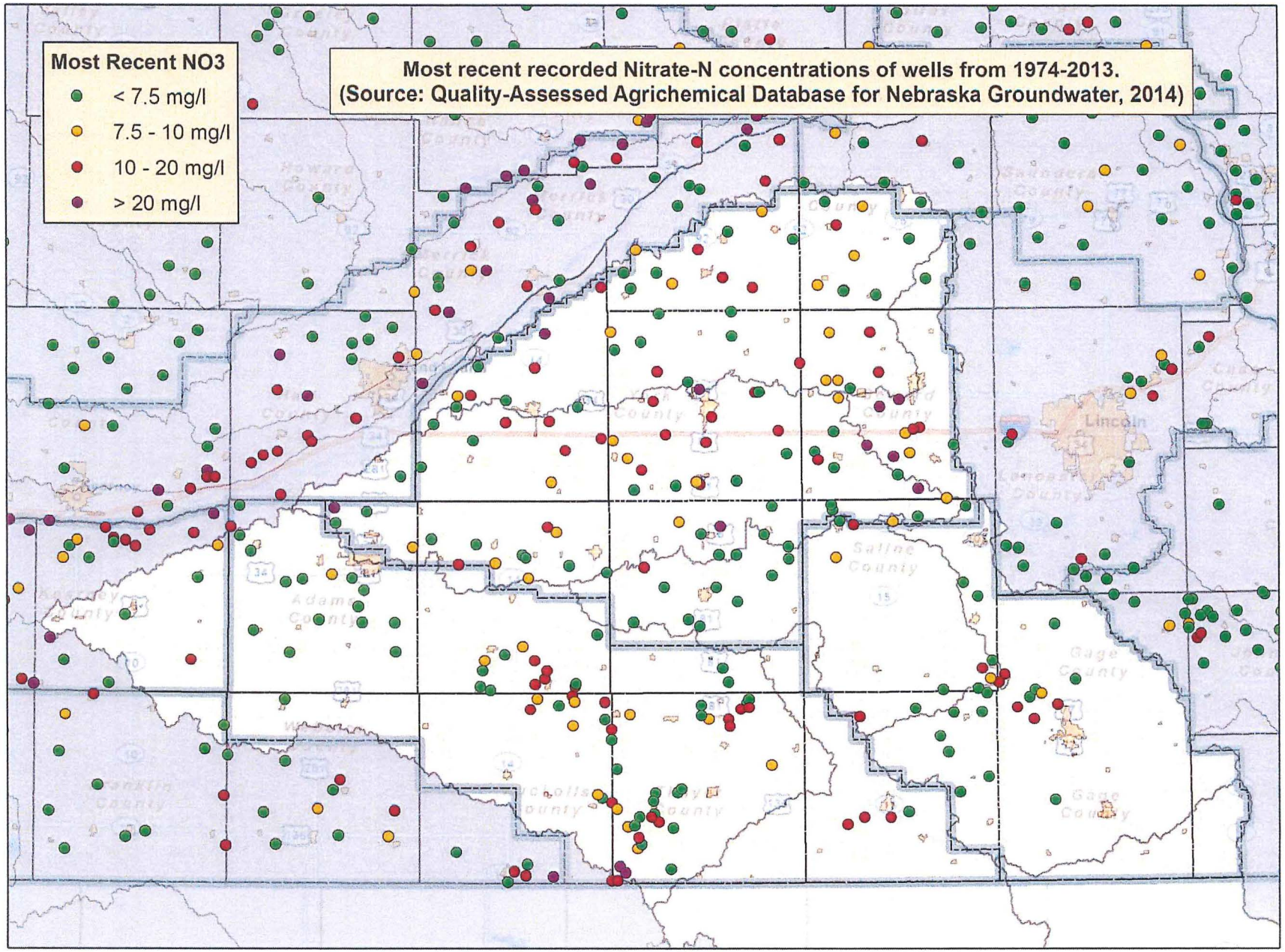
This year, Nebraska became the first State to adopt EPA's newly recommended criteria for ammonia. These new numeric criteria extend protection to freshwater mussels and other invertebrates in streams. In Midwest streams located in Nebraska and Kansas, such shellfish species are ubiquitous. The new criteria are 50-80% lower than current standards and an estimated 101 facilities in Nebraska will need to do some work to meet the new criteria. Approximately 26 facilities in Nebraska lie within the Big Blue River Basin and will see new limits in their next permits. A number of these facilities are lagoon systems.

Kansas plans to follow suit with final adoption slated for early 2017. Most mechanical facilities will be able to meet new criteria through altered operations or building new or upgraded treatment works. Few lagoons, if any, will be able to meet the new standards and Kansas is working simultaneously on a multiple facility variance to the new standards to provide many small towns served by such lagoons relief from the new criteria.

319 Non-point Source Activities and Planning

Nebraska has five projects ongoing in the Lower Big Blue and Little Blue addressing non-point source pollution reduction. Two of the projects are associated with the National Water Quality Initiative of NRCS saturating BMPs in the Cub Creek Watershed. Other activities include development of watershed plans and ground water quality protection and quantity management, emphasizing nitrates. Previous projects were completed in the Upper Big Blue for similar activities in addition to watershed implementation above Big Indian Reservoir.

Kansas is implementing BMPs through its Tuttle Creek Lake WRAPS (Watershed Restoration and Protection Strategy) watershed group. They have been very aggressive in addressing streambank stabilization on streams above Tuttle Creek Lake. Livestock management demonstration projects and cover crop plantings have also been dominant activities. The existing watershed plan is up for review and revision this Summer. Focused monitoring in certain subwatersheds where implementation has been concentrated enters its fifth year. To date, the data have established a baseline of condition but only faint signals of improved quality.


Most Recent NO3
< 7.5 mg/l
7.5 - 10 mg/l
10 - 20 mg/l
> 20 mg/l
Most recent recorded Nitrate-N concentrations of wells from 1974-2013.
(Source: Quality-Assessed Agrichemical Database for Nebraska Groundwater, 2014)
Lincoln

Attachment K

Resolution of Appreciation to Gary Mitchell

RESOLUTION

WHEREAS, Mr. Gary Mitchell served as the Federal Chairman of the Kansas-Nebraska Big Blue River Compact Administration for a period of twelve years, beginning in 2003 and ending in 2014.

WHEREAS, in 2014 Mr. Mitchell was replaced by the President of the United States as Federal Chairman of the Kansas-Nebraska Big Blue River Compact Administration.

WHEREAS, Mr. Mitchell did faithfully and diligently serve on the Compact Administration as the Federal Chairman providing excellent representation and positive input and attitude.

NOW, THEREFORE, BE IT RESOLVED, That the Kansas-Nebraska Big Blue River Compact Administration herby recognizes the dedicated service of Gary Mitchell to the States of Kansas and Nebraska, and expresses on behalf of the citizens of both States sincere appreciation and commendation for his service, and extends to him best wishes for the future.

BE IT FURTHER RESOLVED, That this resolution be entered into the record of the 2015 Annual Compact Commission Meeting Minutes and the 2014 Annual Report, and a copy of the Annual Report be presented to Mr. Mitchell.

Adopted at the Forty Second Annual Meeting of the Kansas-Nebraska Big Blue River Compact Administration in Manhattan, Kansas on this 13th day of May, 2015.

Attachment L

Resolution of Appreciation to Ken Regier

RESOLUTION

WHEREAS, Mr. Ken Regier served as the Nebraska Advisor of the Kansas-Nebraska Big Blue River Compact Administration for a period of twenty four years, beginning in 1990 and ending in 2013.

WHEREAS, in 2013 Mr. Regier elected not to serve another term as Nebraska Advisor to the Kansas-Nebraska Big Blue River Compact Administration.

WHEREAS, Mr. Regier did faithfully and diligently serve on the Compact Administration as the Nebraska State Advisor providing excellent representation and positive input and attitude.

NOW, THEREFORE, BE IT RESOLVED, That the Kansas-Nebraska Big Blue River Compact Administration herby recognizes the dedicated service of Ken Regier to the States of Nebraska and Kansas, and expresses on behalf of the citizens of both States sincere appreciation and commendation for his service, and extends to him best wishes for the future.

BE IT FURTHER RESOLVED, That this resolution be entered into the record of the 2015 Annual Compact Commission Meeting Minutes and the 2014 Annual Report, and a copy of the Annual Report be presented to Mr. Regier.

Adopted at the Forty Second Annual Meeting of the Kansas-Nebraska Big Blue River Compact Administration in Manhattan, Kansas on this 13th day of May, 2015.

Attachment M

RESOLUTION OF THE KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
HONORING
Mr. BRIAN DUNNIGAN

WHEREAS, Brian Dunnigan served as a Representative of the State of Nebraska on the Kansas-Nebraska Big Blue River Compact Administration from 2008 to 2014; and

WHEREAS, Mr. Dunnigan 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. Dunnigan did faithfully and diligently serve on the Compact Administration 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 Brian Dunnigan to this Administration and extends to him the best wishes of each member of the Administration 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 2015 Annual Compact Commission Meeting Minutes and the 2015 Annual Report and that the Compact Secretary be instructed to send a copy of the Annual Report to Mr. Dunnigan.

Entered this 13th day of May, 2015 at the Annual Meeting of the Kansas-Nebraska Big Blue River Compact Administration in Manhattan, Kansas.