

# KANSAS-NEBRASKA BIG BLUE RIVER COMPACT

THIRTY-NINTH ANNUAL REPORT



FISCAL 2012

Blue Rapids, Kansas  
May 16, 2012

**KANSAS – NEBRASKA BIG BLUE RIVER  
COMPACT ADMINISTRATION**

June 22, 2013

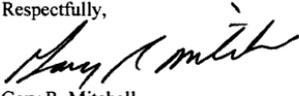
The Honorable Barack H. Obama  
President of the United States of America

The Honorable Sam Brownback  
Governor of Kansas

The Honorable Dave Heineman  
Governor of Nebraska

Pursuant to Article VIII, Section 1 of the Rules and Regulations of the Kansas-Nebraska Big Blue River Compact Administration, I submit the Thirty-Ninth Annual Report. The report covers the activities of the Administration of the compact for the Fiscal Year 2012.

Respectfully,



Gary R. Mitchell  
Compact Chairman

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April 18, 2012

Gary Mitchell, Chairman  
Kansas-Nebraska Big Blue River Compact  
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Dear Compact Members:

Kansas is hosting the annual meeting of the Big Blue River Compact Administration on May 16<sup>th</sup>, 2012 at 9:30 a.m. The meeting will be held at the Blue Rapids Historical Society and Museum, Blue Rapids Kansas, located at 36 Main Street Square.

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

Sincerely,



David W. Barfield, P.E.  
Chief Engineer

PC: Andrea Kessler, Keith Paulsen, Pat Rice, Annette Kovar, Rich Reiman, Will Myers, Dan Howell, Tom Stiles, Katie Tietsort, Burke Griggs, Chris Beightel, John Turnbull, Dave Clabaugh, Daryl Anderson, Mike Onnen, Jason Lambrecht, Kent Askren, Jeremy Gehle, LeRoy Sievers

**KANSAS – NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION  
39<sup>TH</sup> ANNUAL MEETING**

May 16, 2012  
9:30 a.m.  
Blue Rapids Historical Society  
36 Main Street Circle  
Blue Rapids, KS

**AGENDA**

1. Call to Order
2. Introductions and Announcements
3. Approval of the Minutes of the 38th Annual Meeting
4. Chairman's Report
5. Nebraska Report
6. Kansas Report
7. Secretary's Report
8. Treasurer's Report
9. Committee Reports
  - a) Legal
  - b) Engineering
  - c) Budget
  - d) Water Quality
10. USGS
11. Old Business
12. New Business
13. Adjourn

**MINUTES OF THE 39<sup>TH</sup> ANNUAL MEETING  
OF THE  
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION**

**Call to Order**

The Thirty-Ninth annual meeting of the Kansas-Nebraska Big Blue River Compact Administration was held on May 16, 2012 in the Blue Rapids Historical Museum, Blue Rapids, Kansas. The meeting was called to order at 9:35 am by Compact Chairman, Gary Mitchell. Mr. Mitchell introduced himself and suggested that those in attendance introduce themselves.

**Introductions**

Those in attendance were:

Gary Mitchell	Compact Chairman and Federal Member
Brian Dunnigan	Nebraska Ex Officio Member, Director of the Nebraska Department of Natural Resources
Ken Regier	Nebraska Compact Advisory Member
LeRoy Sievers	Legal Counselor for the Nebraska Department of Natural Resources, Legal Committee
Jeremy Gehle	Nebraska Department of Natural Resources, Lincoln Field Office,
Tom O' Connor	Nebraska Department of Natural Resources, Eastern Field Offices Supervisor
Dirk Hargadine	United States Geologic Survey, Kansas District
Tom Stiles	Kansas Department of Health and Environment, Water Quality Committee
Will Myers	Nebraska Department of Environmental Quality, Water Quality Committee
Jason Lambrecht	United States Geologic Survey, Lincoln Data Chief
Bob Lytle	Compact Secretary, Compact Engineering Committee Chair and Budget Committee, Kansas Department of Agriculture, Division of Water Resources
Katie Tietsort	Topeka Field Office Water Commissioner, Kansas Department of Agriculture, Division of Water Resources
Burke Griggs	Attorney with Kansas Department of Agriculture, Legal Committee
David Barfield	Kansas Ex Officio Member, Chief Engineer, Kansas Department of Agriculture, Division of Water Resources
Dave Clabaugh	Lower Big Blue Natural Resource District Manager
John Turnbull	General Manager Upper Big Blue Natural Resource District
Darrell Rains	Director, Big Blue Natural Resource District
Mike Onnen	General Manager, Little Blue Natural Resources District
Jim Schneider	Deputy Director, Nebraska Department of Natural Resources
Pat Goltl	Nebraska Department of Natural Resources

**Approval of the Minutes of the 38<sup>th</sup> Annual Meeting**

Compact Chairman Mitchell noted that the minutes of the 2011 Annual Meeting were e-mailed to the appropriate parties back in January of this year (2012) for comments, corrections and additions. Compact Secretary, Bob Lytle handed out copies of the minutes to those who needed them and stated that he had received comments from some and that those were made part of the minutes. Chairman Mitchell inquired if there were any additional comments or corrections. Hearing none, a motion was made and seconded for the approval of the minutes of the 38<sup>th</sup> annual meeting of the Big Blue River Compact. The motion was passed.

### **Nebraska Report**

Nebraska Commissioner, Brian Dunnigan, thanked Kansas for hosting this year's meeting and last year's meeting and indicated that Nebraska is looking forward to hosting the 2013 and 2014 annual meetings. The 2013 meeting is scheduled for May 15, 2013 in the Offices of the Lower Big Blue Natural Resource District in Beatrice, Nebraska.

The 2011 Big Blue and Little Blue streamflows met or exceeded the target flows as provided by the compact, and at this time it is anticipated that the target flows will also be met for the remainder of the 2012 Compact time frame. Currently the basins are experiencing normal precipitation although that of course could change as the summer goes on.

Nebraska uses integrated management planning practices to insure that hydrologically connected groundwater and surface water supplies are protected for future generations, and to insure that Nebraska remains in compliance with interstate compacts decrees and agreements. In 2009 this process included voluntary measures be taken, and already five (5) natural resources districts have joined in the planning process with the Nebraska Department of Natural Resources (DNR) along with 10 districts that were already participating. An example of the success of these planning efforts is the Upper Platte River Basin Recharge project of 2011. With the cooperation of irrigation districts, a local natural resource district and DNR, over 200 thousand of acre-feet of water was diverted for off season underground storage. An estimated 89 thousand acre-feet provided recharge directly to the underlying aquifer.

Nebraska is required by law to annually evaluate those basins not currently in an integrated managing planning process to determine whether or not they are fully appropriated and thus are required to initiate integrated management planning. The 2012 annual evaluation concluded that the Big Blue and Little Blue River Basins are not fully appropriated at this time. Mr. Dunnigan asked for Jeremy Gehle from the Lincoln Field Office to provide an update on Nebraska's water administration activities.

### **Nebraska Administrative Report**

Jeremy Gehle gave an update on the administrative activities in Nebraska. He noted that through the 2011 water year the Big Blue Basin received approximately normal precipitation, some areas a little more and some less, but target flows were met throughout the compact administrative period. The gage at Hollenberg on the Little Blue River remained above 100 cfs throughout the administrative period, and the Big Blue River at Barneston stayed above 200 cfs for all but the last few weeks of the period. There were no requests received for water administration or concerns of localized shortages.

Flows in both basins have been hovering around median values thus far in 2012. The current U.S. Seasonal Drought Outlook indicates that no drought is posted or predicted for Southeast Nebraska. If

precipitation stays at normal levels, Jeremy indicated he is hopeful that flows will remain above the target values again in 2012 and no administration will be needed.

### **Upper Big Blue NRD Report**

Nebraska Compact Advisor, Ken Regier, noted that in the district in which he is a member of the elected board of directors it is experiencing dry conditions and several pivot systems are already running. The planting season was unique, with it beginning in early April or even sooner and planters were running even up to last week, so almost a six week time frame. Mr. Regier noted that the groundwater table in the District was up 0.41 inches, indicative of the efforts that have been ongoing to wisely use and conserve the resource.

John Turnbull, District General Manager, distributed copies of his report and summarized it. The District had a normal year in 2011 for well drilling permits with 106 new well permits and 54 replacement wells. They are seeing more replacement wells as many of the older wells drilled in the 50s and 60s are experiencing problems like casing failures. Since 2006, the number of irrigated acres are required to be certified with the District. As of January 1<sup>st</sup> the District had 1,170,000 acres irrigated by groundwater. Additionally, groundwater withdrawal reports for wells of 50 gallons per minute or greater are required. The average use over the certified acres for 2011 was 4.7 inches and the average for municipal wells calculated for acres within city limits was 4.8 inches.

The Upper Big Blue District is divided into 12 zones for water quality management, with the primary concern being nitrates. There are two zones that have been designated as Phase II areas which requires farm operators to attend a training session on best management practices related to fertilizer and irrigation management and deep soil sampling, irrigation scheduling and BMP reports. Since being designated Phase II the nitrate levels have been dropping. The District is also working with the City of Hastings on nitrate problems.

The District is also working with producers on water conservation practices. CROP-TIP is a demonstration site where different irrigation and nitrogen management techniques are used. These practices are on a 20 acre plot in York, and two center pivots side by side. Both pivots have same soil types, planting rates and crop practices, but the amount of irrigation for one is controlled by the producer and the other by the NRD. The pivot managed by the District uses substantially less water but achieves the same yield as the producers system. Should the District not come within five bushels of the producer, it will pay him the difference.

The Nebraska Agriculture Water Management Demonstration Network is another very popular program. It encourages the use of ET gages and Watermark sensors. They are working with the University of Nebraska to make this a wide scale management practice.

The District continues to work on groundwater modeling. It has been a long ongoing process in the Blue Basin to study the hydrologic connection between aquifer and the Blue River system. The Department of Natural Resources is also doing work in the same areas, and Mr. Turnbull believes the two will share data for comparison and analysis.

Mr. Turnbull highlighted the two colored charts at the end of the report. The first is a map of the NRD showing the Spring of 2011 to the Spring of 2012 groundwater level changes, and the second a chart showing the historical groundwater levels in the District from the year 1961 thru 2011.

The following questions were asked of Mr. Turnbull: Chairman Mitchell inquired about the CROP-TIP program and the phrase "use of more environmentally friendly fertilizer" what does this mean in terms of the application of fertilizer? It was referring to a split application. Rather than going in during the Fall with anhydrous ammonia, fertilizing at planting and during the season using a subsurface drip irrigation injection system so less is used while getting the same yields. Kansas Chief Engineer Barfield also asked about CROP-TIP and how many years had the side by side pivot operations been going on and how much less water has the Districts pivot used? This year will be the 9<sup>th</sup> season and they have been using 20 to 30% less water. Mr. Turnbull also elaborated on the modeling efforts indicating that it is a MODFLOW model.

#### **Lower Big Blue NRD Report**

Dave Clabaugh, District Manager, noted that a written report was submitted to the Water Quality Committee which will be shared later. He then distributed copies of the Lower Big Blue NRD Newsletter and summarized it. Groundwater levels in the Lower Big Blue District were up a little more than one half foot (.53) which is similar to the Upper Big Blue NRD.

The District had two major projects that were completed this past year, one being the Tuttle Creek Target Watershed Project, a cooperative agreement between Kansas and Nebraska. \$900,000 was targeted for the lower end of the basin where best management practices and buffer strips were installed. The other was the Watershed Rehabilitation Project on Big Indian Reservoir 11A. This project was started in 2009 and targeted the recreational site south of Wymore. This lake renovation project included sediment removal, installation of rip rap, work in the upstream drainage basin with BMPs and the installation of small sediment trapping reservoirs.

Mr. Clabaugh highlighted the map on the newsletter showing the area for a proposed rural water district project around Wymore. The NRD is close to making a bid on the project which will involve the purchase of water from the City of Wymore. One hundred and sixty five residents have signed up for the \$3,203,000 project sponsored by the NRD, which has been approved for a loan through USDA Rural Development. Many of those residents are without a suitable water supply, some even having to haul water.

Mr. Clabaugh concluded by noting that it is becoming more difficult to initiated conservation practices such as buffer strips and conservation reserve lands with grain prices being as high as they are. Producers want to put as much land into crops as possible.

#### **Little Blue NRD Report**

Mike Onnen, District Manager, distributed the Little Blue NRD Report and summarized portions of it. He noted the map on the first page which shows the completed monitoring well installations equipped with data loggers. The real time data that it provided is impressive. You can see the impact on the groundwater levels as the irrigation season begins and the recovery during the offseason. It has provided a great deal of information on the District's aquifer.

Groundwater levels District wide were up .38 inches. There has been an area in the southwestern part of the District near the City of Blue Hills, in which groundwater levels have really dropped the last few years. They have been watching this area closely. It has been found that the levels there have really

responded to the wetter periods. The rapidly changing groundwater table here has made the mapping of groundwater time travel rates for a well head protection project difficult because the rates are rapidly shifting and flow directions are inconsistent.

There is a fair amount of new irrigation well development in the District, and Mr. Onnen echoed the comments made by Dave Clabaugh concerning the price of corn and farmers maximizing acreage. The chart showing the number of new irrigation well installations since 1940 was highlighted. The District has 6,385 active irrigation wells and there were 146 new wells drilled last year.

The NRD has been working on a hydrologic study of the district. This study was completed last July and produced excellent maps and resources which can be found on the website at [www.littlebluenrd.org](http://www.littlebluenrd.org). One of the maps developed is a "Risk Map" which is based upon drought conditions of 2002 thru 2007, transmissivities, specific yields and saturated thickness, and identifies drought sensitive areas, and it is used to evaluate new well permits.

Mr. Onnen highlighted the 2011 Irrigation Pumpage Chart on page three of his report which identifies the number of acres of irrigated of corn, beans, alfalfa, milo and others crops in the District. The last few years the amount of acre-inches reported per acre is significantly lower than earlier years showing increased irrigation efficiencies.

As with the other Districts the Little Blue has some nitrogen issues which seem to be spreading. There are about 230,000 acres that are under soil sampling and required nitrogen management actions by the landowners. The map on the last page showing the Water Quality Management Sub-Areas was noted, especially the area in red near the towns of Carleton and Shickley. Samples will be taken this summer from all the irrigation wells in the area, approximately 600-700 of them to get the scope and size of the contamination.

In terms of surface water projects, the Little Sandy Creek Watershed Project which has been reported on for several years is just about complete. When finished, it will provide 5,450 acre feet of detention storage in the basin and reduce sediment loading of the Little Blue River.

The following question was asked of Mr. Onnen: Commissioner Barfield asked if the "Risk Map" scoring method ever resulted in a new well not being approved for drilling? The District does not use it to deny new wells, but there is a lot of concern about the farming of lands with poor soils scores. And overall scores of 80 or below on a scale to 250 are required to have an irrigation conservation plan.

### **Kansas Report**

Commissioner Barfield distributed copies of a report that Kansas Compact Advisor, Representative Sharon Schwartz, who was unable to attend had given to him. The legislative session has not yet concluded. Mr. Barfield noted that he intended to pass out copies of his report but failed to bring them. He indicated that when discussing the past legislative session he would follow the order of bills covered in Representative Schwartz' report.

### **Climate Conditions**

The climate conditions statewide in Kansas were impacted by a strong La Nina creating the single worst year of drought on record in south-central and southwest Kansas with extreme dryness and heat. The

northern half of the state, including the Blue River Basin was spared these conditions. As a result, a significant amount of water administration occurred, and water users indicated the need for additional pumping authorization beyond their annual authorized quantities. To address this issue, the Division developed in 2011 a drought emergency term permit which allows users to borrow from their 2012 authorized amount. Over 2200 drought term permits were granted. This created a huge additional work load for the Division. Oddly enough, this occurred while the Missouri River was experiencing extreme flooding.

#### **Legislation**

Mr. Barfield summarized the Water Resources Legislation that was addressed at the last session, which was very active in terms of water related issues, driven primarily by the response to the 2011 drought and the Governor's Ogallala initiative.

SB 272 amended an existing statutory provision allowing more options under multi-year flex accounts (MYFA). A MYFA is a 5-year term permit temporarily replacing a standard groundwater right allowing the annual authorized quantity to be exceeded, but limiting the pumping over the 5-year term to the overall average plus a 10% conservation element. The legislation was enacted in 2001, but had little participation because of the conservation requirement. That requirement was removed along with two other options for computing the authorized 5-year total provided.

HB 2451 amends the water appropriation act by eliminating the "use it or lose it clause for groundwater rights in areas formally closed to new water right development to protect those rights from forfeiture.

SB 310 amends the Groundwater Management District (GMD) Act to allow GMDs to develop Local Enhanced Management Areas (LEMAs) as an alternative to the existing Intensive Groundwater Use Area process. This bill represents a major change in the manner in which groundwater sensitive areas are dealt with. A LEMA allows GMDs and stakeholders to propose to the Chief Engineer their own specific corrective controls to address water resource issues. A hearing is then held to determine whether the Chief Engineer accepts or rejects the plan. DWR is currently working with Northwest Kansas GMD No. 4 to implement a LEMA in their Sheridan County high priority area. DWR is excited about this new process and is hopeful that it will improve the Agency's management efforts.

HB 2516 amends the statute related to the establishment of water banking, an optional program to allow irrigators the opportunity bank water for future use or lease water to other water users. The bill deletes language which limited the number of banks and clarifies when the bank is to be reviewed for determining whether the bank charter should lapse or be permanently chartered.

HB 2517 extends the Water Right Transition Assistance Program (WTAP) for an additional ten years. This is a program to retire irrigated acres to non-irrigated or dry land farming.

SB 148 established a procedure for the division water rights.

#### **Regulations**

DWR is working on regulations for increasing the amount of water that can be permitted under a temporary permit from 1 million gallons to 4 million gallons. This is in large part to help facilitate our permitting of water for hydraulic fracturing (fracking) associated with oil and gas production in South

Central Kansas. (K.A.R. 5-9-3) DWR is also working on regulations to implement the provisions of SB 272 and SB 310, MYFAs and LEMAs.

#### **Litigation**

As reported in the past, the Kansas v. Colorado and Nebraska U.S. Supreme Court case is ongoing with discovery essentially finished. The Court appointed William J. Kayatta Jr. of Portland Main as Special Master to hear the case. Trial has been set for Portland on August 13-31<sup>st</sup>

#### **Report of the Kansas Water Commissioner**

##### **Climate Conditions – temperatures and precipitation**

Katie Tietsort, Topeka Field Office Water Commissioner, distributed copies of her report and summarized its high points. The climate conditions in both the Big and Little Blue River Basins in terms of precipitation were at or just above the average with the basins receiving 25 – 35 inches of rainfall, compared to an average of 30 – 35 inches. Some areas of the basin received only 80% of normal with others having more than 100%. Temperature ranged from 1 degree cooler to 1 degree warmer.

##### **Streamflow and Administration**

There were no administrative activities within the Big and Little Blue River Basins for the 2011 water year as required by minimum desirable streamflow (mds) values on the Big Blue River at Marysville, and the Little Blue River at Barnes. As mentioned, flows at the Compact gages remained above the target values for the administrative period of May thru September. There was however significant administration in southern Kansas Basins including the Verdigris, Neosho and Cottonwood systems. In total, 350 water rights were administered in Ms. Tietsort's area.

##### **New Permitting**

There were 18 permits issued in the compact area in Kansas in 2011. In the Big Blue basin, a new flood detention dam was permitted, 2 public water suppliers permitted new wells, 2 new irrigation wells, and 2 term permits for industrial roads construction were approved. In the Little Blue basin, a new irrigation pond project was approved, an additional rate-only application was approved and a term permit for hydraulic dredging was issued.

##### **Metering**

As reported upon in the past, the Topeka Field Office and DWR are working on issuing meter requirement orders from the West to East across eastern Kansas. The Big Blue Basin is now complete with meters on all non-domestic wells. By the next annual meeting, all wells within the whole compact area should have meter requirement orders.

##### **Overpumping Program**

Previously known as the BRO program (blatant, recurring overpumping) this program reviews water use reports to focus on rights with 6% or greater overpumping reported. No water right files within the compact area met the criteria, so no penalties were issued in 2011.

##### **Lake Level Management / Tuttle Creek Reservoir Hydropower**

Because of the drought conditions the past couple of years we are looking closely at the State's Lake Level Management Plans, especially in the southern river systems and reservoirs. DWR has been in close contact with the Tulsa District Corps of Engineers to best manage reservoir releases. This year there has been some changes to the plans, one of which is to allow more storage above the

conservation level to hold more water during runoff events and perhaps stretch that water out during subsequent dry periods.

The Federal Energy Regulatory Commission (FERC) has granted a permit to Riverbank Hydro No. 14, LLC for the exclusive right to investigate the Tuttle Creek Dam Site for the feasibility of constructing a hydroelectric power plant. It expires September 30, 2014.

Dave Clabaugh wondered if the project at Tuttle Creek to reinforce the dam and spillway from failure due to a potential earthquake along a fault line had been completed. Katie informed the group that it was completed last year.

#### **Secretary's Report**

Compact Secretary, Bob Lytle, asked for everyone to be sure to sign the attendance sheet and to include a current e-mail address so that he can forward the draft minutes of today's meeting for everyone's review and comments/corrections later. He indicated that the Annual Report from the 38<sup>th</sup> Annual Meeting held in Marysville, KS in May of 2011 will be printed and distributed in June to those on the annual report mailing list.

#### **Treasurer / Budget Report**

Jim Schneider distributed the Treasurer's Report and a Budget Analysis Table. Mr. O'Connor summarized the Treasurer's Report by indicating the Compact Budget is doing well with the balance on hand as of May 11, 2012 being \$27,054.29 and the estimated balance at the end of the Fiscal Year 2012 to be \$26,819.29. He then summarized the Budget Analysis Table by indicating the column highlighted in yellow is what is proposed for Fiscal Year 2013. It was recommended that the State's assessments remain at \$8,000 per State. An audit is to be performed on even numbered years, the next in 2014. A motion was made and seconded that the proposed Budget for 2012/2013 be approved. The Budget was approved by the Administration.

#### **Committee Reports**

##### **Legal Committee Report**

Burke Griggs indicated that the Big Blue Compact remains non controversial. He and Mr. Sievers of the Legal Committee did work together the past year to finalize several changes to the Compact Rules and Regulations to reflect changes that had been agreed to by the Compact Administration which are reflected in the 2011 minutes approved today. For this meeting, there were no assignments given to the Legal Committee.

##### **Engineering Committee Report**

Bob Lytle, Engineering Committee Chairperson, distributed the Engineering Committee Report. He indicated that the crux of the compact lies with the stateline gages and the flows occurring there during the May through September administrative time frame. As Jeremy Gehle indicated in his report, the compact target flows were met on both the Big Blue and Little Blue River gages, with the Little Blue maintaining flows of at least 100 cfs and the Big Blue 200 cfs. Mr. Lytle briefly went through the Committee Report, its hydrographs and historic water data. The list of groundwater measurements taken by the Lower Big Blue reflects steady to increased water table levels. The USGS report will also cover much of what is contained in the Engineering report.

### **Budget Committee Report**

Bob Lytle spoke on behalf of the Budget Committee. He indicated that the Treasurer's Report pretty much covered all of the budgetary issues. The Committee did not meet but did agree that the state assessments should not be increased. And it was noted that the cost for operating and maintaining the stateline USGS gages is not expected to increase for the next two years as expressed on the Budget Table Analysis. This was confirmed by Jason Lambrecht of the USGS.

### **Water Quality Committee**

Will Myers with the Nebraska Department of Environmental Quality, Water Assessment Section, distributed the Water Quality Committee Report. The Water Quality Committee met on May 16<sup>th</sup> at the Lower Big Blue NRD Office in Beatrice. Mr. Myers noted a few updates that are included in the report. First, the Department of Environmental Quality 2010 Integrated Report, which contains the water quality impairments, was submitted in 2012 and was approved by the EPA. Mr. Myers went through briefly the categories of impairment and the associated Total Maximum Daily Loads (TMDLs) of contaminants. Of primary concern in the Blue Basins are E. coli and Atrazine. The Department has written several TMDLs some of which have been approved by the EPA and others are under review. The Water Quality Report summarizes the status of the TMDLs and has maps showing their locations.

The Big Blue/Tuttle Creek Lake Interstate Targeted Watershed Project as noted by Dave Clabaugh was completed last September. There was good cooperation implementing conservation practice contracts with landowners by the NRDs and cost-sharing was helpful. In Nebraska there were 49 contracts for best management practices, and in Kansas there were 22. This was a very successful project, and a summary report was compiled and submitted to Region 7 of the EPA. It was approved.

The Nebraska Department of Agriculture did provide a summary report for the Water Quality Committee on the buffer strip program in Nebraska. The program is funded through pesticide registration fees.

Tom Stiles with the Kansas Department of Health and Environment provided comments from the State of Kansas perspective. Kansas has also submitted their Integrated Report identifying impaired waters in Kansas' portion of the Blue Basins but it has not yet been approved by Region 7 EPA. The biggest problems not solved by a TMDL are sediment nutrients and phosphorous.

The Committee was initially driven by the quest to deal with the atrazine issue first seen in Tuttle Creek, and subsequently throughout the basin. It continues to show its spiky nature, but concentrations have dropped off after the spring runoff season. So the period where it is prevalent has been shortened markedly. As far as phosphorous and sediment loading, this is very much driven by hydraulic events of the Big Blue, Little Blue and the Black Vermillion Rivers. Management efforts are really only seen as helpful on very local scales.

Finally on non-point source impairment, Kansas has a very active watershed group above Tuttle Creek, using various practices on the ground in sub basins like Horseshoe and Roubidoux Creeks to see if efforts limiting non-point source pollutants are successful.

Mr. Myers noted that Marty Link has been the acting Water Quality Committee Chairperson replacing Pat Rice. Tom Stiles of Kansas will be the Chairperson following this meeting. Tom noted that what the committee intends to focus on over the next two years is less on atrazine, and expand on concerns such

as sediment and phosphorous loading. Also by using existing TMDLs and those to be established throughout both states, that information can be used to help explain the conditions occurring in the basins. Tom also noted the need to concentrate on blue-green algae as it has been a problem the last couple of years. Finally, both states should inventory their NPDES discharge permit points as a way of helping to understand occurring pollutants.

#### **United States Geological Survey Report**

Jason Lambrecht, USGS Data Chief, Lincoln, distributed a written report as well as gaging station data for the Compact stateline gaging stations, the Big Blue River at Barneston and the Little Blue River at Hollenberg. These gaging stations provide 15 minute data that are transmitted every hour for streamflow and water level information data on the website.

The annual mean discharge at the Big Blue River at Barneston for the 2011 Water Year was 607 cubic feet per second which was 1.8 times less than the WR2010 discharge of 1,096 cfs, and was 1.4 times less than the historical record for 79 years of 847 cfs. The minimum flow was 170 cfs on September 30, 2011 and the maximum was 7,470 cfs on May 21, 2011. The past 32 years of record at Barneston are from the exact same location.

The annual mean discharge at the Little Blue River at Hollenberg was 348 cubic feet per second which was 1.6 times less than the WR2010 discharge of 559 cfs and 1.4 times less than the new historical average of 498 cfs for 37 years of record. The maximum daily discharge was 9,200 cfs on May 21, 2011 and the minimum was 117 cfs on September 30, 2011. All 37 years of record at this gage are from the exact same location. Data for the USGS can be viewed at the website <http://water.usgs.gov/>

The funding for these two gages are annually, with a 50% cost share for each at \$15,000 in 2012, so \$7,500 for each gage charged to the Compact. For the next fiscal year the federal government has reduced USGS's match to compensate for overhead, however the Compact will be paying the same amount.

#### **Old Business**

There was no old business to be discussed.

#### **New Business**

Commissioner Dunnigan noted that some committee assignments need to be changed. The Committee memberships going forward are listed below. One main change is that Andrea Kessler will no longer be the Compact Treasurer, with Jim Schneider taking over. The 40<sup>th</sup> annual meeting of the compact is to be held on May 15, 2013 at the Lower Big Blue NRD Office in Beatrice, Nebraska.

#### **Committee Membership and Special Assignments**

Committee appointments were made as follows:

Budget Committee

Jim Schneider NE Chair  
Bob Lytle KS Member

Water Quality Committee

Tom Stiles KS Chair  
Annette Kovar NE Member  
Rich Reiman NE Member  
Greg Foley KS Member  
Dan Howell KS Member

Adjournment

At 11:50 am Chairman Gary Mitchell declared the Thirty Ninth Annual Meeting of the Big Blue River Compact Administration adjourned.



Gary R. Mitchell, Compact Chairman



David W. Barfield, Kansas Commissioner

Legal Committee

LeRoy Sievers NE Chair  
Burke Griggs KS Member

Engineering Committee

Jeremy Gehle NE Chair  
Doug Hallum NE Member  
Bob Lytle KS Member  
Katie Tietsort KS Member



Brian P. Dunnigan, Nebraska Commissioner

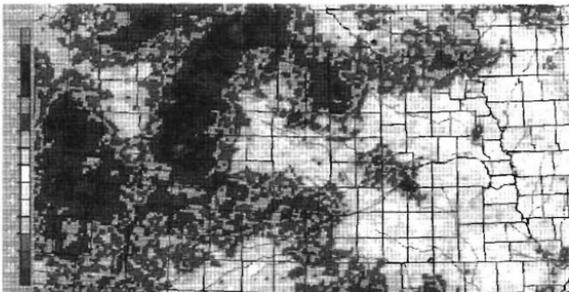
## **2012 Big Blue River Compact Administration Report**

### **2011 Water Administration Activities in Nebraska**

**Through the entire 2011 water year the majority of the basin received normal amounts of precipitation, with some areas slightly below and others slightly above normal precipitation. The flow in both basins exceeded target values over the May through September administration period. The Little Blue River at Hollenberg stayed above 100 CFS throughout the year while Big Blue River at Barneston stayed above 200 CFS for all but the last two weeks the administration period. The Department received no requests for water administration or reports of localized shortages in either Basin. In the spring, each appropriator in the basin was mailed a notice informing them of their permit allotment along with a request to update their owner and tenant contact information.**

**Flows have been hovering around or just slightly below the median value thus far in 2012 at the compact gages. The current U.S. Seasonal Drought Outlook indicates that no drought is posted or predicted for southeast Nebraska, and the U.S. Drought Monitor shows normal conditions throughout the Blue River basins with the exception of small portions of two counties in the headwaters of the Big Blue Basin that were abnormally dry. If precipitation stays at normal levels, I'm hopeful that we will stay above target flows throughout the year.**

Nebraska: 2011 Water Year, Departure from Normal Precipitation  
Valid at 10/11/2011 1200 UTC - Created 10/3/11 21:49 UTC



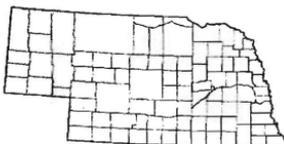
## U.S. Drought Monitor

### Nebraska

May 8, 2012  
Valid 7 a.m. EST

Drought Statistics (Percent Area)

	Severe	Extreme	Very Dry	Dry	Very Wet	Wet
Overall	71.2%	25.7%	5.2%	0.0%	0.0%	0.0%
US (48 States, DC, Puerto Rico)	41.4%	21.4%	24.4%	1.0%	0.0%	1.0%
US (48 States, DC, Puerto Rico, Alaska, Hawaii)	31.4%	14.7%	3.7%	2.2%	0.0%	0.0%
Cont. US (48 States, DC, Puerto Rico, Alaska, Hawaii)	71.2%	25.7%	5.2%	0.0%	0.0%	0.0%
Nebraska	28.0%	14.4%	1.0%	0.0%	0.0%	0.0%
Cont. US (48 States, DC, Puerto Rico, Alaska, Hawaii)	64.2%	21.0%	7.1%	0.0%	0.0%	0.0%



**Legend:**

- No Drought
- Drought - Moderate
- Drought - Severe
- Drought - Extreme
- Drought - Very Dry

The Drought Monitor is a tool for tracking drought conditions. It is based on a variety of data sources and is updated daily. See <http://droughtmonitor.unl.edu> for more information.

<http://droughtmonitor.unl.edu>

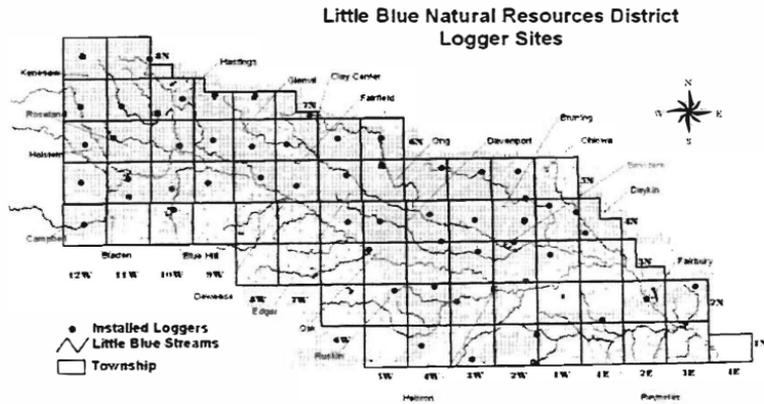
Released Thursday, May 10, 2012  
Matthew Rosencrans, NOAA/NWS/NCEP/CMC

**KANSAS-NEBRASKA BIG BLUE RIVER COMPACT**  
**Nebraska Report - Little Blue Natural Resources District**  
**Mike Onnen, General Manager**  
**MAY 16, 2012**

The Little Blue NRD has engaged in a number of interesting activities this past year. Here are some of the highlights.

**Monitoring Wells Installation**

The NRD finished the installation of the dedicated monitoring well network with 48 in all and approximately one well in each township where an aquifer exists. We began daily recordings in the spring of 2010. Not only has the network provided some great information on the reaction of the aquifer to pumpage and recharge, but the drilling logs provided outstanding geologic information to get a better understanding of the area's hydrogeology.



**Spring 2012 Groundwater Levels**

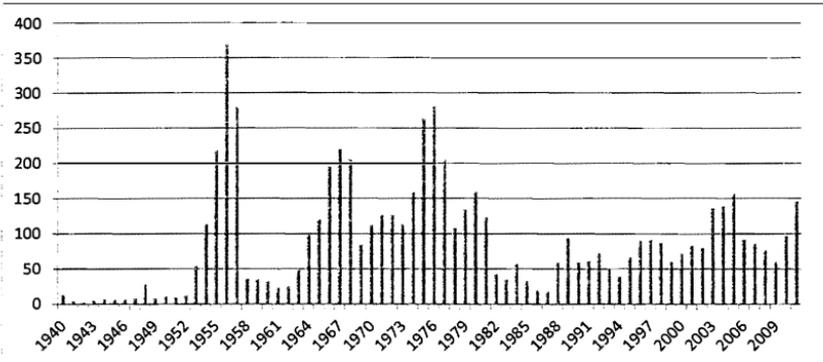
Static groundwater levels were measured 334 irrigation wells in April 2012 and showed a slight average rise of **0.38 feet** since the spring of 2011. The largest township rise was in southwest Adams County with an increase of 1.72', the greatest decline was -1.04' in an area of northwest Nuckolls County where there are very few wells and a poor aquifer. The water table continues to rebound after several years of drought in the early 2000s and according to our records, the district-wide water levels average about the same as those in 1974.

**Irrigated Acres**

Last year, thanks to a request from the legislature, we compiled a fairly accurate accounting of the irrigated acres found in the Little Blue NRD. Although we do not certify acres except in the Unit 8 Water Quantity area, through a process of elimination, calculate 571,400 irrigated acres using FSA acres.

**Irrigation Well Development**

Because the groundwater levels of the Little Blue NRD have been fairly stable over the past 40 years, the Board continues to allow development of irrigated lands. With the attractive commodity prices, pressure on grazing livestock and many acres coming out of CRP, we have seen an increased interest in new irrigation well development. Last year we had 146 new irrigation wells installed. The District currently has 6,285 active irrigation wells. Below find a chart showing the installation of irrigation wells since 1940.



**Hydrogeologic Study Implementation**

Last year we reported that the NRD was working on a hydrogeologic study of the district to compile information already available and add new data to create tools for managing our groundwater resources. The study and mapping project was completed in July 2011 and provided excellent resources. The maps developed, and a description of each, have been loaded to the Little Blue NRD website and are readily available for viewing. [www.littlebluenrd.org](http://www.littlebluenrd.org).

One of the key maps developed during the study was what is called a “Risk Map” which was a qualitative risk analysis of the groundwater supplies. The map included inputs included transmissivity, specific yield, thickness of saturated sands, water level change from 2000 to 2007 (to reflect how the water table responded to an intense drought period) and groundwater recharge. The map has been used to evaluate all well permits which now come into the office.

**Changes in Ground Water Rules and Regulations**

With the increasing land development in the district and the completion of the Hydrogeologic Study, the Board proceeded to develop new Ground Water Management Rules to address some of their concerns. The goal was to create a mechanism whereby each well permit would be assessed to determine not only the availability of reasonable water supply but also the soils irrigation suitability. New well permits received now go through a scoring process to determine the available water supply to determine if conflicts might be likely to occur between landowners. If the score falls below the Board’s predetermined criteria, conditions are attached to the well permit requiring specific water management practices be implemented. The soils are also rated and if the score falls below the Board’s predetermined criteria, a conservation farm plan is required which may require residue levels, buffer strips or cover crops on the breaks of hills following soybeans. We also require a filing of an “encumbrance” in the courthouse so a new

buyer of the land would know that there are conditions attached to the well permit. The process hasn't been perfect and the Board is now wondering if they should have perhaps just said no to some permits, but it has created a new level of awareness for the Board and producers and we've gotten good assistance from the Natural Resources Conservation Service.

Rather than extending the well spacing requirements, the Board also established a rule that there can be no more than two new wells irrigation in any quarter section. That applies in all areas identified on our Risk Map as "high" or "very high" risk.

### **Crop Water Use and Pumpage Reports**

The District continues to gather crop water use reports on about 20% of our irrigated acres each year. Below find a chart of acreages of various crops reported and the past irrigation applications. Note how application levels have dropped in recent years due to conversion to pivot, more efficient irrigation systems, focus on lowering inputs and crop hybrid development.

#### **2011 Irrigation Pumpage Summary**

<b>Crop Year</b>	<b>ACRES REPORTED</b>						<b>ACRE INCHES REPORTED</b>		
	<b>Corn</b>	<b>Beans</b>	<b>Milo</b>	<b>Alfalfa</b>	<b>Other</b>	<b>Total</b>	<b>Gravity</b>	<b>Pivot</b>	<b>All Acres</b>
1999	77,538	31,962	618	3,966	1,031	115,115	15.7	10.1	11.4
2000	65,755	30,611	191	3,481	316	100,354	17.0	11.1	13.6
2001	61,608	35,970	856	3,123	968	102,525	13.9	8.2	10.6
2002	61,973	38,608	294	3,799	2,469	107,143	19.9	13.6	16.5
2003	71,046	32,133	876	3,632	1,994	110,216	16.9	10.3	12.8
2004	72,418	33,679	372	3,388	2,146	112,005	13.1	7.6	10.4
2005	74,790	38,748	487	2,764	2,709	119,498	13.5	8.5	10.7
2006	74,489	41,976	185	3,247	2,108	123,005	13.0	7.8	10.0
2007	80,366	27,049	127	2,660	2,714	112,916	10.6	6.8	7.9
2008	71,112	33,139	112	2,559	2,102	109,313	7.3	4.4	5.2
2009	72,585	37,860	145	2,358	2,337	115,285	13.5	7.5	8.8
2010	73,424	35,828	82	2,542	2,068	113,945	9.1	5.4	6.2
2011	74,533	35,123	25	2,174	2,686	114,542	8.2	4.9	5.9
Average	71,664	34,822	336	3,053	1,973	111,989	13.2	8.2	10.0

### **Nitrate Levels Continue to Rise**

The District continues to monitor the groundwater nitrate level across the district and find that generally the trends show a gradual rise. We have five areas totaling 230,500 acres that are designated a special management areas. The nitrate levels in those areas are: Bruning – 13.77 ppm, Byron-Deshler-Ruskin – 10.93 ppm, Clay-Nuckolls – 10.04 ppm, Fairbury 9.31 ppm and Superior/Hardy 10.5 ppm. Additionally, the NRD has identified another area near Carleton, Nebraska where the nitrates are nearing our 7 ppm action level. The NRD plans to undertake an intensive sampling program in the summer of 2012 to determine the extent and concentrations of the nitrates. We have received a grant to hire a two-year person to collect water samples, promote best management practices in the area and help with education. The area of concern is shown as the violet area in the map on the next page.

In October of 2011, the NRD implemented a rule that all liquid and dry nitrogen fertilizer applied between November 1st and March 1st requires a nitrogen inhibitor along with a fertilizer permit. The Board is also encouraging nitrogen inhibitors for all fall applied anhydrous ammonia, but no restrictions have been imposed.



Kansas-Nebraska Big Blue River Compact  
Nebraska Report - Upper Big Blue NRD  
Rod DeBuhr, Water Department Manager  
May 16, 2012

### Well Drilling Activities

One hundred and sixty permits were issued for irrigation wells (106 new & 54 replacements) in 2011. At the end of 2011 there were registered 11,591 irrigation wells in the District. This is an increase of 57 active irrigation wells compared to the end of 2010.

### Groundwater Level Changes

The average groundwater level change for the District from spring 2011 to spring 2012 was a rise of 0.41 feet. The attached map shows the area of greatest changes and the county averages. With this change, the average ground water level is 7.41 feet above the allocation trigger. Mandatory reporting of irrigated acres and other water uses began in 2006. As of January 1, 2012, there were 1,170,368 ground water irrigated acres certified by the NRD.

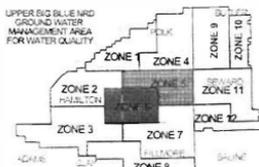
### 2011 Groundwater Withdrawal

2011 was the fourth year that ground water withdrawal reports were required in the Upper Big Blue NRD. Metering is not required at this time. Wells that are not metered must provide an estimate of pumping rate and time of operation. The average water withdrawal for irrigation in 2011 was 4.7 inches per acre. Municipal average water use when calculated for the acres within city limits was 4.8 inches per acre. Other users of groundwater are also required to report withdrawals. The following is a summary of groundwater withdrawal by category of use.

TYPE OF USE	AMOUNT (ac. ft.)	%
Irrigation	465,072.43	96.10%
Ethanol/Commercial	7,812.75	1.61%
Municipal/Public	7,016.24	1.45%
Aquaculture/Livestock	1,901.47	0.39%
Golf course/Lake fill	1,487.17	0.31%
Wetlands	489.74	0.10%
All other	141.52	0.03%
<b>TOTAL</b>	<b>483,921.32</b>	

## Groundwater Nitrates

The district is divided into twelve management zones for ground water quality management. The primary ground water quality management concern is nitrate. A ten township area York County and two townships in Hamilton County (Zones 5 & 6) were designated a Phase II management area to address increased ground water nitrate levels. The 2011 median ground water nitrate level in Zone 5 dropped from 11.0 ppm to 10.0 ppm. In Zone 6 the median nitrate dropped from 9.2 ppm to 9.1 ppm. 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. 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 potential management area to address nitrate contamination in the Hastings Wellhead Protection Area. Regulatory changes are underway in cooperation with the Little Blue NRD, and the City of Hastings.

## CROP-TIP

CROP-TIP is an irrigation demonstration sponsored by The District and Cornerstone Bank near York. The purpose of the project is to show producers ways to reduce groundwater withdrawal and reduce nitrate leaching through improvements in irrigation methods. Corn and soybeans were grown in the 20 acre demonstration field in 2011. 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 are also demonstrated.

## Nebraska Agricultural Water Management Demonstration Network

This is another program to encourage producers improve irrigation scheduling using Etgages and Watermark sensors to determine crop water use. 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 with a collaborative effort with the University of Nebraska Extension. The program is now being implemented in several NRDs. 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 plans to have an interactive website up and running to allow cooperators to post data directly to the website where it can be used by other irrigators. This program, which originated in the Upper Big Blue NRD, has expanded to several other parts of Nebraska. It is estimated that approximately 150,000 acres will use real time soil moisture to schedule irrigation.

### **Soil and Water Conservation Cost-share Assistance**

In FY10-11 the District funded 86 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 \$208,909.80 came from the Nebraska Soil and Water Conservation Program (\$91,052.75) and local NRD property tax revenue (\$117,857.15).

### **Groundwater Modeling**

The Upper Big Blue NRD is the lead agency for the Blue Basin groundwater modeling effort to identify the hydrologic connection of the aquifer and the Blue River system. This is a cooperative effort among the NRDs in the basin. The District is currently working on revision of the model and expanding the model area to include parts of the Upper and Lower Platte river basins along the northern border of the Upper Big Blue NRD.

### **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.

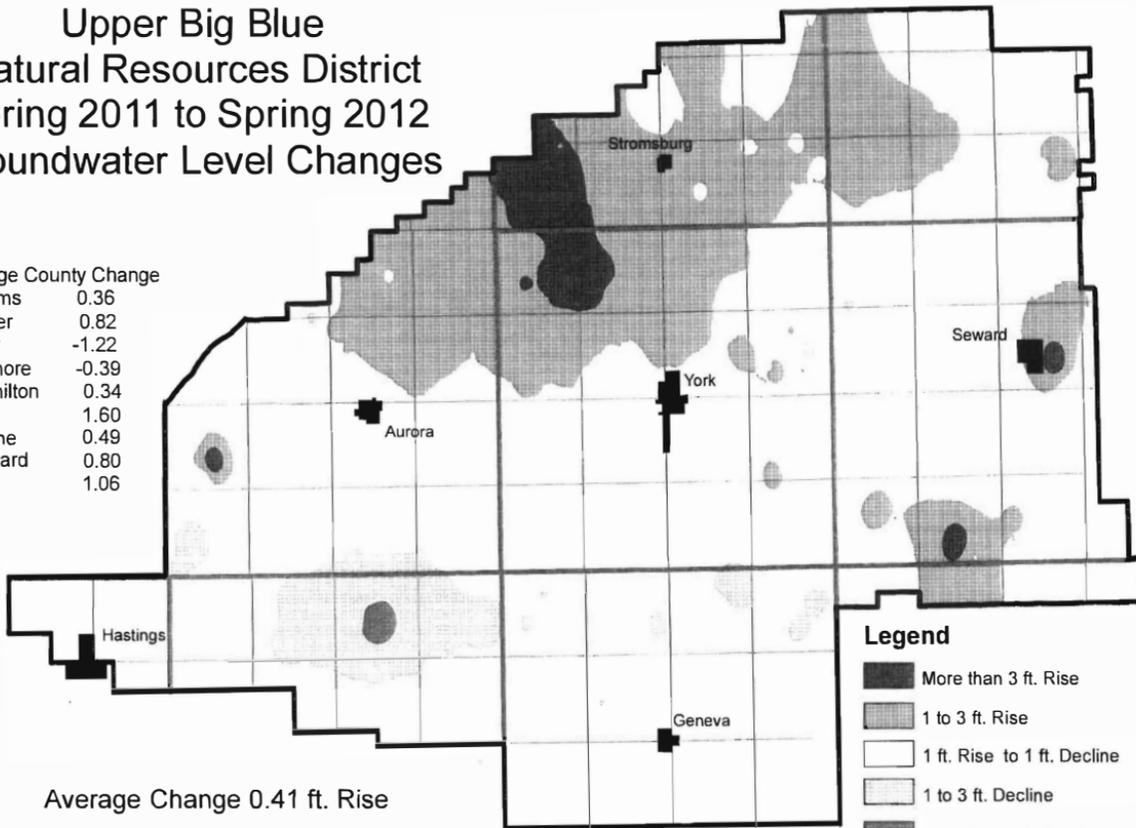
### **Visit our Website**

You can learn all about the District's programs and activities at [www.upperbigblue.org](http://www.upperbigblue.org).

# Upper Big Blue Natural Resources District Spring 2011 to Spring 2012 Groundwater Level Changes

## Average County Change

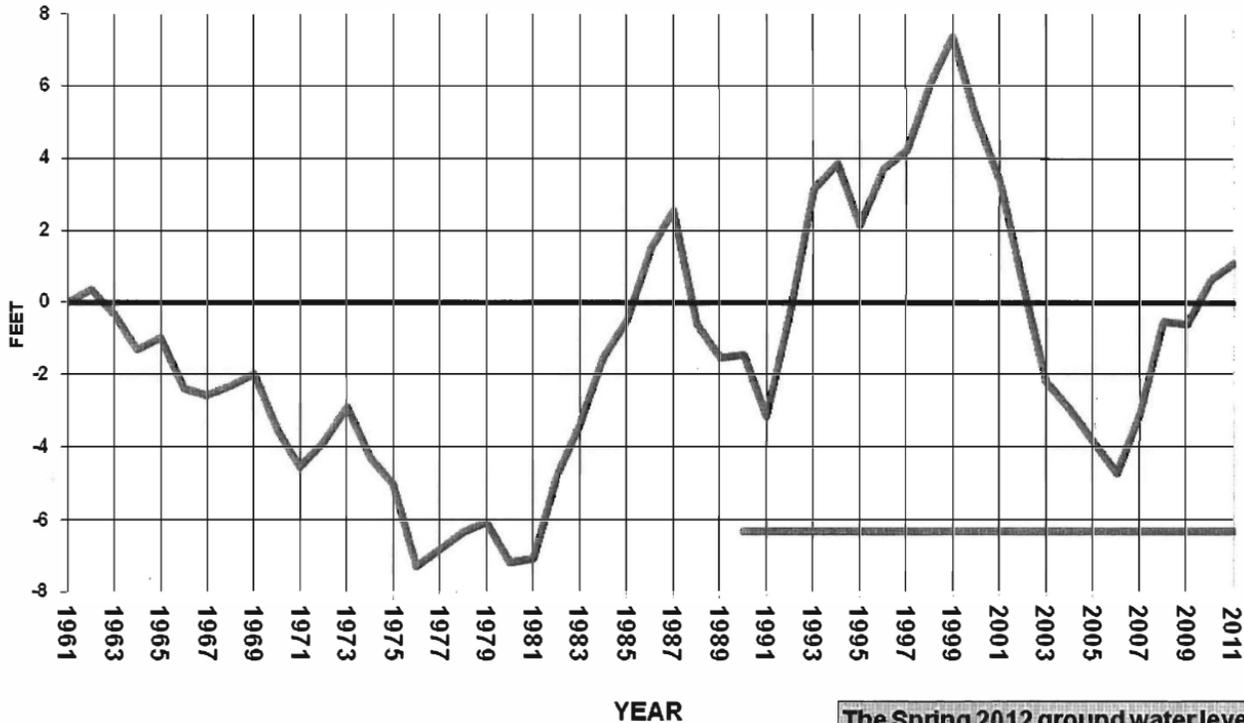
Adams	0.36
Butler	0.82
Clay	-1.22
Fillmore	-0.39
Hamilton	0.34
Polk	1.60
Saline	0.49
Seward	0.80
York	1.06



Average Change 0.41 ft. Rise



**UPPER BIG BLUE NRD - AVERAGE GROUND WATER LEVELS  
TRIGGERS COMPARED TO HISTORIC LEVELS  
SPRING 2012**



— District Ground Water Level  
— Allocation Trigger

The Spring 2012 ground water level change shows a rise of 0.41 feet. This average level also correlates into being 7.41 feet above the "Allocation Trigger".

**Report of the Kansas Commissioner  
to the  
BIG BLUE RIVER COMPACT ADMINISTRATION  
at the  
2012 Annual Meeting  
Blue Rapids, Kansas  
May 16, 2012**

1. **Climate Conditions:** As a result of strong La Niña, a large portion of south-central and south-west Kansas experienced its worst single year of drought on record with both extreme dryness and heat. The northern half of the state, including the Blue River basin, was spared these drought conditions. As a result of the severe drought, a significant amount of water administration occurred in the state. In addition, early in the year water users indicated the need for additional pumping authorization (beyond their annual authorized quantity) to complete their 2011 irrigation. For this extreme condition, the Division developed the 2011 drought emergency term permit which allowed water users to borrow from their 2012 authorized quantity to complete their 2011 use. Over 2200 drought term permits were granted. The drought also created interest in revisions to the multi-year flex account program (see below).

This occurred at the same time that the Missouri River basin was experiencing a very significant flooding.

2. **Legislation:** The year's legislative session has been the most significant for water legislation in many years if not decades. Legislation was driven by responses to the drought of 2011 and by the Governor's Ogallala initiative. The more significant water legislation included:
  - a) **SB 272** amends an existing statutory provision allowing for multi-year flex accounts (MYFA) to provide more options under the program. A MYFA is a 5-year term permit which temporary replaces a groundwater water right, allowing the annual authorized quantity to be exceeded but limiting the pumping over 5-years to the long-term average. While enacted in 2001, the program had little participation as waterusers believed it required too much conservation in exchange for this flexibility. The water conservation requirement was removed and two options for computing the flex account amount provided.
  - b) **SB 310** amends the Groundwater Management District (GMD) Act to allow GMDs to develop Local Enhanced Management Areas (LEMAs), as an alternative to the existing Intensive Groundwater Use Control Area process. The new process allows GMD's and stakeholders to propose to the chief engineer their own specific corrective controls to address water resource issues. The chief engineer then holds a hearing, focused solely on the locally proposed plan, to determine whether to accept the plan, reject the plan or send it back for modification. DWR is currently working with Northwest Kansas GMD No. 4 to implement a LEMA in their Sheridan County high priority area.

- c) HB 2451 amends the water appropriation act to eliminate the “use it or lose it” clause for ground water rights in areas formally closed to new water right development to protect those rights from forfeiture.
  - d) HB 2516 amends the Kansas water banking act to allow for additional water banks and to provide for more permanence of such banks.
  - e) HB 2517 extends the Water Right Transition Assistance Program (WTAP) for an additional ten years.
  - f) SB 148 establishes in statute procedures for division of water rights.
3. **Regulations:**
- a) K.A.R. 5-9-3 (quantity of Water for Temporary Permits, for Fracking). We have proposed amendment of this rule to expand the amount of water that can be permitted under temporary permit from 1 million gallons to 4 million gallons. This will facilitate our permitting of water for fracking.
  - b) We are working on regulations to implement the provisions of SB 272 and SB 310 noted above.
4. **Litigation:**
- a) Kansas v. Nebraska and Colorado: On April 4, 2011, the U.S. Supreme Court issued an order accepting Kansas’ May 3, 2010 request to file suit seeking enforcement of the Republican River Compact and the Court’s decree approving the final settlement stipulation of 2003. The Court appointed William J. Kayatta, Jr., of Portland, Maine as Special Master in the case. Discovery is essentially complete. The Special Master has scheduled trial for August 13-31 in Portland, Maine.

May 15, 2012

Re: Legislative Report – Blue River compact meeting

Members,

I regret that I will not be attending the meeting tomorrow in Blue Rapids. Our legislative session has extended beyond the regular scheduled 90 days as the result of several “big ticket” items; school finance, KPERS reform, tax policy, redistricting and the FY2013 budget. This makes it look like we haven’t accomplished much this session.

Water policy has really dominated the session as the result of the 2011 drought. I believe that this certainly has opened the door for dialogue on water and allowed there to be support to make some positive changes that allow some flexibility for water users. As Chair of the Agriculture and Natural Resource budget committee, we recommended adding money to the Water Litigation Fund. At this point it has been diverted for other uses. I have attached a description of water-related legislation passed or considered by the 2012 Kansas Legislature. I know that Chief Engineer Barfield will cover the most important of these. He has been very instrumental in developing and passing these changes.

Concern is growing that drought is extending to the east and north. In northern Kansas, farmers are currently irrigating early beans and have begun to delay final planting.

I had really looked forward to joining you tomorrow in Blue Rapids on the Big Blue River. What an appropriate location for the Blue River Compact meeting. Once again, my regrets.

Representative Sharon Schwartz

# KANSAS LEGISLATIVE RESEARCH DEPARTMENT

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<http://www.kslegislature.org/kird>

May 14, 2012

**To:** Representative Sharon Schwartz  
**From:** Heather O'Hara, Principal Analyst  
**Re:** 2012 Water-Related Legislation

The following is a list of water-related legislation that has been passed or considered by the 2012 Kansas Legislature.

## SIGNED BY THE GOVERNOR

### Multi-Year Flex Accounts for Water; SB 272

**SB 272** amends existing law in the Kansas Water Appropriations Act that authorizes and governs multi-year flex accounts.

The bill establishes an opportunity for water management practices to enable multi-year flexibility in the use of water authorized to be diverted under a groundwater water right, provided such flexibility does not impair existing water rights or increase the total amount of water diverted.

The bill also establishes definitions for the terms "base water right," "multi-year flex account," "base average usage," "flex account acreage," and "net irrigation requirement." In addition, the bill provides the various conditions under which term permits may operate.

A multi-year flex account, as defined by the bill, is a term permit that suspends a base water right during its term, except when the term permit may no longer be exercised because of an order of the Chief Engineer, Division of Water Resources, Department of Agriculture. Existing law provides for multi-year flex accounts that allows water right holders to exchange annual pumping maximums for a five-year pumping maximum, enabling flexibility in year-to-year pumping. However, existing law also provides that users of multi-year flex accounts must reduce their five-year quantity by 10.0 percent to promote water conservation.

The bill removes the 10.0 percent reduction requirement on multi-year flex account users. The bill provides three options for the calculation of the amount of water a water user may place into a multi-year flex account:

- Option 1—use the average annual historic usage of a water right, based on the years 2000 to 2009, multiplied by five;

- Option 2—use the normal irrigation requirement for crops in the water user's county, multiplied by the water user's maximum irrigated acres, multiplied by five; or
- Option 3—where available, use a groundwater management district (GMD)-developed alternative, provided that it does not increase long-term water use.

The quantity of water deposited into a multi-year flex account is reduced by the quantity of water used in excess of the base water right during 2011, provided that an application for a multi-year flex account is filed with the Chief Engineer on or before July 15, 2012.

If a base water right is suspended due to the issuance of a two-year term permit in a designated drought emergency area for 2011 and 2012, and the water right holder applies for a multi-year flex account on or before July 15, 2012, the quantity of water used in excess of the base water right is not deducted from the quantity of water deposited into the multi-year flex account.

Applications for multi-year flex accounts shall be filed with the Chief Engineer on or before October 1 of the first year of the multi-year flex account term for which the application is being made.

If a base water right is currently suspended due to the issuance of a two-year term permit in a designated drought emergency area for 2011 and 2012, and the water right holder applies for a multi-year flex account, a fee of \$200 will be assessed.

If water use under the authority of the base water right exceeded the maximum annual quantity authorized by the base water right during 2011, the water right holder did not have a two-year term permit in a designated drought emergency area for 2011 and 2012, and the water right holder applies for a multi-year flex account, a fee of \$600 will be assessed.

The bill allows the Chief Engineer to require any additional measuring devices and any additional reporting of water use for term permits issued in accordance with the language of the bill. Failure to comply with any measuring or reporting requirement can result in a penalty. In addition, the Chief Engineer is required to submit a written report on the implementation of the bill to the House Committee on Agriculture and Natural Resources and the Senate Committee on Natural Resources on or before February 1 of each year.

The bill takes effect upon publication in the *Kansas Register*.

#### **Groundwater Rights—Due and Sufficient Cause for Nonuse; HB 2451**

**HB 2451** amends a section of law dealing with the abandonment of water rights by deleting a requirement that, to avoid the abandonment process, the owner of groundwater rights in an area declared closed to further appropriation has a means of diversion available "to put water to beneficial use within a reasonable time." When the bill is in effect, groundwater rights in these areas will have due and sufficient cause for nonuse and, therefore, not be subject to abandonment.

## **Rural Water Districts; HB 2472**

**HB 2472** amends KSA 2011 Supp. 82a-612, which concerns rural water districts. The bill changes the definition of a "participating member" of a rural water district by removing the requirement that such members own land within the district. By removing this requirement, "participating member" includes non-landowners who own meters with the right to connect to the district's water system.

## **Water Districts and the Issuance of Revenue Bonds; HB 2588**

**HB 2588** gives the governing body of a water district the authority to issue revenue bonds in order to repay any outstanding bonds, warrants, or loans owed to the Kansas Department of Health and Environment or to the United States Department of Agriculture. The bill also gives a water district the authority to issue revenue bonds for the refinancing of up to 95.0 percent of the original cost of any project.

## **Establishment of Local Enhanced Management Areas; SB 310**

**SB 310** sets up a process by which a local enhanced management area (LEMA) can be established within a groundwater management district (GMD). The process for establishment of a LEMA requires a GMD to recommend a plan to the Chief Engineer of the Kansas Department of Agriculture's Division of Water Resources. The Chief Engineer reviews the plan for clear geographic boundaries within the GMD, and ensures the plan includes a compliance monitoring and enforcement element, as well as proposed corrective control provisions that meet the goals of the plan. The Chief Engineer is required to conduct public hearings on the reasonableness of the geographic boundaries of the plan, whether public interest requires corrective control provisions be adopted, and whether groundwater conditions exist in the area so as to warrant a local enhanced management plan. The Chief Engineer then has the option to accept the LEMA plan as submitted, reject it as insufficient to address the conditions, or return it with the option for the GMD to revise and resubmit the plan.

If the Chief Engineer accepts the local enhanced management plan, the Chief Engineer then issues an "order of designation" designating the area in question as a LEMA. The designation order defines the boundaries of the LEMA and includes the corrective control provisions as set forth in the local enhanced management plan. Corrective control provisions can include the following:

- Closing the LEMA to any further appropriation of groundwater;
- Determining the permissible amount of groundwater to be withdrawn within the LEMA, with the permissible withdrawal amount to be apportioned by the Chief Engineer among groundwater right holders in accordance with priority dates;
- Reducing the permissible withdrawal of groundwater by any one or more appropriators within the LEMA;
- Requiring and specifying a system of rotation of groundwater use in the LEMA; or

- Any other provisions needed to protect the public interest.

A groundwater right holder can stay the order of designation by applying for a review of the order. Additionally, a public hearing to review the designation of a LEMA must be conducted within seven years after the order of designation is final, with a subsequent review to occur no later than ten years after the initial review.

The bill takes effect upon publication in the *Kansas Register*.

#### **Repeal of Statute on Recording of Farm Names; HB 2668**

**HB 2668** repeals the statute concerning the recording of farm names. KSA 19-322 allowed a farm owner to record the farm name in a register kept by the county clerk of the county where the farm is located, after payment of a one dollar fee to the clerk. Under the statute, the farm owner was provided a certificate with the name and location of the farm and the owner's name. Duplicate farm names were not allowed in the same county under the statute.

#### **Allowing Eligible Water Right Holders To Create Reservoir Improvement Districts; HB 2685**

**HB 2685** establishes the procedures to allow eligible water right holders to create a reservoir improvement district on any particular reservoir, similar to a district created by the Watershed District Act. Water right owners and eligible water right holders can petition to form a district if a petition is signed by the owners or holders of more than 20.0 percent of the combined quantities of water rights within the proposed district. Eligible water right holders includes persons who hold a water right according to the Water Appropriation Act, the Water Storage Act, or the Water Assurance Program Act.

If the petition is deemed sufficient by the Secretary of State and approved by the Director of the Kansas Water Office, the steering committee of the proposed reservoir improvement district will hold an election for eligible water right holders in the proposed district to vote either in favor or against the proposed district. If holders of more than 50.0 percent of the combined quantities of water rights within the proposed district vote in favor, the district will be formed.

Once the district has been incorporated, the eligible water right holders will elect a board of three to five directors. Each holder will receive one vote and one additional vote for every 10.0 percent of the combined quantities of water rights that holder has within the district.

The board will be tasked with developing a general plan and an estimate of costs to implement its plan. The Director of the Kansas Water Office will be required to approve the general plan. Upon approval, the board will adopt a resolution that imposes a charge to each eligible water right holder of the district in proportion to each holder's total quantity of water rights to provide funding. The district also can be dissolved by the board.

## **Water Banking Act—Amendments; HB 2516**

**HB 2516** amends the statutes relating to the establishment of water banking, which is an optional program to allow irrigators an opportunity to bank water for future use.

Specifically, the bill deletes language which limited the number of banks. In addition, the bill clarifies when a water bank is subject to review after its initial charter, a review team determines whether the bank's initial charter would lapse or whether the water bank would be chartered.

The water bank review team, already existing in law, submits to committees of the Legislature and others a report which contains certain information that is expanded under provisions of the bill. Under the bill, the report also includes an evaluation as to whether the charter of the bank should lapse, or the bank should become or remain chartered. If a bank is chartered, it will be subject to review not less frequently than every five years by the review team.

Finally, the bill changes the date by which a water bank is to submit its annual report to the Chief Engineer and provide information including water rights or portions of water rights on deposit and the quantity of water in each safe deposit account from February 10 to April 15.

## **Water Right Transition Assistance Program—Amendments; HB 2517**

**HB 2517** extends the Water Right Transition Assistance Program (WaterTAP), for which the pilot program was set to expire on June 30, 2012. The program was designed to permanently retire all or portions of irrigation water rights. The bill establishes a new sunset date for the program of July 1, 2022.

In addition, the bill:

- Provides that permanent retirement of partial water rights will be approved only when the local groundwater management district (GMD) has the metering and monitoring capabilities to ensure compliance;
- Provides that the application for permanent water right retirement will be prioritized based on the following:
  - The applicant's bid price;
  - The timing and extent of the impact of the application on aquifer restoration or stream recovery; and
  - The impact on local water management strategies designated by the board of the local GMD or the Chief Engineer (water rights with similar hydrologic impacts would be based on seniority of the water right (current law));
- Clarifies the target areas as those designated by the GMD districts and the Chief Engineer and eliminates specific target areas (Prairie Dog Creek and Rattlesnake Creek) established in the law for the pilot water right transition assistance program;

- Requires that target areas are to be in areas closed to further appropriation of water by the Chief Engineer;
- Requires that only vested or certified water rights which are in good standing will be eligible for water right retirement grants; and
- Establishes a formula for calculating the historic consumptive water use of a water right.

## ENROLLED LEGISLATION TO BE CONSIDERED BY THE GOVERNOR

### Division of Water Rights; Water Permits for Sand and Gravel Operations; House Sub. for Sub. for SB 148

House Sub. for Sub. for SB 148 explicitly would codify the authority to divide water rights by stating an owner of a water right not abandoned may divide the water right into two or more distinct water rights without losing priority. In order to divide the water right, the owner must:

- Notify the Chief Engineer in writing of the proposed division, with the written consent of all persons that have an ownership interest in the water right;
- Designate the relative priority of the divided water rights;
- Demonstrate to the Chief Engineer the division is reasonable and would not increase consumptive use; and
- Demonstrate to the Chief Engineer the request does not violate the Kansas Water Appropriation Act.

If the Chief Engineer finds the above four requirements are met, the Chief Engineer then must issue an order dividing the water right and describing the terms and conditions of each water right. Acceptance of the request to divide a water right would not authorize any change in the place of use, point of diversion, or the use made of the water. Upon finding the four requirements are not met, the Chief Engineer would return the division request and take no action.

The bill would provide that if a judicial determination should occur regarding ownership interests and that the determination would result in a partition of a water right not deemed abandoned, the Chief Engineer then must issue an order dividing the water right in accordance with the judicial determination, to the extent the determination does not violate the provisions of the Kansas Water Appropriation Act.

The bill states each division request submitted to the Chief Engineer would be assessed a \$300 fee. Funding from the fee would be remitted to the State Treasurer.

The bill also would address permits to appropriate water for sand and gravel operations by requiring that the permit authorize net evaporation as the primary use and hydraulic dredging

and sand washing as a secondary use of water. Secondary uses would use water in a manner in which there is not significant net consumptive use. The secondary uses would be granted for the proposed life of the project or the exhaustion of reserves. If a permit is denied, the Chief Engineer would be required to set forth all reasons for the denial. Applicants who are denied a project permit by a final order of the Chief Engineer would be able to appeal the decision. The bill would provide for a project application permit fee of \$500, with any request for modification to be accompanied by a \$250 fee.

The bill would authorize the Chief Engineer to reduce the required offset of net evaporation for the operation, as currently provided for in law, based on the estimated use of groundwater by the existing vegetation.

## PENDING LEGISLATION IN CONFERENCE COMMITTEE

### **Land-spreading of Solid Waste Generated by Drilling of Oil and Gas Wells; Oil and Gas Valuation Depletion Trust Fund; Senate Sub. for HB 2597**

**Senate Sub. for HB 2597** would amend KSA 65-3407(c), which allows for the Secretary of the Kansas Department of Health and Environment (KDHE) to authorize persons to carry out activities without a solid waste permit, which would include allowing the disposal of solid waste generated by drilling oil and gas wells through land-spreading. The land-spreading would be done in accordance with best management practices and maximum loading rates developed by the Secretary. For areas that receive more than 25 inches of precipitation annually, the disposal of solid waste through land-spreading would be required to be incorporated into the soil. Additionally, no land-spreading would be allowed to occur on any area where the water table is less than ten feet below the surface, or on an area where there is documented groundwater contamination, as determined by KDHE.

For each land-spreading location, an application would be filed with KDHE and contain the location, soil characteristics, waste characteristics, waste volumes, drilling mud additives, and land-spreading method to be used on the land. A fee of \$250 would be assessed for each application. A land-spreading application would not be approved for the same location unless a minimum of three years had passed since the previous land-spreading occurred on that location. In addition, a post-land-spreading report would need to be filed once the land-spreading had been completed.

The Secretary of KDHE would enter into an agreement with the Kansas Corporation Commission (KCC) to administer the program, monitor compliance, and establish mechanisms for enforcement and remedial action. In addition, on or before January 1, 2014, the Secretary of KDHE, in coordination with the KCC, would be required to adopt rules and regulations governing land-spreading. In the development of rules and regulations, the Secretary and the KCC would seek the advice and comments from groundwater management districts and from other groups or persons who are knowledgeable and experienced in this subject matter. The KCC would be required to present a report on or before January 30, 2013, and January 30, 2014. The report would include information on the costs associated with the regulation of land-spreading, but would not be limited to this type of information. The report would be presented to the Senate Committee on Natural Resources, the Senate Committee on Ways and Means, the

House Committee on Agriculture and Natural Resources, and the House Committee on Appropriations.

These provisions would be in effect upon publication in the *Kansas Register*, with the provisions expiring on July 1, 2015.

The bill also would change the process for holding money in trust for individual counties in the Oil and Gas Valuation Depletion Trust Fund. Under current law, money credited to those trust accounts is held in the State Treasury until a county meets the statutory criteria for a distribution from its trust account.

The bill would annually transfer to each affected county the funds held in its trust account in the State Treasury. The bill would require each county that is to receive moneys from the Oil and Gas Valuation Depletion Trust Fund to establish a county oil and gas valuation depletion trust fund, to be administered by the County Treasurer. On October 1 of each year, the Director of Taxation, Kansas Department of Revenue, would certify the amount in each county's trust account within the State Treasury, and the State Treasurer would issue a warrant to the county for deposit by the County Treasurer in the county's Oil and Gas Valuation Depletion Trust Fund. The statutory criteria for a county to receive a distribution from the Trust Fund would not change.

The Director of Taxation would be directed to impose and collect an administrative fee equal to two percent of the amount credited to the Oil and Gas Valuation Depletion Trust Fund, prior to crediting any amounts to the individual trust accounts in the Fund.

All moneys in the Oil and Gas Valuation Depletion Trust Fund trust accounts on the effective date of the Act would be distributed to the applicable counties within 30 days of the effective date, for deposit in each county's Oil and Gas Valuation Depletion Trust Fund.

These provisions of the bill would become effective upon publication in the *Kansas Register*.

#### **Repeal of Statutes Relating to Dikes, Levees, Dams, and Water Rights; Conservation Reserve Enhancement Program (CREP); HB 2649**

**HB 2649** would repeal the following statutes regarding dikes, levees, dams, and water rights:

- KSA 24-105 describes when a landowner or proprietor may construct a dike or levee which obstructs the flow of surface water, the application requirements to build a dike or levee, the required examination by the Chief Engineer of the Division of Water Resources, Kansas Department of Agriculture (KDA), and the permit needed to build a dike or levee;
- KSA 82a-312, KSA 82a-313, and KSA 82a-314 outline the application for approval to be submitted to the Chief Engineer of the Division of Water Resources by a landowner or operator who has built, or desires to build, a dam for agricultural purposes, as part of the Federal Agricultural Conservation Program, without complying with other statutory provisions for obtaining the prior

written consent or permit and supervision of the Chief Engineer. The statutes also set out the plan requirements which must accompany the applications and the provisions for the revision of the plans; and

- KSA 2011 Supp. 82a-735 establishes the state as the sole authority to enter into negotiations, agreements, and contracts with the federal government regarding water rights related to the Sunflower Ammunition Plant.

The bill also would repeal a statute concerning the Division of Water Resources within the KDA (Chapter 74, Article 5). The statute, KSA 2011 Supp. 74-509, relates to the duties of the Irrigation Commissioner which were conferred on the Division of Water Resources by KSA 74-506b in 1927.

In addition, the bill would establish in statute the Conservation Reserve Enhancement Program (CREP). The CREP would be a joint state-federal program to be administered for the state by the KDA. The CREP would have the purpose of reducing withdrawal demands on the high plains aquifer, improving water quality, protecting public water supplies, and enhancing wildlife habitat.

The CREP would provide for voluntary retirement of water rights and would be subject to the following criteria:

- The total number of acres for enrollment in Kansas in the CREP would not exceed 40,000;
- The number of acres eligible for enrollment in Kansas in CREP would be limited to one-half of the number of acres represented by contracts in the federal Conservation Reserve Program (CRP) that have expired in the prior year in counties within the CREP area, except if federal law permits the land to be used for agricultural purposes, then the number of eligible acres would be limited to the number of acres represented by contracts in the CRP that have expired in the prior year in counties within the CREP area;
- Lands enrolled in the CRP as of January 1, 2008, would not be eligible for enrollment in CREP;
- No more than 25 percent of the acreage in CREP could be in any one county;
- No water right that is owned by a governmental entity, except a groundwater management district (GMD), would be purchased or retired under CREP provisions; and
- Only water rights in good standing would be eligible for inclusion under CREP.

The bill would establish that to have a water right in good standing, the following criteria must be met:

- At least 50 percent of the maximum annual quantity authorized to be diverted under the water right has been used in any three years from 2001 through 2005;

- From 2001 to 2005, the water rights used for the acreage in CREP would not exceed the maximum annual quantity authorized to be diverted and would not have been the subject of enforcement sanctions by the Division of Water Resources, KDA, in the last four years; and
- The water right holder has submitted the required annual water use report required by law for each of the most recent 10 years.

The KDA would be required to submit an annual report regarding CREP to the Senate Committee on Natural Resources and the House Committee on Agriculture and Natural Resources. The report would consist of a description of program activities and would include the total water rights, measured in acre-feet, retired each year by CREP; the acreage in the CREP; the dollar amount received and expended for the CREP; the economic impact of the CREP; the change in groundwater levels in the CREP area; the annual amount of water usage in the CREP area; an assessment of meeting each of the program objectives identified in the agreement with the U.S. Department of Agriculture Farm Service Agency; and other pertinent information.

In addition, the KDA would be authorized to promulgate rules and regulations for the implementation and administration of the CREP.

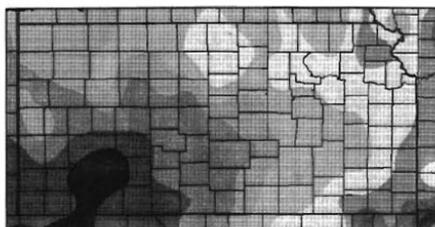
HCO/kal

**Kansas- Nebraska Big Blue River Compact Meeting 2012**  
**Report by Kansas Department of Agriculture- Division of Water Resources**  
**Topeka Field Office- Katherine A. Tietsort**  
**May 16, 2012**

**Climatic Conditions- Precipitation & Temperatures**

The High Plains Regional Climate Center reported 25 to 35 inches of precipitation in calendar year 2011 for the Big and Little Blue River basin area in Kansas, including the Mill Creek and Black Vermillion subbasins, against an average annual of 30 to 35 inches in this region. Annual precipitation was varied throughout these basins with a range of some areas receiving only 80% of average and a small area at the base of the system receiving over 100% of average. Temperatures for the calendar year 2011 ranged from about 1 degree cooler to about 1 degree warmer on average.

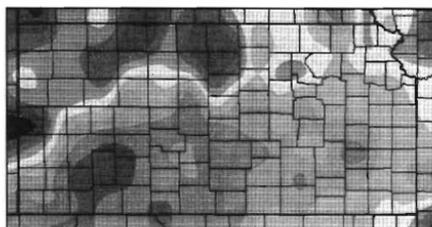
Precipitation (in)  
1/1/2011 – 12/31/2011



Generated 1/11/2012 at HPRCC using provisional data.

Regional Climate Centers

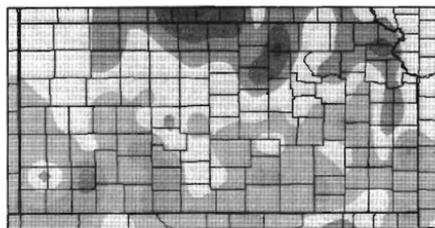
Percent of Normal Precipitation (%)  
1/1/2011 – 12/31/2011



Generated 1/11/2012 at HPRCC using provisional data.

Regional Climate Centers

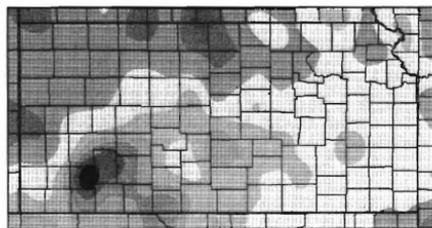
Departure from Normal Temperature (F)  
1/1/2011 – 12/31/2011



Generated 1/11/2012 at HPRCC using provisional data.

Regional Climate Centers

12-Month SPI  
1/1/2011 – 12/31/2011

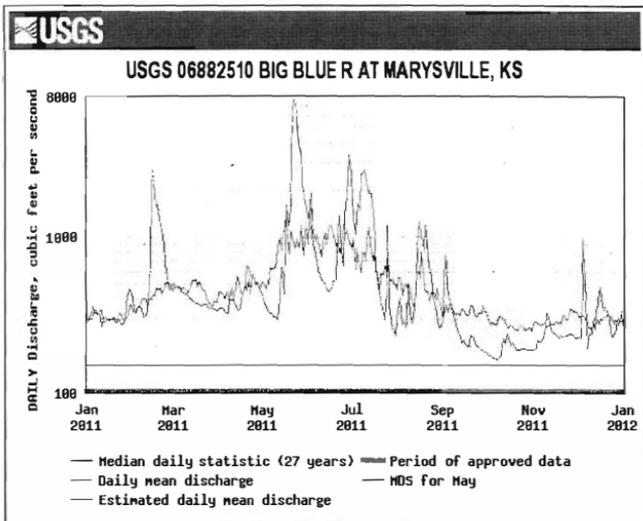


Generated 1/11/2012 at HPRCC using provisional data.

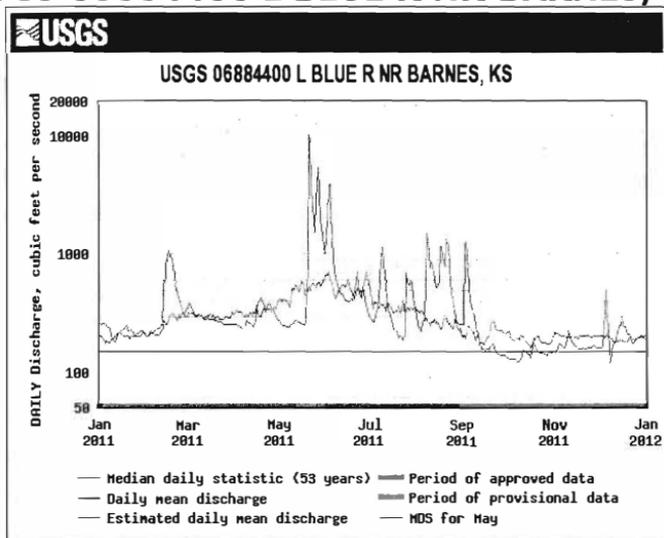
Regional Climate Centers

The Standardized Precipitation Index (SPI's) reflects long-term precipitation patterns and compares the precipitation for 12 consecutive months with the same 12 consecutive months during all previous years of available data. Because SPI's with longer periods of data reflected tend toward zero if no specific trend is taking place and because the SPI tends towards zero throughout the basin, it still appears that no trend is showing at this time.

# USGS 06882510 BIG BLUE R AT MARYSVILLE, KS

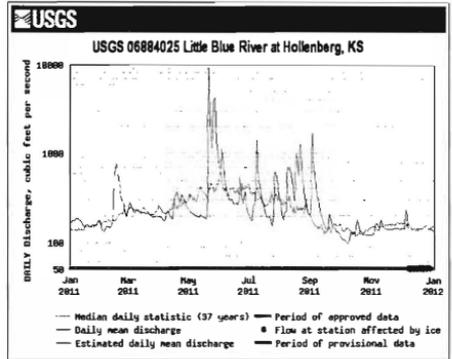
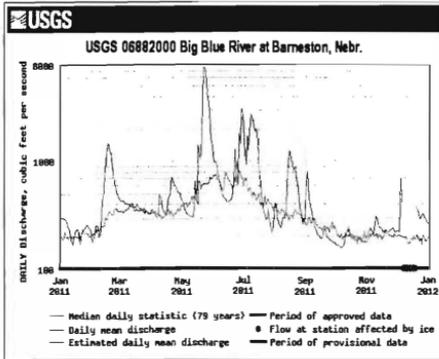


# USGS 06884400 L BLUE R NR BARNES, KS



**Streamflow**

Streamflows, though generally less than median values, reflected several significant precipitation events that occurred in the basin. The timely and relatively significant precipitation events helped the streamflow values to remain above MDS values and resulted in this basin not having to be administered. Statistics reflect 27 years of data at Marysville and 53 years of data at Barnes. There were no days in the 2011 calendar year that streamflow fell below the MDS value at the gage at Marysville, Kansas, on the Big Blue River, or below the MDS value at the gage near Barnes, Kansas, on the Little Blue River. Compact gages at Barneston and Hollenberg remained above compact criteria for the calendar year 2011.



**Administration Activities**

Minimum Desirable Streamflow (MDS) on the Big Blue River at the Marysville U.S.G.S. gage ranges by month from 65 cubic feet per second (CFS) (fall) to 150 cfs (spring). MDS on the Little Blue River at the Barnes U.S.G.S. gage ranges by month from 60 cfs (fall) to 150 cfs (spring). No MDS administration occurred within these basins in 2011.

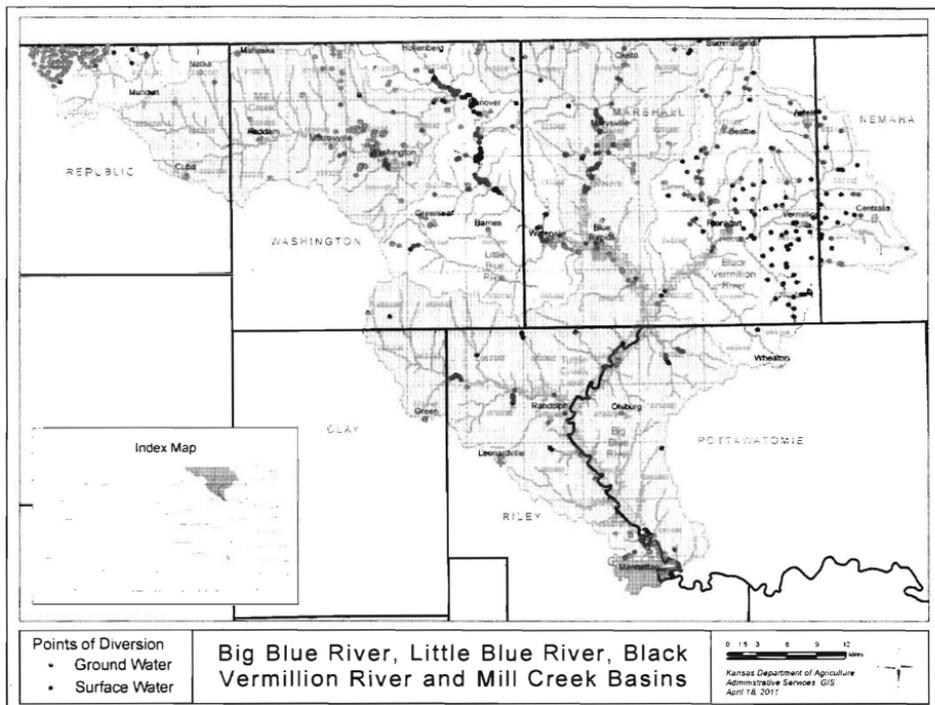
Minimum Desirable Streamflows (cfs)

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.

However, the Division on Water Resources administered MDS on several streams in calendar year 2011 and performed other related administration duties. The southern basins were hardest hit. In the Verdigris system, we administered under the Verdigris River MOA the available water supply to the point that only 6 or 7 users were able to divert throughout that entire system. Due to our attempted curtailment of diversions by one public water supplier pumping under a junior priority, DWR was restrained and litigation is pending. Releases from federal reservoirs were protected in the Neosho and Cottonwood system and MDS administration also occurred in the Cottonwood and Neosho River basins, which affected nearly 200 water rights. DWR portioned available natural flows by priority in the fall in the Marais des Cygnes River basin. We struggled with low flows affecting federally protected mussel beds near state line, but avoided any serious issues by working closely with our U.S. Fish & Wildlife Service office folks in that basin.

MDS was also administered in the Smoky Hill River, Little Arkansas River, Saline River, Walnut River, Whitewater River, Medicine Lodge River, Chikaskia River, and Ninnescah River basins. Administration in 2011 affected use under approximately 350 water rights in Kansas in 2011.



### New Well Development

There were 18 permits issued within the compact area in Kansas in 2011. In the Big Blue River basin, a new flood detention dam was permitted, 2 public water suppliers permitted new wells, 2 new irrigation project wells were permitted, and 2 Term Permits were approved for industrial (road construction) and dewatering use. In the Little Blue River Basin, a new irrigation pond project was approved, a rate-only groundwater application was approved, and we issued a Term Permit for a hydraulic dredging operation. We found and worked with the owner to permit an illegal diversion well found during inspections associated with the Meter Order in the Mill Creek basin. DWR also issued 6 new permits for new irrigation project wells in the Mill Creek basin.

### Metering

On January 3, 2011, the Order Regarding the Installation of Water Flowmeters in the Big Blue River Basin and the Order Regarding the Installation of Water Flowmeters in the Black Vermillion River Basin were issued to owners of 194 water rights, as previously reported. The meter order required the installation of totalizing water flowmeters on all non-domestic, non-temporary diversions of water by December 31, 2011. The Topeka Field Office has wrapped-up the required inspections related to these meter installations. We addressed a number of compliance problems related to place of use acres not being exactly right and point of diversion problems on surface water files. The Division issued 13 Notices of Non-Compliance Cease Diversion Orders to owners of water rights in the Big Blue River Basin and 6 Notices of Non-Compliance Cease Diversion Orders to owners of water rights in the Black Vermillion River Basin for failure to install the required meter to owners who have not used water under the authority of their water rights in many years and who did not want to spend the money for the meter installation at this time. The Notices provided a warning that the required meter is a component of the diversion works, which must be maintained, and that any review of non-use under the right would consider failure to install the required water flowmeter. We have performed all the inspections for these orders and the orders are complete at this time.

On October 14, 2011, the Chief Engineer of the Division of Water Resources issued the Order Regarding the Installation of Water Flowmeters in the Cottonwood and Neosho River Basins. This order was issued to a large number of water rights (~350) and the Field Office is actively inspecting meters installed under these orders for compliance. The Division anticipates issuing identical meter orders to owners in the South Fork Big Nemaha River basin and the Vermillion Creek basin (a tributary of the Kansas River) in the next couple of months. Once metering under the order in the South Fork Big Nemaha River basin is completed, all non-temporary, non-domestic active diversions of groundwater and surface water in the Compact area in Kansas will be metered with totalizing water flowmeters meeting the Divisions meter requirements.

### Overpumping Program

We have stopped using the BRO program acronym (blatant, recurring overpumping) and now refer to this program as the overpumping program in which we review water use reports to focus on files with 6% or greater overpumping reported on all files state-wide. Each year, the program focuses on the previous years' reported diversions. The penalties remain as previously identified. No files within the Compact area in Kansas were pumped in excess of the 6% criteria in the 2010 calendar year, so no action was taken due to overpumping in this area in 2011.

### Tuttle Creek Reservoir

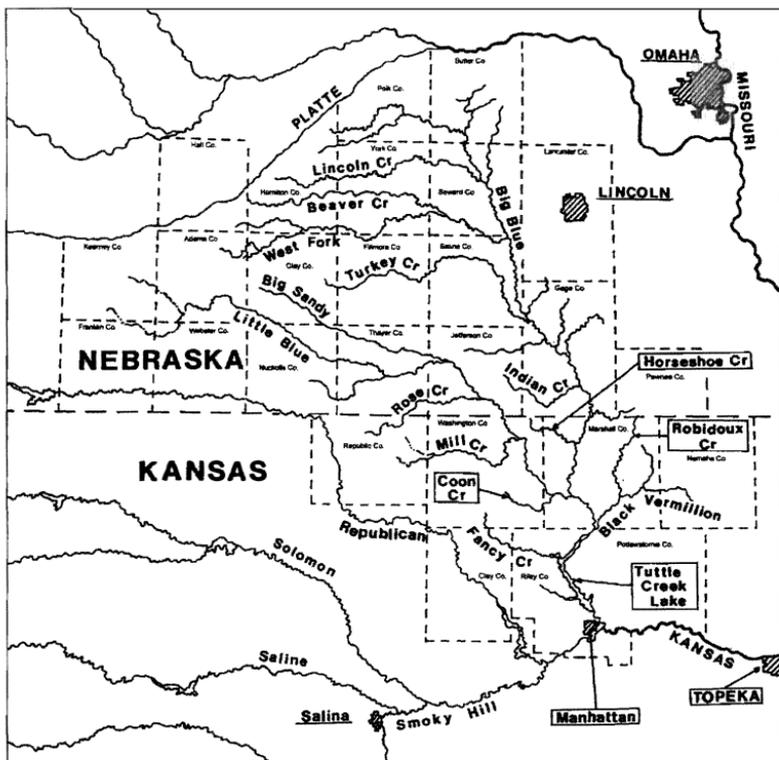
Lake Level Management planning is currently underway for the federal reservoirs in the state of Kansas. In response to the drought impacts last year, concern of multi-year drought and to recognize the inevitable demand versus available storage problem for the federal reservoirs, the Kansas Water Office has modified some guidances this year. The U.S. Army Corps of Engineers has provided some revisions to the maximum pool elevations. For Tuttle Creek Lake project, with conservation pool elevation of 1075.0, the Corps has identified a maximum storage elevation of 1082.2 under 5% over conservation pool level limits. Potentially, this plan could allow for more water to remain in storage in Tuttle Creek Lake than previously.

The proposed plan for Tuttle Creek Lake is:

Tuttle Creek	Max el. 1080	Min. 1072.0 (Dec 1 – May 1)	Target pool elevations higher than 1079 should only be approved if acceptable to the KDWP wetland managers, the State Park Manager, and the county roads department. If acceptable, the maximum elevation can be increased to as much as 1082.2. <i>When necessary, the water level management at Tuttle Creek Reservoir will provide support for navigation on the Missouri River. Changes in lake levels will be coordinated to support additional reservoir uses such as fish spawning, recreation, and waterfowl management.</i>
		Min. 1075.0 (May 1- Dec 1)	

### Tuttle Creek Hydropower

On October 24, 2011, the Federal Energy Regulatory Commission issued an Order Issuing Preliminary Permit and Granting Priority to File License Application ( preliminary permit) to Riverbank Hydro No. 14, LLC for the Tuttle Creek Hydroelectric Project No. 14170-000 (Tuttle Creek Dam Water Power Project), which is valid through September 30, 2014. The permit grants Riverbank Hydro No. 14, LLC the exclusive rights to investigate the site of Tuttle Creek Dam to determine feasibility of a water power project. On November 10, 2011, a preliminary permit application from a different group was received by FERC for the same site. Since the permit issued to Riverbank Hydro No. 14, LLC grants the exclusive rights to investigate the feasibility of a Tuttle Creek Dam water power project, the second application was rejected by FERC. The DWR has contacted FERC as an interested party and we are being provided copies of correspondence and other communications related to the Project.



**REPORT OF THE TREASURER  
TO THE  
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION  
May 19, 2012**

Balance on Hand July 1, 2011	\$ 22,952.84
State Assessments	\$16,000.00
Interest Income through April 30, 2012	<u>\$ 48.45</u>
Funds Available as May 11, 2012	<b>\$39,001.29</b>
Expenditures as of May 11, 2012	
USGS	\$ (11,267.00)
Lower Big Blue Natural Resources District	\$ (680.00)
Balance on Hand	<b>\$27,054.29</b>
Estimated Expenditures through June 30, 2012	
Printing Annual Report	\$100.00
Postage and Office Supplies	\$100.00
Miscellaneous	<u>\$50.00</u>
Total Estimated Additional Expenditures	<b>\$250.00</b>
Estimated Income through June 30, 2012	
Interest Income	<b>\$15.00</b>
<b>Estimated End of Fiscal Year Balance</b>	<b><u><u>\$26,819.29</u></u></b>

**BIG BLUE RIVER COMPACT BUDGET ANALYSIS May 2011**

Column A	Column B FY 2009-2010		Column C FY 2010-2011		Column D FY 2011-2012		Column E FY 2012-2013		FY 2013-2014
	Estimated May 2008	Adopted May 2009	Estimated May 2009	Adopted May 2010	Estimated May 2010	Adopted May 2011	Estimated May 2011	Proposed May 2012	Estimate
<b>EXPENDITURES</b>									
Operations									
Stateline Gages	\$ 21,256.00	\$ 14,000.00	\$ 14,500.00	\$ 14,500.00	\$ 14,500.00	\$ 15,000.00	\$ 14,500.00	\$ 15,500.00	\$ 15,500.00
Observation Wells	\$ 660.00	\$ 700.00	\$ 700.00	\$ 700.00	\$ 700.00	\$ 700.00	\$ 700.00	\$ 700.00	\$ 700.00
Water Quality Committee	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Annual report - Printing	\$ 217.41	\$ 200.00	\$ 200.00	\$ 200.00	\$ 200.00	\$ 200.00	\$ 200.00	\$ 200.00	\$ 200.00
Annual Audit	\$ 775.00	\$ 800.00	\$ 750.00	\$ 800.00	\$ 750.00	\$ 800.00	\$ 750.00	\$ 800.00	\$ -
Postage and Office Supplies	\$ 205.97	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00
Miscellaneous Expenses	\$ 50.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00	\$ 100.00
<b>Total Expenses</b>	\$ 23,164.38	\$ 15,900.00	\$ 16,350.00	\$ 16,400.00	\$ 16,350.00	\$ 16,900.00	\$ 16,350.00	\$ 17,400.00	\$ 16,600.00
<b>INCOME &amp; CARRY OVER</b>									
Assessments (Both States)	\$ 16,000.00	\$ 16,000.00	\$ 16,000.00	\$ 16,000.00	\$ 16,000.00	\$ 16,000.00	\$ 16,000.00	\$ 16,000.00	\$ 16,000.00
Interest earned	\$ 101.39	\$ 300.00	\$ 300.00	\$ 140.00	\$ 140.00	\$ 90.00	\$ 140.00	\$ 90.00	\$ 90.00
Carry Over from Prior Year	\$ 25,398.82	\$ 20,768.92	\$ 21,218.92	\$ 21,168.92	\$ 20,908.92	\$ 20,698.92	\$ 19,888.92	\$ 19,678.92	\$ 18,368.92
<b>Total Income and Carry Over</b>	\$ 41,500.21	\$ 37,068.92	\$ 37,518.92	\$ 37,308.92	\$ 37,048.92	\$ 36,788.92	\$ 36,028.92	\$ 35,768.92	\$ 34,458.92
<b>Balance End of Year</b>	\$ 18,335.83	\$ 21,168.92	\$ 20,908.92	\$ 20,908.92	\$ 20,698.92	\$ 19,888.92	\$ 19,678.92	\$ 18,368.92	\$ 17,858.92

Fiscal Year 2011-2012

Date	check #	Pay to	Description	Bank Account		USGS		Annual Audit		Postage/Supplies		Printing		LBBNRD		Miscellaneous		Water Qual.	
				Amount	Balance	Amount	Balance	Amount	Balance	Amount	Balance	Amount	Balance	Amount	Balance	Amount	Balance	Amount	Balance
7/1/2011					\$ 22,952.84		\$ 14,500.00		\$ 800.00		\$ 100.00		\$ 400.00		\$ 700.00		\$ 100.00		
7/30/2011			Interest	\$ 3.83	\$ 22,956.67	\$ -	\$ -	\$ -	\$ 800.00	\$ -	\$ 100.00	\$ -	\$ 400.00	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
8/18/2011	1057	USGS	USGS	\$ (3,755.00)	\$ 19,201.67	\$ (3,755.00)	\$ (3,755.00)	\$ -	\$ 800.00	\$ -	\$ 100.00	\$ -	\$ 400.00	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
8/31/2011			Interest	\$ 4.06	\$ 19,205.73	\$ -	\$ -	\$ -	\$ 800.00	\$ -	\$ 100.00	\$ -	\$ 400.00	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
9/15/2011	1058	Audit	Audit	\$ (800.00)	\$ 18,405.73	\$ -	\$ -	\$ (800.00)	\$ -	\$ -	\$ 100.00	\$ -	\$ 400.00	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
9/30/2011			Interest	\$ 3.24	\$ 18,408.97	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 400.00	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
10/11/2011	1059	State of KS for FY 2010	Printing	\$ (129.24)	\$ 18,279.73	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ (129.24)	\$ 270.76	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
10/11/2011	1060	State of KS for FY 2011	Printing	\$ (163.37)	\$ 18,116.36	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ (163.37)	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
10/31/2011			Interest	\$ 3.25	\$ 18,119.61	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
11/16/2011			Kansas Dues	\$ 8,000.00	\$ 26,119.61	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
11/16/2011			Nebraska Dues	\$ 8,000.00	\$ 34,119.61	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
11/30/2011			Interest	\$ 5.07	\$ 34,124.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
12/31/2011			Interest	\$ 7.29	\$ 34,131.97	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
1/25/2012	1061	USGS	USGS	\$ (3,756.00)	\$ 30,375.97	\$ (3,756.00)	\$ (3,756.00)	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
1/25/2012	1062	USGS	USGS	\$ (3,756.00)	\$ 26,619.97	\$ (3,756.00)	\$ (3,756.00)	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
1/30/2012			Interest	\$ 7.41	\$ 26,627.38	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
2/29/2012			Interest	\$ 4.95	\$ 26,632.33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
3/30/2012			Interest	\$ 4.60	\$ 26,636.93	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
4/30/2012			Interest	\$ 4.75	\$ 26,641.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
5/8/2012	1063	USGS		\$ (3,756.00)	\$ 22,885.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 700.00	\$ -	\$ 100.00	\$ -	
5/8/2012	1064	LBBNRD	LBBNRD	\$ (680.00)	\$ 22,205.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ (680.00)	\$ 20.00	\$ -	\$ 100.00	\$ -	
					\$ 22,205.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100.00	\$ -	\$ 107.39	\$ -	\$ 20.00	\$ -	\$ 100.00	\$ -	
					\$ 22,205.68	\$ -	\$ -	\$ 0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
					\$ -	\$ -	\$ 0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
				\$ (747.16)	\$ 22,205.68	\$ (11,267.00)		\$ (800.00)		\$ -		\$ (292.61)		\$ (680.00)		\$ -		\$ -	

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

May 16, 2012

The Engineering Committee did not meet during the past year, and it was not given any special assignments from the Compact Administration. The 2011 data for this report were collected as provided by the United States Geological Survey (USGS) and the Lower Big Blue Natural Resource District (LBBNRD).

**Review of Streamflow Data**

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

	<u>Big Blue River</u>	<u>Little Blue River</u>
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 thru September time period of the 2011 water year (October 1, 2010 thru September 30, 2011) the mean daily flow for at the Barneston gage on the Big Blue River (Exhibit A) and the Hollenberg gage on the Little Blue River (Exhibit B) exceeded the target flows established by the Compact. Therefore, no water right administration was required.

Real-time and historical data for these gaging stations can be found at the following websites:

Little Blue River – <http://waterdata.usgs.gov/ne/nwis/uv/?site no=06884025>

Big Blue River – <http://waterdata.usgs.gov/ne/nwis/uv/?site no=06882000>

**Review of Groundwater Data**

The LBBNRD provided the groundwater levels for the Big Blue Basin near Beatrice (Exhibit C).

**Review of wells in the Regulatory Reaches**

Exhibit D is a listing of the wells within the regulatory reaches. There were no irrigation wells drilled in either of the regulatory reaches during this reporting period.

Respectfully submitted,



Bob Lytle, Chair  
Kansas



Pat Goltl, Member  
Nebraska

0682000 Big Blue River at Barneston, Nebr.—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1933 - 2011	
Annual total	398,138		221,524		847	
Annual mean	1,091		607		2,781	
Highest annual mean					115	
Lowest annual mean					1993	
Highest daily mean	8,980	Jun 22	7,470	May 21	50,000	Jun 9, 1941
Lowest daily mean	185	Oct 28	170	Sep 30	1.0	Nov 30, 1945
Annual seven-day minimum	194	Oct 26	181	Sep 24	15	Aug 3, 1934
Maximum peak flow			8,160	May 21	57,700	Jun 9, 1941
Maximum peak stage			13.14	May 21	434.30	Jun 9, 1941
Annual runoff (ac-ft)	789,700		439,400		613,600	
10 percent exceeds	2,780		1,250		1,740	
50 percent exceeds	459		331		281	
90 percent exceeds	217		200		108	

<sup>a</sup> At site and datum then in use.

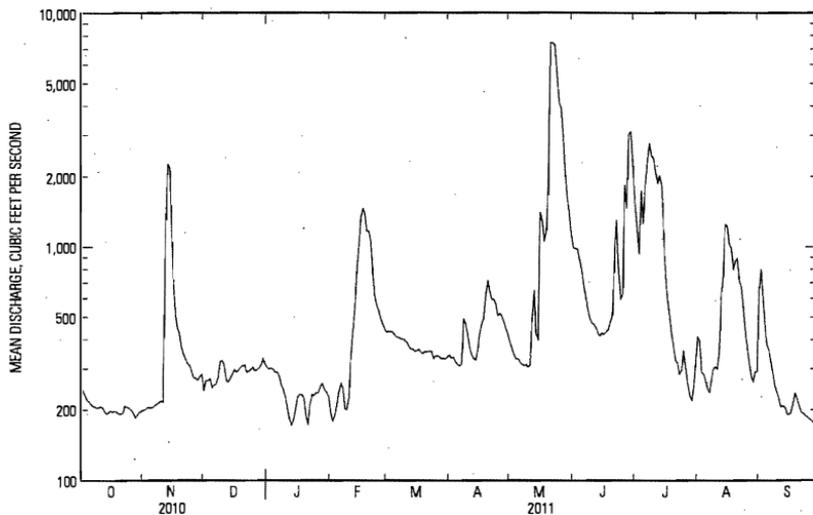


EXHIBIT A

06884025 Little Blue River at Hollenberg, KS—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1975 - 2011	
Annual total	207,215		127,147			
Annual mean	568		348		498	
Highest annual mean					1,891	1993
Lowest annual mean					173	2006
Highest daily mean	12,400	Jun 22	9,200	May 21	39,300	Jul 26, 1992
Lowest daily mean	111	Aug 23	117	Sep 30	26	Oct 1, 1991
Annual seven-day minimum	120	Jan 3	131	Sep 24	27	Sep 27, 1991
Maximum peak flow			11,100	May 21	47,800	Jul 26, 1992
Maximum peak stage			<sup>a</sup> 12.13	May 21	21.21	Jul 26, 1992
Annual runoff (ac-ft)	411,000		252,200		360,500	
10 percent exceeds	1,050		580		830	
50 percent exceeds	278		198		200	
90 percent exceeds	143		144		103	

<sup>a</sup> From floodmark.

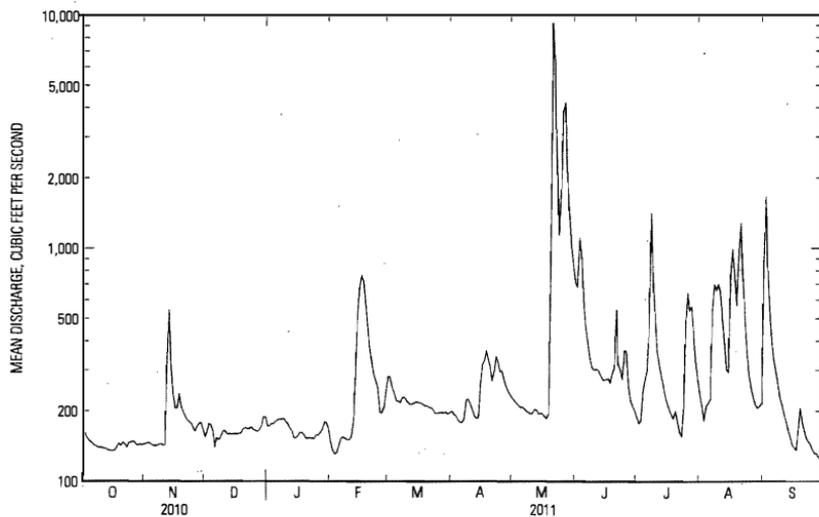


EXHIBIT B

## BIG BLUE RIVER COMPACT STATIC WATER LEVELS 2011

LEGAL	SECTION	LOCATION	WELL	DEPTH SPRING	DEPTH FALL
4N-5E	2	AAAA	OW	93.68	94.94
4N-5E	2	DDAA	IW	18.22	19.28
4N-5E	4	BBBC	IW	21.02	21.71
4N-5E	9	CBCC	IW	73.42	74.45
4N-5E	10	DDAA	IW	27.49	28.05
4N-5E	11	DACA	IW	17.14	17.36
4N-5E	14	ABBB	IW	14.36	14.68
4N-5E	25	AACD	IW	19.67	20.09
5N-4E	12	ABBA	IW	19.24	19.68
5N-4E	13	BADD	IW	16.84	16.66
5N-4E	23	BABB	IW	17.53	16.79
5N-4E	24	AACD	IW	19.29	19.01
5N-5E	7	CADD	IW	62.18	65.51
5N-5E	20	BCCD	IW	20.10	20.35
5N-5E	21	DDBB	IW	54.47	57.68
5N-5E	29	CBBB	IW	14.57	15.58
5N-5E	33	AADD	IW	19.19	20.16

OW - OBSERVATION WELL

EXHIBIT C

Big Blue River Regulatory Area Wells					
Registration Number	Location T-R-S	Completion Date	Depth (FT)	Registration Pumping Capacity (GPM)	Filing Date
G-036485	4N-5E-11BC	3/28/1972	82	750	4/24/1972
G-088314	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-059178	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	4/30/1998	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

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

EXHIBIT D

Agreement  
Between the  
Engineering Committee of the Big Blue River Compact Administration  
And the  
Lower Big Blue Natural Resource District

That on this the 16<sup>th</sup> day of May, 2012, the Director of the Lower Big Blue River Natural Resource District, and the Chairperson of the Engineering Committee of Big Blue River Compact Administration, mutually agree to the following:

That the Lower Big Blue NRD will take a total of 34 ground water level measurements from observation wells during the spring and fall of the 2012 calendar year as enumerated on the attachment to this agreement identified as "Attachment A".

The two parties further agree to allow for variances from the wells identified on Attachment A if necessary.

This agreement is as provided by the Contract between the Kansas-Nebraska Big Blue River Compact Administration and the Lower Big Blue Natural Resources District for Ground Water Measurement Tabulations dated May 19, 2010.

Dated this 16<sup>th</sup> day of May, 2012 .

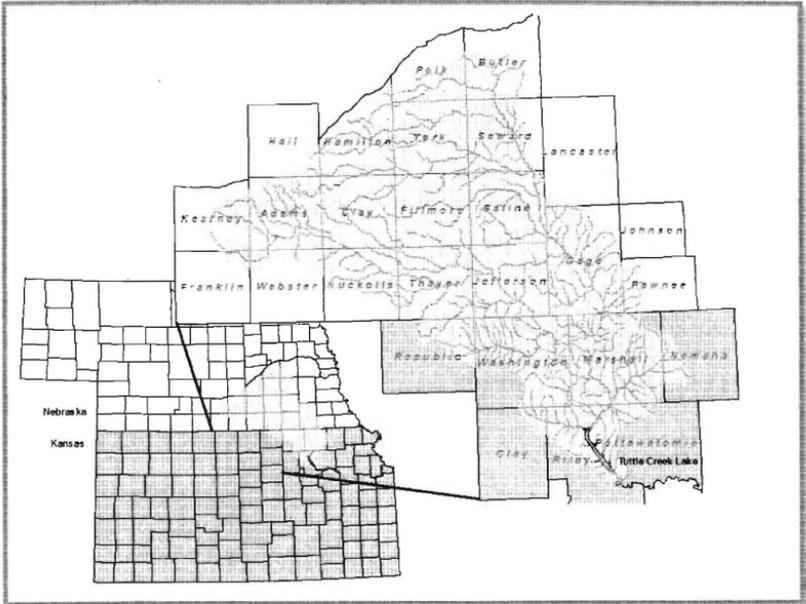


David S. Clabaugh, Manager  
Lower Big Blue Natural Resource District



Robert F. Lytle Jr., Chair  
Engineering Committee

# KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION REPORT



WATER QUALITY COMMITTEE

MAY 16<sup>th</sup> 2012

**KANSAS-NEBRASKA BIG BLUE RIVER COMPACT**  
**WATER QUALITY COMMITTEE ANNUAL MEETING**

April 25, 2012

**Background**

In 1995, the Water Quality Committee and affiliated partner agencies and associations began pursuing four primary objectives designed to enhance water quality in the Big Blue River Basin of Kansas and Nebraska. These objectives were to:

1. Design, implement, and conduct a basin wide water quality monitoring program;
2. Develop and conduct a baseline survey of farm practices utilized in the basin with emphasis on pesticide and nutrient use;
3. Develop water quality Best Management Practices (BMPs) and economics support information suitable to the basin; and,
4. Initiate and conduct water quality stewardship education and outreach programs in the basin.

The full committee and affiliated partners meet annually for a review of the status of existing projects and to plan activities for the upcoming year. Typically the annual Water Quality meeting is held immediately preceding the annual Kansas- Nebraska Compact annual meeting. Committee project work groups meet as the need arises.

**Annual Meeting**

The 2012 annual meeting of the Kansas- Nebraska Big Blue River Compact Administration's Water Quality Committee was held on Wednesday, April 25<sup>th</sup> at 10am at the Lower Big Blue Natural Resource District office, 805 Dorsey Street, Beatrice, Nebraska. The following pages contain the agency and partner reports and associated program updates that were presented to the Water Quality Committee during this meeting.

# AGENDA

## Kansas – Nebraska Big Blue River Compact

### Water Quality Committee Meeting

Wednesday, April 25<sup>th</sup>, 2012 - 10:00 AM

Lower Big Blue NRD Office, 805 Dorsey Street, Beatrice, NE

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1. **Introductions and Announcements** (Attendance Record Attached)
2. **Water Quality, Listings, TMDLs & Watershed Plans**
  1. **Nebraska – Patrick Hartman** (Summary Attached)
  2. **Kansas – Tom Stiles/Amanda Reed** (Summary Attached)
3. **Tuttle Creek Lake Targeted Watershed Grant Summary** (Presentation Attached)
  1. **Will Myers**
  2. **Pat O'Brien**
4. **Round Table – Agency and Partner Reports and Updates** (Summaries Attached)
5. **Other Items – “Discussion on Shifting Chair Between States”**

It was decided to transfer the WQ committee chair to Tom Stiles, Chief - Watershed Planning and TMDL Program Section at Kansas Department of Health and Environment.
6. **Upcoming Compact Meeting - May 16<sup>th</sup> Blue Rapids, KS – Historical Society and Museum (36 Main Street Square)** (Announcement Attached)
7. **Lunch at Valentino's Pizza**

## 1. Introductions and Announcements

### 4/25/2012 WQ Committee Meeting Attendees

Marty Link	NDEQ	marty.link@nebraska.gov
Daryl Andersen	Little Blue NRD	dandersen@littleblue.org
Dave Clabaugh	Lower Big Blue NRD	clabaugh@lbbnrd.org
Patrick Hartman	NDEQ	patrick.hartman@nebraska.gov
Erik Anderjaska	Lower Big Blue NRD	anderjaska@lbbnrd.org
Kelli Evans	NRCS	kelli.evans@ne.usda.gov
Jason Lambrecht	USGS	jmlambre@usgs.gov
Doug Jones	EPA R7	jones.doug@epa.gov
Dick Wiechman	EPA R7	wiechman.dick@epa.gov
O'Brien, Patrick	NARD	patrick.o'brien@nebraska.gov
Romary, Craig	NE Dept. of Ag	craig.romary@nebraska.gov
Paul Hay	UNL Extension	phay2@unl.edu
Tom Stiles	KDHE	tstiles@kdheks.gov
Will Myers	NDEQ	will.myers@nebraska.gov
Barbara Donovan	Tuttle Creek WRAPS	DonovanMN@aol.com
Amanda Reed	KDHE	akreed@kdheks.gov
Rod DeBuhr	Upper Big Blue NRD	rdebuhr@upperbigblue.org
Tyler Weishahn	LBBNRD	weishahn@lbbnrd.org
Pete Davis	EPA R7	davis.peter@epa.gov

## 2.1 Nebraska Water Quality, Listings, TMDLs & Watershed Plans - Patrick Hartman

### Summary of Section 303(d) and Total Maximum Daily Load (TMDL) Activities Big and Little Blue River Basins

The 2012 Water Quality Integrated Report, which is the combination of the Clean Water Act (CWA) Section 303(d) list of impaired waterbodies and the CWA Section 305(b) Water Quality Report, was approved by EPA in early April. This document outlines the water quality assessments completed in the Big and Little Blue River basin.

Potential assessment categories for waterbodies in the 2012 Integrated Report are:

**Category 1** – Waterbodies where all designated uses are met.

**Category 2** – Waterbodies where some of the designated uses are met but there is insufficient information to determine if all uses are being met.

**Category 3** – Waterbodies where there is insufficient data to determine if any beneficial uses are being met.

**Category 4** – Waterbody is impaired, but a TMDL is not needed. Sub-categories 4A, 4B, 4C and 4R outline the rationale for the waters not needing a TMDL:

**Category 4A** – Waterbody assessment indicates the waterbody is impaired, but all of the required TMDLs have been completed.

**Category 4B** – Waterbody is impaired, but “other pollution control requirements” are expected to address the water quality impairment(s) within a reasonable period of time. Other pollution control requirements include but are not limited to, National Pollutant Discharge Elimination System (NPDES) permits and best management practices.

**Category 4C** – Waterbody is impaired but the impairment is not caused by a pollutant. This category also includes waters where natural causes/sources have been determined to be the cause of the impairment. In general, natural causes/sources shall refer to those pollutants that originate from landscape geology and climactic conditions. It should be noted, this general description does not exclude parameters and can be utilized when appropriate justification is provided.

**Category 4R** – Waterbody data exceeds the impairment threshold, however a TMDL may not be needed. The category will only be used for nutrient assessments in new or renovated lakes and reservoirs. Newly filled reservoirs usually go through a period of trophic instability – a trophic upsurge followed by the trophic decline (Holdren, et. al. 2001). Erroneous or non representative water quality assessments are likely to occur during this period. To account for this, all new or renovated reservoirs will be placed in this category for a period not to exceed eight years following the fill or re-fill process.

After the eighth year monitoring data will be assessed and the waterbody will be appropriately placed into category 1, 2, or 5.

**Category 5** – Waterbodies where one or more beneficial uses are determined to be impaired by one or more pollutants and all of the TMDLs have not been developed. **Category 5 waters constitute the Section 303(d) list subject to EPA approval/disapproval.**

The 2012 Integrated Report assessment status for waterbodies of the Big Blue and Little Blue River Basins are found in the table below.

Basin	Category								Basin Total
	1	2	3	4A	4B	4C	4R	5	
Big Blue Streams	1	16	31	0	0	0	--	16	63
Big Blue Lakes	0	8	7	1	0	0	0	15	31
Little Blue Streams	0	5	24	0	0	0	--	9	38
Little Blue Lakes	0	3	1	0	0	0	0	9	13

Parameters identified as impairing beneficial uses in these river basins include: algal blooms, atrazine, E. Coli, elevated pH, fish consumption advisory, impaired aquatic community, low dissolved oxygen, nutrients, and selenium

EPA has approved seven TMDLs written by NDEQ for these river basins. Five of the approved TMDLs were for E. Coli in streams, and one was for sediment and phosphorus in lakes. Currently NDEQ has 10 TMDLs under review at EPA for the Little Blue river basin addressing bacteria and atrazine. NDEQ is also developing 27 TMDLs in the Big Blue river basin for bacteria, atrazine and selenium.

Little Blue TMDLs (Atrazine and Bacteria)

Currently Pending Approval at EPA:

Four (4) segments are impaired for Atrazine, TMDL reductions range from 11% to 67%

Six (6) segments are impaired for Bacteria, TMDL reductions range from 56% to 99%

Big Blue TMDLs (Atrazine, Bacteria, and Selenium)

Draft Results:

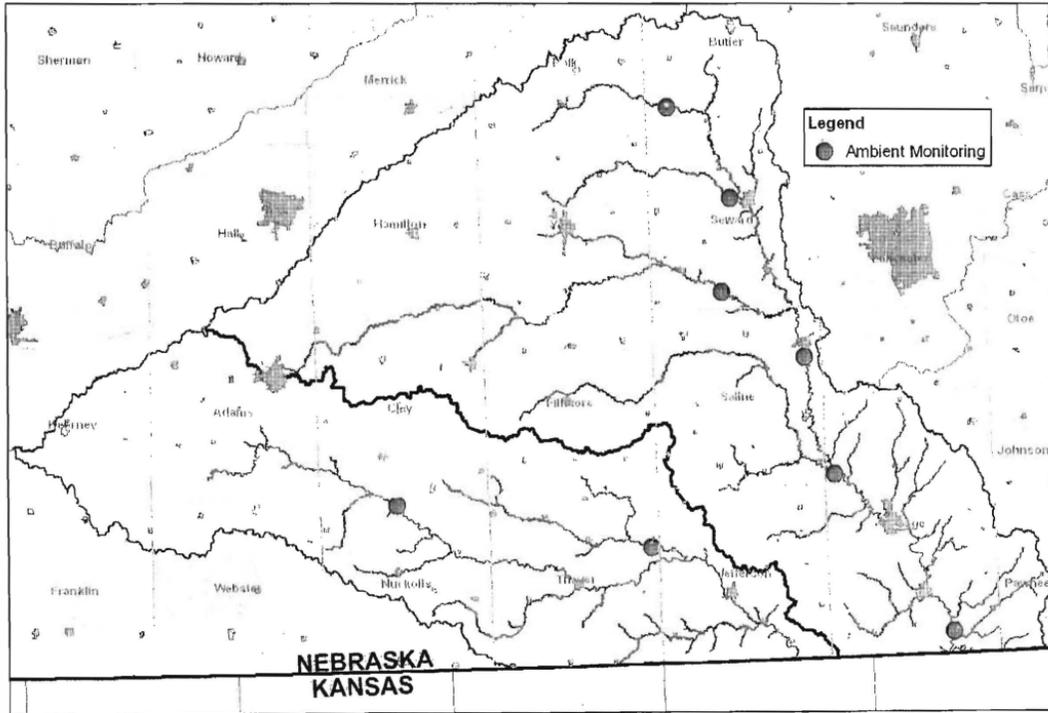
Thirteen (13) segments are impaired for Atrazine, reductions range from 33% to 71%

Four (4) segments are impaired for Selenium, reductions range from 6% to 42%

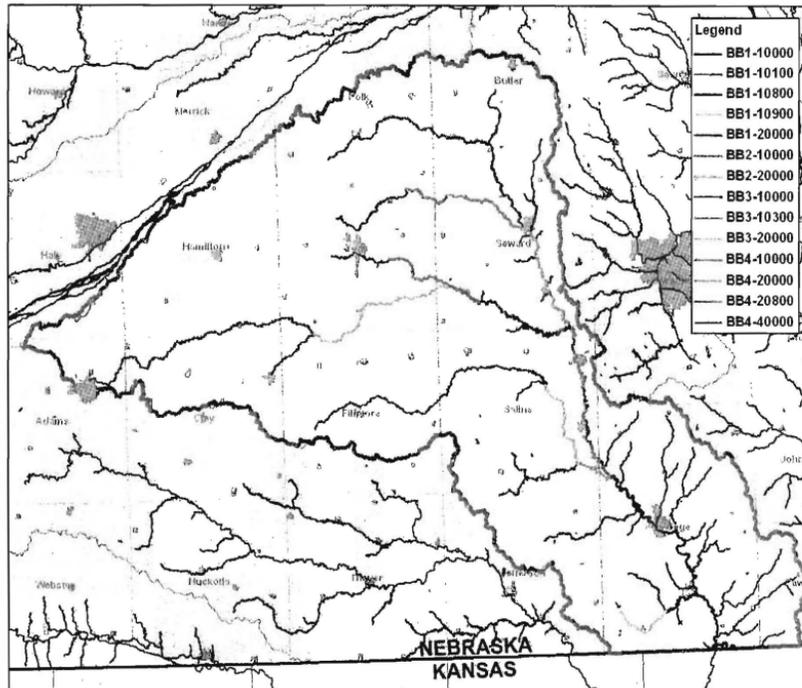
Ten (10) segments are impaired for Bacteria, reductions are to be determined.



**Ambient Monitoring Locations in the Big Blue and Little Blue Basins**



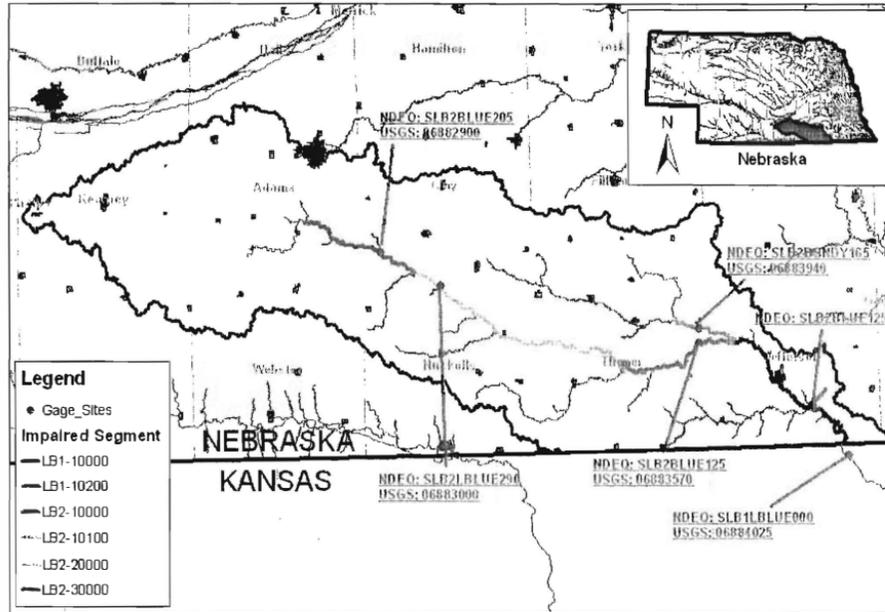
## Big Blue River Impairments and Draft TMDLs



**Draft TMDL Reductions in Percent**

Impairment	BB1-10000	BB1-10100	BB1-10800	BB1-10900	BB1-20000	BB2-10000	BB2-20000	BB3-10000	BB3-10300	BB3-20000	BB4-10000	BB4-20000	BB4-20800	BB4-40000
<b>Atrazine</b>	47	4	43	33	57	41	35	54	48	71	43	--	34	67
<b>E. Coli</b>	TBD	TBD	TBD	--	TBD	TBD	TBD	TBD	--	TBD	TBD	TBD	--	--
<b>Selenium</b>	--	--	--	--	20	6	--	21	--	--	--	--	42	--

## Little Blue River Impairments and Draft TMDL Reductions



Segment	Waterbody Name	Atrazine Impairments			E. Coli Impairments		
		Impaired	Reduction	Expected Concentration (ug/l)	Impaired	Reduction	Expected Concentration (cfu/100 ml)
LB1-10000	Little Blue River	Yes	67%	3	Yes	56%	112
LB1-10200	Rock Creek	No	--	--	Yes	70%	113
LB2-10000	Little Blue River	Yes	11%	12	Yes	67%	113
LB2-10100	Big Sandy Creek	Yes	42%	12	Yes	74%	113
LB2-20000	Little Blue River	Yes	44%	12	Yes	88%	113
LB2-30000	Little Blue River	No	--	--	Yes	83%	113

## 2.2 Kansas Water Quality, Listings, TMDLs & Watershed Plans - Tom Stiles & Amanda Reed

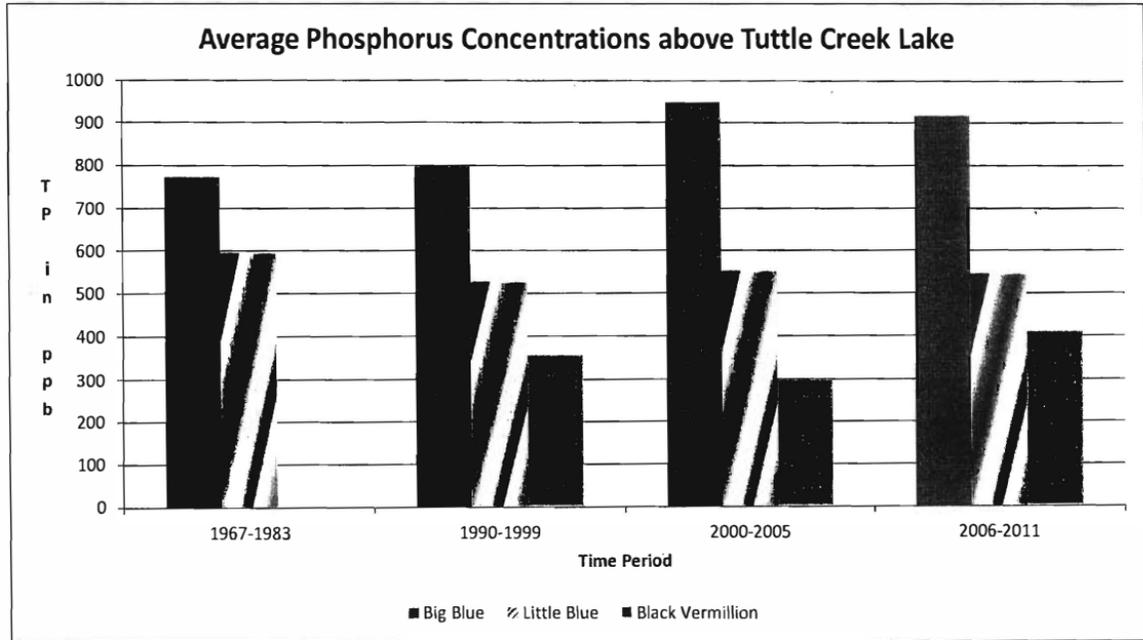
### 2012 Status of Impaired Waters in the Tuttle Creek Lake Drainage in Kansas

1. Existing TMDLs
  - a. Tuttle Creek Lake – Eutrophication, Siltation, Alachlor, Atrazine
  - b. Streams – Atrazine and Bacteria
2. 2012 Listings
  - a. Biology (Macroinvertebrates)
    - i. Big Blue River – Oketo
    - ii. Black Vermillion River
    - iii. Little Blue River – Hollenberg
  - b. Metals (Copper and Lead – f(Conc., Hardness)
    - i. Big Blue River – Oketo & Blue Rapids
    - ii. Black Vermillion River (Copper only)
    - iii. Little Blue River – Hollenberg & Waterville
    - iv. Mill Creek
    - v. Rose Creek
  - c. Total Phosphorus (>201 ug/l)
    - i. Big Blue River – Oketo (868 ug/l) & Blue Rapids (630 ug/l)
    - ii. Black Vermillion River (259 ug/l)
    - iii. North Elm Creek (220 ug/l)
    - iv. Horseshoe Creek (287 ug/l)
    - v. Robidoux Creek (257 ug/l)
    - vi. Little Blue River – Hollenberg (430 ug/l) & Waterville (353 ug/l)
    - vii. Rose Creek (407 ug/l)
  - d. Total Suspended Solids (>50 mg/l)
    - i. Big Blue River – Oketo (106 mg/l) & Blue Rapids (89 mg/l)
    - ii. Black Vermillion River (56 mg/l)
    - iii. Little Blue River – Hollenberg (60 mg/l) & Waterville (51 mg/l)
    - iv. Mill Creek (55 mg/l)
  - e. Sulfate (> 250 mg/l)
    - i. Fancy Creek
    - ii. Horseshoe Creek
3. Delistings
  - a. 2010
    - i. Centralia Lake – Atrazine
    - ii. Big Blue River – Blue Rapids – Beryllium
    - iii. Black Vermillion River - Lead
  - b. 2012
    - i. Little Blue River – Hollenberg – pH
    - ii. Horseshoe Creek – Total Suspended Solids (48 mg/l)
    - iii. Rose Creek – Total Suspended Solids (48 mg/l)

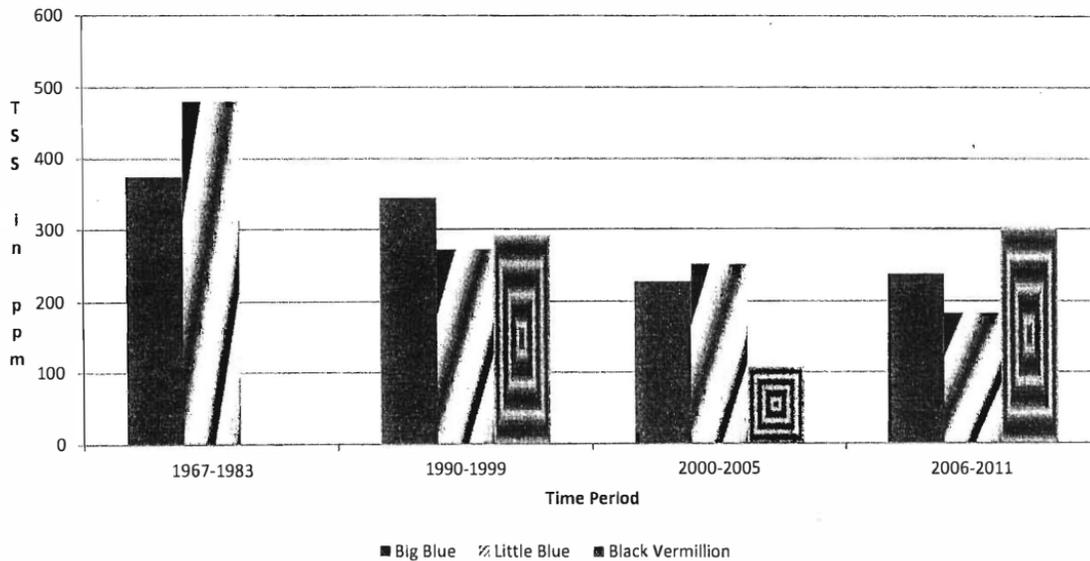


Average Atrazine Concentrations above Tuttle Creek Before and After 2000

<b>Station and Month Period</b>	<b>Before 2000</b>	<b>2000 - 2011</b>
<b>Big Blue – Oketo</b>		
April thru June	6.35 ug/l	8.60 ug/l
July thru September	2.54 ug/l	0.52 ug/l
<b>Little Blue – Hollenberg</b>		
April thru June	3.31 ug/l	6.23 ug/l
July thru September	1.65 ug/l	0.63 ug/l
<b>Big Blue – Blue Rapids</b>		
April thru June	6.86 ug/l	7.90 ug/l
July thru September	2.13 ug/l	0.66 ug/l
<b>Black Vermillion</b>		
April thru June	3.32 ug/l	4.70 ug/l
July thru September	1.54 ug/l	0.68 ug/l
<b>Mill Creek</b>		
April thru June	4.09 ug/l	4.65 ug/l
July thru September	2.61 ug/l	1.20 ug/l



Average TSS Concentrations above Tuttle Creek Lake



## Tuttle Creek Reservoir – Lower Big Blue River and Lower Little Blue River Watersheds

### 9 Element Watershed Plan Overview

#### Impairments to be addressed

Directly addressing High Priority TMDLs for:

- Bacteria – Big Blue River above Tuttle Creek
- Bacteria – Black Vermillion River
- Atrazine – Tuttle Creek Lake Watershed
- Atrazine – Tuttle Creek Lake and Watershed
- Atrazine – Tuttle Creek Lake
- Siltation – Tuttle Creek Lake
- Eutrophication – Tuttle Creek Lake

Directly addressing many 303d listed impairments throughout the project area for Phosphorus, Total Suspended Solids, and pH

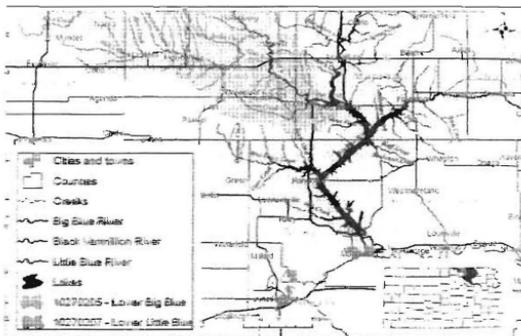
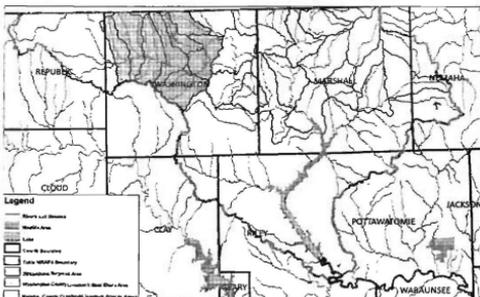


Figure 1. Map of Lower Big Blue and Lower Little Blue River Watersheds.

#### Targeting Determinations

- Cropland BMP Targeted areas were identified through SWAT (Soil and Water Assessment Tool) modeling to determine areas of high overland runoff contributing sediment and nutrients to the watershed and Tuttle Creek Lake.
- Livestock BMP Targeted areas were identified through analysis of grazing density in the watershed and correlation with SWAT identified areas for high phosphorus runoff potential and the locations of existing High Priority bacteria TMDLs.
- Streambank Targeted areas were identified through GIS analyses of the main stem of the Big Blue and Little Blue Rivers targeting riparian areas that were considered “barren”.



## Best Management Practices and Load Reduction Goals

Best Management Practices (BMPs) to address nutrients, sediment, atrazine, and bacteria in the watershed were chosen by the SLT based on local acceptance/adoption rate and amount of load reduction gained per dollar spent.

### Sediment Reducing Cropland

- Buffers
- Encouragement of Continuous No-till by producers
- Preparation of Nutrient Management Plans with producers
- Grassed Waterways
- Streambank Stabilization

The total load reduction needed to meet the sediment TMDL is 3,000,000 tons of sediment.



### Phosphorus Reducing Cropland, Streambank and Livestock BMPs:

- Buffers
- Encouragement of Continuous No-till implementation by producers
- Preparation of Nutrient Management Plans with producers
- Grassed Waterways
- Subsurface Fertilizer
- Streambank Stabilization
- Vegetative filter strips between small feeding operations and streams
- Relocation of small feeding operations away from streams
- Relocation of pasture feeding sites away from streams
- Promotion of alternative watering sites away from streams

A 95% reduction would be needed to meet the TMDL. At the end of this forty year plan, if all BMPs have been implemented, 2,850,393 pounds will have been reduced from the watershed.



### Bacteria Reducing Livestock BMPs:

- Vegetative filter strips between small feeding operations and streams
- Relocation of small feeding operations away from streams
- Relocation of pasture feeding sites away from streams
- Promotion of alternative watering sites away from streams

### Atrazine Reducing Cropland BMPs:

- Promotion of the Use of Alternative Herbicides
- Vegetative Buffers
- Split Application
- Apply before April 15

The current estimated pollutant load for atrazine is 63,145 pounds in the months of May and June in Tuttle Creek Lake. The load needs to be reduced by 55,883 pounds to meet the TMDL.



### 3. Tuttle Creek Lake Targeted Watershed Grant Summary - Will Myers & Pat O'Brien



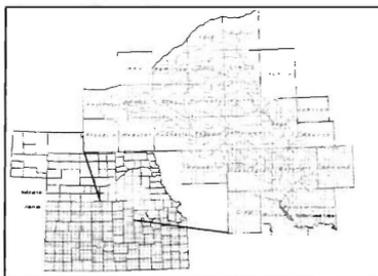
#### Project Objective

3. Address Water Quality Impairments - How?

- Tuttle Creek Lake - sedimentation, eutrophication, atrazine, andalachlor
- Other Big and Little Blue Basin impairments primarily atrazine, bacteria, phosphorus

2010 Stream Assessments for the Big Blue and Little Blue River Basins

Map showing the Big Blue and Little Blue River Basins. The map includes a legend for 'Basins' (Big Blue River Basin, Little Blue River Basin) and 'Streams' (Assessed by 2010, Assessed by 2009). The map also shows '2010 Stream Assessment Points' and '2010 Stream Assessment Results'.



#### HUC 8 Targeted Areas

# Nebraska Buffer Strip Program Summary

NRD	# Applications	Total Acres	Miles	Irrigated Acres	Annual Application Dollars	'BSP Only' Acres	BSP only Dollars	Contracted Acres	Annual Contracted Dollars
Central Platte	33	288	29	222	\$45,454.46	154	\$27,428.54	288	\$45,454.46
Lewis & Clark	15	71	10	27	\$6,731.24	22	\$3,890.14	71	\$6,731.24
Little Blue	59	328	49	196	\$44,701.83	217	\$37,694.06	317	\$43,963.53
Lower Big Blue	174	994	121	265	\$82,435.29	373	\$55,482.20	962	\$77,626.74
Lower Elkhorn	121	980	108	195	\$76,343.98	264	\$46,670.77	959	\$71,949.30
Lower Loup	65	867	74	708	\$165,826.60	834	\$163,528.78	811	\$153,631.62
Lower Niobrara	4	41	3	38	\$8,793.54	41	\$8,793.54	41	\$8,793.54
Lower Platte North	8	94	8	57	\$11,881.69	34	\$7,605.00	94	\$11,881.69
Lower Platte South	44	227	32	10	\$17,319.05	105	\$14,138.63	227	\$17,319.05
Lower Republican	1	3	0	0	\$298.08	3	\$298.08	3	\$298.08
Middle Republican	4	56	5	16	\$5,061.91	44	\$4,982.00	44	\$4,982.00
Nemaha	186	1,516	181	49	\$62,178.18	131	\$20,282.56	1,514	\$61,808.18
Papio-Missouri River	26	199	21	0	\$17,642.45	89	\$14,759.08	199	\$17,642.45
South Platte	33	434	28	152	\$41,195.06	303	\$40,410.29	425	\$39,125.06
Tri-Basin	9	96	10	89	\$18,109.06	96	\$18,109.06	81	\$14,891.56
Twin Platte	6	52	4	19	\$4,027.82	7	\$1,310.32	52	\$4,027.82
Upper Big Blue	27	231	33	157	\$33,203.83	150	\$25,620.41	231	\$33,203.83
Upper Elkhorn	5	155	9	155	\$34,605.00	155	\$34,605.00	155	\$34,605.00
Upper Republican	24	235	14	21	\$6,695.07	25	\$4,017.43	235	\$6,695.07
<b>844</b>	<b>6,868</b>	<b>737</b>	<b>2,376</b>	<b>\$682,504.14</b>	<b>3,046</b>	<b>\$529,625.89</b>	<b>6,710</b>	<b>\$654,630.22</b>	

## LAND-USE DOLLARS

Annual \$ for Irrigated w/o CRP

\$373,221.64

Annual \$ for irrigated w/ CRP

\$72,634.52

Annual \$ for Non-irrigated w/o CRP

\$158,952.81

Annual \$ for Non-irrigated w/ CRP

\$71,933.07

## LAND-USE ACRES

Irrigated Acres w/o CRP

1738

Irrigated Acres w/ CRP

635

Non-irrigated Acres w/o CRP

1333

Non-irrigated Acres w/ CRP

9159

## BUFFER TYPE

Forested Buffer Acres

104

Potential Obligation for Approved Applications

\$6,393,153.06

Total Obligation for Approved Contracts

\$6,082,079.51

## Nebraska Buffer Strip Program Summary

NRD	# Applications	Total Acres	Miles	Irrigated Acres	Annual Application Dollars	"BSP Only" Acres	BSP Only Dollars	Annual Contracted Dollars
Central Platte	56	473.8	48	371	\$45,216.64	236	\$30,352.49	\$45,216.64
Lewis & Clark	34	207.9	29	54	\$12,493.43	75	\$8,913.70	\$12,493.43
Little Blue	66	409.5	58	218	\$36,430.22	235	\$31,036.36	\$36,430.22
Lower Big Blue	196	1,335.3	150	295	\$54,807.00	254	\$29,415.18	\$53,041.34
Lower Elkhorn	306	2,531.1	254	413	\$71,576.99	225	\$26,983.16	\$71,576.99
Lower Loup	88	1,022.1	96	858	\$131,299.0	895	\$123,823.3	\$129,440.5C
Lower Niobrara	4	36.3	4	34	\$3,705.77	9	\$1,123.74	\$3,705.77
Lower Platte North	80	650.3	70	301	\$21,647.44	55	\$7,860.42	\$21,269.08
Lower Platte South	66	470.3	54	14	\$14,934.74	68	\$7,467.89	\$14,934.74
Lower Republican	13	73.2	8	27	\$7,090.48	65	\$7,001.67	\$7,090.48
Middle Republican	8	102.5	9	16	\$4,107.56	44	\$3,752.17	\$4,107.56
Nemaha	229	2,001.5	219	66	\$50,567.62	123	\$14,776.39	\$50,567.62
Papio-Missouri River	64	449.2	47	0	\$18,664.97	93	\$13,072.71	\$18,664.97
South Platte	31	474.5	39	188	\$30,618.09	208	\$26,562.35	\$30,618.09
Tri-Basin	18	146.6	15	133	\$20,821.41	145	\$20,660.41	\$18,936.62
Twin Platte	10	66.5	7	56	\$6,834.21	27	\$3,898.78	\$6,834.21
Upper Big Blue	59	476.2	66	251	\$33,846.89	185	\$25,498.42	\$33,846.89
Upper Elkhorn	18	243.2	22	236	\$26,079.54	64	\$9,615.00	\$26,079.54
Upper Republican	15	115.8	11	73	\$10,186.11	59	\$7,621.57	\$10,186.11
	<b>1,361</b>	<b>11,286</b>	<b>1,207</b>	<b>3,600</b>	<b>\$600,928.11</b>	<b>3,065</b>	<b>\$399,436</b>	<b>\$595,040.77</b>

### LAND-USE DOLLARS

Annual \$ for Irrigated w/ CRP	293,481
Annual \$ for Irrigated w/ CRP	95,367
Annual \$ for Non-Irrigated w/o CRP	107,353
Annual \$ for Non-Irrigated w/ CRP	103,467

### LAND-USE ACRES

Irrigated Acres w/o CRP	7,961
Irrigated Acres w/ CRP	1,835
Non-irrigated Acres w/o CRP	31
Non-Irrigated Acres w/ CRP	6,554

### BUFFER TYPE

Forested Buffer Acres	
Potential Obligation for Approved Applications	\$5,794,022
Total Obligation for Approved Contracts	\$5,735,151



Water-Data Report 2011

**06882000 Big Blue River at Barneston, Nebr.**

Big Blue Basin  
Middle Big Blue Subbasin

LOCATION.—Lat 40°02'41", long 98°35'14" referenced to North American Datum of 1983, in NE ¼ NW ¼ sec.24, T.1 N., R.7 E., Gage County, NE, Hydrologic Unit 10270202, on right bank at right downstream end 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 m<sup>2</sup> of which 77 m<sup>2</sup> probably is noncontributing.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.—DAILY DISCHARGE—May 1932 to current year.

PERIOD OF RECORD.—DAILY GAGE HEIGHT—October 2009 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.—Records good except for estimated daily discharges, which are poor.

## 06882000 Big Blue River at Barneston, Nebr.—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	264	200	243	e305	e195	430	344	393	993	1,510	412	643
2	245	201	267	e298	e179	436	334	368	987	1,170	394	798
3	232	205	267	e302	e188	435	336	345	981	937	291	612
4	222	205	272	e299	e210	432	323	331	875	1,730	286	456
5	217	204	e249	e290	e238	418	314	332	776	1,260	267	383
6	212	206	e256	e290	e260	412	309	322	674	1,890	246	361
7	208	210	e258	e279	e249	410	314	314	601	2,290	238	323
8	207	212	e277	e256	e202	404	491	310	542	2,760	270	286
9	204	216	323	e245	e200	404	469	313	493	2,470	302	256
10	205	219	326	e228	e226	396	422	305	472	2,390	307	239
11	207	216	311	e206	e337	389	374	311	467	2,100	300	226
12	204	1,190	e268	e183	e424	373	345	489	451	1,870	355	207
13	196	2,250	e264	e172	e541	366	333	651	427	2,010	611	209
14	192	2,170	e273	e180	e776	364	328	426	415	1,820	758	205
15	196	1,130	e284	e202	e1,010	358	359	399	429	1,180	1,250	192
16	198	664	e298	e227	e1,340	359	425	1,410	422	748	1,230	192
17	196	516	e291	e233	e1,460	364	465	1,290	432	589	1,030	195
18	198	449	e295	e234	1,390	354	491	1,060	443	505	987	215
19	196	427	e304	e225	1,170	349	619	1,180	481	423	801	236
20	193	373	e310	e189	1,170	357	715	1,780	511	371	871	224
21	192	347	e311	e173	1,040	355	645	7,470	897	328	894	209
22	195	330	e289	e211	773	358	596	7,450	1,300	317	712	196
23	208	317	e294	e233	608	357	598	7,280	783	285	672	194
24	206	310	e297	e231	562	331	572	5,500	595	295	547	190
25	204	294	e305	e237	e531	340	508	4,140	631	359	438	187
26	200	275	e295	e238	e496	342	518	3,900	1,830	305	369	184
27	194	274	e297	e251	e466	338	506	2,980	1,470	260	318	181
28	185	269	e302	e260	e446	332	477	2,050	2,990	231	279	177
29	189	278	e311	e245	---	333	450	1,620	3,110	220	264	176
30	195	284	e332	e239	---	330	424	1,380	2,180	249	290	170
31	197	---	e313	e228	---	338	---	1,140	---	326	294	---
<b>Total</b>	6,357	14,441	8,982	7,389	16,687	11,564	13,404	57,239	27,658	33,198	16,283	8,322
<b>Mean</b>	205	481	290	238	596	373	447	1,846	922	1,071	525	277
<b>Max</b>	264	2,250	332	305	1,460	436	715	7,470	3,110	2,760	1,250	798
<b>Min</b>	185	200	243	172	179	330	309	305	415	220	238	170
<b>Ac-ft</b>	12,610	28,640	17,820	14,660	33,100	22,940	26,590	113,500	54,860	65,850	32,300	16,510

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2011, BY WATER YEAR (WY)

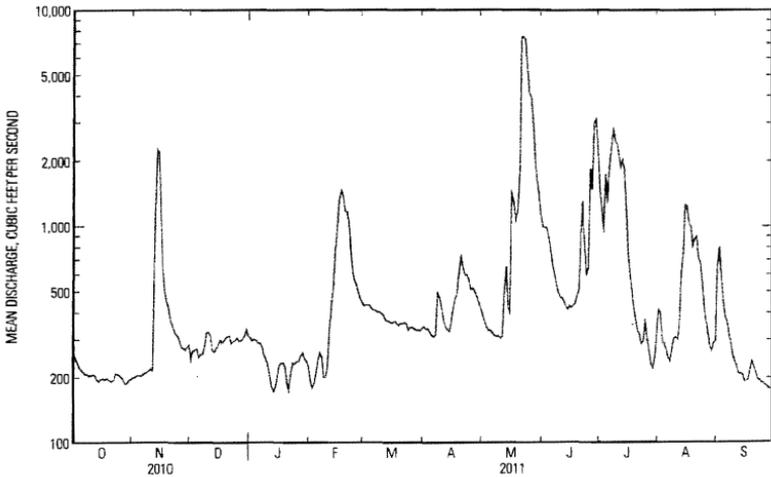
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	555	312	239	292	614	1,293	839	1,325	2,033	1,288	685	682
<b>Max (WY)</b>	7,451 (1974)	1,526 (1999)	851 (1998)	1,596 (1973)	2,876 (1984)	10,560 (1979)	5,280 (1984)	5,207 (1995)	10,460 (1951)	12,270 (1993)	5,227 (1954)	3,420 (1989)
<b>Min</b>	61.5	77.5	87.4	67.6	116	137	132	96.0	69.3	30.7	21.1	50.6
<b>(WY)</b>	(1941)	(1937)	(1977)	(1937)	(1940)	(1968)	(1934)	(1934)	(1934)	(1934)	(1934)	(1939)

06882000 Big Blue River at Barneston, Nebr.—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1933 - 2011	
Annual total	398,138		221,524		847	
Annual mean	1,091		607		2,781	
Highest annual mean					115	
Lowest annual mean					1934	
Highest daily mean	8,980	Jun 22	7,470	May 21	50,000	Jun 9, 1941
Lowest daily mean	185	Oct 28	170	Sep 30	1.0	Nov 30, 1945
Annual seven-day minimum	194	Oct 26	181	Sep 24	15	Aug 3, 1934
Maximum peak flow			8,160		57,700	
Maximum peak stage			13.14		34.30	
Annual runoff (ac-ft)	789,700		439,400		613,600	
10 percent exceeds	2,780		1,250		1,740	
50 percent exceeds	459		331		281	
90 percent exceeds	217		200		108	

<sup>a</sup> At site and datum then in use.

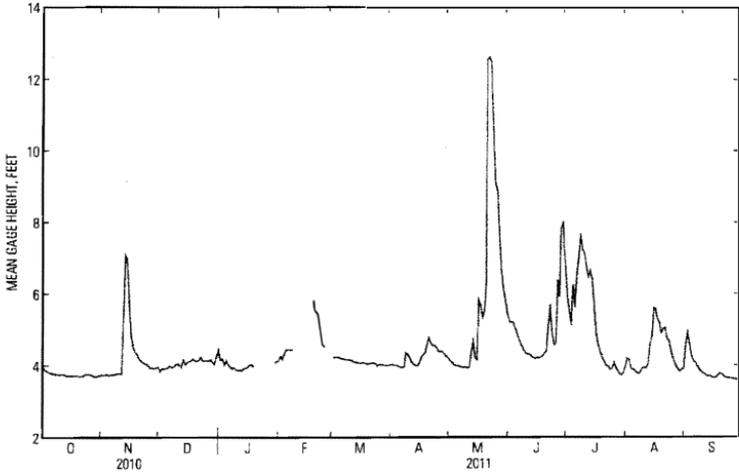


## 0682000 Big Blue River at Barneston, Nebr.—Continued

**GAGE HEIGHT, FEET**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.93	3.73	3.84	4.16	4.24	4.22	4.02	4.14	5.20	5.96	4.18	4.59
2	3.88	3.73	3.91	4.18	4.16	4.23	4.00	4.08	5.19	5.47	4.14	4.89
3	3.84	3.74	3.91	4.03	4.31	4.23	4.00	4.03	5.18	5.11	3.90	4.58
4	3.81	3.73	3.92	4.14	4.43	4.22	3.97	3.99	5.01	6.23	3.88	4.28
5	3.79	3.73	3.94	4.02	4.43	4.19	3.95	3.99	4.85	5.60	3.84	4.12
6	3.78	3.74	3.99	3.96	4.43	4.18	3.94	3.97	4.68	6.44	3.78	4.08
7	3.76	3.75	3.95	3.91	4.43	4.17	3.95	3.95	4.56	6.97	3.76	3.99
8	3.76	3.76	3.96	3.94	---	4.16	4.34	3.94	4.45	7.55	3.84	3.90
9	3.75	3.77	4.04	3.88	---	4.16	4.30	3.95	4.35	7.20	3.92	3.83
10	3.75	3.78	4.05	3.86	---	4.14	4.20	3.93	4.31	7.10	3.93	3.78
11	3.76	3.77	4.01	3.88	---	4.13	4.09	3.94	4.30	6.74	3.92	3.75
12	3.75	5.51	3.95	3.85	---	4.09	4.03	4.34	4.26	6.45	4.05	3.69
13	3.72	7.07	4.15	3.91	---	4.08	4.00	4.64	4.21	6.61	4.57	3.70
14	3.71	6.97	4.03	3.93	---	4.07	3.99	4.21	4.18	6.37	4.82	3.69
15	3.71	5.58	4.09	3.94	---	4.06	4.06	4.14	4.21	5.48	5.59	3.65
16	3.72	4.82	4.12	4.01	---	4.06	4.21	5.81	4.20	4.81	5.56	3.65
17	3.71	4.53	4.14	4.02	---	4.07	4.29	5.65	4.22	4.53	5.26	3.66
18	3.72	4.38	4.19	3.97	5.79	4.05	4.35	5.30	4.25	4.37	5.19	3.71
19	3.71	4.33	4.13	---	5.47	4.04	4.58	5.49	4.33	4.20	4.89	3.77
20	3.70	4.20	4.13	---	5.47	4.05	4.75	6.25	4.39	4.09	5.01	3.74
21	3.70	4.14	4.15	---	5.28	4.05	4.63	12.52	5.04	3.98	5.04	3.70
22	3.71	4.10	4.23	---	4.85	4.06	4.55	12.60	5.67	3.96	4.75	3.66
23	3.75	4.06	4.14	---	4.57	4.05	4.55	12.47	4.86	3.88	4.68	3.65
24	3.75	4.04	4.13	---	4.49	3.99	4.50	10.63	4.55	3.90	4.46	3.64
25	3.74	3.99	4.14	---	---	4.01	4.38	9.11	4.61	4.06	4.23	3.63
26	3.73	3.94	4.14	---	---	4.02	4.40	8.84	6.36	3.93	4.08	3.62
27	3.71	3.93	4.16	---	---	4.01	4.38	7.81	5.90	3.82	3.96	3.61
28	3.68	3.92	4.09	---	---	3.99	4.32	6.67	7.81	3.74	3.87	3.60
29	3.69	3.94	4.04	4.07	---	4.00	4.26	6.12	7.96	3.71	3.83	3.60
30	3.71	3.96	4.24	4.10	---	3.99	4.21	5.78	6.83	3.79	3.89	3.58
31	3.72	---	4.43	4.12	---	4.01	---	5.43	---	3.98	3.90	---
Mean	3.75	4.29	4.08	---	---	4.09	4.24	6.06	5.00	5.16	4.35	3.84
Max	3.93	7.07	4.43	---	---	4.23	4.75	12.60	7.96	7.55	5.59	4.89
Min	3.68	3.73	3.84	---	---	3.99	3.94	3.93	4.18	3.71	3.76	3.58

0682000 Big Blue River at Bismeton, Nebr.—Continued



Water-Data Report 2011

**06884025 Little Blue River at Hollenberg, KS**

Big Blue Basin  
Lower Little Blue Subbasin

LOCATION.--Lat 39°58'49", long 97°00'17" referenced to North American Datum of 1983, in NE ¼ SW ¼ 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 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

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

PERIOD OF RECORD.--DAILY GAGE HEIGHT--October 2009 to current year.

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

REMARKS.--Records fair except for estimated daily discharges, which are poor. Discharge measurements made prior to 1974 water year are published in table of miscellaneous gages in WDR NE-73.

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

## 06884025 Little Blue River at Hollenberg, KS—Continued

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011  
DAILY MEAN VALUES

(e, estimated)

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	172	145	155	e173	e148	e281	200	227	705	188	236	850
2	164	146	163	e173	e136	281	194	222	680	177	206	1,660
3	157	147	177	e177	e131	253	191	217	1,100	182	183	852
4	152	145	175	e177	e133	240	184	212	929	245	210	558
5	148	143	166	e180	e143	223	180	208	573	272	217	416
6	146	142	e141	e183	e153	221	179	209	451	299	226	335
7	143	143	e154	e185	e155	218	185	204	392	468	533	298
8	142	144	e151	e185	e153	229	224	201	341	1,410	699	259
9	140	145	e156	e186	e151	230	225	198	309	754	660	229
10	140	143	e164	e181	e151	222	215	195	302	493	701	212
11	140	144	e166	e177	e156	217	203	197	303	362	645	196
12	139	332	e160	e170	e179	214	191	204	301	315	490	182
13	138	543	e160	e164	e286	215	187	203	288	285	388	167
14	136	321	e160	e154	e512	218	188	195	277	258	303	154
15	136	237	e160	e154	e687	219	259	197	272	231	295	143
16	136	206	e160	e157	e761	218	316	195	275	215	773	140
17	136	207	e160	e162	e720	217	328	190	276	203	992	137
18	141	238	e160	e162	591	214	363	186	265	192	758	169
19	146	210	e162	e158	457	211	336	196	289	186	571	207
20	142	198	e168	e153	379	211	309	e800	308	201	954	180
21	147	190	e170	e154	330	208	270	e9,200	544	181	1,280	164
22	145	184	e168	e154	289	207	295	e6,000	319	162	751	154
23	140	180	e168	e153	271	202	342	e2,330	299	156	503	149
24	147	177	e171	e153	e253	196	324	1,140	275	210	363	145
25	147	170	e167	e158	e198	196	296	e1,730	365	473	289	137
26	149	164	e165	e158	e197	197	296	e3,810	361	640	251	133
27	147	172	e164	e162	e208	198	271	e4,200	254	540	228	132
28	143	177	e166	e168	e244	196	254	e2,020	223	562	214	128
29	144	179	e173	e179	---	198	243	1,360	209	409	207	125
30	144	167	e189	e179	---	195	235	1,010	200	322	211	117
31	144	---	e189	e169	---	197	---	828	---	272	217	---
<b>Total</b>	4,491	5,839	5,108	5,198	8,172	6,742	7,483	38,284	11,685	10,863	14,554	8,728
<b>Mean</b>	145	195	165	168	292	217	249	1,235	390	350	469	291
<b>Max</b>	172	543	189	186	761	281	363	9,200	1,100	1,410	1,280	1,660
<b>Min</b>	136	142	141	153	131	195	179	186	200	156	183	117
<b>Ac-ft</b>	8,910	11,580	10,130	10,310	16,210	13,370	14,840	75,940	23,180	21,550	28,870	17,310

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2011, BY WATER YEAR (WY)

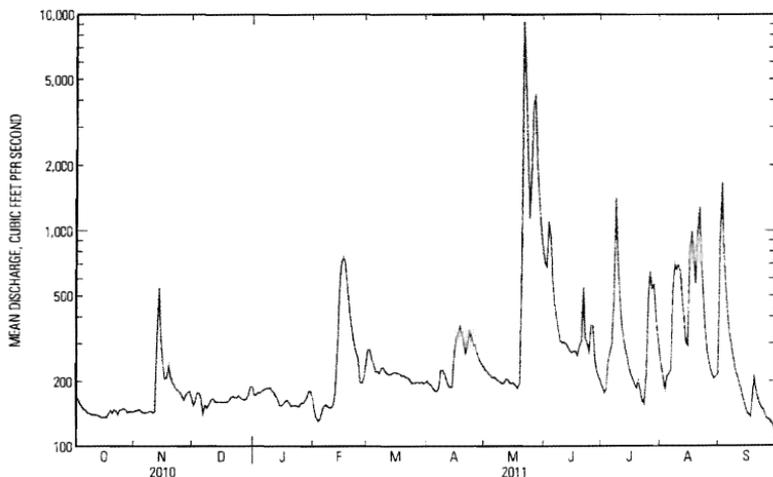
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	332	229	175	180	313	694	495	806	957	896	510	370
<b>Max</b>	2,163	1,113	424	576	1,059	3,816	2,379	2,302	4,373	9,014	2,572	1,320
<b>(WY)</b>	(1987)	(1997)	(1993)	(1984)	(1993)	(1993)	(1987)	(1995)	(1984)	(1993)	(1985)	(1977)
<b>Min</b>	45.3	81.1	96.7	98.5	115	118	123	108	151	83.8	72.5	32.0
<b>(WY)</b>	(1992)	(1992)	(2001)	(1977)	(1992)	(1981)	(2003)	(1992)	(1981)	(2002)	(1991)	(1991)

06884025 Little Blue River at Hollenberg, KS—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1975 - 2011	
<b>Annual total</b>	207,215		127,147			
<b>Annual mean</b>	568		348		498	
<b>Highest annual mean</b>					1,891	1993
<b>Lowest annual mean</b>					173	2006
<b>Highest daily mean</b>	12,400	Jun 22	9,200	May 21	39,300	Jul 26, 1992
<b>Lowest daily mean</b>	111	Aug 23	117	Sep 30	26	Oct 1, 1991
<b>Annual seven-day minimum</b>	120	Jan 3	131	Sep 24	27	Sep 27, 1991
<b>Maximum peak flow</b>			11,100	May 21	47,800	Jul 26, 1992
<b>Maximum peak stage</b>			<sup>a</sup> 12.13	May 21	21.21	Jul 26, 1992
<b>Annual runoff (ac-ft)</b>	411,000		252,200		360,500	
<b>10 percent exceeds</b>	1,050		580		830	
<b>50 percent exceeds</b>	278		198		200	
<b>90 percent exceeds</b>	143		144		103	

<sup>a</sup> From floodmark.

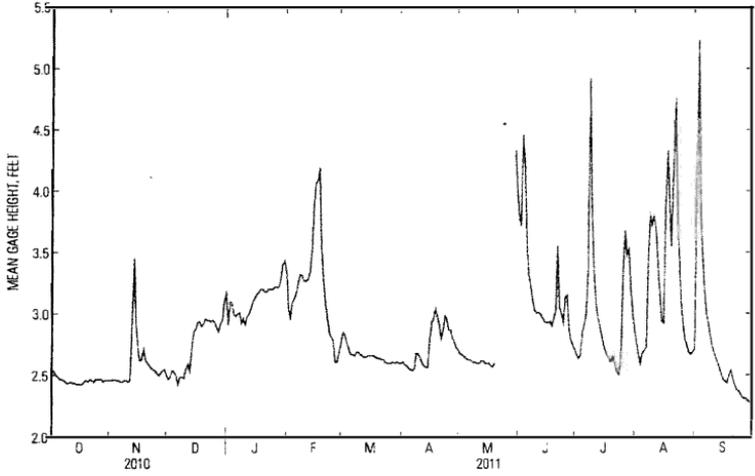


## 06884025 Little Blue River at Hollenberg, KS—Continued

**GAGE HEIGHT, FEET**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**  
**DAILY MEAN VALUES**

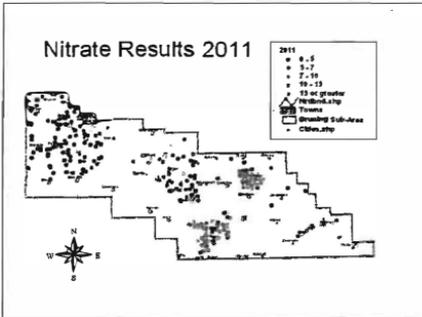
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2.55	2.46	2.47	2.91	3.03	2.85	2.61	2.68	3.78	2.67	2.76	3.96
2	2.53	2.46	2.49	3.10	2.97	2.83	2.59	2.67	3.73	2.64	2.67	5.23
3	2.50	2.47	2.54	3.09	3.09	2.76	2.58	2.66	4.46	2.66	2.60	4.08
4	2.49	2.46	2.53	3.00	3.13	2.72	2.56	2.64	4.20	2.85	2.68	3.52
5	2.47	2.46	2.50	2.98	3.17	2.67	2.55	2.63	3.55	2.92	2.70	3.21
6	2.47	2.45	2.43	3.00	3.25	2.67	2.54	2.63	3.31	3.00	2.73	3.02
7	2.46	2.45	2.49	3.01	3.32	2.66	2.56	2.62	3.21	3.35	3.45	2.93
8	2.45	2.46	2.49	2.93	3.31	2.69	2.68	2.61	3.11	4.92	3.80	2.83
9	2.44	2.46	2.48	2.96	3.27	2.69	2.68	2.61	3.03	3.90	3.73	2.74
10	2.44	2.45	2.56	2.91	3.27	2.67	2.65	2.60	3.01	3.38	3.80	2.69
11	2.45	2.46	2.59	2.98	3.28	2.66	2.61	2.60	3.01	3.09	3.69	2.64
12	2.44	2.98	2.54	3.00	3.34	2.65	2.58	2.62	3.00	2.97	3.38	2.60
13	2.44	3.45	2.74	3.04	3.53	2.65	2.57	2.62	2.97	2.90	3.15	2.55
14	2.43	2.93	2.86	3.10	3.87	2.66	2.57	2.60	2.94	2.82	2.94	2.50
15	2.43	2.71	2.88	3.13	4.06	2.66	2.77	2.60	2.93	2.75	2.92	2.46
16	2.43	2.62	2.93	3.16	4.09	2.66	2.93	2.60	2.93	2.70	3.87	2.45
17	2.43	2.63	2.94	3.18	4.19	2.66	2.96	2.58	2.94	2.66	4.33	2.44
18	2.45	2.72	2.90	3.20	3.55	2.65	3.04	2.57	2.90	2.63	3.91	2.50
19	2.46	2.63	2.92	3.20	3.26	2.64	2.98	2.60	2.97	2.61	3.55	2.54
20	2.45	2.60	2.96	3.18	3.08	2.64	2.91	---	3.02	2.66	4.24	2.47
21	2.47	2.58	2.95	3.18	2.96	2.63	2.80	---	3.55	2.59	4.76	2.42
22	2.46	2.56	2.95	3.20	2.85	2.63	2.87	---	3.05	2.53	3.90	2.38
23	2.45	2.55	2.94	3.20	2.81	2.61	2.99	---	3.00	2.51	3.41	2.37
24	2.47	2.54	2.95	3.20	2.79	2.60	2.95	4.55	2.93	2.65	3.09	2.35
25	2.47	2.52	2.93	3.22	2.61	2.60	2.87	---	3.14	3.34	2.91	2.32
26	2.47	2.50	2.89	3.22	2.61	2.60	2.87	---	3.15	3.68	2.80	2.31
27	2.47	2.52	2.86	3.22	2.68	2.61	2.81	---	2.87	3.48	2.74	2.31
28	2.45	2.54	2.92	3.28	2.76	2.60	2.76	---	2.78	3.53	2.69	2.29
29	2.46	2.55	2.95	3.40	---	2.61	2.73	---	2.74	3.20	2.67	2.28
30	2.46	2.51	3.11	3.43	---	2.60	2.71	4.34	2.71	2.99	2.69	2.25
31	2.46	---	3.17	3.36	---	2.60	---	4.01	---	2.86	2.71	---
Mean	2.46	2.59	2.77	3.13	3.22	2.66	2.74	---	3.16	3.01	3.27	2.75
Max	2.55	3.45	3.17	3.43	4.19	2.85	3.04	---	4.46	4.92	4.76	5.23
Min	2.43	2.45	2.43	2.91	2.61	2.60	2.54	---	2.71	2.51	2.60	2.25

06884025 Little Blue River at Hollenberg, KS—Continued

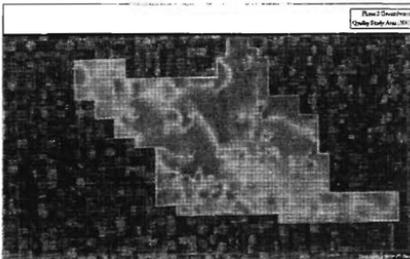


**BIG BLUE RIVER COMPACT**  
**Water Quality Committee Report**  
 by Little Blue Natural Resources District  
 April 2012

**Summer 2011 Water Quality Sampling Results**

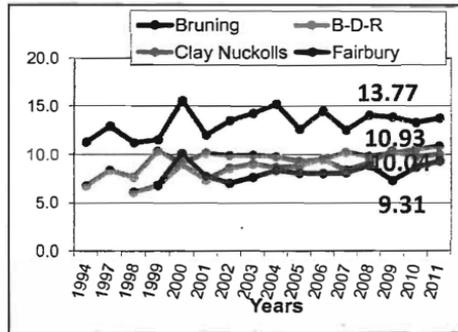


The Little Blue, Upper Big Blue and Hastings Utilities have been sampling an additional 500 groundwater wells in Hastings Wellhead Management Area for the last couple of years. The map below shows areas in red exhibiting higher concentration of nitrates. This area is now a joint



pollution with the older construction standards. The study will force concrete through the casing seams into the gravel packs surrounding the casing holes. The summer of 2012 extensive water sampling will be conducted to established baseline information. Monitoring wells will be installed for constant monitoring of contaminants.

Nitrate levels for the Water Quality Sub-Areas are Bruning – 13.77 PPM, Byron-Deshler-Ruskin – 10.93 PPM, Clay-Nuckolls – 10.04 PPM, and Fairbury 9.31 PPM. District wide the NRD sampled 522 irrigation wells with a 7.03 PPM average. The graph below shows the trends of the nitrate levels of the current sub-areas.



management area between all parties. As this area was sampled for more than nitrates a couple of other plumes arose with uranium and iron. More investigation will be done in 2012. The NRD is looking at 3 new water quality sub-areas with extensive sampling planned for 2012.

The City of Edgar has received a grant to do some well rehabilitation of irrigation wells. DHHS and the Well Drillers are looking at irrigation wells as point source

**New Fertilizer Rule**

LBNRD Board of Directors in October of 2011 implemented a rule that all liquid and dry nitrogen fertilizer applied between November 1st and March 1st requires a nitrogen inhibitor along with a fertilizer permit. In the Hastings Management Area an inhibitor is also required for anhydrous ammonia during this time frame.

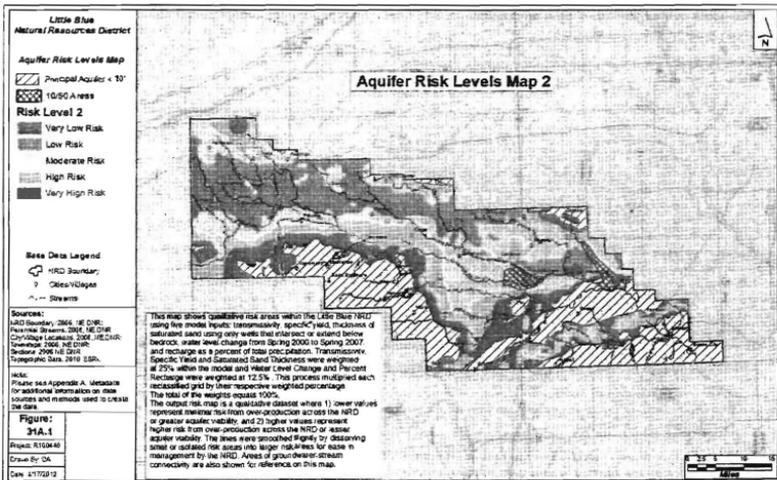
**Fall 2011 Groundwater Levels**

The fall 2011 static groundwater levels were completed by the Little Blue NRD in November. A total of 338 irrigation and monitoring wells were read showing a slight rise of **0.76 feet** from the fall of 2010. In the District's Groundwater Management Plan, sub-areas of the district were established based on areas of similar groundwater geologic conditions, and broken into manageable sized areas. We continue to work with producers in Unit 8, in which about 50% of the wells in this sub-area are metered and have been working with producers to implement best management irrigation practices. Spring levels are now being completed.

**Hydro Geologic Study**

The NRD hired JEO to complete a hydro geologic study of the entire district. The study is completed and in which the NRD has come up with a scoring system, when issuing well permits, using the following Risk Map. The description explains all that is considered.

structure.



## **Future**

Above average rainfall has brought static water levels back to above base line levels. If static water levels were to decline to trigger levels set in the Districts groundwater management plan, the NRD would enact policies set forth in the plan. Water sampling for nitrate-nitrogen will continue, particularly in areas with known hot spots of nitrate problems.

## **Blue Basin Groundwater Modeling Study**

The Lower Big Blue, Upper Big Blue and Little Blue NRDs have approved a Blue River Groundwater Model Study for the Blue River Basin. This study was completed this year and will be used for evaluating the hydrologic connectivity of streams and groundwater in the Blue River Basin of Nebraska. Where possible, the COHYST database was used. Additional data, such as streambed conductance, estimates of stream base flow, and geologic layer refinements were also used in the model. Total land area in the 10/50 zones as determined by the model was 2.7 % of the land area in the three NRDs.

## **Irrigation Management Project:**

The District is in the fifth year of a joint irrigation scheduling program with the Cooperative Extension Service and the NRCS assisting and educating producers in the use of ET gages, data loggers, moisture sensors, and irrigation scheduling to reduce pumping rates. The district has 41 producers signed up to install the irrigation management equipment this summer.

## **Swan 5 Watershed Improvement Project:**

The NRD has completed the Swan 5 Watershed Improvement Project.

## **EDUCATION**

The district works with schools to educate kids about conservation. The NRD hands out trees and talks about buffer strips to about 500 5<sup>th</sup> graders at Camp Jefferson during Earth Day. High school students participate in land judging and the Envirothon every year. Doane College has also been working with the NRD on some GIS work as well as water sampling. The NRD also puts on a family fishing day in conjunction with the Game and Parks free fishing day, and Hunters Education classes at the Big Indian Archery Range. Newsletters are sent out to inform the residents of what the NRD is doing and what programs are offered. The NRD participates in a Test-Your-Well program in conjunction with the Groundwater Foundation for schools, FFA chapters, or science clubs who want to become involved in water quality activities.

## **Land Treatment** – 73% of Land in the NRD meets NRCS soil erosion standards

- NSWCP – NRD Funds: \$65,000, State: \$107,263
- 153 applications requesting \$795,832
- Approved 69 applications for \$242,834
- In the last year :
  - > 110 miles of terraces
  - > 30 miles of tile outlets

> 50 acres grassed waterways

- Buffer Strips 268 contracts - 1,200 acres \$86,319 annual payments
- Small Dam Cost-Share Program
  - Initiated in 1997
  - Constructed 20 dams, Total cost - \$368,919

### **Flood Control**

- 11 flood control projects control runoff from 34% of the district, or 157,000 acres.
- The NRD has over 250 Watershed structures in the 11 watersheds

### **Wymore Rural Water Project**

- 160 potential users have signed up for rural water east and south of the town of Wymore
- Construction is to begin the Fall of 2012

### **Lower Turkey Creek Project**

The Lower Turkey Creek Project was approved for funding through the Natural Resources Development Fund (NRDF) in November 2005. The primary purpose of this project is flood control. The seven flood control structures will control runoff from 43,600 acres, or approximately 33% of the 131,200 acres located in Saline County

- Four of the seven planned structures have been completed.
- Bids have been let for the fifth structure, with construction to be completed this year.
- The Lower Turkey Creek Project contains 131,200 acres of the 294,900 total Turkey Creek Watershed.
- The seven structures will provide 490 surface acres of permanent pool and 1450 surface acres of flood pool.
- Annual damages will be reduced by 31% in the 16,700 acres in the 100 year flood plain.
- Average annual benefits will be \$400,000.
- Dollar damages – 100 year, \$1,836,706

#### Estimated Cost of Project

TOTAL COST     \$ \$6,204,095

#### Stream Flow Augmentation

- Turkey Creek flows improved through retained flows for releases over longer period of times (flood storage releases)
- Drains within structures providing some year-round flows into tributaries and Turkey Creek

- 3,500 acre feet of sediment storage would be available for release during extreme low flows.
- Erosion and Sediment Control
  - 7 structures have estimated 3500 acre feet of sediment storage (1.03” runoff from each acre of drainage area above structures)
  - Presently 75% of drainage area above 7 structures is treated with grass and terraced cropland. In addition, between 10-15% of the drainage area is on non-HEL soil and requires no land treatment practices (Class I & II lands)

Other Purposes

- Surface Water Quality – 490 acres of surface water
- Wildlife Habitat – Upland birds, fisheries
- Wetland creations in upper reaches of permanent pools

**KANSAS-NEBRASKA BIG BLUE RIVER COMPACT REPORT**  
**U.S. Geological Survey—Water Year 2011**

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 Web (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 a national Web page (address shown below).

During water year (WY) 2011 (October 1, 2010 to September 30, 2011), 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 2011 published data (manuscript; discharge and gage height daily values; statistics tables; and discharge and gage height hydrographs) from *WDR2011: Water-Data Report 2011* are attached for each station. These site-data sheets (PDF files) are available online at <http://wdr.water.usgs.gov/wy2011/search.jsp> 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 2011 compared to those for the median daily statistic for each day of the year.

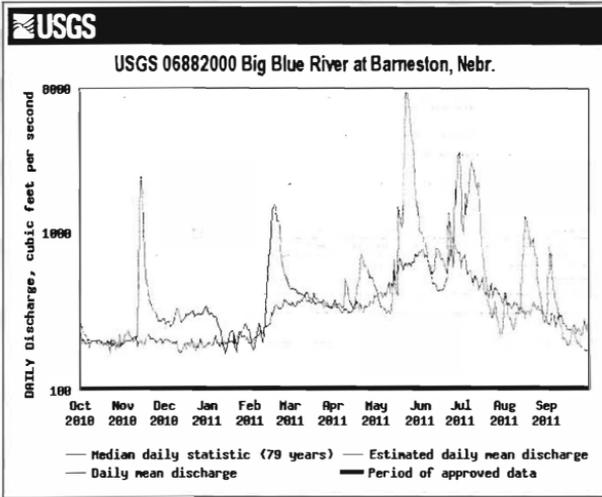
Current (real-time) and historical data on surface water, groundwater, and water quality for the Nation can be accessed and downloaded via the National Water Resources website (<http://water.usgs.gov/>) or from the Nebraska Water Resources website (<http://ne.water.usgs.gov/>). Daily, monthly, and annual streamflow statistics are also available under "Surface Water" on the National site and under "Historical data: Streamflow" on the Nebraska site. Up to 120 days of unit values data and all daily values can be accessed using the real-time options.

Jason Lambrecht  
Chief, Hydrologic Data Section

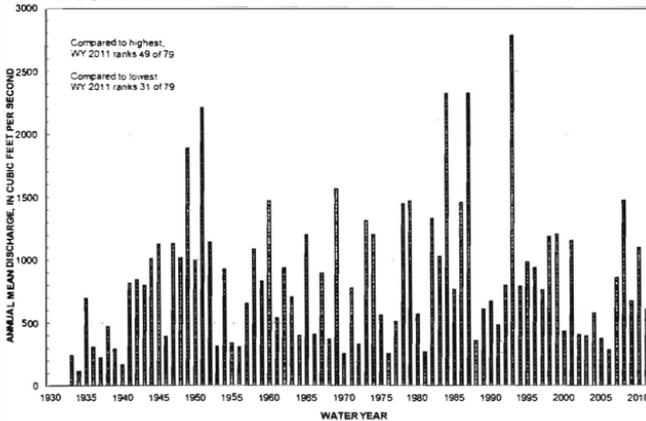
U.S. Geological Survey, Nebraska Water Science Center  
5231 S. 19th St., Lincoln, NE 68512-1271  
([jmlambre@usgs.gov](mailto:jmlambre@usgs.gov))  
402-328-4124 (office), 402-328-4101 (fax), 402-416-2363 (mobile)

May 15, 2012

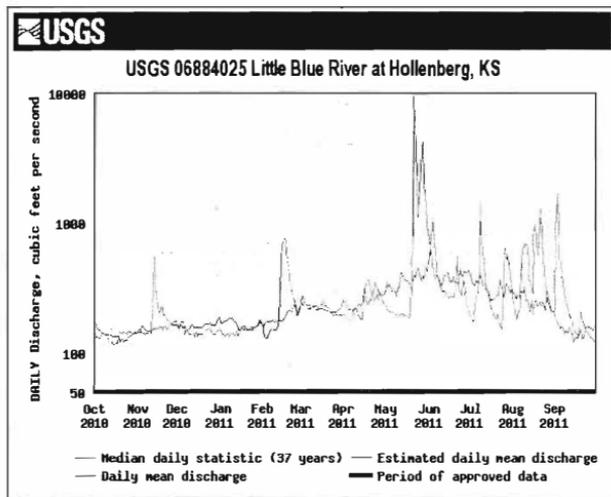
For **Big Blue River at Barneston**, ten discharge (and stage) measurements, ranging from 188 ft<sup>3</sup>/s (3.80 ft) to 7,050 ft<sup>3</sup>/s (12.53 ft), and three inspections were made during WY 2011. The annual mean discharge of 607 ft<sup>3</sup>/s was 1.8 times less than that of the WY 2010 mean of 1,096 ft<sup>3</sup>/s; and 1.4 times less than the new historical mean of 847 ft<sup>3</sup>/s for WYs 1933–2011 (79 years of record). The maximum and minimum daily discharges were 7,470 ft<sup>3</sup>/s on May 21, 2011; and 170 ft<sup>3</sup>/s on September 30, 2011.



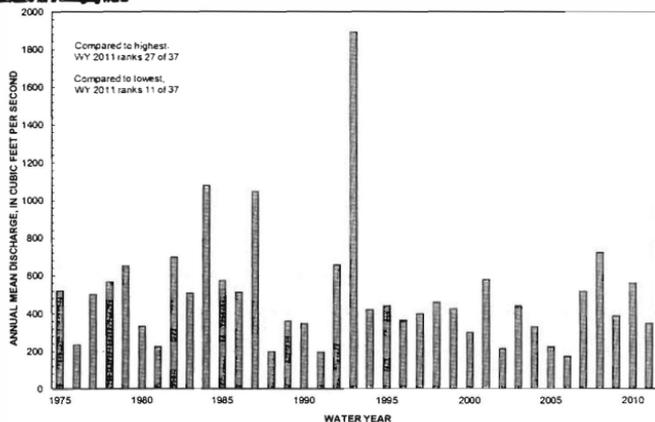
06882000 Big Blue River at Barneston, NE



For **Little Blue River at Hollenberg**, nine discharge (and stage) measurements, ranging from 131 ft<sup>3</sup>/s (2.48 ft) to 1,870 ft<sup>3</sup>/s (5.48 ft) were made during WY 2011. The annual mean discharge of 348 ft<sup>3</sup>/s was 1.6 times less than that of the WY 2010 mean of 559 ft<sup>3</sup>/s; and 1.4 times less than the new historical mean of 498 ft<sup>3</sup>/s for WYs 1975–2011 (37 years of record). The maximum and minimum daily discharges were 9,200 ft<sup>3</sup>/s (estimated) on May 21, 2011; and 117 ft<sup>3</sup>/s on September 30, 2011.



06884025 Little Blue River at Hollenberg, KS



Water-Data Report 2011

**06882000 Big Blue River at Barneston, Nebr.**

Big Blue Basin  
Middle Big Blue Subbasin

LOCATION.--Lat 40°02'41", long 96°35'14" referenced to North American Datum of 1983, in NE ¼ NW ¼ sec.24, T.1 N., R.7 E., Gage County, NE, Hydrologic Unit 10270202, on right bank at right downstream end 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<sup>2</sup> of which 77 mi<sup>2</sup> probably is noncontributing.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--DAILY DISCHARGE--May 1932 to current year.

PERIOD OF RECORD.--DAILY GAGE HEIGHT--October 2009 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.--Records good except for estimated daily discharges, which are poor.

## 06882000 Big Blue River at Barneston, Nebr.—Continued

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011  
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	264	200	243	e305	e195	430	344	393	993	1,510	412	643
2	245	201	267	e298	e179	436	334	368	987	1,170	394	798
3	232	205	267	e302	e188	435	336	345	981	937	291	612
4	222	205	272	e299	e210	432	323	331	875	1,730	286	456
5	217	204	e249	e290	e238	418	314	332	776	1,260	267	383
6	212	206	e256	e290	e260	412	309	322	674	1,890	246	361
7	208	210	e258	e279	e249	410	314	314	601	2,290	238	323
8	207	212	e277	e256	e202	404	491	310	542	2,760	270	286
9	204	216	323	e245	e200	404	469	313	493	2,470	302	256
10	205	219	326	e228	e226	396	422	305	472	2,390	307	239
11	207	216	311	e206	e337	389	374	311	467	2,100	300	226
12	204	1,190	e268	e183	e424	373	345	489	451	1,870	355	207
13	196	2,250	e264	e172	e541	366	333	651	427	2,010	611	209
14	192	2,170	e273	e180	e776	364	328	426	415	1,820	758	205
15	196	1,130	e284	e202	e1,010	358	359	399	429	1,180	1,250	192
16	198	664	e298	e227	e1,340	359	425	1,410	422	748	1,230	192
17	196	516	e291	e233	e1,460	364	465	1,290	432	589	1,030	195
18	198	449	e295	e234	1,390	354	491	1,060	443	505	987	215
19	196	427	e304	e225	1,170	349	619	1,180	481	423	801	236
20	193	373	e310	e189	1,170	357	715	1,780	511	371	871	224
21	192	347	e311	e173	1,040	355	645	7,470	897	328	894	209
22	195	330	e289	e211	773	358	596	7,450	1,300	317	712	196
23	208	317	e294	e233	608	357	598	7,280	783	285	672	194
24	206	310	e297	e231	562	331	572	5,500	595	295	547	190
25	204	294	e305	e237	e531	340	508	4,140	631	359	438	187
26	200	275	e295	e238	e496	342	518	3,900	1,830	305	369	184
27	194	274	e297	e251	e466	338	506	2,980	1,470	260	318	181
28	185	269	e302	e260	e446	332	477	2,050	2,990	231	279	177
29	189	278	e311	e245	---	333	450	1,620	3,110	220	264	176
30	195	284	e332	e239	---	330	424	1,380	2,180	249	290	170
31	197	---	e313	e228	---	338	---	1,140	---	326	294	---
<b>Total</b>	6,357	14,441	8,982	7,389	16,687	11,564	13,404	57,239	27,658	33,198	16,283	8,322
<b>Mean</b>	205	481	290	238	596	373	447	1,846	922	1,071	525	277
<b>Max</b>	264	2,250	332	305	1,460	436	715	7,470	3,110	2,760	1,250	798
<b>Min</b>	185	200	243	172	179	330	309	305	415	220	238	170
<b>Ac-ft</b>	12,610	28,640	17,820	14,660	33,100	22,940	26,590	113,500	54,860	65,850	32,300	16,510

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2011, BY WATER YEAR (WY)

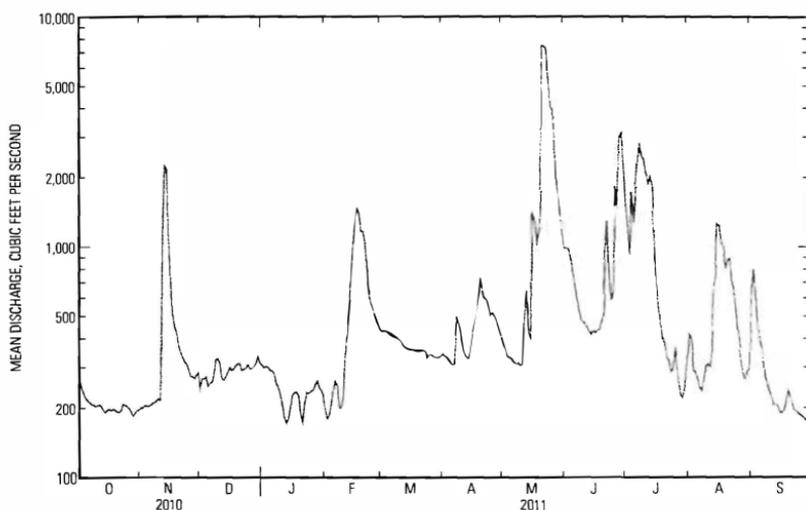
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	555	312	239	292	614	1,293	839	1,325	2,033	1,288	685	682
<b>Max</b>	7,451	1,526	851	1,596	2,876	10,560	5,280	5,207	10,460	12,270	5,227	3,420
<b>(WY)</b>	(1974)	(1999)	(1998)	(1973)	(1984)	(1979)	(1984)	(1995)	(1951)	(1993)	(1954)	(1989)
<b>Min</b>	61.5	77.5	87.4	67.6	116	137	132	96.0	69.3	30.7	21.1	50.6
<b>(WY)</b>	(1941)	(1937)	(1977)	(1937)	(1940)	(1968)	(1934)	(1934)	(1934)	(1934)	(1934)	(1939)

06882000 Big Blue River at Barneston, Nebr.—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1933 - 2011	
<b>Annual total</b>	398,138		221,524			
<b>Annual mean</b>	1,091		607		847	
<b>Highest annual mean</b>					2,781	1993
<b>Lowest annual mean</b>					115	1934
<b>Highest daily mean</b>	8,980	Jun 22	7,470	May 21	50,000	Jun 9, 1941
<b>Lowest daily mean</b>	185	Oct 28	170	Sep 30	1.0	Nov 30, 1945
<b>Annual seven-day minimum</b>	194	Oct 26	181	Sep 24	15	Aug 3, 1934
<b>Maximum peak flow</b>			8.160	May 21	57,700	Jun 9, 1941
<b>Maximum peak stage</b>			13.14	May 21	34.30	Jun 9, 1941
<b>Annual runoff (ac-ft)</b>	789,700		439,400		613,600	
<b>10 percent exceeds</b>	2,780		1,250		1,740	
<b>50 percent exceeds</b>	459		331		281	
<b>90 percent exceeds</b>	217		200		108	

<sup>a</sup> At site and datum then in use.

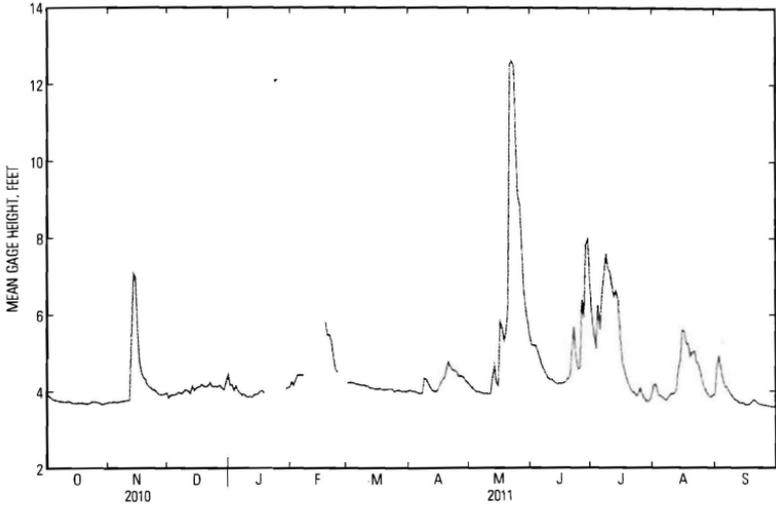


## 06882000 Big Blue River at Barneston, Nebr.—Continued

**GAGE HEIGHT, FEET**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.93	3.73	3.84	4.16	4.24	4.22	4.02	4.14	5.20	5.96	4.18	4.59
2	3.88	3.73	3.91	4.18	4.16	4.23	4.00	4.08	5.19	5.47	4.14	4.89
3	3.84	3.74	3.91	4.03	4.31	4.23	4.00	4.03	5.18	5.11	3.90	4.58
4	3.81	3.73	3.92	4.14	4.43	4.22	3.97	3.99	5.01	6.23	3.88	4.28
5	3.79	3.73	3.94	4.02	4.43	4.19	3.95	3.99	4.85	5.60	3.84	4.12
6	3.78	3.74	3.99	3.96	4.43	4.18	3.94	3.97	4.68	6.44	3.78	4.08
7	3.76	3.75	3.95	3.91	4.43	4.17	3.95	3.95	4.56	6.97	3.76	3.99
8	3.76	3.76	3.96	3.94	---	4.16	4.34	3.94	4.45	7.55	3.84	3.90
9	3.75	3.77	4.04	3.88	---	4.16	4.30	3.95	4.35	7.20	3.92	3.83
10	3.75	3.78	4.05	3.86	---	4.14	4.20	3.93	4.31	7.10	3.93	3.78
11	3.76	3.77	4.01	3.88	---	4.13	4.09	3.94	4.30	6.74	3.92	3.75
12	3.75	5.51	3.95	3.85	---	4.09	4.03	4.34	4.26	6.45	4.05	3.69
13	3.72	7.07	4.15	3.91	---	4.08	4.00	4.64	4.21	6.61	4.57	3.70
14	3.71	6.97	4.03	3.93	---	4.07	3.99	4.21	4.18	6.37	4.82	3.69
15	3.71	5.58	4.09	3.94	---	4.06	4.06	4.14	4.21	5.48	5.59	3.65
16	3.72	4.82	4.12	4.01	---	4.06	4.21	5.81	4.20	4.81	5.56	3.65
17	3.71	4.53	4.14	4.02	---	4.07	4.29	5.65	4.22	4.53	5.26	3.66
18	3.72	4.38	4.19	3.97	5.79	4.05	4.35	5.30	4.25	4.37	5.19	3.71
19	3.71	4.33	4.13	---	5.47	4.04	4.58	5.49	4.33	4.20	4.89	3.77
20	3.70	4.20	4.13	---	5.47	4.05	4.75	6.25	4.39	4.09	5.01	3.74
21	3.70	4.14	4.15	---	5.28	4.05	4.63	12.52	5.04	3.98	5.04	3.70
22	3.71	4.10	4.23	---	4.85	4.06	4.55	12.60	5.67	3.96	4.75	3.66
23	3.75	4.06	4.14	---	4.57	4.05	4.55	12.47	4.86	3.88	4.68	3.65
24	3.75	4.04	4.13	---	4.49	3.99	4.50	10.63	4.55	3.90	4.46	3.64
25	3.74	3.99	4.14	---	---	4.01	4.38	9.11	4.61	4.06	4.23	3.63
26	3.73	3.94	4.14	---	---	4.02	4.40	8.84	6.36	3.93	4.08	3.62
27	3.71	3.93	4.16	---	---	4.01	4.38	7.81	5.90	3.82	3.96	3.61
28	3.68	3.92	4.09	---	---	3.99	4.32	6.67	7.81	3.74	3.87	3.60
29	3.69	3.94	4.04	4.07	---	4.00	4.26	6.12	7.96	3.71	3.83	3.60
30	3.71	3.96	4.24	4.10	---	3.99	4.21	5.78	6.83	3.79	3.89	3.58
31	3.72	---	4.43	4.12	---	4.01	---	5.43	---	3.98	3.90	---
Mean	3.75	4.29	4.08	---	---	4.09	4.24	6.06	5.00	5.16	4.35	3.84
Max	3.93	7.07	4.43	---	---	4.23	4.75	12.60	7.96	7.55	5.59	4.89
Min	3.68	3.73	3.84	---	---	3.99	3.94	3.93	4.18	3.71	3.76	3.58

06882000 Big Blue River at Barneston, Nebr.—Continued



## 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:2012-04-24 15:37 By jmlambre

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*****
AS NO.*  DATE *  TIME *  MADE BY *  GAGE *  DISCHARGE *  RATING *  INDIC *  APPLD *  UNSFT *  SHIFT *  GHT. *  TIME *  RATED *  STATUS
          *  HEIGHT *  CFS          *  SHIFT *  SHIFT *  DIFF *  DIFF *  CHG.
*****
371  2010/10/05 1038 CDT   gsn    3.80    219     34.0    0.03    0.03    4.3    -0.5    0.0          G    L
NTROL LOCATION: 700 ft downstream  CONDITION: Clear
NTROL REMARKS: mostly flat shale w/some cobble and sand

372  2010/12/02 1306 CST   PAB    3.92    271     35.0    -0.07   -0.07  -10.0   -0.7   -0.01          F    L
NTROL LOCATION:  CONDITION: Clear
NTROL REMARKS: no ice
ASUREMENT REMARKS: no ice in water, small sheet on west shale bar

373  2011/02/03 1111 CST   gsn/tpb  4.36    188     35.0    -0.74   -0.06  -62.2  -59.9  -0.02          P    L
NTROL LOCATION:  CONDITION: Ice cover
NTROL REMARKS: 100% ice cover
ASUREMENT REMARKS: 100% ice cover

374  2011/02/17 1544 CST   gsn/tpb  5.86   1460     35.0    0.03   -0.00    1.4    1.4   -0.04          F    L
NTROL LOCATION:  CONDITION: Clear
NTROL REMARKS: ice slabs on bank

375  2011/03/17 1227 CDT   gsn    4.09    373     35.0    0.0    0.0    0    0    0.02          F    L
NTROL LOCATION:  CONDITION: Clear

376  2011/04/25 1303 CDT   gsn    4.36    485     35.0   -0.03    0.0   -2.6   -2.6    0.0          F    L
NTROL LOCATION:  CONDITION: Clear

377  2011/05/23 1323 CDT   mja   12.53   7050     35.0   -0.62   -0.40   -9.1   -3.4          F    L

378  2011/06/08 1022 CDT   gsn    4.46    550     35.0    0.0    0.0    0.2    0.2    0.0          F    L
NTROL LOCATION:  CONDITION: Clear

379  2011/07/12 1032 CDT   gsn    6.43   1880     35.0    0.02    0.0    1.1    1.1    0.0          F    L
NTROL LOCATION:  CONDITION: Clear

380  2011/09/08 1009 CDT   gsn/tpb  3.91    288     35.0   -0.02   -0.02   -3.0   -0.3    0.0          F    L
NTROL LOCATION:  CONDITION: Clear
NTROL REMARKS: can kind of see rock riffle 300 yards dwnstrm but mostly drowned out

381  2011/10/06 1043 CDT   gsn    3.56    162     35.0   -0.03   -0.02   -4.7   -1.2    0.0          F    L
NTROL LOCATION: 600 ft downstream  CONDITION: Clear

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Water-Data Report 2011

**06884025 Little Blue River at Hollenberg, KS**

Big Blue Basin  
Lower Little Blue Subbasin

LOCATION.--Lat 39°58'49", long 97°00'17" referenced to North American Datum of 1983, in NE ¼ SW ¼ 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 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

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

PERIOD OF RECORD.--DAILY GAGE HEIGHT--October 2009 to current year.

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

REMARKS.--Records fair except for estimated daily discharges, which are poor. 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 Oct. 12, 1973.

## 06884025 Little Blue River at Hollenberg, KS—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**  
**DAILY MEAN VALUES**  
 [e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	172	145	155	e173	e148	e281	200	227	705	188	236	850
2	164	146	163	e173	e136	281	194	222	680	177	206	1,660
3	157	147	177	e177	e131	253	191	217	1,100	182	183	852
4	152	145	175	e177	e133	240	184	212	929	245	210	558
5	148	143	166	e180	e143	223	180	208	573	272	217	416
6	146	142	e141	e183	e153	221	179	209	451	299	226	335
7	143	143	e154	e185	e155	218	185	204	392	468	533	298
8	142	144	e151	e185	e153	229	224	201	341	1,410	699	259
9	140	145	e156	e186	e151	230	225	198	309	754	660	229
10	140	143	e164	e181	e151	222	215	195	302	493	701	212
11	140	144	e166	e177	e156	217	203	197	303	362	645	196
12	139	332	e160	e170	e179	214	191	204	301	315	490	182
13	138	543	e160	e164	e286	215	187	203	288	285	388	167
14	136	321	e160	e154	e512	218	188	195	277	258	303	154
15	136	237	e160	e154	e687	219	259	197	272	231	295	143
16	136	206	e160	e157	e761	218	316	195	275	215	773	140
17	136	207	e160	e162	e720	217	328	190	276	203	992	137
18	141	238	e160	e162	591	214	363	186	265	192	758	169
19	146	210	e162	e158	457	211	336	196	289	186	571	207
20	142	198	e168	e153	379	211	309	e800	308	201	954	180
21	147	190	e170	e154	330	208	270	e9,200	544	181	1,280	164
22	145	184	e168	e154	289	207	295	e6,000	319	162	751	154
23	140	180	e168	e153	271	202	342	e2,330	299	156	503	149
24	147	177	e171	e153	e253	196	324	1,140	275	210	363	145
25	147	170	e167	e158	e198	196	296	e1,730	365	473	289	137
26	149	164	e165	e158	e197	197	296	e3,810	361	640	251	133
27	147	172	e164	e162	e208	198	271	e4,200	254	540	228	132
28	143	177	e166	e168	e244	196	254	e2,020	223	562	214	128
29	144	179	e173	e179	---	198	243	1,360	209	409	207	125
30	144	167	e189	e179	---	195	235	1,010	200	322	211	117
31	144	---	e189	e169	---	197	---	828	---	272	217	---
<b>Total</b>	4,491	5,839	5,108	5,198	8,172	6,742	7,483	38,284	11,685	10,863	14,554	8,728
<b>Mean</b>	145	195	165	168	292	217	249	1,235	390	350	469	291
<b>Max</b>	172	543	189	186	761	281	363	9,200	1,100	1,410	1,280	1,660
<b>Min</b>	136	142	141	153	131	195	179	186	200	156	183	117
<b>Ac-ft</b>	8,910	11,580	10,130	10,310	16,210	13,370	14,840	75,940	23,180	21,550	28,870	17,310

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2011, BY WATER YEAR (WY)

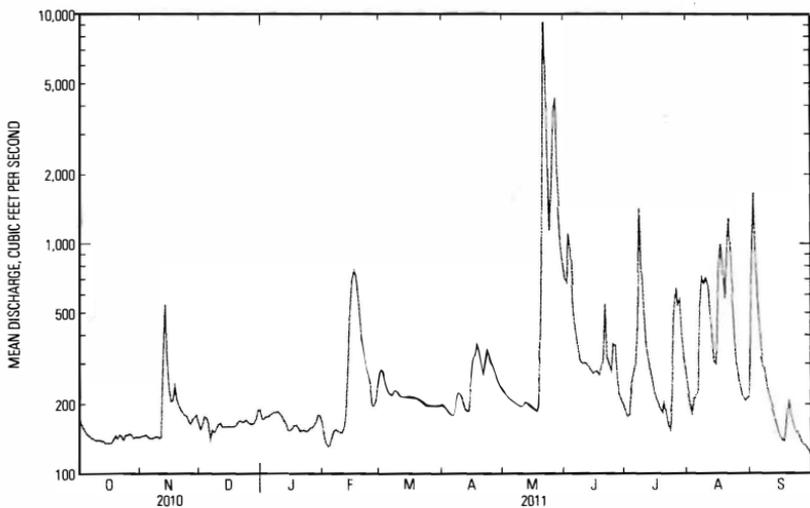
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	332	229	175	180	313	694	495	806	957	896	510	370
<b>Max</b>	2,163	1,113	424	576	1,059	3,816	2,379	2,302	4,373	9,014	2,572	1,320
<b>(WY)</b>	(1987)	(1997)	(1993)	(1984)	(1993)	(1993)	(1987)	(1995)	(1984)	(1993)	(1985)	(1977)
<b>Min</b>	45.3	81.1	96.7	98.5	115	118	123	108	151	83.8	72.5	32.0
<b>(WY)</b>	(1992)	(1992)	(2001)	(1977)	(1992)	(1981)	(2003)	(1992)	(1981)	(2002)	(1991)	(1991)

06884025 Little Blue River at Hollenberg, KS—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1975 - 2011	
Annual total	207,215		127,147			
Annual mean	568		348		498	
Highest annual mean					1,891	1993
Lowest annual mean					173	2006
Highest daily mean	12,400	Jun 22	9,200	May 21	39,300	Jul 26, 1992
Lowest daily mean	111	Aug 23	117	Sep 30	26	Oct 1, 1991
Annual seven-day minimum	120	Jan 3	131	Sep 24	27	Sep 27, 1991
Maximum peak flow			11,100	May 21	47,800	Jul 26, 1992
Maximum peak stage			<sup>a</sup> 12.13	May 21	21.21	Jul 26, 1992
Annual runoff (ac-ft)	411,000		252,200		360,500	
10 percent exceeds	1,050		580		830	
50 percent exceeds	278		198		200	
90 percent exceeds	143		144		103	

<sup>a</sup> From floodmark.

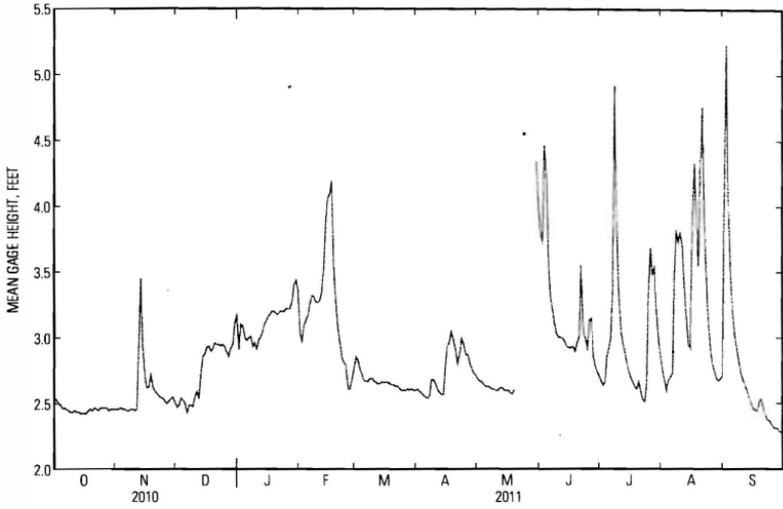


## 06884025 Little Blue River at Hollenberg, KS—Continued

**GAGE HEIGHT, FEET**  
**WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2.55	2.46	2.47	2.91	3.03	2.85	2.61	2.68	3.78	2.67	2.76	3.96
2	2.53	2.46	2.49	3.10	2.97	2.83	2.59	2.67	3.73	2.64	2.67	5.23
3	2.50	2.47	2.54	3.09	3.09	2.76	2.58	2.66	4.46	2.66	2.60	4.08
4	2.49	2.46	2.53	3.00	3.13	2.72	2.56	2.64	4.20	2.85	2.68	3.52
5	2.47	2.46	2.50	2.98	3.17	2.67	2.55	2.63	3.55	2.92	2.70	3.21
6	2.47	2.45	2.43	3.00	3.25	2.67	2.54	2.63	3.31	3.00	2.73	3.02
7	2.46	2.45	2.49	3.01	3.32	2.66	2.56	2.62	3.21	3.35	3.45	2.93
8	2.45	2.46	2.49	2.93	3.31	2.69	2.68	2.61	3.11	4.92	3.80	2.83
9	2.44	2.46	2.48	2.96	3.27	2.69	2.68	2.61	3.03	3.90	3.73	2.74
10	2.44	2.45	2.56	2.91	3.27	2.67	2.65	2.60	3.01	3.38	3.80	2.69
11	2.45	2.46	2.59	2.98	3.28	2.66	2.61	2.60	3.01	3.09	3.69	2.64
12	2.44	2.98	2.54	3.00	3.34	2.65	2.58	2.62	3.00	2.97	3.38	2.60
13	2.44	3.45	2.74	3.04	3.53	2.65	2.57	2.62	2.97	2.90	3.15	2.55
14	2.43	2.93	2.86	3.10	3.87	2.66	2.57	2.60	2.94	2.82	2.94	2.50
15	2.43	2.71	2.88	3.13	4.06	2.66	2.77	2.60	2.93	2.75	2.92	2.46
16	2.43	2.62	2.93	3.16	4.09	2.66	2.93	2.60	2.93	2.70	3.87	2.45
17	2.43	2.63	2.94	3.18	4.19	2.66	2.96	2.58	2.94	2.66	4.33	2.44
18	2.45	2.72	2.90	3.20	3.55	2.65	3.04	2.57	2.90	2.63	3.91	2.50
19	2.46	2.63	2.92	3.20	3.26	2.64	2.98	2.60	2.97	2.61	3.55	2.54
20	2.45	2.60	2.96	3.18	3.08	2.64	2.91	---	3.02	2.66	4.24	2.47
21	2.47	2.58	2.95	3.18	2.96	2.63	2.80	---	3.55	2.59	4.76	2.42
22	2.46	2.56	2.95	3.20	2.85	2.63	2.87	---	3.05	2.53	3.90	2.38
23	2.45	2.55	2.94	3.20	2.81	2.61	2.99	---	3.00	2.51	3.41	2.37
24	2.47	2.54	2.95	3.20	2.79	2.60	2.95	4.55	2.93	2.65	3.09	2.35
25	2.47	2.52	2.93	3.22	2.61	2.60	2.87	---	3.14	3.34	2.91	2.32
26	2.47	2.50	2.89	3.22	2.61	2.60	2.87	---	3.15	3.68	2.80	2.31
27	2.47	2.52	2.86	3.22	2.68	2.61	2.81	---	2.87	3.48	2.74	2.31
28	2.45	2.54	2.92	3.28	2.76	2.60	2.76	---	2.78	3.53	2.69	2.29
29	2.46	2.55	2.95	3.40	---	2.61	2.73	---	2.74	3.20	2.67	2.28
30	2.46	2.51	3.11	3.43	---	2.60	2.71	4.34	2.71	2.99	2.69	2.25
31	2.46	---	3.17	3.36	---	2.60	---	4.01	---	2.86	2.71	---
Mean	2.46	2.59	2.77	3.13	3.22	2.66	2.74	---	3.16	3.01	3.27	2.75
Max	2.55	3.45	3.17	3.43	4.19	2.85	3.04	---	4.46	4.92	4.76	5.23
Min	2.43	2.45	2.43	2.91	2.61	2.60	2.54	---	2.71	2.51	2.60	2.25

06894025 Little Blue River at Hollenberg, KS—Continued



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:2012-04-24 16:16 By jmlambre

MEAS NO.	DATE	TIME	MADE BY	GAGE HEIGHT	DISCHARGE CFS	RATING	INDIC SHIFT	APPLD SHIFT	UNSFY DIFF	SHFT DIFF	GHT. CHG.	TIME	RATED	STATUS
484	2010/10/05	1240	CDT gsn	2.48	149	10.1	-0.21	-0.21	-31.0	-0.7	0.0		F	L
CONTROL LOCATION: CONDITION: Clear														
MEASUREMENT REMARKS: No recent HWM's observed														
485	2010/12/02	1051	CST PAB	2.52	176	10.1	-0.16	-0.18	-23.1	2.9	0.0		F	L
CONTROL REMARKS: No ice throughout msmt, some floating ice sheets at end.														
MEASUREMENT REMARKS: no ice on shore or in flow, then some thin floating sheets at end of measurement														
486	2011/02/03	1343	CST gsn/tpb	3.08	131	10.1	-0.88	-0.15	-70.3	-65.5	0.0		P	L
CONTROL LOCATION: CONDITION: Ice cover														
CONTROL REMARKS: 100% ice cover														
MEASUREMENT REMARKS: 100% ice cover.														
487	2011/03/18	1110	CDT gsn	2.64	205	10.1	-0.19	-0.17	-24.1	-3.3	-0.01		G	L
CONTROL LOCATION: CONDITION: Clear														
488	2011/04/26	1321	CDT gsn	2.87	301	10.1	-0.15	-0.16	-15.4	1.7	0.0		F	L
CONTROL LOCATION: CONDITION: Clear														
489	2011/05/23	1205	CDT mja	5.48	1870	10.1	-0.03	-0.03	-1.6	0	-0.01		F	L
MEASUREMENT REMARKS: Increased the Power / Power Coeff. to 0.30 based on the Extrap. program														
490	2011/06/08	1240	CDT gsn	3.11	340	10.1	-0.28	-0.28	-24.9	-0.3	0.0		F	L
CONTROL LOCATION: CONDITION: Clear														
MEASUREMENT REMARKS: The total Q was the combination of two wading measurements (160 cfs and 180 cfs)														
491	2011/07/12	1251	CDT gsn	2.97	315	10.1	-0.21	-0.21	-20.5	0.3	0.0		F	L
CONTROL LOCATION: CONDITION: Clear														
492	2011/09/08	1148	CDT gsn/tpb	2.84	260	10.1	-0.23	-0.22	-24.4	-1.1	-0.01		F	L
CONTROL LOCATION: CONDITION: Clear														
MEASUREMENT REMARKS: Measurement is combined discharge of two channel measurements.														
493	2011/10/06	1212	CDT gsn	2.21	110	10.1	-0.09	-0.10	-17.3	3.8	0.02		F	L
CONTROL LOCATION: CONDITION: Clear														