

I3710A001-2000

0007-910 X

NEBRASKA
PUBLICATIONS
CLEARINGHOUSE

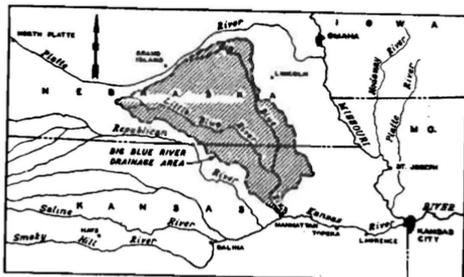


APR 19 2001

NEBRASKA LIBRARY COMMISSION
LINCOLN, NE 68506

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT

TWENTY-SEVENTH ANNUAL REPORT



FISCAL 2000

TOPEKA, KANSAS
MAY 18, 2000

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

**The Honorable William J. Clinton
President of the United States**

**The Honorable William Graves
Governor of Kansas**

**The Honorable Mike Johanns
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 Twenty-Seventh Annual Report. The report covers activities of the Administration for Fiscal Year 2000.

Respectfully,



**Clayton Lukow
Compact Chairman**

TABLE OF CONTENTS

	<u>Page</u>
Membership	1
Minutes of Annual Meeting	2
Engineering Committee Report	13
Federal Agency Report	32
Water Quality Committee Report	33
Administration Budget Analysis	48
Treasurer's Report	49
Auditor's Report	50

1999-2000 MEMBERSHIP

Representatives of the United States

Clayton Lukow

Kansas Representatives

David L. Pope, Topeka ¹

Terry Blaser, Waterville ²

Nebraska Representatives

Roger K. Patterson, Lincoln ¹

Kenneth Regier, Aurora ³

1999-2000 OFFICERS

Clayton Lukow, Chairman
Pam Bonebright, Secretary
Denise Rolfs, Treasurer

1999-2000 COMMITTEES

Budget Committee

Bob Lytle, Chairperson
Ann Bleed

Engineering Committee

Bob Lytle, Chairperson
Keith Paulsen
Ann Bleed
Dale Mahan

Water Quality Committee

Dale Lambley, Chairperson
Annette Kovar
Glen Kirk
Denis Blank
Pat Rice
Tom Stiles

Legal Committee

Leland Rolfs, Chairperson
LeRoy Sievers

1 Term continuous but coincides with duties of the state official who administers water law.

2 Term expires April 25, 2004.

3 Term expires September 19, 2001.

**MINUTES OF
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
TWENTY-SEVENTH ANNUAL MEETING**

Call to Order

The Kansas-Nebraska Big Blue River Compact Administration annual meeting was held May 18, 2000, in the Conference Room of the Kansas Department of Agriculture, Division of Water Resources, Topeka, Kansas. The meeting was called to order at 9:00 a.m. by Clayton Lukow, Compact Chairman.

Introductions and Announcements

Introductions of attendees were made. Those in attendance were:

Clayton Lukow	Compact Chairman, Holstein, Nebraska
Roger Patterson	Nebraska Commissioner
David Pope	Kansas Commissioner
Denise Rolfs	Compact Treasurer
Pam Bonebright	Compact Secretary
Kenneth Regier	Nebraska Citizen Representative
Keith Paulsen	Nebraska Dept. Of Water Resources, Lincoln
Jeff Shafer	Nebraska Dept. Of Water Resources, Lincoln
Terry Blaser	Kansas Citizen Representative
Bob Lytle	Kansas Dept. of Agriculture, Topeka
Dale Lambley	Kansas Dept. of Agriculture, Topeka
Glen E. Kirk	Kansas Water Office, Topeka
Earl Lewis	Kansas Water Office, Topeka
Kent Askren	Kansas Dept. of Agriculture, Topeka
Glenn Engel	U.S. Geological Survey, Lincoln
Daryl Andersen	Board Member, Little Blue Natural Resources District, Davenport
Ron Fleecs	General Manager, Lower Big Blue Natural Resources District, Beatrice
Dave Clabaugh	Lower Big Blue Natural Resources District, Beatrice
Phil Barnes	Kansas State University
R.E. Pelton	Kansas River Water Assurance District #1

Minutes of the 2000 Meeting

Chairman Lukow stated that the minutes for 1999 annual meeting had been reviewed and signed by both states and were distributed prior to the 2000 meeting. There being no additions, corrections or comments, the minutes stood approved as distributed.

Report of the Chairman

Chairman Lukow wanted to again state that there is no question that between the two states, in other arenas, there are tensions. But the degree of professionalism between the two states is such that it can be set aside and get on to the business of what is best for the Blue River Basin and as chairman he appreciates that professionalism.

Lukow also spoke on two other issues that impact the Blue River system. The first issue in the Blue River Basin has been water quality. In 1999 the State of Nebraska passed what is called the "Buffer Strip" legislation and that will have profound impact on keeping pollutants out of the stream. To date 175 applications for over 6,800 acres of the buffer strips have been filed and that equates to 700 miles of buffer strips. Lukow feels this substantiates that we in agriculture are concerned about the environment and are willing to do our part.

The second issue is carbon sequestration. Last year it was not looked on as that important but now a year later that is a hot issue. In Nebraska a bill has been passed that authorizes an advisory board for the mapping of the state with regard to its potential for carbon sequestration. This will be conducted for the most part by Steve Chick of the NRCS. The funding was provided by Nebraska Ag. Policy Task Force, Corn Board, Nebraska Public Power District, Department of Energy and EPA. Funding is also possible from the Nebraska Environmental Trust.

Kansas Report

Litigation

The damages and remedies phase of the Kansas v. Colorado lawsuit continues. The Supreme Court upheld a ruling that Colorado depleted the useable Stateline flows by 91,565 acre-feet from the period of 1986-1994. The total amount of water that Kansas has been shorted at the State line for the period 1950 through 1994 is 420,070 acre-feet. From November of 1999 through January 2000, 36 days of trial took place in Pasadena where evidence on damages was heard. Kansas claims that this amount of depletion in useable Stateline flows relates to about 62.4 million dollars in economic damages. On April 21st, both States completed their final briefs addressing damages and are now awaiting the decision of Special Master Littleworth, which is expected by late summer.

The last phase of the trial relating to Colorado's current compliance with the Compact is still to be heard, including an evaluation of the effectiveness of Colorado's current effort to comply with the compact. There are still issues to be resolved concerning methods and accounting procedures to insure that current depletions caused by groundwater pumping are actually offset by remedy efforts.

In the matter of Kansas v. Nebraska, Vincent McKusick, Special Master appointed to hear the case, filed his "First Report of the Special Master" on January 28, 2000. In it he recommended that Nebraska's Motion to Dismiss be denied. On April 5, 2000 Nebraska filed exceptions to the first report of the Special Master, and on April 7, 2000 Colorado did the same. Kansas has until May 25, 2000 to file its response to the exceptions by Nebraska and Colorado. If the Supreme Court should decide to hear oral arguments concerning the Special Master's Report, it will probably be after it returns in October 2000.

Legislation

During the 2000 legislative session there were a few bills debated that were of interest to the Division of Water Resources (DWR) and other water related agencies. Senate Bill No. 388 was introduced by the Committee on Environment and was of particular interest to DWR. This bill, although ultimately not signed into law, represented a great deal of time and effort on the part of DWR. DWR had staffed a task force comprised of representatives of water interests, who worked for about two years to author a Report on Water Banking on which the bill was based. The goal was to allow water marketing opportunities, but also decrease water consumption. The bill would have created a Kansas Water Banking Act which would have allowed water right holders to deposit water rights into a water bank for financial compensation, and allowed others needing water to lease water from the bank. The bill was changed substantially through the legislative process, and a final version could not be agreed upon. It is likely that a similar bill will be proposed next year.

Senate Bill No. 501 enacted the Agricultural and Specialty Chemical Remediation Act which establishes a loan program for the remediation of chemical pollution sites. Funding would be from assessments to custom blenders, pesticide dealers, commercial fertilizers and agricultural chemicals, and an annual assessment of \$0.0005 per bushel of warehouse storage capacity.

Senate Bill No. 625 (Executive Order on Equus Beds) The introduction of this bill ultimately lead to the issuance of an Executive Order by Governor Graves which requires the Secretary of Health and Environment, along with other appropriate agencies, to identify all sources of existing and potential pollution of the Equus Beds Aquifer.

House Bill No. 2985 addresses water diverted in Kansas but used in another state. It requires the Chief Engineer to approve such application only if 1) the diversion and transportation of water complies with all current Kansas statutes, and 2) the statutes and laws in the other state do not prohibit the use of water at that location, as determined by the Attorney General of the other state.

Water Rights and Water Use Reports

The Division of Water Resources continues to respond aggressively to legislation passed last year which requires that DWR issue Certificates of Appropriation in an expedited time frame, which generally allows about five years to accomplish the task primarily depending on the specific perfection period for the water appropriation. Significant efforts are being made by field office staff to conduct the necessary field inspections and the preparation of draft certificates. The Chief Engineer is also in the process of promulgating a large number of new and amended rules and regulations.

It is important that the most accurate water use data is available for statewide analysis and the quantification of water rights. Because of this, the Division of Water Resources continues an aggressive water use program. A total of 11,482 irrigation water use reports and 2,487 non-irrigation water use reports were mailed to water users in January of 2000. As of March 1st, 11,080 of the irrigation reports have been returned and 2,190 of the non-irrigation reports have been returned. That equates to a compliance rate of 97%.

Sub-Basin Management Programs

There are four sub-basin management programs currently active in Kansas. They are the Upper Arkansas, the Middle Arkansas, the Rattlesnake, and the Pawnee/Bucker Basins. The management effort in each basin is complete when a management strategy is developed, accepted by the Chief Engineer, and implemented. The Rattlesnake Basin has developed a plan that has been

accepted by the Chief Engineer and implementation is beginning. In the Pawnee/Buckner Basin, a plan has been drafted and public meetings will be held in late May, after which a final plan will be submitted to the Chief Engineer. In both the Upper and Middle Arkansas Basins, analysis of the hydrologic characteristics is taking place and initial management strategies are being developed.

Water Quality

Water quality continues to be an important issue in Kansas, and the Governor's Water Quality Initiative which began in 1995 is ongoing, as well as the establishment of Total Maximum Daily Loads. In response to a lawsuit filed by the Kansas Natural Resource Council and the Sierra Club, Kansas is in an 8 year schedule to submit to the EPA, TMDLs for water quality in each of the 12 major river basins. Kansas is setting these water quality standards on an accelerated pace to meet the Clean Water Act requirement.

Nebraska Report

Commissioner Patterson began by announcing that the Nebraska Legislature passed a bill to create a Department of Natural Resources (DNR) within the State of Nebraska. That entity is going to be formed by merging the Department of Water Resources with the Natural Resources Commission. The Commission has been in existence since about 1937. These two agencies have been around for a very long time but as of July 1, 2000, they will become one agency. This bill went through the legislature without a dissenting vote; it came up early in the session and moved through fairly rapidly. This bill was a high priority for our governor.

As far as drought, Nebraska looks very similar to Kansas. The eastern part of the state in particular is extremely dry but not limited to just the east. In general Nebraska is not in very good shape. Nebraska has a Climate Assessment Response Committee that goes into action at times like these. They have been working on mitigation plans. Nebraska is anticipating having, maybe for the first time, fairly significant regulation of water rights for instream flows that were adopted a few years ago. In the past we have had some fairly wet weather and these rights have not had to be regulated. If it continues to stay dry Keith's office is going to be very, very busy. People may be surprised when they are shut down or have their diversions reduced of these instream flows.

Patterson reported on some personnel changes. Jeff Shafer is a new engineer with our department. Jeff will be taking over many of the duties that Ann Bleed had with this Commission. Jeff will be replacing Ann on the Engineering Committee. Ann is the Deputy Director for the new DNR. LeRoy Sievers, previous legal counsel to our department, has moved on into private practice and following the formation of DNR, Jim Cook, who is the Commission's legal counsel, will be assuming the responsibilities of Legal Counsel for the new agency.

Commissioner Patterson then asked the three Nebraska NRD representatives to give a report on their district's activities.

Ron Fleecs from the Lower Big Blue NRD submitted a written report which is included herein as **Exhibit L**. He highlighted portions of the report. It was also pointed out about the Well Monitoring that the Compact contracts with the Lower Big Blue NRD. They measured 34 wells. The numbers reported are averages for the wells. Fleecs also reported that they are looking into converting 59 miles of potential railroad abandonment to a trail from Lincoln down to three and a half miles into Kansas. This is a controversial project.

Pope brought up about the Horseshoe project, concerning people who are opposed to that project in the watershed district in Kansas. The Kansas Legislature amended the Watershed District Act in Kansas to protect that particular watershed district for the next several years. There was a question if it would reach its general plan in time. That has now been largely resolved. That group basically wanted to dismiss the district and this was a concern because a lot of time and effort had been invested through the water quality initiative and broad activities to make it go. Pope feels it will go.

Daryl Andersen submitted a report from the Little Blue NRD which is included herein as **Exhibit M**. He highlighted portions of the report.

Patterson submitted the report for the Upper Big Blue NRD (UBB) in the absence of John Turnbull. This written report is included herein as **Exhibit N**. Patterson highlighted portions of the report. Patterson turned to Ken Regier for any further comments on the Upper Big Blue NRD. He added that the UBB NRD is also involved in the Platte River Cooperative Agreement meetings that are ongoing. This is an effort amongst the three states, Colorado, Wyoming and Nebraska and is aimed at establishing target flows which Fish and Wildlife Service is requesting for the Platte River flow and land. There are a number of different committees that have been established and are

working on this. There is also a hydrology study that is being done and the more discussion of the issues the more complex they become. There are seven of the NRDs across the state that are involved in the process and UBB is one of the seven. The irrigation wells in the district are what lead them to be involved in the process.

Administration and Gaging

Keith Paulsen reported last year target Compact flows were met on both the Little Blue and Big Blue Rivers for May through September. The trend is down for this year, Nebraska is in a drought. The Blue basin experienced below normal rain fall late in the summer, throughout the fall and through the spring. Normally early spring irrigation is not a common practice in Nebraska but this year it was wide spread. There was no organized adjudication in the Little Blue or Big Blue for the past year. As far as the upcoming year, there are none planned as of yet.

Interstate Litigation

Commissioner Patterson reported that the Nebraska v Wyoming lawsuit, concerning the North Platte River, that originated in 1986, had trial set to begin May 10th. Fairly intense negotiations were started again the end of last July in an attempt to arrive at some kind of negotiated settlement before trial. The states agreed to a negotiated settlement in principle. From the presentation to the Special Master on May 10th, Richard Simms, lead counsel for the State of Nebraska requested to the Special Master "The parties have reached agreement in principle and in fundamental detail on the remaining issues in the case that will lead to dismissal with prejudice." All five parties in litigation requested a stay of the proceedings until December 1, whereby all the legal documents will be drawn up and ready to file. Several engineering and administrative procedures will be worked out in detail.

Endangered Species

Patterson reported that the Platte River Cooperative Agreement timeline for putting the program together between the three basin states and the Department of Interior is a concern. Getting a lot of pressure from the Department of Interior. They want to have this done before the end of the year.

There is some activity going on the lower part of the Platte basin in regards to Pallid Sturgeon and Sturgeon Cub. Effort is being made between Nebraska Game and Parks Commission, several of the NRDs, power companies, irrigation districts, looking at putting together what are the habitat needs. The Pallid Sturgeon has caused some delays in water project approvals.

Legislation

Most of Nebraska legislation has been mentioned. Carbon Sequestration bill requires a couple of studies, a policy program approach and also an assessment of what is the potential on lands within Nebraska as it relates to Carbon Sequestration. Both are to be done by January 1, 2002. There is a 14 member advisory counsel.

Last year Patterson mentioned water banking and leasing that was in front of the Legislature. No action was taken on that.

Federal Agency Report

Glenn Engel distributed the USGS report. It is included herein as Exhibit O. Pope noted that streamflows are up in the Big Blue and that corresponds with the rise in water levels. They are down slightly in the Little Blue. Engel reported that the greater precipitation occurred between July and August of last year and that the numbers would not reflect the drought as such. Even though Little Blue was below average, it is still within the normal range.

Secretary's Report

Pam Bonebright requested that everyone sign in and please indicate a mailing address for updating the mailing list. She made note that the report for last year was available with extra copies also available.

Patterson moved to adopt the Secretary's Report. Pope seconded the motion. Lukow declared the MOTION CARRIED.

Treasurer's Report

Denise Rolfs reported that the FY 99 audit was completed and showed the Compact was in good standing.

Rolfs distributed copies of the FY 2000 Treasurer's report. The report reflected the following:

Funds Available.....	\$ 30,108.66
Total Expenditures.....	10,870.00
Balance on hand as of May 18, 2000.....	19,238.66
Estimated Additional FY2000 Expenses.....	4,523.33
Estimated Additional Interest Income.....	35.42
Estimated Balance on June 30, 2000.....	\$ 14,750.75

Pope moved to accept the Treasurer's Report. Patterson seconded the motion. Lukow declared the MOTION CARRIED.

Water Quality Committee Report

Dale Lambley from the Water Quality Committee submitted a written report which is included herein as **Exhibit P**. Lambley reported on Committee activities and highlighted portions of the report.

Lambley then turned the presentation over to Phil Barnes. His report is **Attachment 1** of the Water Quality Committee Report. He commented that the drought has assisted in the water quality area due to the delay from when a farmer applies to a field and when the run off will occur. Barnes talked about TMDLs. Kansas is required due to a lawsuit to monitor TMDLs. Nebraska is also monitoring but will have time to study it a bit before implementing.

Patterson moved to adopt the Water Quality Committee Report. Pope seconded the motion. Lukow declared the MOTION CARRIED.

Engineering Committee Report

Lytle distributed copies of the Engineering Committee Report which is included herein as **Exhibit A through K**.

Most of the information in the report is provided by the USGS and all the target flows were met during the 1999 water year.

Pope moved to adopt the Engineering Committee Report. Patterson seconded the motion. Lukow declared the MOTION CARRIED.

Budget Committee

Lytle distributed copies of the budget analysis chart which is included herein as **Exhibit Q**. Lytle pointed out that in fiscal year 2001 there will be an increase in each state's assessment to \$8,000. This is represented in the proposed 2001 budget.

Patterson moved to adopt the Budget Committee Report. Pope seconded the motion. Lukow declared the MOTION CARRIED.

Old Business

There is no old business.

New Business

Chairman Lukow identified the next annual meeting date of May 17, 2001. The meeting will be located in Lincoln.

Lukow brought to the attention of the committee that with a new administration he is not sure whether he will continue to chair the Compact. Lukow pointed out that last time the appointment was not handled in a very efficient manner and looked to the two commissioners for their assistance.

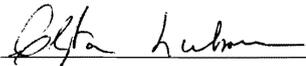
Committee membership for the upcoming year was assigned as follows:

- | | |
|------------------------|--|
| Budget Committee: | Keith Paulsen, Chairperson
Bob Lytle |
| Legal Committee: | Jim Cook, Chairperson
Leland Rolfs |
| Engineering Committee: | Jeff Shafer, Chairperson
Keith Paulsen
Kent Askrn
Bob Lytle |

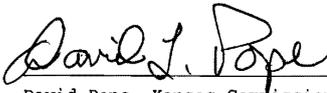
Water Quality Committee:

Dale Lambley, Chairperson
Annette Kovar
Glen Kirk
Denis Blank
Pat Rice
Tom Stiles

There being no further business, Chairman Lukow adjourned the meeting at 11:40 a.m.



Clayton Lukow, Compact Chairman



David Pope, Kansas Commissioner



Roger K. Patterson, Nebraska Commissioner

REPORT OF THE ENGINEERING COMMITTEE
TO
KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
MAY 21, 1999 - MAY 18, 2000

The Engineering Committee did not meet during the past year. The committee was not given any special assignments from the Compact Administration.

The 1999 data collection per agreement with the United States Geological Survey (USGS) and the Lower Big Blue Natural Resource District (LBBNRD) was completed and is attached to this report and identified as follows:

EXHIBITS

- A. 1999 water year USGS daily discharge record, Big Blue River at Barneston, NE
- B. 1999 water year USGS daily discharge record, Little Blue River at Hollenberg, KS
- C. Monthly mean discharge from the Big Blue River at Barneston, NE (1970-1999)
- D. Monthly mean discharge from the Little Blue River at Hollenberg, KS (1970-1999)
- E. USGS groundwater level hydrograph, Gage County, NE
- F. USGS groundwater level hydrograph, Jefferson County, NE
- G. LBBNRD groundwater level data
- H. List of wells located in the Big Blue River regulatory area
- I. List of wells located in the Little Blue River regulatory area
- J. USGS Big Blue River seepage data
- K. USGS Little Blue River seepage data

REVIEW OF STREAMFLOW DATA

During the 1999 water year (October 1, 1998 thru September 30, 1999) the mean daily streamflow at the Barneston Gaging Station on the Big Blue River, and the Hollenberg Gaging Station on the Little Blue River was above the target flow values established by the Compact.

REVIEW OF GROUNDWATER DATA

The groundwater hydrographs for a well in Gage and one in Jefferson Counties (exhibits E and F) have ranged from approximately 4 to 16 feet below ground level throughout their existence of 25 years for the Gage County well and 33 years for the Jefferson County well. The hydrographs do not show an increasing or decreasing trend. At the end of the 1999 water year, levels were approximately 3 feet and 7 feet below land surface for the two wells. This represents an increase from the end of the 1998 water year of 7 feet and 3 feet respectively.

The well measurements taken by the LBBNRD show that ground water levels have remained relatively steady throughout the 1999 water year, and show only a slight overall decline from the 1998 water year measurements of less than 1 foot.

EXHIBIT B

STATION NUMBER 06884025 LITTLE BLUE R AT HOLLENBERG, KS STREAM SOURCE AGENCY USGS
 LATITUDE 395848 LONGITUDE 0970016 DRAINAGE AREA 2752.00 DATUM 1216.10 STATE 20 COUNTY 201

PUBLISHED

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	273	249	e205	e400	271	272	370	2530	444	668	146
2	194	1340	247	e200	338	268	273	353	2000	445	546	136
3	209	1470	251	e195	330	259	282	362	1930	460	394	130
4	324	1180	253	e180	324	255	281	364	1640	383	343	140
5	1220	688	255	e190	320	250	515	557	1250	364	313	209
6	695	438	254	e205	313	246	505	520	935	724	290	203
7	338	345	251	e195	322	247	369	587	718	445	321	163
8	248	321	247	e190	324	274	349	542	558	412	288	145
9	217	330	244	e180	311	315	355	544	479	352	272	128
10	198	1420	241	e195	309	315	336	488	444	326	257	123
11	185	1980	239	e205	320	307	317	480	420	370	607	115
12	174	1060	241	e210	303	301	298	422	405	340	1050	114
13	166	573	242	e200	287	299	289	402	2030	303	771	112
14	165	424	240	e210	281	297	559	387	821	282	658	111
15	161	359	240	e230	278	293	2140	604	607	269	627	110
16	167	325	237	e250	276	291	1130	688	665	266	523	110
17	196	305	232	e260	275	288	748	903	575	281	411	109
18	178	288	234	e290	277	276	595	1730	469	374	356	107
19	176	276	228	e300	279	275	499	1050	430	364	305	105
20	176	260	206	e310	276	277	430	802	411	318	277	111
21	175	250	e180	e300	274	277	408	5110	388	276	327	114
22	171	249	e190	e290	278	281	398	4670	368	255	508	113
23	169	246	e200	e290	287	286	374	2490	401	243	459	113
24	171	248	e220	e280	281	280	348	2740	427	258	347	113
25	176	249	e230	e290	285	277	344	1480	411	262	283	110
26	180	248	e230	e280	283	273	367	947	371	267	237	108
27	186	248	e230	e280	281	272	482	722	387	269	207	117
28	190	250	e225	e290	275	275	446	604	552	268	188	121
29	191	253	e215	e300	---	---	270	505	514	547	253	175
30	185	255	e200	e350	---	---	268	418	483	489	248	170
31	187	---	e190	e480	---	---	269	---	3290	276	162	---
TOTAL	7531	16151	7141	7830	8387	8632	14632	35205	23658	10397	12340	3772
MEAN	243	538	230	253	300	278	488	1136	789	335	398	126
MIN	1220	1980	255	480	400	315	2140	5110	2530	724	1050	209
MIN	161	246	180	180	274	246	272	353	368	243	162	105
AC-FT	14940	32040	14160	15530	16640	17120	29020	69830	46930	20620	24480	7480

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1999, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1975	330	258	190	182	350
1976	316	1113	424	576	1059
1977	1987	1997	1993	1984	1993
1978	45.3	81.1	102	98.5	115
1979	1992	1992	1977	1992	1981

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1975 - 1999

ANNUAL TOTAL	173150	155676		
ANNUAL MEAN	474	427		
MEDIAN OF ANNUAL MEANS				
HIGHEST ANNUAL MEAN			1891	1993
LOWEST ANNUAL MEAN			195	1991
HIGHEST DAILY MEAN	5120	Apr 8	5110	May 21
LOWEST DAILY MEAN	120	Jan 13	105	Sep 19
ANNUAL SEVEN-DAY MINIMUM	132	Jan 10	109	Sep 14
INSTANTANEOUS PEAK FLOW			9740	May 21
INSTANTANEOUS PEAK FLOW			11.51	May 21
ANNUAL RUNOFF (AC-FT)	343400	308800	394400	21.21
10 PERCENT EXCEEDS	986	688	911	
50 PERCENT EXCEEDS	325	283	217	
90 PERCENT EXCEEDS	168	171	109	

Stateline Flow Schedule
 May 45c.f.s. June 45c.f.s. July 75c.f.s. Aug 80c.f.s. Sept 60c.f.s.

Station 06882000 BIG BLUE R AT BARNESTON NEBR

EXHIBIT C

MEAN DISCHARGE PUBLISHED
 Normal monthly means (All days)

Year	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept
1970	219.1	190.7	174.3	252.1	284.2	211.6	229.1	275.6	544.7	81.3	339.4	286.2
1971	550.0	223.1	137.1	153.4	1596	2683	326.2	2274	672.2	418.6	166.5	121.5
1972	106.5	220.2	137.1	115.7	129.6	146.4	181.3	1124	348.1	717.1	486.6	235.7
1973	148.6	458.2	305.3	1596	960.2	3035	2742	1014	813.0	1089	235.0	3386
1974	7451	1014	497.5	930.2	1181	530.3	427.6	1162	623.2	130.5	248.8	121.7
1975	111.4	143.1	150.3	157.2	212.0	949.6	440.3	894.5	2678	627.6	231.9	160.2
1976	109.7	138.8	161.0	129.1	176.8	255.8	1027	433.9	235.5	238.5	193.5	88.3
1977	97.6	85.7	87.4	88.4	121.7	151.0	168.8	440.2	511.4	393.5	1445	2744
1978	376.1	464.1	211.9	135.7	148.4	4912	2394	2436	1579	3263	318.9	187.2
1979	157.2	176.6	160.0	155.9	505.2	10560	961.8	1527	1231	1407	343.9	967.0
1980	172.4	520.8	207.3	239.4	686.6	1444	1263	305.6	1374	190.0	346.5	125.0
1981	247.8	120.3	132.5	129.2	151.9	148.6	165.1	389.0	149.5	319.6	649.3	615.5
1982	128.5	252.2	312.4	164.2	2307	1310	439.8	3765	3372	2705	844.6	452.4
1983	457.1	236.4	220.6	504.5	2099	1218	1352	1301	3802	789.9	324.0	176.7
1984	808.5	438.9	276.4	322.6	2876	1534	5280	4646	9445	1552	561.2	294.9
1985	369.0	259.4	546.2	338.7	693.9	506.4	339.8	1529	450.3	1306	1258	1572
1986	1221	355.3	261.8	314.2	366.4	743.5	1560	1247	789.1	7220	1896	1327
1987	4676	811.7	721.3	434.3	417.5	7527	4449	1659	3071	1193	1675	1048
1988	353.6	466.1	413.5	335.8	457.0	401.1	407.1	443.6	239.8	480.9	159.2	134.6
1989	403.8	190.6	201.5	208.5	224.4	402.9	221.6	192.2	643.6	877.5	378.7	3420
1990	227.5	204.4	199.3	239.2	211.5	283.8	238.7	564.3	2521	1605	1563	178.1
1991	145.1	164.8	171.3	195.5	464.4	250.5	496.0	795.4	2298	582.5	181.3	104.9
1992	96.8	146.8	170.9	190.6	176.1	352.0	314.8	417.3	1022	4075	1835	709.5
1993	418.8	562.8	520.1	246.1	1879	5914	1466	2056	3567	12270	1788	2503
1994	954.0	514.7	442.0	364.7	529.7	1232	376.9	1354	1004	1400	666.9	604.8
1995	272.2	353.5	339.0	374.7	397.8	538.1	566.5	5207	1655	875.1	742.0	287.1
1996	214.6	240.6	251.5	240.8	501.7	272.2	331.2	4909	2287	501.9	1034	417.8
1997	301.3	1501	429.6	331.9	615.2	596.0	622.0	725.0	1701	1437	650.1	256.5
1998	420.0	661.4	850.7	453.7	1184	1746	2066	1212	2787	1327	990.4	582.4
1999	614.3	1526	391.5	400.9	440.9	435.9	1722	2863	3067	1775	836.7	347.0

Station 06882000 BIG BLUE R AT BARNESTON NEBR

MEAN DISCHARGE PUBLISHED
 Normal annual means (All days)

Year	MEAN
1970	256.5
1971	774.9
1972	331.0
1973	1312
1974	1200
1975	562.7
1976	251.3
1977	511.9
1978	1445
1979	1465
1980	570.4
1981	269.2
1982	1332
1983	1028
1984	2325
1985	1457
1986	765.7
1987	2322
1988	357.7
1989	611.5
1990	672.1
1991	486.6
1992	798.2
1993	2781
1994	790.8
1995	983.3
1996	937.1
1997	762.1
1998	1186
1999	1203

Station 06884025 LITTLE BLUE R AT HOLLENBERG, KS

EXHIBIT D

MEAN DISCHARGE PUBLISHED
Normal monthly means (All days)

Year	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept
1974	*	*	*	*	*	338.6	346.6	451.3	368.0	167.8	224.0	99.5
1975	114.3	133.9	135.3	128.7	159.6	825.6	314.9	359.4	2092	1474	339.5	133.0
1976	106.1	147.4	141.1	120.4	176.0	215.7	838.4	285.4	166.8	279.0	238.0	117.0
1977	123.5	111.1	101.8	98.5	159.0	152.2	227.8	733.6	1090	317.8	1563	1320
1978	208.3	238.5	163.6	113.5	137.8	2635	826.4	517.9	359.2	700.7	201.2	644.3
1979	117.5	151.5	163.8	121.1	615.0	3693	454.6	1063	465.7	497.9	274.3	130.6
1980	172.4	398.0	150.3	178.0	383.8	677.9	1024	219.6	485.3	142.2	132.6	49.2
1981	89.7	92.5	105.2	113.1	124.2	118.1	124.9	375.9	151.4	573.5	548.1	262.6
1982	115.4	244.3	240.0	144.7	1010	618.6	228.3	1945	908.8	2299	417.6	193.0
1983	255.3	150.1	160.3	206.6	556.1	389.6	388.6	858.5	1895	279.6	201.4	798.7
1984	1225	267.4	174.5	576.5	867.9	552.1	2040	2059	4373	482.3	252.6	143.4
1985	231.4	170.3	239.5	169.0	442.6	239.1	232.8	942.1	475.5	320.4	2572	822.0
1986	613.7	251.6	234.5	226.1	216.4	271.7	1098	585.1	339.7	712.1	827.4	770.9
1987	2163	389.4	340.4	253.0	240.0	3205	2379	1414	748.0	562.5	454.5	327.8
1988	181.0	206.8	209.3	213.5	315.3	219.5	230.2	189.3	165.6	237.9	94.5	117.3
1989	210.6	130.3	135.5	146.2	132.0	169.0	139.7	134.0	623.3	1289	356.0	854.4
1990	128.0	125.3	108.4	155.5	150.0	199.7	160.2	368.9	1612	294.6	771.9	113.6
1991	94.6	114.6	117.5	124.4	196.3	159.8	227.6	370.2	728.5	111.2	72.5	32.0
1992	45.3	81.1	101.9	115.4	115.5	179.8	163.9	108.5	344.3	4746	1088	725.6
1993	641.5	405.4	424.1	202.9	1059	3816	856.7	1102	2568	9014	1290	1148
1994	547.1	314.7	294.0	230.5	257.5	755.7	412.5	561.8	580.6	230.7	176.6	126.6
1995	149.2	188.8	191.1	162.6	169.0	221.9	244.0	2302	828.3	320.4	359.5	120.3
1996	127.1	149.8	141.5	119.9	206.6	185.7	196.1	1572	671.4	359.8	433.7	205.7
1997	145.4	113.3	141.0	177.7	283.4	263.3	248.4	328.9	1197	429.4	280.7	197.4
1998	205.3	344.4	295.8	198.6	472.6	572.3	1079	345.5	496.3	644.8	693.9	191.1
1999	242.9	538.4	230.4	252.6	299.5	278.5	487.7	1136	788.6	335.4	398.1	125.7

* Indicates a no-value month

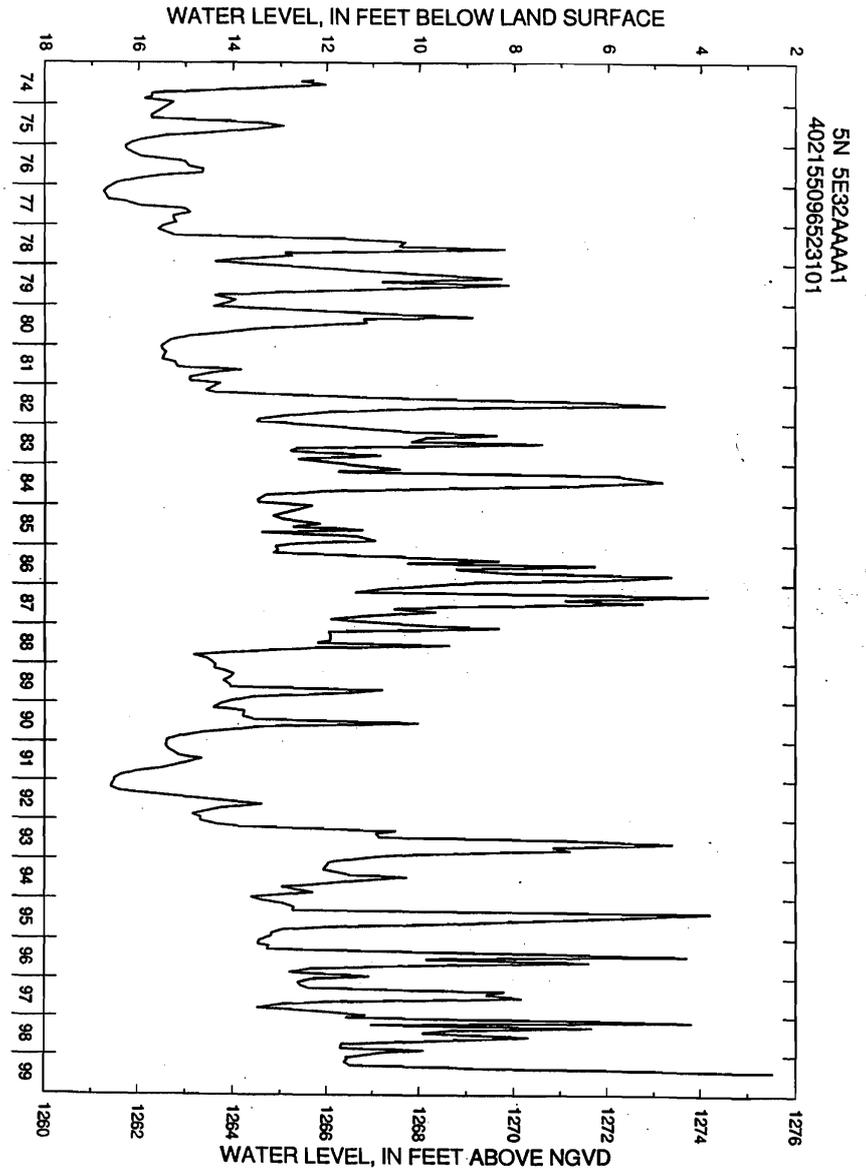
Station 06884025 LITTLE BLUE R AT HOLLENBERG, KS

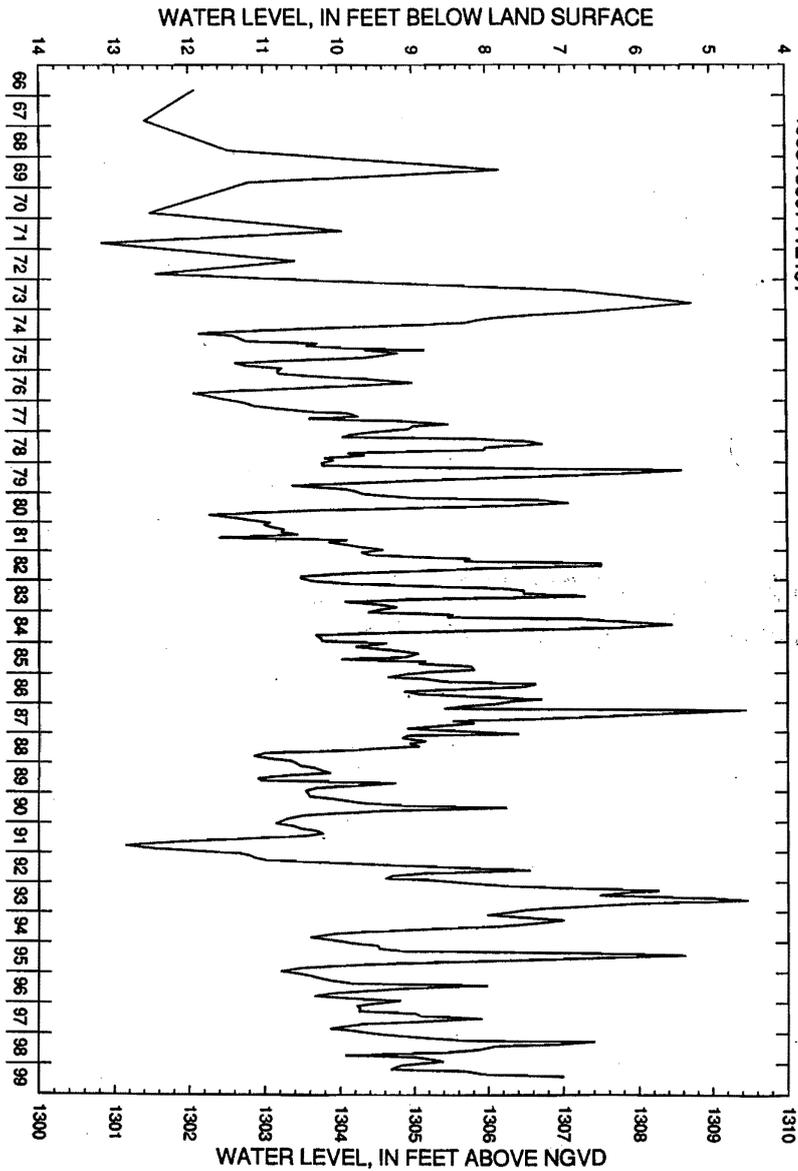
MEAN DISCHARGE PUBLISHED
Normal annual means (All days)

Year	Mean Annual Mean
1974	*
1975	518.8
1976	235.4
1977	500.7
1978	566.1
1979	649.7
1980	332.5
1981	224.8
1982	697.7
1983	508.0
1984	1079
1985	574.0
1986	513.6
1987	1047
1988	197.9
1989	361.1
1990	348.9
1991	194.9
1992	657.7
1993	1891
1994	420.5
1995	441.3
1996	365.6
1997	398.2
1998	460.8
1999	426.5

* Indicates a no-value year

EXHIBIT E





BIG BLUE RIVER COMPACT STATIC WATER LEVELS

LEGAL SECTION	LOCATION	WELL	DEPTH	99	DEPTH	99	DEPTH	99
				4/9/99	8/2/99	11/9/99		
4N-5E	2	AAAA	OW	90.70	91.08	91.52		
4N-5E	2	CBBB	IW	18.48		19.45		
4N-5E	2	DDAA	IW	0.00		16.72		
4N-5E	3	CDBC	IW	22.42		24.32		
4N-5E	4	BBBC	IW	18.04		18.44		
4N-5E	4	AAAA	OW	13.39	14.06	13.98		
4N-5E	7	BBAA	IW	81.23		81.43		
4N-5E	9	CBCC	IW	69.46		69.96		
4N-5E	10	DDAA	IW	0.00		26.86		
4N-5E	11	DACA	IW	16.13		16.49		
4N-5E	12	CCCD	OW	13.38	11.69	13.73		
4N-5E	14	ABBB	IW	13.26		13.39		
4N-5E	14	DDDD	OW	20.42	18.56	19.87		
4N-5E	22	BCCC	IW	65.88		66.89		
4N-5E	25	AACD	IW	18.62		17.68		
4N-6E	6	CBBB	IW	90.48		91.26		
4N-6E	8	AABB	IW	91.50		92.07		
4N-6E	18	DDCC	OW	5.27	5.31	6.50		
5N-4E	12	ABBA	IW	17.38		17.65		
5N-4E	13	BADD	IW	15.43		15.08		
5N-4E	15	DBBB	IW	17.00		17.03		
5N-4E	22	DCCC	IW	46.55		46.02		
5N-4E	23	BABB	IW	14.78		15.11		
5N-4E	24	AACD	IW	18.69		19.43		
5N-4E	25	DDAA	IW	46.26		45.85		
5N-5E	7	CADD	IW	59.60		59.99		
5N-5E	16	CBBA	IW	71.61		73.29		
5N-5E	17	ABBB	IW	41.25		42.69		
5N-5E	17	CDAA	OW	63.86	74.68	65.24		
5N-5E	20	BCCD	IW	19.06		19.57		
5N-5E	21	DDBB	IW	49.57		51.19		
5N-5E	29	CBBB	IW	12.60		11.98		
5N-5E	33	AADD	IW	17.11		17.92		
5N-5E	35	ABBB	IW	101.56		102.56		

OW - OBSERVATION WELLS

IW - IRRIGATION WELLS

EXHIBIT H

BIG BLUE RIVER BASIN
WELLS LOCATED IN REGULATORY AREA

Registration Number	Location	Completion Date	Depth	Registration Pumping Capacity (GPM)
G-69638	2N-7E-04DD	08-24-84	99	800
G-3877M	2N-7E-17BB	10-20-88	87	500
G-50085	4N-5E-01BA	05-26-76	130	800
G-38314	4N-5E-02DD	01-16-73	188	1,300
G-72859M	4N-5E-02BB	06-08-80	187	1,500
G-72860M	4N-5E-02BD	06-08-90	187	1,500
G-56152	4N-5E-04BB	04-14-77	91	1,000
G-34172	4N-5E-10AC	05-03-70	91	750
G-36485	4N-5E-11BC	03-28-72	82	750
G-54048	4N-5E-12BA	03-01-76	121	600
G-47820	4N-5E-12BB	11-01-75	117	1,200
G-70741	4N-5E-12BD	04-25-88	188	700
G-81769	4N-5E-13CD	04-22-94	65	250
G-54260	4N-5E-14AA	06-01-74	70	800
G-54261	4N-5E-14AB	05-02-70	70	800
G-69619	4N-5E-24BA	08-16-84	45	500
G-54047	4N-5E-24BB	03-01-76	84	800
G-68243	5N-5E-20CB	06-23-82	52	1,300
G-64213	5N-5E-21DC	07-28-80	99	800
G-59128	5N-5E-29AA	04-25-77	60	400
G-61085	5N-5E-29BC	04-24-78	88	800
G-61086	5N-5E-29CB	04-23-78	80	1,000
G-50086	5N-5E-33AC	05-26-76	123	800
G-59727	5N-5E-33CB	04-19-78	91	1,200
G-72465	5N-5E-35CC	04-12-90	204	800
G-72756	5N-5E-35DC	02-20-90	274	800
G-73992	5N-5E-30AC	06-24-91	92	700
G-100477	5N-5E-28AA	??-??-75	?	800
G-100788	5N-5E-29AB	03-19-99	65	500

M = Municipal; not subject to regulation
I = Industrial; not subject to regulation

EXHIBIT I

LITTLE BLUE RIVER BASIN
WELLS LOCATED IN REGULATORY AREA

Registration Number	Location	Completion Date	Depth	Registration Pumping Capacity (GPM)
G-7013M	1N-3E-04BA	11-15-86	199	210
G-69689	2N-2E-25AB	12-31-84	108	500
G-44015	2N-2E-27DB	07-15-74	136	265
G-59427	2N-2E-26AB	01-30-78	40	450
G-66380	2N-2E-26AC	07-31-77	40	175
G-66381A	2N-2E-26AB	04-10-81	40	175
G-66381B	2N-2E-23DC	04-10-81	42	175
G-66381C	2N-2E-26AB	04-10-81	42	175
G-66381D	2N-2E-23DC	04-10-81	41	175
G-66381E	2N-2E-26AB	04-10-81	38	175
G-66381F	2N-2E-26AB	04-10-81	28	175
G-58158	2N-2E-16AA	09-15-77	28	660
G-76103M	1N-3E-17CA	09-20-78	229	150
G-76386	2N-2E-26DC	07-12-79	40	480
G-86458	2N-2E-27DB	10-26-94	132	670
G-86459	2N-2E-27DB	10-25-94	155	550
G-102220	2N-2E-24DD	04-22-97	124	600

M = Municipal; not subject to regulation

EXHIBIT J

Big Blue River Seepage Investigation
Current Meter Measurements
Downstream Order

	October 12, 1999 (cfs)
Big Blue River 1.5 miles north of DeWitt in the SW1/4NE1/4 of 12-5N-4E	211
Clatonia Creek 1 mile northeast of DeWitt in the NW1/4NW1/4 of 17-5N-5E	1.11
Turkey Creek 1.5 miles west of DeWitt in the SE1/4NW1/4 of 15-5N-4E	31.2
Turkey Creek 0.5 miles south of DeWitt in the SE1/4NW1/4 of 24-5N-4E	32.0
Turkey Creek 1.5 miles southeast of DeWitt in the NW1/4SW1/4 of 29-5N-5E	35.4
Big Blue River 2.5 miles southeast of DeWitt in the NW1/4NE1/4 of 33-5N-5E	240
Soap Creek 3.5 miles southeast of DeWitt in the SE1/4SW1/4 of 27-5N-5E	.27
Unnamed tributary to the Big Blue River 1 mile north of Hoag in the NW1/4NE1/4 of 10-4N-5E	0
Snake Creek 2 miles northeast of Hoag in the NW1/4NW1/4 of 1-4N-5E	0
Big Blue River 1 mile east of Hoag in the NE1/4NW1/4 of 13-4N-5E	259
Cub Creek 2 miles south of Hoag in the SW1/4SW1/4 of 24-4N-5E	1.30
Bottle Creek 1.5 miles northwest of Beatrice in the NW1/4SW1/4 of 30-4N-6E	0.08
Unnamed tributary to the Big Blue River 0.5 miles northwest of Beatrice in the SW1/4SW1/4 of 29-4N-6E	0.29
Indian Creek at Beatrice in the SE1/4SE1/4 of 28-4N-6E	1.79
Big Blue River at Beatrice in the SW1/4NW1/4 of 3-3N-6E	270

EXHIBIT K

Little Blue River Seepage Investigation
Current Meter Measurements
Downstream Order

	October 7, 1999 (cfs)
Little Blue River 2.7 miles south of Alexandria in SE1/4SE1/4 of 23-3N-1W	70.8
Big Sandy Creek 0.8 miles south of Alexandria in SE1/4SE1/4 of 11-3N-1W	21.5
Big Sandy Creek 1.2 miles west of Powell in SE1/4SE1/4 of 16-3N-1E	27.0
Little Blue River 1.2 miles southwest of Powell in SE1/4SE1/4 of 22-3N-1E	94.4
Little Sandy Creek 2.0 miles east of Powell in NW1/4NE1/4 of 19-3N-2E	1.57
Whiskey Creek 2.1 miles northwest of Fairbury in SW1/4SE1/4 of 33-3N-2E	.186
Little Blue River 1.3 miles northwest of Fairbury in NW1/4NE1/4 of 9-2N-2E	94.4
Tributary to Little Blue River 0.8 miles southwest of Fairbury in NE1/4SW1/4 of 22-2N-2E	0
Little Blue River 0.8 miles south of Fairbury in NW1/4NE1/4 of 26-2N-2E	96.0
Brawner Creek 0.4 miles southeast of Fairbury in SE1/4NE1/4 of 23-2N-2E	.009
Rose Creek 4.0 miles southwest of Endicott in NW1/4NW1/4 of 12-1N-2E	8.96
Smith Creek 0.2 miles northwest of Endicott in NW1/4SE1/4 of 5-1N-3E	0.235
Little Blue River 0.3 miles south of Endicott in SE1/4SW1/4 of 4-1N-3E	112
Rock Creek 0.3 miles southeast of Endicott in SE1/4SE1/4 of 4-1N-3E	.232
Coon Creek 2.6 miles northwest of Steele City in NW1/4NE1/4 of 15-1N-3E	.175
Little Blue River 0.5 miles south of Steele City in NW1/4NW1/4 of 30-1N-4E	124
Little Blue River 0.6 miles west of Hollenberg in NE1/4SW1/4 of 8-15N-4E	117

The NRD's will lose approximately \$2 million dollars in funding of water quality programs at the end of the year 2000 when a \$1.00/ton fee from commercial fertilizer is eliminated. Alternative funding sources have not been found to replace this money. NRD's have used this money for cost-share on water quality best management practices and groundwater monitoring programs. The LBB NRD provided incentives on deep nitrate sampling of soils, anhydrous application meters, flow meters, soy-based drip oil, etc.

Construction of the final structure in the Swan Creek watershed project has been completed. This completes the nineteen dams planned in this 160,000 acre watershed that was begun in 1983. These structures are providing 20,778 acre feet of flood storage and 5,564 acre feet of sediment storage. The last of the 83 long term contracts (LTC's) in the Swan Creek project was completed this year. The LTC's involved 13,500 acres with a total cost of \$1.1 million dollars.

The Wolf-Wildcat Flood Control project was also completed this past year. The seven structures in this project will contain 5,555 acre feet of flood storage and 1,946 acre feet of sediment storage.

In the Lower Turkey Creek, 120,000 acres have been approved for a fourth year as one of twelve priority areas in the state for EQIP. \$344,250 has been allocated for this work with thirty-four applications received in this sign-up period. In its second year, the 67,300 acre Beatrice Tribes priority area has received \$210,000. These two projects received almost 15% of Nebraska's total allocation for EQIP. The NRCS is currently ranking 66 applications received in the two priority areas. These projects focus on erosion control, flood prevention and increased efficiency in nutrient and pesticide usage to protect surface and groundwater. In addition, \$36,000 has been approved for non-priority areas. Horseshoe Creek in Kansas and Nebraska has been approved for \$100,000 in funding in FY 2000.

Demand for cost-share for land treatment practices (terraces, waterways etc.) remains very high. The Lower Big Blue NRD budgeted \$150,000 this year to address the need for cost-share money. When combined with the \$134,000 available from the state cost-share program, \$284,000 was used for land treatment practices for 133 landowners. We had 216 requests for over \$ 568,000. Over 9,700 acres were treated in FY 1999 and 63,600 tons of soil was saved. A total of 122 miles of terraces and 250 acres of grassed waterways were also constructed.

The NRD's new Small Dam Cost-share program currently has six dams under construction.

The Nebraska Buffer Strip Program began in December of 1999. The NRD has eighty-five contracts covering 548 acres for \$20,451.

Proper well decommissioning for water quality protection and personal safety has received ever-increasing interest. Twenty-seven wells have been properly closed with cost-share money from state and NRD programs.

Beatrice West Public Water Project. The NRD is sponsoring a public water project along Highway 4 west of Beatrice. Water will be purchased from the City of Beatrice to serve 40-50 customers. Financing will be through a rural development loan in the amount of \$328,000. The Homestead National Monument will be served by this project. Construction is currently underway and should be completed in 6 weeks.

Blue River Compact Well Monitoring BRC Spring 99 -0.71 ft BRC Spring 00 -0.17 ft

REPORT TO THE LITTLE BLUE RIVER COMPACT May 18, 2000

Watershed Efforts

The Little Blue NRD has submitted the Little Sandy Creek Watershed to the Nebraska Natural Resources Commission for funding consideration. The Little Sandy Creek is a 66,700 acre watershed located in the four corners of Jefferson, Thayer, Fillmore and Saline Counties, just 20 miles upstream of the Kansas line. The project's pre-feasibility study was completed in March of this year by the NRCS. The preferred alternative includes five (5) dam sites and would control about 42 % of the watershed's drainage.

Dam Site Listing

Site	Drainage Area (Ac)	Riser Elevation	Permanent Pool (Ac)	Emergency Spillway	Flood Pool (Ac)	Flood Storage	Construct. Cost
12	2,466	1448.5	36	1457.5	84	500	\$152,640
31	698	1505.0	13	1511.0	30	120	57,100
40	14,528	1497.0	144	1509.5	356	2,842	385,860
61	5,539	1545.0	80	1555.5	200	1,269	191,600
73	3,995	1556.5	57	1566.0	131	812	153,100
Total	27,226		330 Ac.		801	5,543	\$ 940,300

The benefits of the project include an approximate 33 % flood reduction, sediment control, stream bank erosion protection, water quality improvement, recreation and wildlife habitat establishment.

Conservation Efforts

The Little Blue NRD has participated in various buffer strip programs over the last three years to reduce field sedimentation and protect surface water quality. To date the district has enrolled 202.6 acres of buffer strips. These practices will help reduce loading of chemicals and sediments, and their subsequent transport downstream to Kansas waters.

The District continues to administer various local and state funds for conservation practices which save soil and water, and protect water quality. Last year we provided assistance for:

120,000 feet of terraces	38,500 feet of grassed waterways
10 livestock dugouts	3 small dams
610 acres of range and critical area seeding	18 planned grazing systems
42,178 trees sold	5 irrigation management systems
	57 water well decommissionings

Water Quality Efforts

Little Blue has been active with several communities in the development of municipal wellhead protection areas. Those communities include: Fairbury, Bruning, and Hastings. We have also been contacted by several others who are considering actions to protect their water supplies from contamination. The NRD samples about 160 irrigation wells and 210 domestic wells annually for nitrates and tracks water quality trends throughout the district.

Rural Water Service

The Little Blue Public Water Project - South, which is our rural water system constructed in 1998-9, has been running smoothly. We currently have 67 water users in Nebraska and 66 water users in northern Washington County, Kansas. Final water users signups were 166% of those anticipated when our Water Transfer Permits were submitted to the Nebraska Department of Water Resources. As a result, water use for our first full year of operation were right at the limits of our transfer permit. The NRD is currently revising our permits and hopes to have new limitations in place by the end of the summer. Incidentally, the water consumption for those 66 Kansas users totaled 4.77 million gallons or 14.64 Ac. Ft. (200 gal. per household).

**REPORT OF THE UPPER BIG BLUE
NATURAL RESOURCES DISTRICT**

Ground Water Quantity Regulations

The District adopted new regulations to require large ground water users to obtain a permit prior to development of a new water well or expansion of the use of an existing water well. This rule applies to any new use of ground water of 500 ac.ft./yr. Or more. The applicant is required to provide hydrologic evaluation showing the impacts, if any, of the intended withdrawal on the ground water table and other ground water users. The District could deny such a permit if there was evidence that existing ground water users would be adversely impacted.

Spring 2000 Ground Water Levels

The spring 2000 average ground water level change in the District was a rise of 1.30 ft. above the 1999 level. Ground water levels have risen an average of approximately 14 feet since 1980. See attached illustrations.

During 1999. The Nebraska Natural Resources Commission located most of the NRD's designated observation wells in Adams, Clay, Hamilton, York and York Countries using GPS. A total of 197 wells. This was done to provide vertical and horizontal control of the Platte River Cooperative Hydrology Study.

Ground Water Quality

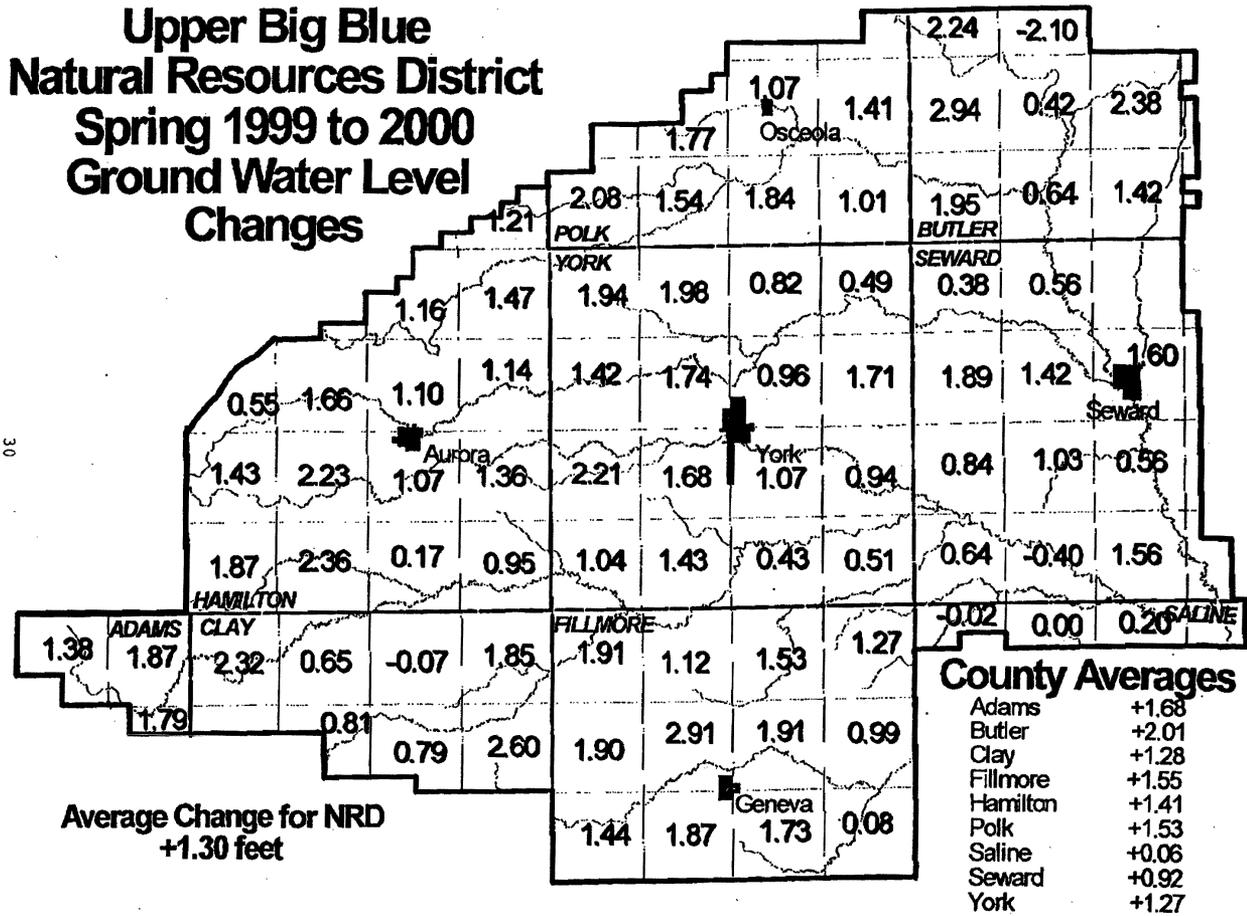
The Upper Big Blue NRD was declared a Ground Water Management Area for Water Quality in 1995. The District Identifying Information: divided into 12 management zones. The contaminant of concern is nitrate. The entire District is in Phase 1 management. Phase 1 requires farmers to wait until November 1 to apply anhydrous ammonia and until March 1 to apply other forms of nitrogen fertilizers to row crops. There are no Phase 2 zones at this time. The nitrate trigger level for Phase 2 is 9.0 ppm. The highest nitrate level in any of the 12 zones for 1999 was 8.0. Phase 2 would require implementation of a variety of bmps.

The University of Nebraska Cooperative Extension, in cooperation with the Upper Big Blue and Little Blue NRD's is in the second year of an irrigation water/nutrient management demonstration with agricultural and urban areas in Wellhead Protection Area. The project demonstrates conservation and nutrient management methods on irrigated land, lawns, public parks and ball fields, etc.

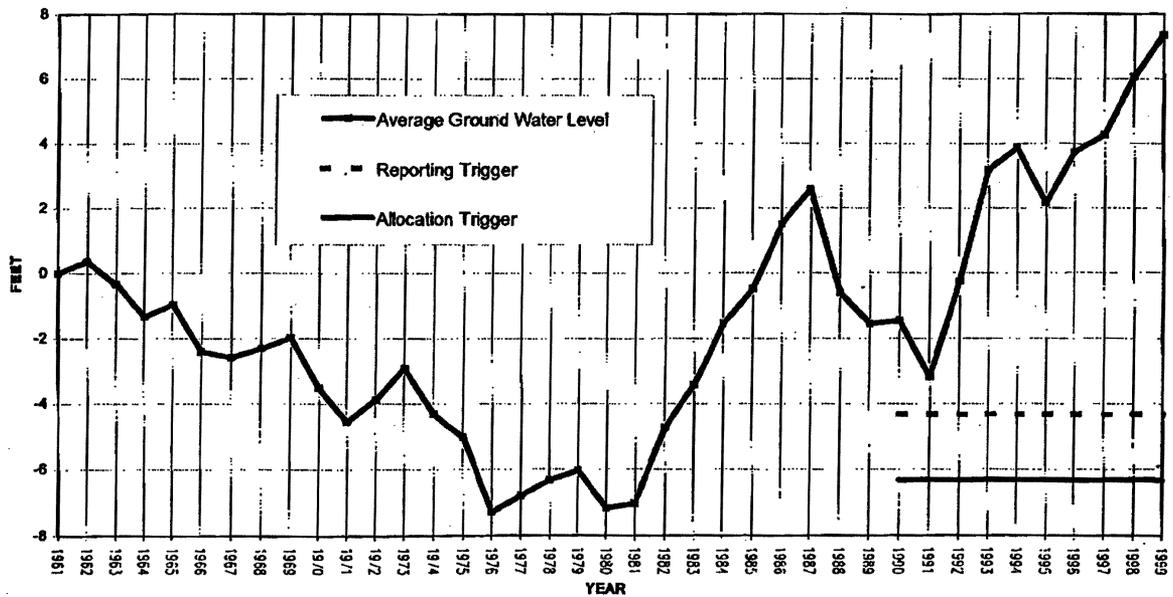
Wellhead Protection Area (WHPA) Assistance

The Upper Big Blue NRD has been given tentative approval for a CWA 319 grant to employ a full time staff person to provide technical and administrative assistance to communities in the District to develop Wellhead Protection Areas, conduct contaminant source inventories, and assist with preparation of the communities WHPA management plans. The grant is for 2 year, with possible extension up to 5 years.

Upper Big Blue Natural Resources District Spring 1999 to 2000 Ground Water Level Changes



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



The Spring 2000 ground water level is 11.69 ft. above the reporting trigger and 13.69 ft. above the allocation trigger

KANSAS-NEBRASKA BIG BLUE RIVER COMPACT
U.S. Geological Survey - 1999 Water Year
May 18, 2000

The U.S. Geological Survey is presently operating two streamflow gaging stations for the Compact Administration: The Big Blue River at Barneston, NE, and Little Blue River near Hollenberg, KS. Daily discharge records were computed at the two sites. Data collection platforms are being maintained for transmission of gage heights. The two sites are on the Nebraska District's WEB site on the Internet for viewing of the previous seven days. The Internet address for the streamflow is:

http://www-ne.cr.usgs.gov/rt-cgi/gen_tbl_pg

Low-flow measurements were made at sites in the Big Blue River and Little Blue River basins in October 1999. Flows were in the normal range for the October date of the measurements in both basins; Big Blue River at Beatrice (median=200 cfs, 1999 meas.=270 cfs), Little Blue River at Hollenberg, KS (median=160 cfs, 1999 meas.=117 cfs).

The mean daily discharge of the Big Blue River at Barneston for the 1999 water year was 1203 cfs, as compared to the mean discharge for the 1998 water year of 1186 cfs and to the mean discharge for the period of record (1933-98) of 869 cfs. The minimum daily discharge during water-year 1999 was 280 cfs on December 22, 1998. The minimum daily discharge, May through September, was 299 cfs on September 30.

The mean daily discharge of the Little Blue River near Hollenberg, KS for the 1999 water year was 427 cfs, as compared to the mean discharge for the 1998 water year of 461 cfs and compared to the mean discharge for the period of record (1975-98) of 549 cfs. The minimum daily discharge during water-year 1999 was 105 cfs on September 19, 1999.

The daily records for the two gaging stations, the hydrographs of the two ground-water observation wells in Gage and Jefferson Counties, Nebraska, and a listing of the low-flow measurements were provided to the Compact's Engineering Committee. Current stage-discharge rating tables for the two stream gages and tables of monthly mean flows for each year for the gaging stations since 1970 were also provided.

The estimate of the Compact Administrations's share of the cost to operate the two streamflow gaging stations for the period July 1, 2001 to June 30, 2002 and the cost for making the low-flow measurements in the fall of calendar-year 2001 were given to the Budget Committee.

KANSAS - NEBRASKA BIG BLUE RIVER
COMPACT ADMINISTRATION
REPORT

Water Quality Committee
May 18, 2000

Background: In 1995, the Water Quality Committee and affiliated work groups began pursuing four (4) primary objectives designed to enhance water quality in the Big Blue River Basin of Kansas and Nebraska. These objectives were to:

- 1) design and implement 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) initiate and conduct water quality stewardship education and outreach programs; and,
- 4) develop water quality Best Management Practices and economics support information suitable to the basin.

The basin wide water quality monitoring system was put into place and water quality sampling began in mid-April of 1997. A baseline farm practices survey was completed and published in March, 1998. Following is a report of findings of the water quality monitoring program and a review of the current status of ongoing educational, stewardship and BMP projects which are underway in the Big Blue River Basin.

Water Quality Monitoring : Dr. Phillip Barnes, Department of Biological and Agricultural Engineering, Kansas State University has been a lead worker in the basin wide water quality monitoring program. He has recently published a summary of the program and 1997 - 1998 findings (Attachment 1). Data collected indicates that most atrazine is moving from farm fields into adjacent surface waters in late May through the month of June. Consequently, this is the atrazine application period that needs revised farming and/or atrazine application practices. Analysis of atrazine annual mass loss data and spatial loading indicates that a significant proportion of the total loading into the Big Blue River system is occurring along the Big Blue River near the state line and at the vicinity of the juncture of the Big and Little Blue Rivers. Geographically, this is the general area lying within Gage and Jefferson Counties in Nebraska, and Marshall and Washington counties in Kansas. Of the four counties, Gage and Marshall appear key.

Although work with farmers first began on the Kansas portion of the Big Blue River Basin, Dr. Barnes recently reported to the Compact Water Quality Committee that Nebraska appears to be making rapid water quality progress in the upper reaches. He believes that a trend toward improved water quality may already be starting to appear. Dr. Barnes also expressed the belief that atrazine levels can be reduced and Kansas waters brought into compliance with atrazine TMDL levels with general implementation of a few basic BMPs in the four county area (above).

Water quality monitoring is continuing. Steve Walker (Nebraska Department of Environmental Quality) has advised the Water Quality Committee that funding is available for continuation of the monitoring program for two more years. As you will recall, the U.S. Environmental Protection Agency, Region VII and Novartis have given strong support to funding the monitoring effort.

Education, Research and Stewardship Activities: The University of Nebraska, Lincoln and Kansas State University are closely coordinating their educational and research programs in the Big Blue River Basin. Numerous educational, research and stewardship activities are ongoing. Some highlights are as follows:

- During February, the Kansas and Nebraska state extension programs held a joint two-day water quality training program for county extension agents of the basin. The training session was held in Beatrice, NE and covered such topics as TMDLs, riparian management and atrazine BMPs. I was asked to participate in one of the panel discussions. Charles Benjamin, attorney and spokesman for the Kansas Chapter of the Sierra Club and the Kansas Natural Resource Council was also invited to participate. Mr. Benjamin advised the agents that he was working diligently to find a Nebraska based environmental group who would agree to file a lawsuit against EPA concerning alleged lack of progress by Nebraska with TMDL development.

- Attention is also being given to educating the various agricultural specialists who work with farmers. Tom Franti, UNL Surface Water Management Specialist sponsored a spring water quality training program for consultants and chemical dealers. This session was held in Crete, NE and focused on atrazine BMPs. In the lower end of the basin, there are few consultants. KSU is basically working with extension agents, farmers and the few consultants one-on-one.

- KSU has developed an Integrated Agricultural Management Site on a farm in Washington Co., Ks. This will be the second season since the site became fully operational. Development and work at the site is funded by a grant to KSU and UNL from the Fund For Rural America with additional monetary support from the Corn, Grain Sorghum and Soybean Commissions. The site is being used to: 1) evaluate effectiveness of pesticide, tillage and nutrient BMPs under field-scale conditions; 2) verify findings of small plot studies on water quality impacts of fall applied atrazine; and 3) serve as a demonstration site for Blue River Basin educational activities on water quality. The University of Nebraska has a companion study underway at Clay Center, NE which is devoted to irrigated agriculture and pesticide practices. At this point fall applied atrazine appears to offer good potential as a water quality BMP, but further on-farm testing needs to be done to insure it's efficacy.

- Riparian buffers are receiving an increasing amount of attention as water quality protection measures for the basin. KSU and UNL have received funding from EPA for a joint extension project on forested riparian buffers. To date, one training session has been held and a landowner survey developed. Future plans call for completing the survey of landowners (fall, 2000), installation of 2 to 4 demonstration sites, field days/tours, and publications on riparian buffer functions. Additional research into evaluating the effectiveness of riparian areas and vegetative buffers on water quality is planned, and the universities have brought in two new riparian buffer specialists (1 KS/1 NE) to serve in the basin.

- The Nebraska Buffer Strip Program was created by the Nebraska Legislature in 1998. The program is designed to encourage landowners to establish buffer strips, specifically filter strips and riparian forest buffers, along vulnerable surface waters. The program is funded from fees assessed on pesticides registered in Nebraska. The program appears to be highly successful, with most interested landowners choosing to sign up for the 10 year maximum duration. To date 950 landowner applications have been approved covering 840 stream side miles or 282 riparian buffer acres. If there is a current concern it is that potential sign-ups may outstrip available dollars. A map locating current signed acreage is shown in Attachment 2.

The Kansas Water Quality Buffer Initiative is a supplemental program to the federal Conservation Reserve Program continuous signup provision. The state program provides additional rental rate payments for the establishment of grass filter strips and riparian forest buffers. The initiative was developed to compliment the Governor's Water Quality Initiative in north central and northeast Kansas. High priority TMDL areas in the Kansas Lower Republican River Basin are targeted, and a major expansion occurred in March to allow inclusion of all TMDL areas. At this point, pending and approved buffer acreage totals 1,697.1 acres.

- Increased attention is also being paid to factors influencing landowner adoption of water quality BMPs. Tom Franti is leading a project to assess the level of outreach effort needed to achieve landowner adoption in the Indian and Turkey Creek watersheds. This is the second year of this project whose goal is to determine how differing outreach approaches affect BMP adoption rates and to determine the intensity of education and outreach program needed to gain landowner/farmer confidence and adoption of practices. The KSU Department of Agricultural Economics is examining the economics of BMP adoption by Kansas crop producers. The basic goal of this series of studies is to develop, evaluate and promote farm management systems which protect water quality while maintaining farm profitability. The KSU work is being funded by the Kansas Corn, Grain Sorghum, Soybean and Wheat Commissions.

- Although prevention of field runoff of pesticides has been the principal focus of committee activities, occasional pesticide "spikes" in monitoring data appear possibly related to point sources, spills, or improper disposal. The pesticide disposal program in Nebraska is proving to be very effective in removing unwanted pesticides off the farm. The program has held it's 5th collection in seven years and during that time has collected over 1.4 million pounds of unwanted pesticide products.

Kansas TMDL Needs Inventory: Because Kansas is in the process of developing TMDLs for the 12 river basins in the state, the Kansas Conservation Commission has initiated a project to collect information relative to the costs of TMDL implementation. This effort, termed the TMDL Needs Inventory, will soon be complete for the Kansas-Lower Republican River Basin (KLR). The inventory should also give us some decent estimates of costs for that portion of the Big Blue River Basin in Kansas and above Tuttle Creek Lake. Primary TMDL concerns in that area are coliform bacteria, sediments and pesticides (atrazine/alachlor).

Other Committee Business: The Kansas - Nebraska Big Blue River Compact Administration's

Water Quality Committee met on May 10, 2000 at the offices of the Lower Big Blue Natural Resources District in Beatrice, NE. The principal purpose of the meeting was to review the progress of various projects and establish goals for the upcoming period. A copy of the meeting agenda is provided in Attachment 3.

Committee members participating in the May 10th work session were: Denis Blank (Nebraska Department of Agriculture), Pat Rice and Annette Kovar (Nebraska Department of Environmental Quality), Glen Kirk (Kansas Water Office) and Dale Lambley (Kansas Department of Agriculture). The other Kansas representative, Tom Stiles (Kansas Department of Health & Environment) was involved in TMDL issues in south central Kansas and was unable to attend. In addition to the committee members, several individuals who are working with the committee and on Blue River Basin water quality efforts joined us for the meeting. These included: Rich Reiman (Nebraska Department of Agriculture), Steve Walker (Nebraska Department of Environmental Quality), Jessica Baetz (Kansas Corn Growers/Kansas Grain Sorghum Producers Associations), Phil Barnes and Dan Devlin (Kansas State University), Don Vogel (Nebraska Corn Growers Association), Scott Carlson (Kansas Conservation Commission), Tom Franti (UNL-Cooperative Extension), and Jack Dutra (JD Information Services representing Novartis).

In addition to the continuation of ongoing programs, the committee chose as it's new goal for the upcoming year the completion and publication of a formal report of water quality data and findings.

Sincerely Submitted,



Dale Lambley, Chair
Water Quality Committee

WATERSHED MONITORING TO ADDRESS CONTAMINATION SOURCE ISSUES AND REMEDIATION OF THE CONTAMINANT IMPAIRMENTS

P. L. Barnes

* *Department of Biological and Agricultural Engineering, Kansas State University, Manhattan, Kansas 66506 (lbarnes@ksu.edu)*

ABSTRACT

The Big Blue River Basin is located in southeastern Nebraska and northeastern Kansas and consists of surface water in the Big Blue River, Little Blue River, Black Vermillion River, and various tributaries draining 24,968 square kilometers. Approximately 75% of the land area in the basin is cultivated cropland. The Big Blue River flows into Tuttle Creek Reservoir near Manhattan, Kansas. Releases from the lake are used to maintain streamflow in the Kansas River during low flow periods, contributing 27 percent of the mean flow rate of the Kansas River at its confluence with the Missouri River. Tuttle Creek Reservoir and the Kansas River are used as sources of public drinking water and meet many of the municipal drinking water supply needs of the urban population in Kansas from Junction City to Kansas City.

Elevated concentrations of pesticides in the Big Blue River Basin are of growing concern in Kansas and Nebraska as concentrations may be exceeding public drinking water standards and water quality criteria for the protection of aquatic life. Pesticides cause significant problems for municipal water treatment plants in Kansas, as they are not appreciably removed during conventional water treatment processes unless activated carbon filtering is used. Pesticides have been detected during all months of the year with concentrations ranging up to 200 µg/L. If high concentration in water is associated with high flow conditions then large mass losses of pesticides can flow into the water supplies in this basin. This paper will investigate the use of a monitoring program to assess the non-point source of this atrazine contamination. Several practices will be examined that have shown ability to remediate or prevent these impairments.

KEYWORDS

Best management practices; maximum contaminant level; non-point pollution; total maximum daily loading

Section 303(d) of the Clean Water Act calls for each state to identify those water within its boundaries for which effluent limitations are not stringent enough to implement any water quality standard applicable to such waters. The state also priority ranks those waters, accounting for the severity of the pollution and the uses to be made of the waters. For those identified waters, the state is to establish the total maximum daily load (TMDL) for those pollutants causing the non-attainment of the water quality standards. Such loads are to be established at a level necessary to implement the applicable water quality standard with seasonal variations and a margin of safety, which accounts for uncertainty concerning the relationship between effluent limitations and water quality.

On November 1, 1995, the Kansas Natural Resource Council and the Sierra Club filed a complaint against the EPA, compelling it to enforce Section 303(d) of the Clean Water Act by establishing TMDLs for impaired water bodies in Kansas. Each pollutant source contributing to the deviation from the water quality standards will be identified and their relative contribution to the impaired situation determined. Based on the flow-load analysis, judgements can be made on the degree of point and non-point sources contributing to the current condition. The number of sources, their geographic location along the segment or within the watershed, the type of source, the magnitude of their potential pollutant loading and their degree of influence on water quality will be identified. For non-point sources, information will be gathered on the land uses within the watershed, such as topography and soil features. Other information will include likely contributing areas producing runoff, percent of impervious area within the watershed producing storm water discharges, stream-aquifer interaction, existing management practices in place and the limits of those practices to influence hydrologic extremes, and types of water use present along the streams and lakes.

The Big Blue River Basin is located in southeastern Nebraska and northeastern Kansas and consists of surface water in the Big Blue River, Little Blue River, Black Vermillion River, and various tributaries draining 25,900 square kilometers. Approximately 75% of the land area in the basin is cultivated cropland. The Big Blue River flows into Tuttle Creek Reservoir near Manhattan, Kansas. Releases from the lake are used to maintain streamflow in the Kansas River during low flow periods, contributing 27 percent of the mean flow rate of the Kansas River at its confluence with the Missouri River (Dugan et al., 1991). The largest population centers in Kansas are supplied by surface water from the Kansas River. Clean Water Act monitoring for this water supply has consistently exceeded the drinking water standard for atrazine. This monitoring requires at least an annual quarterly sample to be taken for these drinking water supplies. These data would indicate that in most cases quarterly monitoring does not accurately represent conditions in the water supply.

This paper will investigate the use of a monitoring program to assess the non-point sources of this atrazine contamination. Several practices will be examined that have shown ability to remediate or prevent these impairments.

Table 1. Blue River Basin sampling locations and characteristics.

Station Number	Location	Area (km ²)	Percent of Basin
1	Crete, NE (Big Blue)	7034	28
2	Beatrice, NE (Big Blue)	9919	39
3	Barneston, NE (Big Blue)	11318	45
4	Marysville, KS (Big Blue)	12372	49
5	Deweese, NE (Little Blue)	2535	10
6	Fairbury, NE (Little Blue)	6086	24
7	Hollenberg, KS (Little Blue)	7127	28
8	Barnes, KS (Little Blue)	8609	34
9	Frankfort, KS (Black Vermillion)	1061	4
10	Manhattan, KS (Tuttle Creek Reservoir)	24968	100

Elevated concentrations of atrazine in the Big Blue River Basin are of growing concern in Kansas and Nebraska as concentrations have been shown to exceed the public drinking water standards and water quality criteria for the protection of aquatic life. Atrazine causes significant problems for municipal water treatment plants in Kansas as it is not appreciably removed during conventional water treatment processes unless activated carbon filtering is used (Miltner et al., 1989). Atrazine has been detected during all months of the year in the Big Blue Basin with concentrations ranging from 0.1 to 166 µg/L in Nebraska from 1987 to 1992 (Frankforter, 1994). More recently, in the Recharge Lake watershed near York, Nebraska, atrazine concentrations as high as 854 µg/L were detected following a May 1995 runoff event (Upper Big Blue NRD, 1995).

Sample collection included a protocol of grab sampling when stream flows were at or below normal base flow. Grab samples were collected at each site on a stratified fixed-frequency basis. Grab samples were collected instead of width-depth integrated samples because grab samples greatly reduce sample time and effort and were considered equivalent to depth-width samples in representing stream water quality conditions if the stream can be assumed to be well mixed. Grab samples were collected on a weekly basis from April through September during the runoff season when atrazine concentration variability is the highest, and on a monthly basis from October through March when concentration variability is low.

Automated runoff samplers collected additional samples when stream flows were above base flow conditions. These samplers were set to take discrete samples at uniform times during the runoff hydrograph. To determine the mean atrazine concentration for a particular runoff event, selected discrete samples of runoff that were collected by the automated sampler were composited into a single discharge-weighted sample. Discrete samples were selected to adequately define variations in flow rate and atrazine concentration. The method of computing the discharge-weighted value of each discrete sample to be included in the composite sample was based on the mid-interval method (Porterfield, 1977). Each sampling site was located at an existing United States Geological Survey (USGS) gage station or will have continuous flow meters equipped

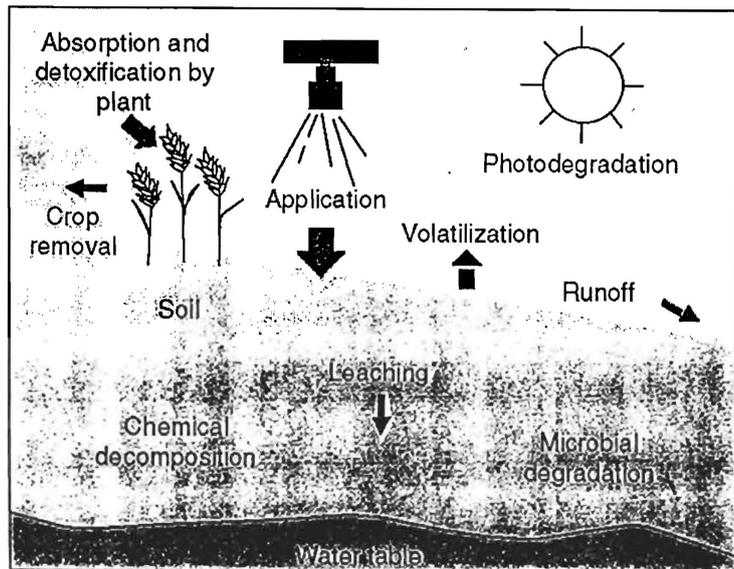


Figure 3. Potential fate for atrazine applied in an agricultural environment.

Adsorption is a term that describes a herbicide's tendency to bind to soil particles, primarily to clay and organic matter in the soil (Figure 4).

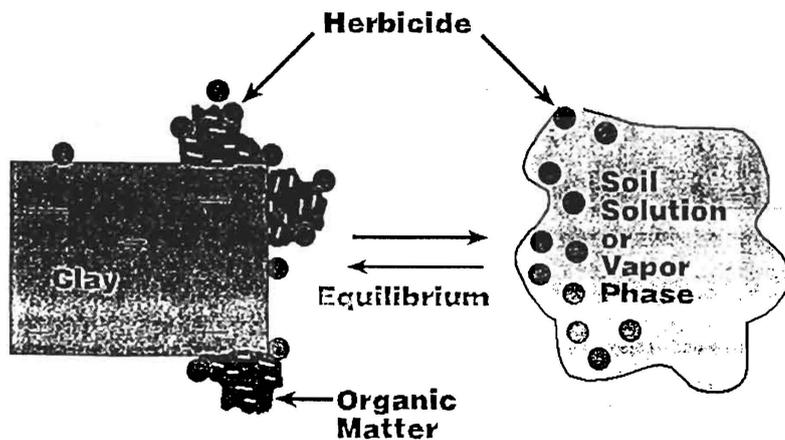


Figure 4. Adsorption model for herbicides applied to agricultural soil.

MONITORING RESULTS

During 1998, the various sampling stations (Table 1) had an average of 42 samples taken per station. The daily atrazine concentration was calculated by interpolating between discrete sampled concentrations. Figure 6 shows that the peak concentration at Station 1 occurred in late May through early July. If the daily concentrations are averaged for the year the annual average concentration for atrazine at Station 1 is 2.84 $\mu\text{g/L}$ that is slightly below the drinking water MCL.

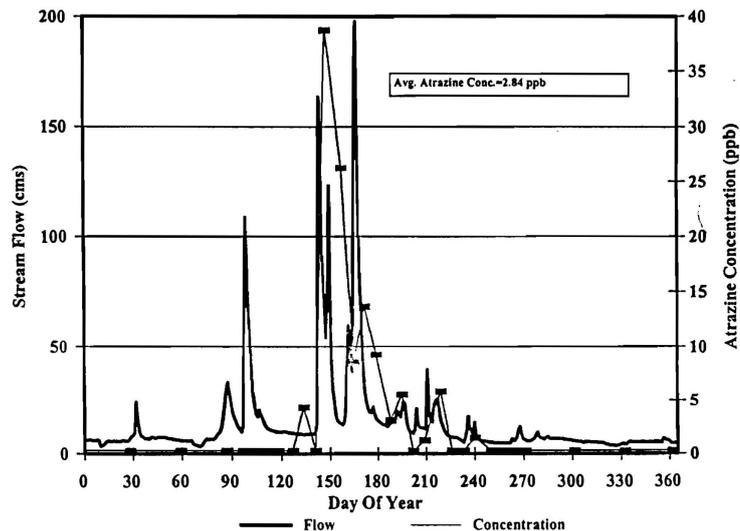


Figure 6. Annual flow and atrazine concentration for the Big Blue River near Crete, Nebraska (Station 1, 1998 ppb= $\mu\text{g/L}$)

These concentration peaks occur during the same time frame that represented the peak stream flows. If the daily flowrate is multiplied by the average daily concentration, then multiplied by a factor (0.005383), the result gives the daily atrazine load in kilograms. These daily loading values are presented in Figure 7 for the Big Blue River near Crete, Nebraska. Figure 7 would indicate that most of the atrazine load is lost in late May through the month of June.

Table 2. Blue River Basin sampling locations and atrazine annual mass loss (1998).

Station Number	Location	Atrazine Mass Loss (kg)	MCL	Percent of Total
1	Crete, NE (Big Blue)	3819	2.84	33
2	Beatrice, NE (Big Blue)	5333	3.78	46
3	Barneston, NE (Big Blue)	7491	4.20	65
4	Marysville, KS (Big Blue)	9241	4.55	80
5	Deweese, NE (Little Blue)	256	1.46	2
6	Fairbury, NE (Little Blue)	473	1.96	4
7	Hollenberg, KS (Little Blue)	791	1.88	7
8	Barnes, KS (Little Blue)	1665	2.31	14
9	Frankfort, KS (Black Vermillion)	603	2.24	5
10	Manhattan, KS (Tuttle Creek Reservoir)	4506	1.27	39

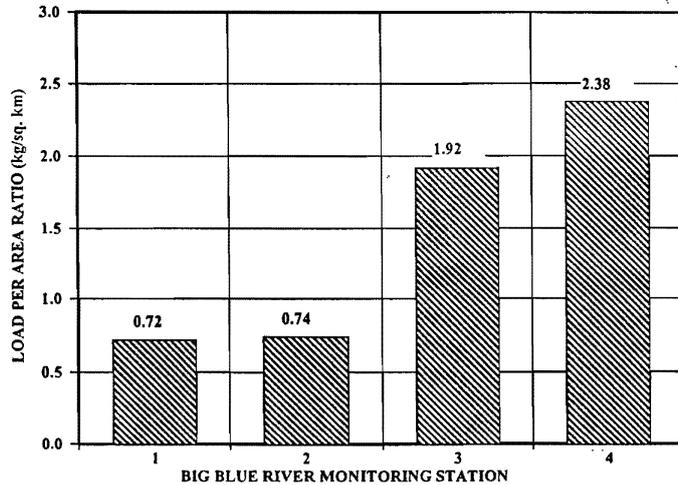


Figure 8. Spatial loading of atrazine along the Big Blue River, 1998.

The calculation of the total maximum daily load (TMDL) compares daily flow at the measured concentration versus the MCL concentration of 3 µg/L. This comparison shows that the TMDL is exceeded during the late May through June runoff period. When working with farm practices, this is the atrazine application period that needs revised practices.

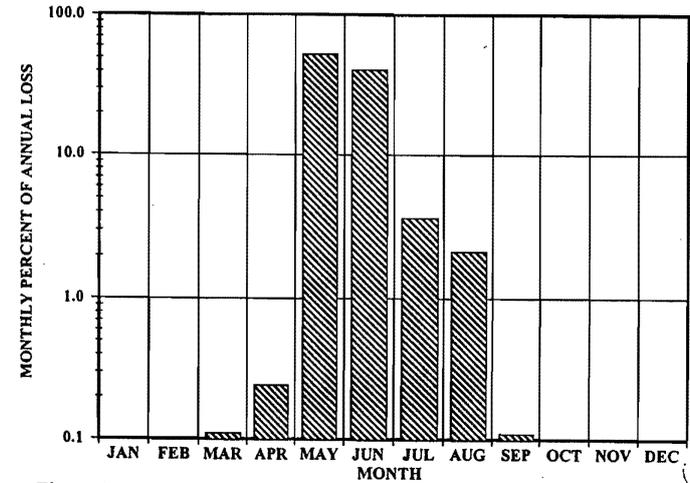


Figure 10. Monthly percent of annual atrazine loading for the Big Blue River near Crete, Nebraska (Station 1, 1998).

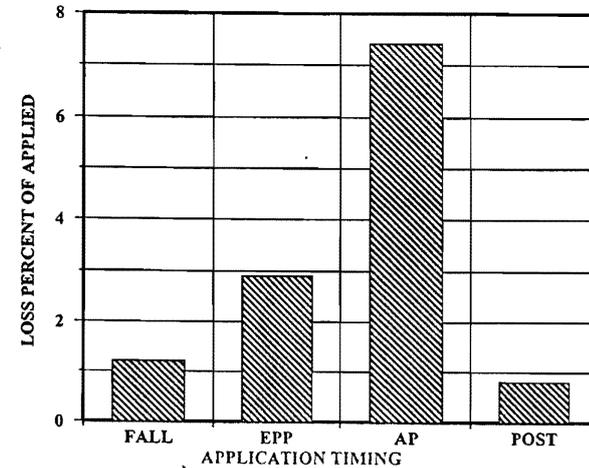


Figure 11. Atrazine loss as a percentage of applied for fall, early pre-plant (EPP), at plant (AP), and post applied atrazine.

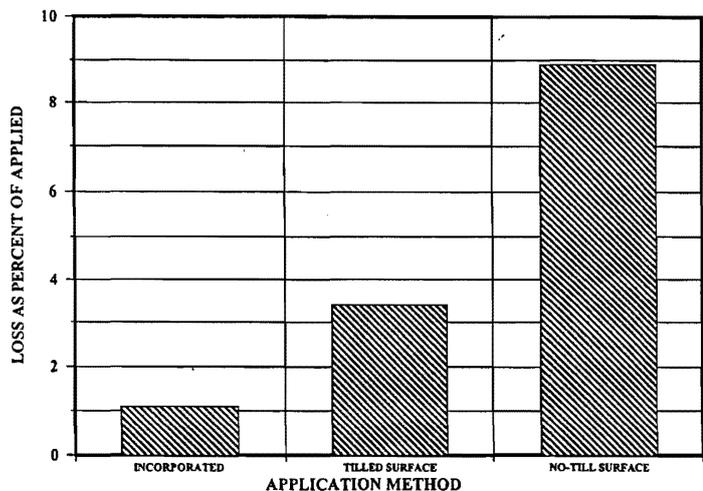


Figure 13. Atrazine loss as a percentage of the mass applied by different methods.

Vegetative buffer strips along the edge of fields are zones that can contain various forms of vegetation such as grass and trees (Figure 14). The purpose of these buffers is to reduce the runoff flow rate from the field to allow deposition of sediments and nutrients contained on the sediments (Dillaha et al., 1986, 1988; Cooper and Gilliam, 1987). Limited data is available on the effectiveness of these buffers ability to reduce herbicides in the runoff water (Arora et al., 1995). It is important to realize that the vegetation in the buffer does not remove the pesticide from the water passing through the buffer. It is the proportion of the herbicide-containing water that infiltrates into the buffer that reduces the herbicide runoff. Vegetative buffers used in the Big Blue Basin have reduced atrazine loss in runoff from fields by 30 percent.

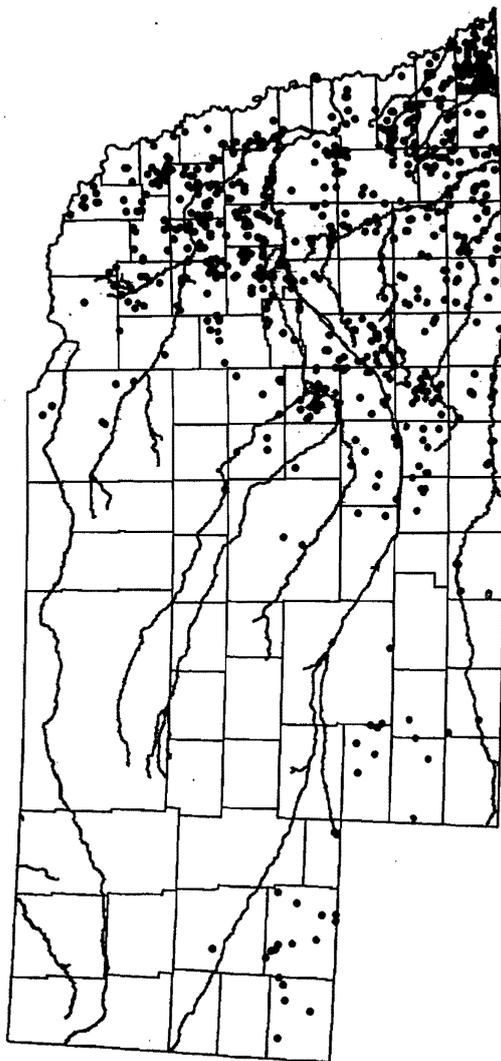
CONCLUSIONS

This monitoring research suggests that additional management practices are needed in a portion of the Big Blue River Basin. Reducing runoff-leaving fields with vegetative buffers combined with proper timing and application method can bring these parts of the Basin into compliance with the current water quality standards.

REFERENCES

- Arora, K., Mickelson S. K. and Baker J. L. (1995). Evaluating vegetative buffer strips for herbicide retention. *Trans. Am. Soc. Agric. Eng.*, Paper No. 95-2699.
- Baker J. L. and Lafren J. M. (1979). Runoff losses of surface-applied herbicides as affected by wheel tracks and incorporation. *J. Environ. Qual.*, 8(3), 602-607.
- Cooper J. R. and Gilliam J. W. (1987) Phosphorous redistribution from cultivated fields to riparian areas. *Soil Sci. Soc. Am. J.*51(2), 1600-1604.
- Dillaha, T. A., Sherrard J. H., Lee D., Shanholtz V. O., Mostaghani S. Magette W. L. (1986) Use of vegetative filter strips to minimize sediment and phosphorous losses from feed lots: Phase I experimental plot study, Bulletin 151. Virginia Water Resources Research Institute, Virginia Tech University, Blacksburg, VA.
- Dillaha T. A., Sherrard J. H., Lee D., Mostaghani S. and Shanholtz V. O. (1988) Evaluation of vegetative filter strips as a best management practice for feed lots. *J. Water Pollut. Control Fed.* 60(7) 1231-1238.
- Dugan J. T., Engberg R. A. and Jordan P. R. (1991) Description of the lower Kansas River Basin. In: *Surface water quality assessment of the lower Kansas River Basin*, P. R. Jordan and J. K. Stamer (eds.), U. S. Geological Survey Open-File Report 91-75, pp. 10-20.
- Frankforter J. D. (1994) Compilation of atrazine and selected herbicide data from previous surface-water investigations within the Big Blue Basin, Nebraska, 1983-92. U. S. Geological Survey Open-File Report 94-100, 69p.
- Hall J. K., Pawlus M. and Higgins E. R. (1972) Losses of atrazine in runoff water and soil sediment. *J. Environ. Qual.* 1(1), 172-176.
- Miltner R. J., Baker D. B., Speth T. F. and Fronk C. A. (1989) Treatment of seasonal pesticides in surface water. *J. American Water Works Ass.* 81(1), 43-52,
- Olson B. L., Regehr D. L., Janssen K. A. and Barnes P. L. (1998) Tillage system effects on atrazine loss in surface water runoff. *Weed Tech.* 12(4) 646-651.
- Porterfield G. (1972) Computation of fluvial-sediment discharge. U. S. Geological Survey Water-Resources Investigations Book 3 Chapter C3. 66p.
- Regehr D. L., Devlin D. L., Barnes P. L. and Watson S. L. (1996) Reducing atrazine runoff from crop fields. Cooperative Extension Service, Kansas State University. MF 2208.

Buffer Strip Distribution



Highlighted points contain irrigated cropland acres.
Points may represent more than one buffer.

FINAL AGENDA

Big Blue River Compact Water Quality Committee Meeting

May 10, 2000 - 10:00A to 2:00P

1. **Introductions and Opening Comments** - Dale Lambley (10 minutes)
2. **Big Blue River Basin Water Quality Monitoring Report** - Phil Barnes (KSU) (45 minutes)
3. **Current Status of Clean Water Act TMDL Activities**
 - Kansas Report - Dale Lambley (KDA) (20 minutes)
 - Nebraska Report - Steve Walker/Pat Rice (NDEQ) (20 minutes)
4. **Update on Educational and Research Activities**
 - Kansas Report - Dan Devlin (KSU) (20 minutes)
- LUNCH (11:40 to 1:00P)**
 - Update on Educational and Research Activities (cont.)**
 - Nebraska Report - Tom Franti (UNL) (20 minutes)
5. **Other Information & Reports:**
 - Kansas TMDL Needs Inventory - Scott Carlson (SCC) (30 minutes)
 - Other Participants
6. **Discussion of Future Actions** - All Participants

BIG BLUE RIVER COMPACT ADMINISTRATION BUDGET ANALYSIS
As of MAY'00

EXHIBIT Q

	99		2000		2001		FY02	
	Actual	Adopted May 1998	Estimate (To Date)	Adopted May 1999	Proposed	Adopted May 2000	Proposed	
EXPENDITURES								
Operations								
Stalene Gages	\$10,210.00	\$10,210.00	\$10,650.00	\$10,650.00	\$11,090.00	\$11,090.00	\$11,500.00	
Observation Wells	\$1,140.00	\$1,140.00	\$1,110.00	\$1,140.00	\$1,140.00	\$1,140.00	\$1,140.00	
Low-flow Measurements	\$1,150.00	\$1,150.00	\$1,200.00	\$1,200.00	\$1,250.00	\$1,250.00	\$1,300.00	
Water Quality Committee	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Fidelity Bond	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	
Secretary Honorarium	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00	
Treasurer Honorarium	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00	\$750.00	
Staff Travel Expenses	\$86.67	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	
Annual Report	\$143.53	\$200.00	\$88.01	\$200.00	\$200.00	\$200.00	\$200.00	
Annual Audit	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00	
Postage and Office Supplies	\$60.63	\$100.00	\$45.32	\$100.00	\$100.00	\$100.00	\$100.00	
Miscellaneous Expenses	\$0.00	\$100.00	\$0.00	\$100.00	\$100.00	\$100.00	\$100.00	
Total Expenses	\$14,890.83	\$15,200.00	\$15,393.33	\$15,690.00	\$16,180.00	\$16,180.00	\$16,640.00	
INCOME AND CARRY OVER								
Assessments (Both States)	\$14,000.00	\$14,000.00	\$14,000.00	\$14,000.00	\$16,000.00	\$16,000.00	\$16,000.00	
Interest Earned	\$374.37	\$380.00	\$225.00	\$400.00	\$400.00	\$400.00	\$400.00	
Carry Over from Prior Year	\$16,435.54	\$16,197.67	\$15,919.08	\$15,799.72	\$14,750.75	\$14,649.92	\$14,649.92	
Total Income and Carry Over	\$30,809.91	\$30,577.67	\$30,144.08	\$30,199.72	\$31,150.75	\$31,049.92	\$31,049.92	
Balance End of Year	\$15,919.08	\$15,377.67	\$14,750.75	\$14,509.72	\$14,970.75	\$14,869.92	\$14,409.92	

**KANSAS-NEBRASKA BIG BLUE RIVER COMPACT ADMINISTRATION
TREASURER'S REPORT
FISCAL YEAR 2000**

Balance on hand July 1, 1999:		\$15,919.08	
Receipts during fiscal year 2000			
State of Nebraska	\$ 7,000.00		
State of Kansas	\$ 7,000.00		
Interest Earned	\$ 218.46		
Total receipts	\$14,218.46	\$14,218.46	
Total funds available:		<u>\$30,137.54</u>	
Disbursement by the Administration July 1, 1999 to June 30, 2000:			
<u>Date</u>	<u>Voucher No.</u>	<u>Payee and Purpose</u>	<u>Amount</u>
7-12-99	283	Brier Payne Meade Insurance(Bond)	\$ 100.00
12-3-99	284	U.S. Geological Survey	2,580.00
2-21-00	285	U.S. Geological Survey	3,890.00
4-12-00	286	U.S. Geological Survey	2,690.00
5-11-00	287	Lower big Blue NRD	1,110.00
5-11-00	288	Kennedy & Coe (Audit)	500.00
5-25-00	289	Pamela Bonebright (Travel & Postage)	270.69
6-5-00	290	Denise J. Rolfs	750.00
6-5-00	291	Pamela Bonebright	750.00
6-14-00	292	U.S. Geological Survey	2,690.00
Total disbursements			<u>\$13,330.69</u>
Funds available in Fiscal Year 2000:			\$30,137.54
Disbursements			<u>13,330.69</u>
Balance on hand June 30, 2000			<u>\$14,806.85</u>



KENNEDY AND COE, LLC
CERTIFIED PUBLIC ACCOUNTANTS

INDEPENDENT AUDITORS' REPORT ON FINANCIAL STATEMENTS

To the Chairman
Kansas - Nebraska Big Blue River Compact Administration

We have audited the accompanying statement of financial position of the Kansas - Nebraska Big Blue River Compact Administration, as of June 30, 2000, and the related statements of activities, cash flows, and revenues and expenses compared to budget for the year then ended. These financial statements are the responsibility of the Administration's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Kansas - Nebraska Big Blue River Compact Administration as of June 30, 2000, and the changes in its net assets and its cash flows for the year then ended in conformity with generally accepted accounting principles.

Respectfully submitted,


Kennedy and Coe, LLC

Topeka, Kansas
March 1, 2001

**KANSAS - NEBRASKA BIG BLUE RIVER
COMPACT ADMINISTRATION**
Topeka, Kansas

Exhibit A

Statement of Financial Position
June 30, 2000

Assets	
Cash in bank	<u>\$ 14,807</u>
Liabilities and Net Assets	
Net assets - unrestricted	<u>\$ 14,807</u>
Total liabilities and net assets	<u>\$ 14,807</u>

KANSAS - NEBRASKA BIG BLUE RIVER
 COMPACT ADMINISTRATION
 Topeka, Kansas

Exhibit B

Statement of Activities
 Year Ended June 30, 2000

Unrestricted Net Assets	
Revenues:	
Kansas contribution	\$ 7,000
Nebraska contribution	7,000
Interest	218
Total revenues	<u>14,218</u>
Expenses:	
Surface and ground water investigations	12,960
Staff travel	225
Auditing and accounting services	500
Fidelity bond	100
Secretary - Treasurer services	1,500
Office supplies and postage	45
Total expenses	<u>15,330</u>
Increase (decrease) in unrestricted net assets	(1,112)
Net assets, beginning of year	15,919
Net assets, end of year	<u>\$ 14,807</u>

KANSAS - NEBRASKA BIG BLUE RIVER
 COMPACT ADMINISTRATION
 Topeka, Kansas

Exhibit C

Statement of Cash Flows
 Year Ended June 30, 2000

Cash flows from operating activities:	
Increase (decrease) in net assets	\$ (1,112)
Net cash (used) by operating activities	<u>(1,112)</u>
Cash flows from investing activities	-
Cash flows from financing activities	-
Net (decrease) in cash	<u>(1,112)</u>
Cash, beginning of year	15,919
Cash, end of year	<u>\$ 14,807</u>

**KANSAS - NEBRASKA BIG BLUE RIVER
COMPACT ADMINISTRATION**
Topeka, Kansas

Statement of Revenues and Expenses Compared to Budget
Year Ended June 30, 2000

Exhibit D

	<u>Budget</u>	<u>Actual</u>	<u>Variance Favorable (Unfavorable)</u>
Revenues:			
Kansas contributions	\$ 7,000	\$ 7,000	\$ -
Nebraska contributions	7,000	7,000	-
Interest	400	218	(182)
Total revenues	<u>14,400</u>	<u>14,218</u>	<u>(182)</u>
Expenses:			
Surface and ground water investigations	12,990	12,960	30
Staff travel	200	225	(25)
Auditing and accounting services	500	500	-
Printing annual report	200	0	200
Fidelity bond	100	100	-
Secretary - Treasurer services	1,500	1,500	-
Office supplies and postage	100	45	55
Miscellaneous	100	-	100
Total expenses	<u>15,690</u>	<u>15,330</u>	<u>360</u>
Excess (deficit) of revenues over expenses	<u>\$ (1,290)</u>	<u>\$ (1,112)</u>	<u>\$ 178</u>

**KANSAS - NEBRASKA BIG BLUE RIVER
COMPACT ADMINISTRATION**
Topeka, Kansas

Notes to Financial Statements
Year Ended June 30, 2000

Note A - Summary of Significant Accounting Policies

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

The following is a summary of the more significant policies:

1) Basis of Accounting

The financial statements have been prepared on the accrual basis financial accounting in accordance with generally accepted accounting principles. All activities of the Administration are classified as unrestricted for financial reporting purposes.

2) Function

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

The purpose of the compact is to:

- A) Promote interstate comity between the States of Nebraska and Kansas.
- B) To achieve equitable apportionment of the waters of the Big Blue River Basin between the two states and to promote orderly development thereof.
- C) To encourage continuation of the active pollution-abatement programs of the waters of the Big Blue River Basin.

3) Estimates

The preparation of financial statements in conformity with generally accepted accounting principles may require the management to make estimates and assumptions that affect certain reported amounts and disclosures.