

MINUTES OF THE SENATE AGRICULTURE COMMITTEE

The meeting was called to order by Chairman Mark Taddiken at 8:30 a.m. on January 24, 2007 in Room 423-S of the Capitol.

All members were present except:
Derek Schmidt- excused

Committee staff present:
Raney Gilliland, Kansas Legislative Research
Art Griggs, Office of Revisor of Statutes
Judy Seitz, Committee Assistant

Conferees appearing before the Committee:
Tracy Streeter, Director, Kansas Water Office
David Pope, Chief Engineer, Division of Water Resources, Kansas Department of Agriculture
Jerry Mayo, Chairman, Clay County Commissioners
Thayne Larson, Farmer, Republic County
Kent Weatherby, General Counsel, Kansas River Water Assurance District (KRWAD) No. 1
Mary Jane Stankiewicz, Vice President & General Counsel, Kansas Grain & Feed and Kansas Agribusiness Retailers Association
Brad Harrelson, State Policy Director - Governmental Relations, Kansas Farm Bureau
Leslie Kaufman, Executive Director, Kansas Cooperative Council

Others attending:
See attached list.

Chairman Taddiken opened the hearing on **SB 89 - Republican river water conservation projects fund.**

Tracy Streeter, Director, Kansas Water Office, appeared in support of **SB 89 (Attachment 1)**. He said the first priority is the delivery of specified quantities of water. 33 1/3% of the financial settlement would go to the State Water Plan Fund. The Republican River Water Conservation Projects Fund (RRWCPF) would receive 66 2/3% of the settlement.

Mr. Streeter stood for questions.

David Pope, Chief Engineer, Division of Water Resources, Kansas Department of Agriculture, offered testimony in support of **SB 89 (Attachment 2)**. He said it appears that Nebraska, and possibly Colorado, may not achieve compliance by the deadlines, therefore, it is appropriate that preparations be made to receive damages that may be recovered.

Mr. Pope stood for questions.

Jerry Mayo, President, Clay County Commission spoke in favor of **SB 89 (Attachment 3)**. A proposed usage of these funds would be to ensure that all county residents and surrounding residents would have a source of water for their household use. Other suggested projects are to help local producers become more efficient with their current irrigation practices and bank stabilization of the Republican River.

Mr. Mayo took questions from the Committee.

Chairman Taddiken noted that the Committee had copies of testimony from James Koch, President, Peoples Exchange Bank, in support of **SB 89 (Attachment 4)**.

Thayne Larson, Farmer, Republic County, presented testimony in favor of **SB 89 (Attachment 5)**. He stated that the entire region has suffered economically due to water availability. Mr. Larson said that this bill would be the start of a process to return to the basin the financial resources that could be used for water efficiency projects that will allow individual farmers, businesses and communities to stretch their water allotments through water conservation projects.

CONTINUATION SHEET

MINUTES OF THE Senate Agriculture Committee at 8:30 a.m. on January 24, 2007 in Room 423-S of the Capitol.

Mr. Larson offered to stand for questions.

Keith Weatherby, General Counsel, Kansas River Water Assurance District (KRWAD) No. 1 testified in favor of **SB 89** (Attachment 6). He suggested the addition of "reservoir maintenance" as a type of project that may be funded.

Mr. Weatherby stood for questions.

Mary Jane Stankiewicz, Vice President and General Counsel, Kansas Grain and Feed Association and the Kansas Agribusiness Retailers Association, spoke in support of **SB 89** (Attachment 7). She suggested that a provision for a litigation fund be established. Ms. Stankiewicz also said it is not necessary have a distinction between state or federal conservation programs in the section regarding the purchase, lease or other acquisition of water rights.

Ms. Stankiewicz offered to stand for questions.

Brad Harrelson, State Policy Director - Governmental Relations, Kansas Farm Bureau, appeared in support of **SB 89** (Attachment 8). He expressed concerns with the funds paying for administration and the types of projects that can be funded. He also stated that perhaps the first priority for projects should go to those water rights holders who were directly affected because Nebraska did not fulfill the terms of the agreement.

Leslie Kaufman, Executive Director, Kansas Cooperative Council (KCC), gave testimony in favor of **SB 89** (Attachment 9). The KCC has concerns with the provision in the bill that allows a portion of any proceeds from a Republican River settlement to be used for "cost share for state or federal conservation programs that save water" because certain federal cost-share programs currently prohibit dryland farming.

No opponents appeared on **SB 89**.

Mr. Harrelson and Ms. Kaufman stood for questions.

Hearings were closed on **SB 89**.

Senator Ostmeyer moved the approval of the minutes for the January 10, 16 and 17 minutes. Senator Pine seconded. Motion passed.

Meeting adjourned at 9:30 a.m.

The next meeting will be held January 30 in Room 423-S.

SENATE AGRICULTURE COMMITTEE GUEST LIST

DATE:

DATE: January 24, 2007

[illegible]



K A N S A S

TRACY STREETER, DIRECTOR

KANSAS WATER OFFICE

KATHLEEN SEBELIUS, GOVERNOR

Senate Bill 89 Republican River Water Conservation Projects Fund

Tracy Streeter
Kansas Water Office
January 24, 2007

Chairman Taddiken and members of the Committee, I am Tracy Streeter, Director of the Kansas Water Office. I appear before you today to comment on Senate Bill 89. This legislation provides for the deposit and disbursement of monies that may be received as a result of violations to the Republican River Compact. As you know, the State of Kansas' first priority relative to compliance with this Compact is the delivery of specified quantities of water. However, in the event that does not occur and financial damages are accrued, the creation of the appropriate accounts and guidance for the expenditure of funds prior to their receipt is advisable.

This legislation is similar to KSA 82a-1801 and 82a-1803 passed in 1996 relative to the Arkansas River litigation. The only major difference between the 1996 legislation and SB 89 is that proposed bill does not provide for the creation of or deposit of funds into an interstate litigation fund. KSA 82a-1802, also passed in 1996, provides the framework for an interstate water litigation fund. Approximately \$20 million in funds from the Arkansas River damage award is currently maintained in this account.

SB 89 proposes dollars received from a settlement, judgment or decree to be deposited as follows:

A) 33 $\frac{1}{3}$ % to the State Water Plan Fund for water conservation projects (no geographic limitation)

B) 66 $\frac{2}{3}$ % to the Republican River Water Conservation Projects Fund (RRWCPF); of which:

i. $\frac{1}{3}$ of the RRWCPF designated for upper Republican River basin in northwest Kansas in all or parts of Cheyenne, Decatur, Norton, Phillips, Rawlins, Sheridan, Sherman and Thomas counties;

ii. $\frac{1}{3}$ of the RRWCPF designated for lower Republican River basin between the Kansas/Nebraska border and Milford dam in all or parts of Clay, Cloud, Dickinson, Geary, Jewell, Mitchell, Republic, Riley, Smith and Washington counties;

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*Senate Agriculture Committee
1-24-07*

Attachment 1

iii. 1/3 of the RRWCPF designated (1) Projects needed to achieve or maintain compliance with the Republican River compact; (2) projects that achieve greatest water conservation efficiency for the general good; and (3) projects that have been required by the division of water resources.

Projects eligible for funding in the specified areas include: (1) Efficiency improvements to canals or laterals owned by an irrigation district or projects to improve the operational efficiency or management of such canals; (2) water use efficiency upgrades; (3) implementation of water conservation of irrigation and other types of water uses; (4) implementation of water management plans or actions; (5) water measurement flumes, meters, gauges, data collection platforms or related monitoring equipment; (6) artificial recharge, funding the water transition assistance program; the purchase of water rights for stream recovery or aquifer restoration and cost share for state or federal conservation programs that save water; (7) maintenance of the channel and the tributaries of the Republican river; (8) the purchase, lease, construction or other acquisition of existing or new storage space in reservoirs; (9) purchase, lease or other acquisition of a water right; and (10) monitoring and enforcement of Nebraska's and Colorado's compliance with the Republican river compact.

The director of the Kansas water office and the chief engineer of the Kansas department of agriculture, division of water resources are required to review and approve each proposed project for which moneys in the fund will be expended. In addition, SB89 requires any expenditures from the Republican River water conservation projects fund shall be made in accordance with appropriation acts approved by the Legislature.

I applaud the Committee for the introduction of SB 89 to establish the mechanism for the receipt and expenditure of Republican River Compact dollars. I will respond to questions at the appropriate time.

**Testimony on SB 89: Republican River Water Conservation Projects Fund
to
the Senate Agriculture Committee**

**By David L. Pope
Chief Engineer
Kansas Department of Agriculture's Division of Water Resources**

January 24, 2007

Mr. Chairman and members of the committee, I am David L. Pope, chief engineer of the Kansas Department of Agriculture's division of water resources. I am here in support of Senate Bill 89, which was drafted and introduced on the recommendation of the 2006 Special Committee on Agriculture and Natural Resources.

This bill is similar to legislation passed in 1996 to address the receipt and expenditure of money from Colorado for their violations of the Arkansas River Compact. As you know, we ultimately received damages from that litigation, and that statute has served us well.

SB 89 would establish a mechanism to direct where funds would be credited, should damages be recovered from a settlement, judgment or decree from the Republican River Compact litigation. Two-thirds would go to a new Republican River Water Conservation Projects Fund to be expended only for water management, conservation, administration and delivery projects in the Republican River basin, as defined in the bill. The Kansas Water Office would administer the Republican River Conservation Projects Fund, and each project would be approved by the chief engineer. One-third would go to the State Water Plan Fund for water conservation projects in any area of the state.

Section 2 of the bill subdivides the new Republican River Water Conservation Projects Fund so that the upper and lower basin each receives one-third of the money from this fund and another one-third is available to ensure funding for priority water projects, like making sure we have adequate resources to monitor and enforce the compact.

The lower Republican River basin has not received water it is entitled to and continues to suffer shortages, primarily due to excessive use upstream in Nebraska and Colorado. The upper Republican River basin also has important needs, but it is especially important that we ensure that Kansas continues to comply with the compact, as that area of Kansas is restricted by the compact. Under this proposal, each area would have a one-third share of the Republican River Water Conservation Projects Fund for its projects. The remaining one-third would fund other worthy water projects according to the priorities set forth in Section 3 of the bill. All projects would be of the type outlined in Section 2 (e).

*Senate Agriculture Committee
1-24-07
Attachment 2*

Our support of this bill should not be construed to mean that we will stop pursuing the water to which Kansas is entitled. We would prefer that all states – Kansas, Colorado and Nebraska – comply with the compact and settlement terms. However, it appears that Nebraska, and possibly Colorado, may not achieve compliance by the deadlines established in the final settlement stipulation. Therefore, it is appropriate that we prepare to receive damages that could be recovered as a result of any future enforcement action.

By passing this bill, you are sending a strong message that Kansas is serious about enforcing the Republican River Compact. It also serves an important purpose if damages are recovered in the future.

I would be happy to answer questions at the appropriate time. Thank you.

**Testimony to the
Committee on Agriculture
By the Clay County, Kansas Commission
Wednesday, January 24, 2007
SB 89**

Jerry Mayo

Esteemed members of the Committee on Agriculture:

It is my pleasure to appear before you today on behalf of the Clay County, Kansas Commission. We have been made aware of Senate Bill 89 outlining the mechanics of any monetary award to the State of Kansas from Nebraska in the Republican River water suit.

Clay County strongly favors this bill. It is a bill which appears to have much logic and forethought given and provides assistance to those areas of the state which have been severely affected by this water situation and also provides benefits to the remainder of the state.

For many years, Clay County has been impacted by dry season weather patterns and dramatically reduced water flow through our Republican River. The dry weather compounded the need for irrigation in the area which was hampered by the low stream flow in the river. Many rural residents have seen their once bountiful supply of fresh water for household usage become strained to the point of having to drill new wells to obtain water for personal use.

The City of Morganville in Clay County is a community of approximately 200 residents and growing. Its water needs are around 12 – 14 million gallons per year. The city owns 2 wells one with senior rights and the other a junior rights well. They are unable to pump only about 4 ½ million gallons per year from those wells. So they are forced to contract with local area farmers to obtain enough water for the town's needs. This is an arrangement which has worked to this point.

Our first proposed usage of these funds would be to ensure that all county residents, like those in Morganville and surrounding residents would have a source of water for their household use.

Another project would be to help local producers become more efficient with their current irrigation practices. It may be assisting them in converting from a flood type system to a more efficient pivot or drip type irrigation system. While this action is not intended to increase the number of acres under irrigation, it would be intended to conserve our water resources while still addressing the irrigation needs of our local farmers. Our intent would be to assist our local producers to be more efficient with our precious water resources.

The final project we would suggest these funds be utilized for is bank stabilization of the Republican River. We have several areas in our county where the course of the river

*Senate Agriculture Committee
1-24-07
Attachment 3*

has eroded the river banks. This produces much sediment that ends up in Milford Lake. This has the effect of eroding productive farmland and reducing the life span of Milford Lake. We would propose using a portion of this fund to stabilize banks along the Republican to ensure a proper river bed, protect our farmland and highway system, and extend the life of Milford Lake.

We would urge a positive action on this measure.

Thank you for your time and attention.

Sincerely,

Jerry F. Mayo, Chairman
Clay County Commission
P.O. Box 98
Clay Center, KS. 67432
785-632-2656 (business)
785-632-2552 (County Clerk's Office)

Economic Effects of Irrigation Clay County, Kansas

Acres under Irrigation, Clay County	18,781*
Value of Irrigated Cropland, North Central Kansas (2004), per acre	\$1,445*
Value of Non-Irrigated Cropland, North Central Kansas (2004), per acre	\$ 645*
Increased Value of Land due to irrigation, per acre	\$ 800
Increased value of Clay County land due to irrigation (total)	\$15,024,800

Average Clay County Corn Yield, bu. per acre, Non-Irrigated, 2000-05	77.5*
Average Clay County Corn Yield, bu. per acre, Irrigated, 2000-05	165.3*
Increase in yield due to irrigation, 2000-05, bu. per acre	87.8
Increase in gross income per acre due to irrigation, corn @ \$2.50/bu	\$219.50
Total increase in annual gross income, Clay County, using above assumptions	\$4,122,430

Unknown Factors

- Increase in property tax revenue to Clay County due to irrigation
- Clay County acres subject to Minimum Desirable Streamflow (MDS)
- Effect on yield from reductions in irrigation due to MDS restrictions
- Effect of other factors (soil type, etc.) on land values and yield differences between irrigated and non-irrigated land
- Increase in net income from irrigation

* Source – National/Kansas Agricultural Statistics Service

1998	490	410	490	550	560	590	830	800	590	577
1999	490	405	500	580	620	590	900	855	615	600
2000	530	435	525	605	610	640	920	850	650	625
2001	555	445	540	625	630	655	945	875	685	645
2002	550	460	550	640	660	685	990	920	690	665
2003	560	470	550	660	670	700	1,005	950	710	685
2004	580	490	590	690	690	725	1,045	985	750	715

1/ Data not available at the district level due to of budget constraints.

KANSAS NON-IRRIGATED CROPLAND VALUES PER ACRE BY AGRICULTURAL STATISTICS DISTRICTS										
YEAR	NW	WC	SW	NC	C	SC	NE	EC	SE	STATE
1976	296	271	316	342	426	507	458	430	391	385
1977	324	335	352	439	529	584	545	471	435	451
1978	343	328	345	439	520	623	619	538	496	473
1979	444	408	392	544	604	756	761	631	577	568
1980	551	484	483	638	691	862	860	771	697	669
1981	625	554	502	640	738	873	900	788	732	702
1982	592	560	545	691	706	916	1026	807	749	726
1983	612	529	485	643	748	831	941	761	699	688
1984	544	545	487	623	718	877	918	769	663	673
1985	426	429	437	490	599	687	732	593	559	544
1986 1/										460
1987 1/										415
1988 1/										462
1989	434	383	434	468	512	581	548	484	466	473
1990	448	409	428	462	545	617	607	514	491	501
1991	434	412	411	464	530	569	610	537	488	500
1992	418	411	405	522	550	574	608	571	466	513
1993	442	394	395	492	548	598	667	508	487	516
1994	480	426	445	581	539	610	708	569	524	563
1995	536	2/	458	602	2/	642	2/	2/	2/	595
1996	526	437	430	588	572	611	890	980	641	607
1997	530	440	430	590	580	630	900	960	700	615
1998	525	435	420	600	590	645	910	935	735	620
1999	525	440	420	610	610	650	920	940	730	625
2000	525	445	425	620	610	650	940	950	730	630
2001	545	445	425	620	615	660	950	960	725	635
2002	515	455	425	625	635	660	990	970	720	640
2003	515	455	425	630	635	665	990	975	720	645
2004	540	470	450	645	645	680	1,020	1,000	750	665

1/ Data not available at the district level due to of budget constraints.
 2/ Insufficient reports received to publish at a district level; included in state total.

KANSAS IRRIGATED CROPLAND VALUES PER ACRE
 BY AGRICULTURAL STATISTICS DISTRICTS

YEAR	NW	WC	SW	NC	C	SC	NE	EC	SE	STATE
1976	595	616	640	769	724	696	815	793	465	646
1977	667	727	710	926	943	825	981	915	657	739
1978	728	684	723	951	964	900	1,120	927	735	755
1979	809	839	795	1,129	1,108	1,057	1,410	1,081	870	858
1980	930	889	894	1,257	1,154	1,163	1,354	1,237	985	951
1981	1,051	976	939	1,227	1,252	1,201	1,629	1,267	1,056	1,011
1982	1,050	916	943	1,257	1,258	1,111	1,851	1,341	1,230	1,000
1983	977	885	870	1,244	1,232	1,112	1,600	1,229	1,022	943
1984	951	874	861	1,135	1,202	1,171	1,343	1,253	936	918
1985	721	657	780	947	918	913	1,096	884	826	784
1986 1/										692
1987 1/										613
1988 1/										692
1989	716	623	759	908	886	928	1,046	786	760	801
1990	780	690	783	909	922	925	1,193	852	737	833
1991	744	663	725	878	877	902	1,017	859	784	809
1992	747	690	747	1,008	957	863	1,215	891	694	792
1993	829	646	730	1,002	971	865	1,083	865	713	788
1994	889	702	753	1,229	910	938	1,317	979	722	825
1995	1,188	2/	772	1,005	2/	1,076	2/	2/	2/	920
1996	1,141	705	884	1,390	960	1,074	1,468	2/	1,194	966
1997	1,140	775	900	1,360	1,050	1,110	1,380	1,280	1,080	990
1998	1,090	820	930	1,340	1,140	1,130	1,400	1,300	1,100	1,010
1999	1,110	825	935	1,350	1,190	1,140	1,430	1,350	1,130	1,020
2000	1,120	830	960	1,365	1,205	1,160	1,445	1,370	1,130	1,040
2001	1,120	830	975	1,400	1,230	1,210	1,500	1,430	1,150	1,060
2002	1,120	830	975	1,430	1,260	1,300	1,595	1,600	1,160	1,080
2003	1,120	825	945	1,420	1,275	1,300	1,610	1,605	1,155	1,080
2004	1,145	840	985	1,445	1,290	1,320	1,625	1,620	1,175	1,110

1/ Data not available at the district level due to of budget constraints.
 2/ Insufficient reports received to publish at a district level; included in state total.

KANSAS ALL CROPLAND VALUES PER ACRE
 BY AGRICULTURAL STATISTICS DISTRICTS

YEAR	NW	WC	SW	NC	C	SC	NE	EC	SE	STATE
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United States Department of Agriculture
National Agricultural Statistics Service

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Kansas County Data - Crops									
Commodity ↑	Practice	Year	State	County	District	Planted All Purposes	Harvested	Yield	Production
Corn For Grain	Irrigated	1995	Kansas	Clay	40	9,300 acres	8,100 acres	132 bushel	1,070,000 bushel
Corn For Grain	Irrigated	1996	Kansas	Clay	40	10,300 acres	9,600 acres	159 bushel	1,529,000 bushel
Corn For Grain	Irrigated	1997	Kansas	Clay	40	9,900 acres	9,400 acres	168 bushel	1,582,000 bushel
Corn For Grain	Irrigated	1998	Kansas	Clay	40	8,000 acres	7,400 acres	165 bushel	1,222,000 bushel
Corn For Grain	Irrigated	1999	Kansas	Clay	40	8,500 acres	8,100 acres	164 bushel	1,329,000 bushel
Corn For Grain	Irrigated	2000	Kansas	Clay	40	7,500 acres	7,000 acres	144 bushel	1,005,000 bushel
Corn For Grain	Irrigated	2001	Kansas	Clay	40	11,100 acres	10,600 acres	170 bushel	1,803,000 bushel
Corn For Grain	Irrigated	2002	Kansas	Clay	40	8,700 acres	8,400 acres	159 bushel	1,334,000 bushel
Corn For Grain	Irrigated	2003	Kansas	Clay	40	8,400 acres	7,800 acres	156 bushel	1,215,000 bushel
Corn For Grain	Irrigated	2004	Kansas	Clay	40	11,600 acres	11,400 acres	193 bushel	2,198,000 bushel
Corn For Grain	Irrigated	2005	Kansas	Clay	40	12,500 acres	12,300 acres	170 bushel	2,095,000 bushel

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Kansas County Data - Crops									
Commodity ↑	Practice	Year	State	County	District	Planted All Purposes	Harvested	Yield	Production
Corn For Grain	Non Irrigated Total	1995	Kansas	Clay	40	2,800 acres	1,900 acres	81 bushel	153,000 bushel
Corn For Grain	Non Irrigated Total	1996	Kansas	Clay	40	4,100 acres	3,400 acres	90 bushel	307,000 bushel
Corn For Grain	Non Irrigated Total	1997	Kansas	Clay	40	3,600 acres	3,000 acres	91 bushel	274,000 bushel
Corn For Grain	Non Irrigated Total	1998	Kansas	Clay	40	6,900 acres	5,900 acres	116 bushel	683,000 bushel
Corn For Grain	Non Irrigated Total	1999	Kansas	Clay	40	8,300 acres	7,100 acres	113 bushel	805,000 bushel
Corn For Grain	Non Irrigated Total	2000	Kansas	Clay	40	12,900 acres	10,700 acres	75 bushel	801,000 bushel
Corn For Grain	Non Irrigated Total	2001	Kansas	Clay	40	9,900 acres	8,000 acres	78 bushel	620,000 bushel
Corn For Grain	Non Irrigated Total	2002	Kansas	Clay	40	11,500 acres	5,800 acres	30 bushel	175,000 bushel
Corn For Grain	Non Irrigated Total	2003	Kansas	Clay	40	6,500 acres	2,800 acres	45 bushel	125,000 bushel
Corn For Grain	Non Irrigated Total	2004	Kansas	Clay	40	4,600 acres	4,400 acres	123 bushel	542,000 bushel
Corn For Grain	Non Irrigated Total	2005	Kansas	Clay	40	7,600 acres	6,700 acres	114 bushel	761,000 bushel

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DECEMBER 2006

Stream Data	Total Miles – Major (100K Hydro GIS Layer)	1,061
	303d/TMDL Listed Streams (DEQ)	829

2006 Impaired Waters with TMDLs			
Stream Segment	Stream/Watershed/Lake with TMDL	Priority for TMDL Implementation	Impairments
26,27,28	Republican River Watershed	Medium	Bacteria
8,9,13,17,18	Republican River Watershed	Medium	Bacteria
19,20,22,23	Salt Creek Watershed	High	Bacteria, Dissolved Oxygen
29,37	Buffalo Creek Watershed	Low	Bacteria, Chloride
	Lake Jewell	Medium	Eutrophication, Dissolved Oxygen, Aquatic Plants
	Belleville City Lake	Low	Eutrophication
	Jamestown Wildlife Management Area	Low	Eutrophication, pH
	Jamestown Wildlife Management Area	Low	Siltation
	Jamestown Wildlife Management Area	Low	Bacteria

2006 Impaired Waters Needing TMDLs	
Impaired Stream/Lake	Impairment
Milford Lake	Eutrophication
Peats Creek	Copper
Middle Republican River	pH
Lower Republican River	Biological
Mulberry Creek	Zinc

Impairment definitions:

Bacteria: Bacteria indicators (either fecal coliform or *E. coli*) are found in the digestive systems of warm-blooded animals. In surface waters, bacteria are an indicator of potential disease causing organisms. Potential sources of bacteria contamination in surface waters include municipal wastewater, livestock, septic systems, pets, and wildlife.

Dissolved Oxygen: Oxygen available to aquatic life with the water column. State water quality standards require a stream or lake to have at 5mg/L of dissolved oxygen.

Chloride: Chloride is a naturally occurring mineral found Kansas lakes, streams, and groundwater. In high concentrations, chloride can cause deterioration of domestic plumbing, water heaters, and municipal water works.

Eutrophication: Excessive nutrients entering lake causing an increase in algae to nuisance conditions, impairing aquatic life, recreation, and water supply uses.

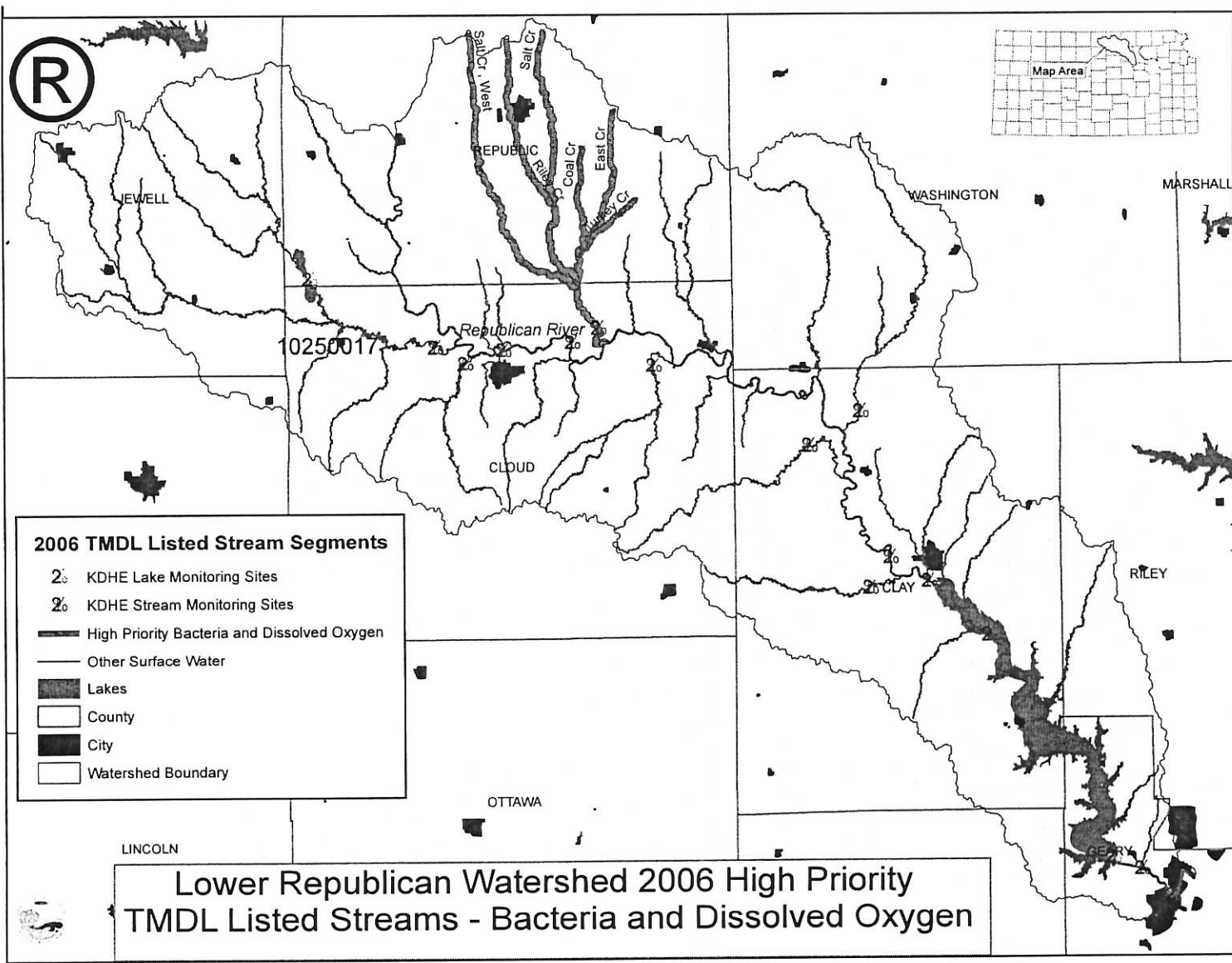
Aquatic Plants: Excessive macrophytes (aquatic plants) impairing recreation uses of lakes.

pH: Rises in alkalinity levels over pH 8.5 caused by excessive photosynthesis from algae.

Siltation: Excessive sediment entering lake causing loss of volume, increased turbidity, and decreased clarity. Siltation causes impairment of aquatic life, recreation, and water supply uses.

Copper, Zinc: Metals contained in sediments and runoff impairing aquatic life by toxic amounts in soft water.

Biological: Impairments caused by excessive nutrients/sediments, toxic ammonia or organic material present in the stream, decreasing the diversity of clean water biological organisms in the stream.

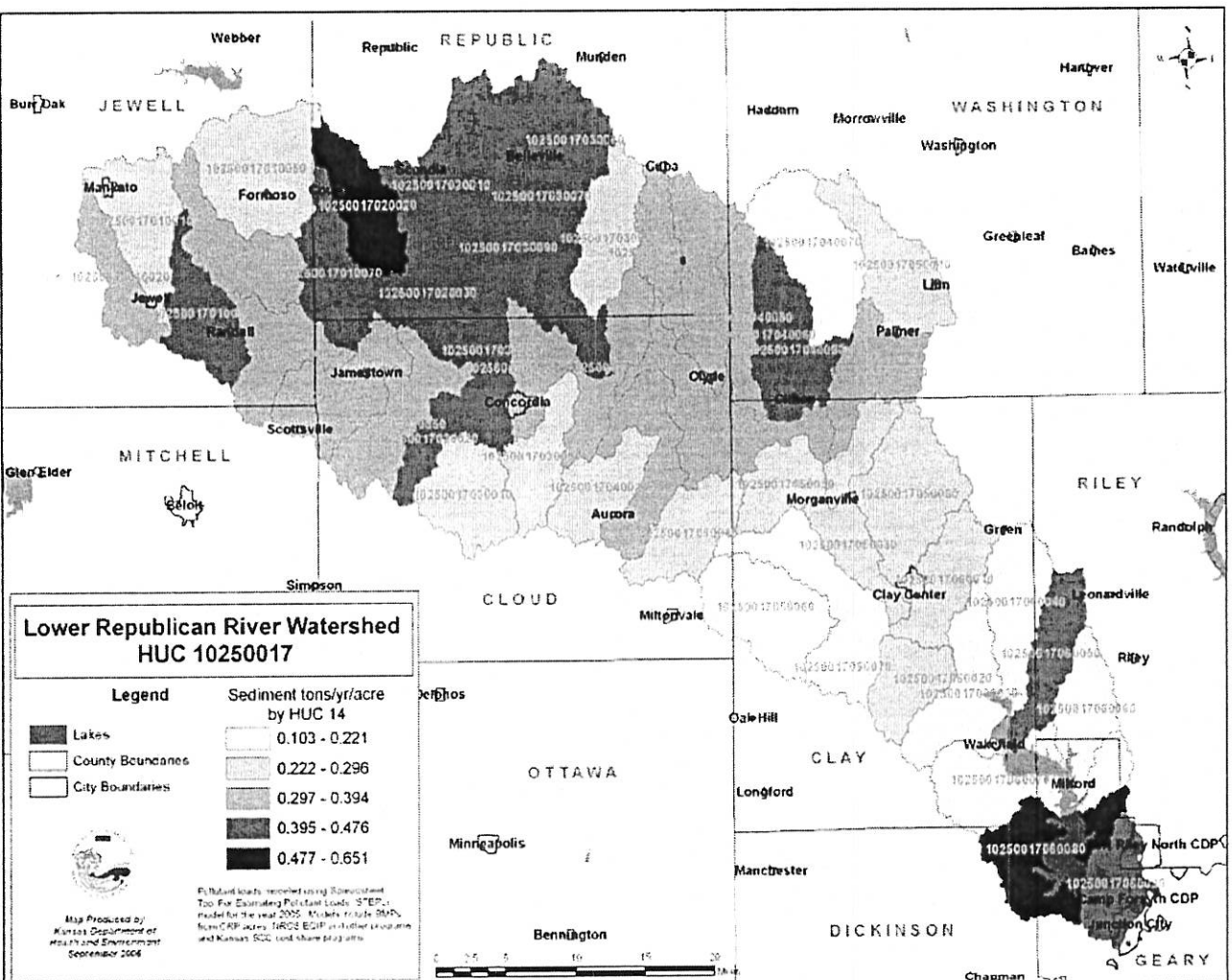




4.3.5 Modeled Pollutant Loads

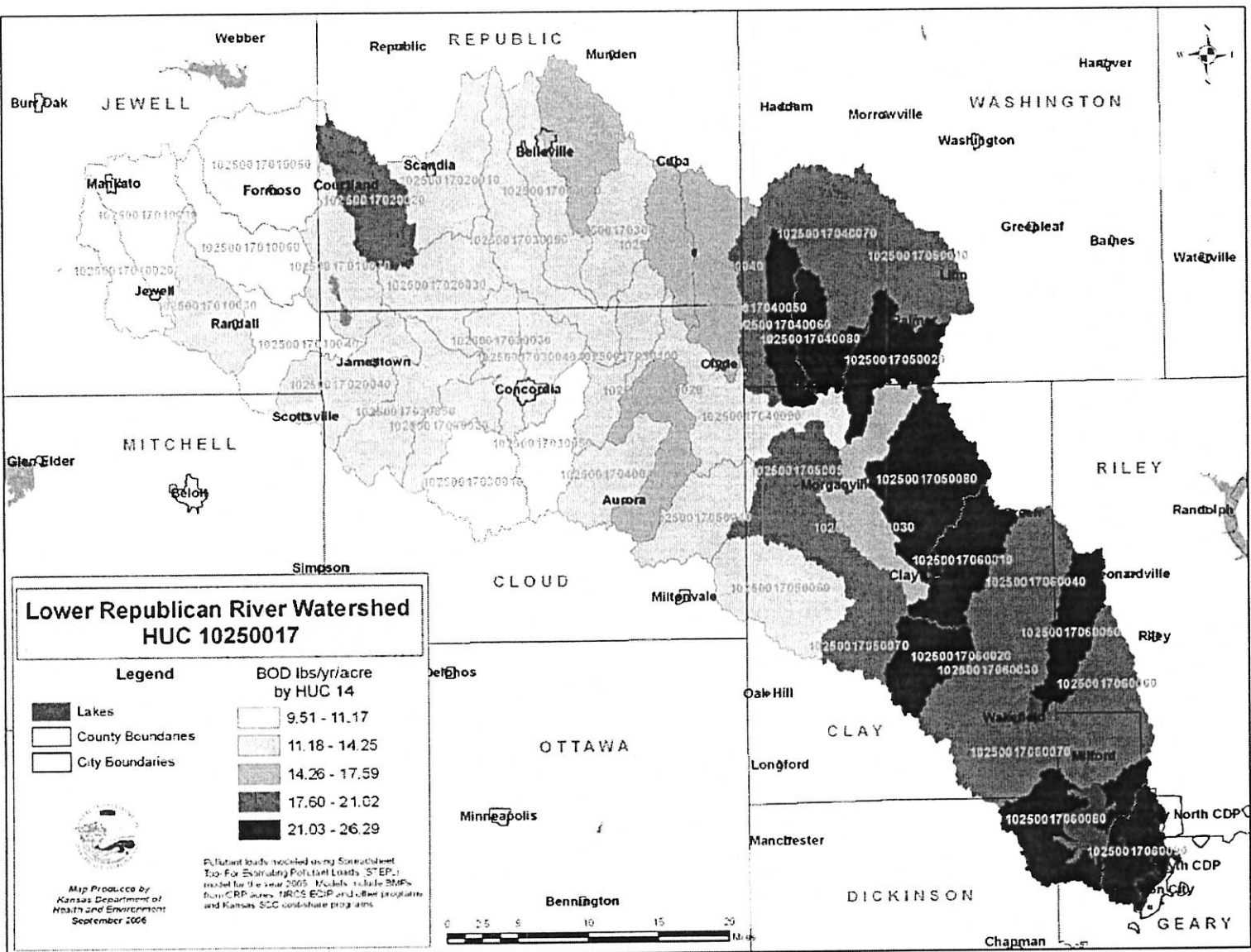
The following figures indicate pollutant loads (sediment, biological oxygen demand, nitrogen, and phosphorus) modeled using the Spreadsheet Tool for Estimating Pollutant Loads (STEPL) model for the year 2005. Models include best management practices for Conservation Reserve Program (CRP) acres, NRCS Environmental Quality Incentives Program (EQIP) and other program, and Kansas State Conservation Commission (SCC) cost-share programs.

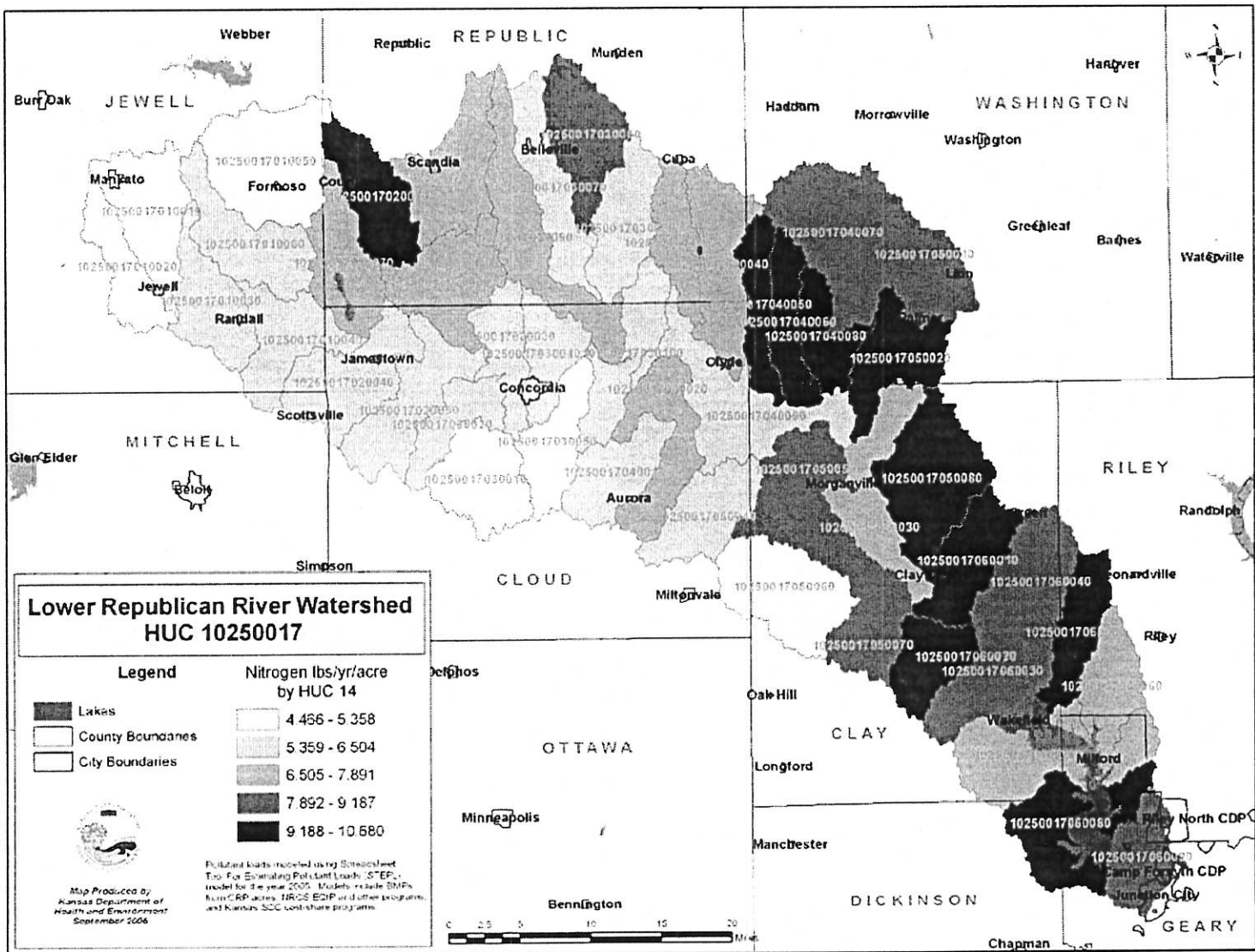
Sediment



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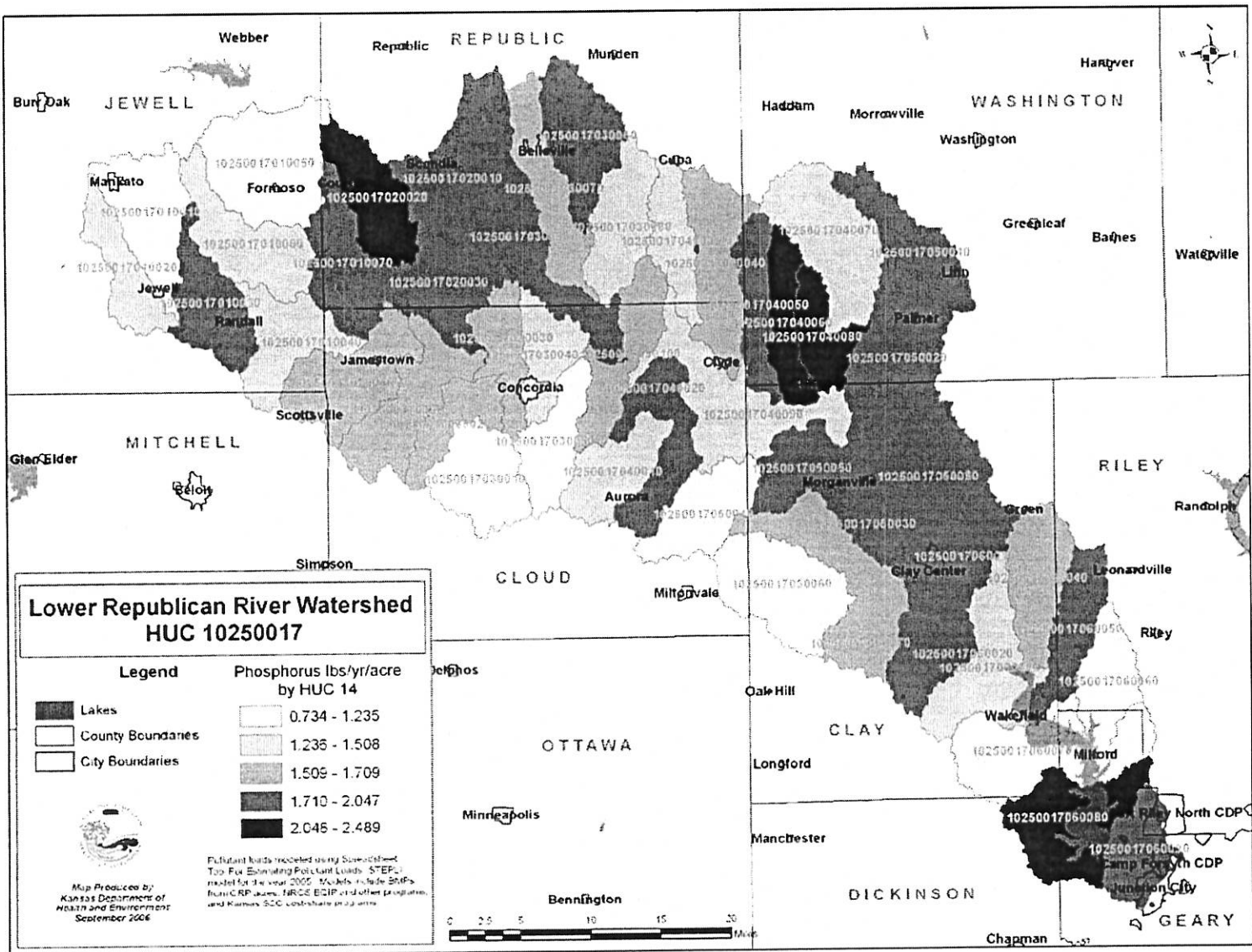
Biological Oxygen Demand (BOD)





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Phosphorus



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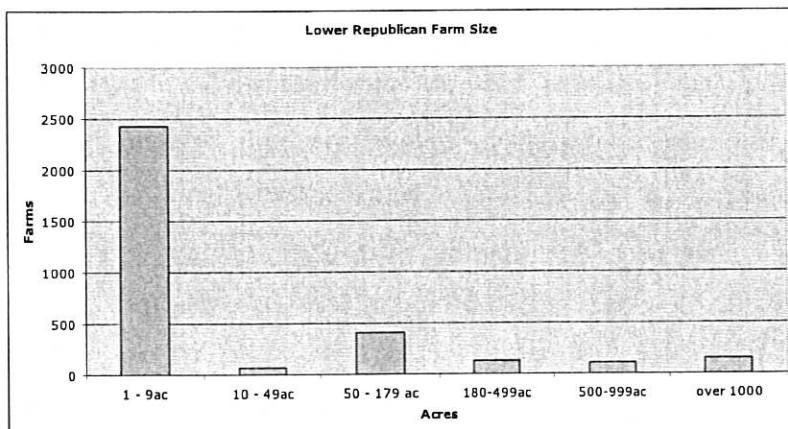


4.4 Threatened and Endangered Species Status ¹⁷

The Endangered Species Act provides protection to animals that are experiencing a decline in population, or nearing extinction. The table below lists species of concern and their federal and state designation(s).

LISTED THREATENED AND ENDANGERED SPECIES¹²			
Species Common Name (Scientific name)	Threatened (T), Endangered (E), Proposed (P), Candidate (C)	Designated Critical Habitat (Y)es/(N)o	Listing: Federal (F), State (S)
Animals, Vertebrates - Fishes			
Silver Chub (<i>Macrhybopsis storeriana</i>)	E	Y	S
Sturgeon Chub (<i>Macrhybopsis gelida</i>)	C/T	Y	F/S
Topeka Shiner (<i>Notropis topeka</i>)	E/T	Y	F/S
Animals, Vertebrate - Birds			
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	T/T	Y	F/S
Eskimo Curlew (<i>Numenius borealis</i>)	E/E	N	F/S
Least Tern (<i>Sterna antillarum</i>)	E/E	Y	F/S
Peregrine Falcon (<i>Falco peregrinus</i>)	E	N	S
Piping Plover (<i>Charadrius melodus</i>)	T/T	Y	F/S
Snowy Plover (<i>Charadrius alexandrinus</i>)	T	N	S
Whooping Crane (<i>Grus Americana</i>)	E/E	N	F/S
Animals, Vertebrate - Mammals			
Eastern Spotted Skunk (<i>Spilogale putorius interrupta</i>)	T	N	S
Animals, Invertebrate - Insects			
American Burying Beetle (<i>Nicrophorus americanus</i>)	E/E	N	F/S

5.0 Census and Social Data (2000)¹⁸



Number of Farms: 580
- Average Farm Size: 700

Number of Operators:
- Full-Time Operators: 400
- Part-Time Operators: 170

5.1 Estimated Level of Willingness and Ability to Participate in Conservation¹⁹

The Lower Republican Watershed exhibits a good likelihood of full participation in the first five years of practice application, with moderate adjustments in technical and financial assistance and conservation marketing; although management skills and a combination of educational assistance and technical assistance could be increased to improve the participation rate. On average, there are no concerns with the availability of technical assistance in the watershed. The existing information and education

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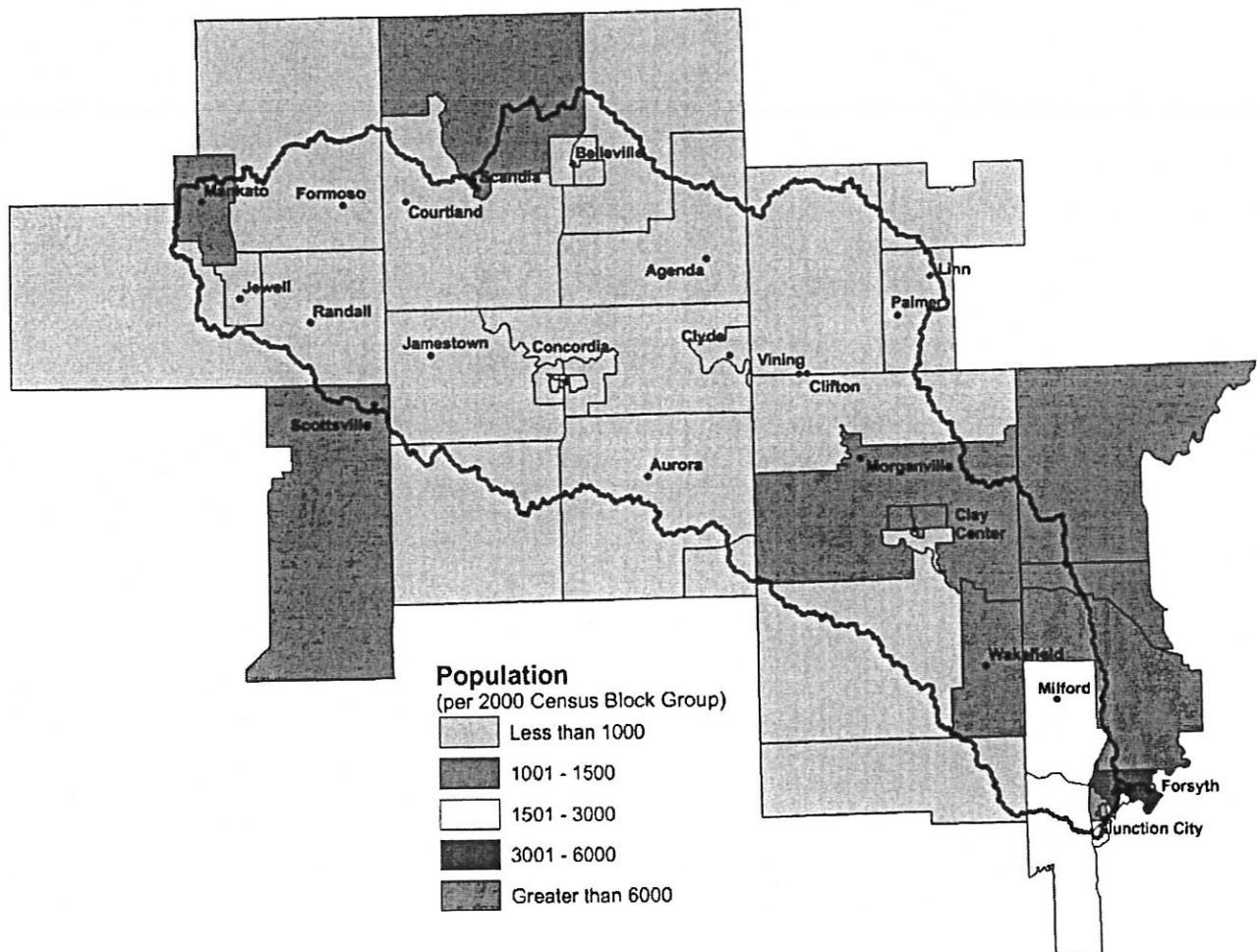
delivery system may need minor modifications to improve effectiveness. Existing financial incentives need major expansion or substantial increases to achieve successful participation rates in a reasonable amount of time.

5.2 Evaluation of Social Capital¹⁰

Social capital is defined as bonds of trust that arise between people interacting in everyday life. Local conservationists developed a summary of social capital for this sub-basin and concluded the following:

Collectively, communities in the Lower Republican sub-basin are reported to be effective at solving problems. Some small communities are very close knit and are willing to assist their neighbors by pooling their resources. Dry climatic conditions over the past decade have affected the community economic capital, which has led to a decreased state of social well-being, and thus less likely to address resource concerns.

5.3 Population Distribution Map (2000)



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6.0 Conservation Progress

Conservation on the land is defined by the progress made by local landowners and operators addressing resource issues. Progress is typically accomplished through private, local, state, and federal funds. This data is current through the date the RWA was published. For up-to-date NRCS Performance Results System (PRS) information, visit: <http://ias.sc.egov.usda.gov/prsreport2006/>.

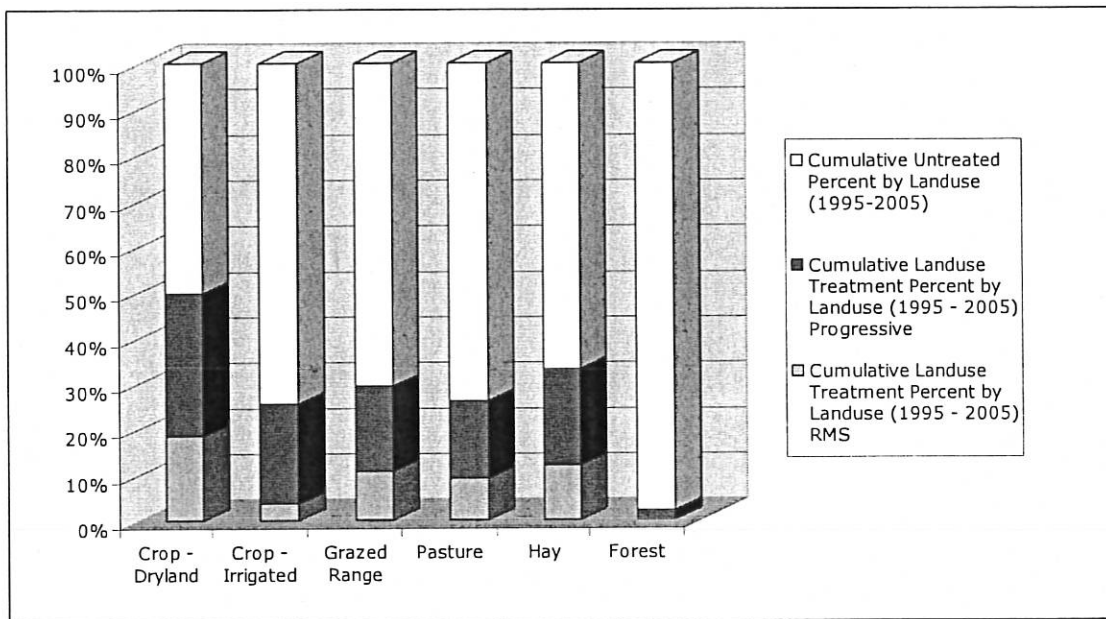
6.1 Reported Conservation Progress (2002 – 2006)

PRS Data	FY02	FY03	FY04	FY05	FY06	Avg/Year	Total
Total Conservation Systems Planned (ac)	38,024	33,735	N/A	35,518	37,319	36,149	144,596
Total Conservation Systems Applied (ac)	28,280	17,663	N/A	25,299	23,675	23,729	94,917
Conservation Treatment (Units/Acres)							
Brush Management (ac)			246	356	902	301	1,504
Comprehensive Nutrient Management Plan (no)	1	3			3	1	7
Conservation Crop Rotation (ac)			7,652	8,109	5,142	4,181	20,903
Contour Buffer Strips (ac)					36	7	36
Contour Farming (ac)			3,193	1,559	945	1,139	5,697
Cover Crop (ac)			1,062	1,102	759	585	2,923
Critical Area Planting (ac)			101	37	14	30	152
Diversion (ft)			6,232	926	4,279	2,287	11,437
Fence (ft)			383	8,154	11,051	3,918	19,588
Field Border (ft)					53,731	10,746	53,731
Filter Strip (ac)			54	16	97	33	167
Forage Harvest Management (ac)			291	307	58	131	656
Grassed Waterway (ac)			72	27	61	32	160
Irrigation System, Sprinkler (ac)			10	933	699	328	1,642
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (ft)			7,286	9,132	10,572	5,398	26,990
Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic (ft)			3,411	7,986		2,279	11,397
Irrigation Water Management (ac)	34		134	669	921	352	1,758
Nutrient Management (ac)			5,220	4,072	4,901	2,839	14,193
Pest Management (ac)	5,801	8,204	6,185	6,024	6,950	6,633	33,164
Pipeline (ft)			5,534	1,465	10,374	3,475	17,373
Pond (no)			9	5	4	4	18
Prescribed Burning (ac)			294	2,745	1,708	949	4,747
Prescribed Grazing (ac)	2,611	1,333	1,403	802	2,613	1,752	8,762
Range Planting (ac)			551	458	334	269	1,343
Residue Management, Mulch Till (ac)			228	281	546	211	1,055
Residue Management, No-Till/Strip Till (ac)			8,079	5,785	5,538	3,880	19,402
Residue Management, Seasonal (ac)			2,412	638	522	714	3,572
Restoration and Management of Declining Habitats(ac)			352	1,251	403	401	2,006
Riparian Forest Buffer (ac)			5	21	9	7	35
Streambank and Shoreline Protection (Feet)				2,740		548	2,740
Terrace (ft)			140,282	163,251	88,776	78,462	392,309
Tree/Shrub Establishment (ac)	3	3		7	1	3	14
Underground Outlet (ft)			5,906	1,494	260	1,532	7,660
Upland Wildlife Habitat Management (ac)	5,421	4,359	2,618	2,935	4,601	3,987	19,934
Use Exclusion (ac)			1,350	1,078	2,034	892	4,462
Waste Utilization (ac)					273	55	273
Watering Facility (no)			1		7	2	8
Windbreak/Shelterbelt Establishment (ft)			10,478	1,940		2,484	12,418

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6.2 Cumulative Conservation Status

Conservation plans developed and applied from 1995 to 2005 are projected in the following chart. Landuses displayed reflect the areas where resource concerns have been identified.



- Progress over the last 10 years has been focused on:
 - ~ Nutrient and pest management on cropland
 - ~ Confined Animal Feeding Operations
 - ~ Erosion control on cropland
- Much of the grazed range, pasture, hay land, and forest are untreated, creating an opportunity for assistance.

Note: Estimates are based on information received from local conservationists in the watershed.

6.3 Other Watershed Projects

Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects ^{/11}		NRCS Watershed Plans, Studies, and Assessments ^{/12}	
Name	Status	Name	Status
Dry Creek Watershed	Complete	None	
319 Projects - KDHE TMDL Plans ^{/6} Watershed Restoration and Protection Strategy Plans ^{/13}			
Milford Lake Watershed Watershed RAPS Development (Kansas State University)			
No-till Demonstration Project (Heartland Crop Residue Alliance)			
Nutrient and TSS Reduction in Surface Waters in North Central Kansas (Clay County Conservation District)			

6.4 Lands Removed from Production through Farm Bill Programs^{/14}

Conservation Reserve Program (CRP) ^a :	42,986 acres
Wetland Restoration Program (WRP):	None
Grassland Reserve Program (GRP):	None
Farm and Ranch Lands Protection Program (FRPP):	None

^a Data from 2006 Farm Service Agency, CRP information

7.0 Footnotes/Bibliography

All data is provided "as is." There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

1. Common Resource Area Map – Information available online at:
<http://efotg.nrcs.usda.gov/treemenuFS.aspx>. Select Section I, E. Maps, 2. Common Resource Area Maps (CRA).
2. Precipitation Map - United States Department of Agriculture, National Weather and Climate Service. Online reference information available at:
ftp://gateway1.ftw.nrcs.usda.gov/GatewayCatalogDetails/MetaData/PRCIPANN%5Cprecip_a_ks.txt.
3. National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Information available online at: <http://edcwww.cr.usgs.gov/programs/lccp/nationallandcover.html>.
4. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information:
<http://www.nrcs.usda.gov/technical/NRI/>.
5. Kansas stream flow data available from the Department of the Interior, U.S. Geological Survey online at: <http://waterdata.usgs.gov/ks/nwis/rt>.
6. Kansas Department of Health and Environment, Total Maximum Daily Loads (TMDL) Strategies, <http://www.kdheks.gov/tmdl/>.
7. U.S. Fish and Wildlife Service, Mountain-Prairie Endangered Species List, Kansas (January 2005) <http://www.mountain-prairie.fws.gov/endspp/CountyLists/KANSAS.htm>. The Kansas Department of Wildlife and Parks, Threatened and Endangered Species, http://www.kdwp.state.ks.us/news/other_services/threatened_and_endangered_species.
8. Data were taken from the 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available.
9. Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, Guide for Estimating Participation in Conservation, 2004. Four categories of indicators were evaluated: Personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.
10. Social capital is an indicator of the community's ability and willingness to work together to solve problems. A high amount of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. A low amount of social capital typically results in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation is based on NRCS Technical Report Release 4.1, March, 2002: Adding up Social Capital: an Investment in Communities. Local conservationists provided information to measure social capital.



Footnotes/Bibliography Continued

All data is provided "as is." There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

11. Natural Resources Conservation Service (NRCS), Watershed Projects Planned and Authorized, <http://www.nrcs.usda.gov/programs/watershed/Purpose>. Natural Resources Conservation Service, Kansas online information at: <http://www.ks.nrcs.usda.gov/programs/pl566/>.
12. NRCS, Watershed Plans, Studies, and Assessments completed, http://www.nrcs.usda.gov/programs/watershed/Surveys_Plnng.html#Watershed%20Surveys%20and%20Plan.
13. Kansas Department of Health and Environment, Bureau of Water, Watershed Management Section, <http://www.kdheks.gov/nps/wraps/index.htm>.
14. NRCS, Kansas, Program Information is located at: <http://www.ks.nrcs.usda.gov/programs/>.

7.1 Additional On-line Resources

1. US Environmental Protection Agency (EPA), EnviroMapper for Water, http://map8.epa.gov/scripts/esrimap.dll?name=NHDMapper&Cmd=ZoomInByCat&qc=3&th=6&lc=00010200000110_0000&fipsCode=10250017.
2. US EPA Surf Your Watershed at: http://cfpub.epa.gov/surf/huc.cfm?huc_code=10250017.

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Assessment

Introduction

This assessment matrix has been developed to provide an estimate of conservation systems which may be needed to address resource concerns identified in the RWA Resource Profile. This can also be described as likely future conditions within the watershed.

Conservation Systems have been described in this assessment as systems of conservation practices developed to address resource concerns on various landuses. Systems include benchmark and resource management systems. Benchmark (BM) systems are best described as land units that have had no treatment or one or more resource concerns treated with conservation practices. Resource management systems (RMS) are described as land units which have all known resource concerns treated with conservation practices. The level of treatment to an individual resource concern is credited when the practice(s) used meet or exceed a predetermined level of treatment, known as quality criteria.

Only priority resource concerns have been described in this RWA. These concerns were identified by local resource professionals. Other resource concerns likely exist within the watershed but only make up a small percentage of what needs to be treated. Further investigation and analysis will need to be completed in order to better define all resource concerns.

Resource professionals provided an estimate by percent of conservation systems that will likely be applied to BM systems and untreated land units to address resource concerns identified in the resource profile. These systems are not meant to be comprehensive or address all resource concerns for each land unit in the watershed. Rather only the typical system of conservation practices that could be applied. Numerous alternatives and combinations of practices exist that should be made available to landowners and producers in order to meet their desired level of treatment.

Federal programs identified to implement conservation systems include, but are not limited to; Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentive Program (WHIP), and WRP. Other funding available for implementation includes various private, local, and state program funds.

This assessment provides estimates only which have been developed using local conservationists and work groups to identify resource concerns, participation rates, and conservation systems likely to be applied. This information was merged with state average cost lists and estimated operation and maintenance costs to generate a cost estimate by individual practice for each conservation system projected to be applied.

Further investigation and analysis within the watershed is required to identify all resource concerns and locations of conservation practices and systems needed to address resource concerns.



United States Department of Agriculture
Natural Resources Conservation Service

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1.0 Cropland

1.1 Dryland

		Cultivated / Non-Cultivated*	Dryland	Irrigated	Total					
1.1.1 Current Conditions										
Total Cropland		750,000	745,900	4,100	750,000	Acres				
Cropland Needing Treatment		440,000	447,540	2,460	450,000	Acres				
Cropland Currently at RMS Level**		150,000	149,180	205	149,385	Acres				
Cropland Currently at Progressive Level***		225,000	223,770	820	224,590	Acres				
Cropland Currently at Untreated Level		375,000	372,950	3,075	376,025	Acres				
Typical Cropland-Dryland Management Unit		80								
<i>* Non-cultivated cropland is cropland that has been planted to a perennial crop such as alfalfa.</i>										
<i>** RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.</i>										
<i>*** Progressive level defines a management unit that does not have all resource concerns treated to the RMS level.</i>										
<i>Note: For this analysis, all untreated units and progressive systems will be treated to RMS level.</i>										
Current Conditions for Cropland - Dryland										
Management Systems		Quantity		Costs		Effects				Note: Effects are numerical values placed on benchmark conditions and degree of change in condition by conservation system(s) application. Scale range from -5 (most damaging to resources) to +5 (least damaging, best protection offered by treatment).
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Soil Condition	Water Quality, Surface	Human Economics	
BM1		Ac.	372,950			-3	-1	-3	-2	
	Conservation Cropping Rotation	Ac.	372,950							
	Residue Management	Ac.	372,950							
BM2			223,770			0	-1	-2	-1	
	Conservation Cropping Rotation	Ac.	223,770							
	Residue Management	Ac.	223,770							
	Terrace	Ac.	67,131							
RMS		Ac.	149,180			+1	0	0	+1	
	Conservation Cropping Rotation	Ac.	149,180							
	Terrace	Ac.	44,754							
	Conservation Tillage	Ac.	149,180							
	Nutrient Management	Ac.	149,180							
	Pest Management	Ac.	149,180							
Desired/Estimated Participation Rates										
	Proposed Practice Change	Rate	Acres							
	Cropland-Dryland Conservation System	66%	295,376					Estimates: 16,600 Acres needing terraces		
	Cropland-Irrigation Conservation System	66%	1,624					440,000 Acres needing treatment		
		Total	297,000					144,624 Acres are not expected to be treated		

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1.1.2 Future Conditions		Total	BM1	BM2	RMS1	RMS2	RMS3			
Crop - Dryland		745,900	120,537	180,806	385,481	14,769	44,306			
Future Conditions for Cropland - Dryland										
Management Systems		Quantity		Costs		Effects				Implementation
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Soil Condition	Water Quality, Surface	Human Economics	EQUIP
BM1		Ac.	120,537			-3	-1	-3	-2	
	Conservation Cropping Rotation	Ac.	120,537		\$72,322					
	Residue Management	Ac.	120,537		\$2,652					
BM2		Ac.	180,806			0	-1	-2	-1	
	Conservation Cropping Rotation	Ac.	180,806		\$108,484					
	Residue Management	Ac.	180,806		\$3,978					
	Terrace	Ac.	54,242		\$6,443,932					
RMS1		Ac.	236,301			+1	+1	+1	+1	
	Conservation Cropping Rotation	Ac.	236,301	\$1,417,807	\$141,781					X
	Grassed Waterway	Ac.	2,640	\$2,640,000	\$79,200					X
	Terrace	LF	6,969,600	\$6,272,640	\$156,816					X
	Conservation Tillage	Ac.	236,301	\$2,126,710	\$212,671					X
	Terrace Restoration	LF	20,064,000	\$18,057,600	\$451,440					X
	Filter Strip	Ac.	11,815	\$708,903	\$3,545					X
	Nutrient Management	Ac.	236,301	\$1,890,409	\$189,041					X
	Pest Management	Ac.	236,301	\$1,417,807	\$141,781					X
RMS2		Ac.	14,769			+4	+4	+4	+3	
	Conservation Cover	Ac.	14,769	\$221,532,300	\$2,215,323					X
	Native Grass Seeding	Ac.	14,769	\$738,441	\$3,692					X
RMS3		Ac.	193,486			+3	+2	+2	+2	
	Conservation Cropping Rotation	Ac.	193,486	\$1,160,919	\$116,092					X
	Residue Management	Ac.	193,486	\$212,835	\$4,257					X
	Nutrient Management	Ac.	193,486	\$1,547,892	\$154,789					X
	Pest Management	Ac.	193,486	\$1,160,919	\$116,092					X
	Terrace Restoration	Ft.	3,762,000	\$3,385,800	\$84,645					X
	Filter Strip	Ac.	9,674	\$580,459	\$2,902					X
	Terrace	Ft.	1,306,800	\$1,176,120	\$29,403					X
	Grassed Waterway	Ac.	495	\$495,000	\$14,850					X
Total RMS Costs				\$266,027,561	\$10,734,836					

1.1.3 Potential RMS Effects Summary for Cropland - Dryland

Cost Items and Programs	Costs	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		\$2,591,496
Operator Investment (25% Cost Share)	\$66,506,890	
Federal Costs (75% Cost Share)	\$199,520,670	
Total RMS Costs	\$266,027,561	\$10,734,836
Estimated Level of Participation	66%	
Total acres projected to be in RMS System	444,556	
Total Annual Crop Production Benefit	\$2,767,624	
Beneficial Effects of Proposed RMS System		
Decreases Soil Erosion		
Improves soil condition		
Reduces Transport of Pollutants and Sediment		
Potentially improves economic gains		

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1.0 Cropland

1.2 Irrigated

1.2.1 Current Conditions	Cultivated / Non-Cultivated*	Dryland	Irrigated	Total	
Total Cropland	750,000	745,900	4,100	750,000	Acres
Cropland Needing Treatment	440,000	447,540	2,460	450,000	Acres
Cropland Currently at RMS Level**	120,000	119,344	205	119,549	Acres
Cropland Currently at Progressive Level***	202,500	201,393	820	202,213	Acres
Cropland Currently at Untreated Level	427,500	425,163	3,075	428,238	Acres
Typical Cropland-Dryland Management Unit	80				

* Non-cultivated cropland is cropland that has been planted to a perennial crop such as alfalfa.
 ** RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.
 *** Progressive level defines a management unit that does not have all resource concerns treated to the RMS level.
 Note: For this analysis, all Untreated units and progressive systems will be treated to RMS level.

Current Conditions for Cropland - Irrigated									
Management Systems		Quantity		Costs		Effects			
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Soil Condition	Water Quality, Surface	Human Economics
BM1		Ac.	3,075			-3	-1	-3	-2
	Conservation Cropping Rotation	Ac.	3,075						
	Conventional Tillage	Ac.	3,075						
BM2		Ac.	820			0	-1	0	-1
	Conservation Cropping Rotation	Ac.	820						
	Residue Management	Ac.	820						
	Irrigation Water Management	Ac.	820						
RMS1		Ac.	205			+2	0	+1	+1
	Conservation Cropping Rotation	Ac.	205						
	Conservation Tillage	Ac.	205						
	Nutrient Management	Ac.	205						
	Pest Management	Ac.	205						
	Irrigation Water Management	Ac.	205						

Note: Effects are numerical values placed on benchmark conditions and degree of change in condition by conservation system(s) application. Scale range from -5 (most damaging to resources) to +5 (least damaging, best protection offered by treatment).

Desired/Estimated Participation Rates				Estimates:	
Proposed Practice Change	Rate	Acres			
Cropland-Dryland Conservation System	66%	295,376		2,460 Acres needing treatment	
Cropland-Irrigation Conservation System	66%	1,624			
Total		297,000		836 Acres are not expected to be treated	

1.2.2 Future Conditions	Total	BM1	BM2	RMS1	RMS3	RMS4
Crop - Irrigated	4,100	991	1,486	731	568	325

Future Conditions for Cropland - Irrigated									
Management Systems		Quantity		Costs		Effects			
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Soil Condition	Water Quality, Surface	Human Economics
BM1		Ac.	991			-3	-1	-3	-2
	Conservation Cropping Rotation	Ac.	991		\$594				
	Residue Management	Ac.	991		\$22				
BM2		Ac.	1,486			0	-1	0	-1
	Conservation Cropping Rotation	Ac.	1,486		\$892				
	Residue Management	Ac.	1,486		\$33				
	Irrigation Water Management	Ac.	1,486		\$1,634				
RMS1		Ac.	936			+2	0	+1	+1
	Conservation Cropping Rotation	Ac.	936	\$5,614	\$561				
	Residue Management	Ac.	936	\$1,029	\$21				
	Nutrient Management	Ac.	936	\$7,485	\$748				
	Pest Management	Ac.	936	\$5,614	\$561				
	Irrigation Water Management	Ac.	936	\$10,292	\$1,029				
RMS3		Ac.	568			+3	+2	+2	+2
	Conservation Cropping Rotation	Ac.	568	\$3,410	\$341				
	Conservation Tillage	Ac.	568	\$5,114	\$511				
	Nutrient Management	Ac.	568	\$4,546	\$455				
	Pest Management	Ac.	568	\$3,410	\$341				
RMS4		Ac.	325			+2	+1	+1	+1
	Conservation Cropping Rotation	Ac.	325	\$1,948	\$195				
	Conservation Tillage	Ac.	325	\$2,922	\$292				
	Irrigation Water Management	Ft.	325	\$3,572	\$357				
	Irrigation System, Sprinkler (conversion)	Ft.	325	\$18,509,040	\$92,545				
Total RMS Costs				\$18,563,996	\$101,133				

1.2.3 Potential RMS Effects Summary for Cropland - Irrigated		
Cost Items and Programs	Costs	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		\$5,413
Operator Investment (25% Cost Share)	\$4,640,999	
Federal Costs (75% Cost Share)	\$13,922,997	
Total RMS Costs	\$18,563,996	\$101,133
Estimated Level of Participation	66%	
Total acres projected to be in RMS System	1,624	
Total Annual Crop Production Benefit	\$186,651	

Beneficial Effects of Proposed RMS System

- Improves soil condition
- Increases soil organic matter
- Improves water quality by reducing erosion and sediment delivery to streams
- Decreases aquifer overdraft

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2.0 Grazed Range

2.1 Native Grassland

2.1.1 Current Conditions	Grazed	Ungrazed	Total	
Total Grazed Range	400,000	0	400,000	Acres
Grazed Range Needing Treatment	280,000	0	280,000	
Total Range with Brush Invasion	160,000	0	160,000	Acres
Typical Range Management Unit	160			

* RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.
 ** Progressive level defines a management unit that does not have all resource concerns treated to the RMS level.
 Note: For this analysis, all untreated units and progressive systems will be treated to RMS level.

Current Conditions for Grazed Range

Grazed Range		Quantity		Costs		Effects				Note: Effects are numerical values placed on benchmark conditions and degree of change in condition by conservation system(s) application. Scale range from -5 (most damaging to resources) to +5 (least damaging, best protection offered by treatment).
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Plant Condition	Animal: Domestic	Human Economics	
BM1		Ac.	280,000			-3	-3	-1	-2	
	Pond	No.	438							
	Watering Facility	No.	1,750							
	Fence	Mi.	3,500							
BM2		Ac.	120,000			+1	+1	+1	+1	
	Prescribed Grazing	Ac.	120,000							
	Pond	No.	188							
	Watering Facility	No.	750							
	Pipeline	Ft.	150,000							
	Fence	Mi.	1,500							

Desired/Estimated Participation Rates

Proposed Practice Change	Rate	Acres
Grazing System	66%	184,800
Brush Management	66%	105,600
Prescribed Burning	66%	184,800

2.1.2 Future Conditions	Total	BM1	BM2	RMS
Grazed Range	400,000	95,200	120,000	184,800

Future Conditions for Grazed Range

Grazed Range and Forestlands		Quantity		Costs		Effects				Implementation			
	Practices	Unit	Quantity	Investment Cost	Annual O&M Cost	Soil Erosion	Plant Condition	Animal: Domestic	Human Economics	EQUIP	WHIP	WRP	Other
BM1		Ac.	95,200			-3	-3	-1	-2				
	Pond	No.	149		\$17,850								
	Watering Facility	No.	595		\$27,370								
	Fence	Mi.	1,190		\$251,328								
BM2		Ac.	120,000			+1	+1	+1	+1				
	Prescribed Grazing	Ac.	120,000		\$118,800								
	Pond	No.	188		\$22,500								
	Watering Facility	No.	750		\$34,500								
	Pipeline	Ft.	1,950,000		\$35,100								
	Fence	Mi.	1,500		\$316,800								
RMS		Ac.	184,800			+3	+3	+3	+2				
	Prescribed Grazing	Ac.	184,800	\$554,400	\$182,952					X			
	Fence	LF	310,200	\$620,400	\$12,408					X			X
	Brush Management	Ac.	105,600	\$5,280,000	\$158,400					X	X		
	Prescribed Burning	Ac.	184,800	\$369,600	\$370					X	X		
	Pond	No.	858	\$10,296,000	\$102,960					X	X		X
	Watering Facility	No.	264	\$607,200	\$12,144					X			X
	Pipeline	Ft.	290,400	\$522,720	\$5,227					X			X
	Spring Development	No.	79	\$198,000	\$3,960					X			X
	Pest Management	Ac.	73,920	\$443,520	\$44,352					X	X		X
	Streambank & Shoreline Protection	Ft.	204,600	\$12,276,000	\$245,520					X			X
Total RMS Costs				\$31,167,840	\$1,592,541								

2.1.3 Potential RMS Effects Summary for Grazed Range

Cost Items and Programs	Costs	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		\$227,674
Operator Investment (25% Cost Share)	\$7,791,960	
Federal Costs (75% Cost Share)	\$23,375,880	
Total RMS Costs	\$31,167,840	\$1,592,541
Estimated Level of Participation	66%	
Total acres projected to be in RMS System	184,800	
Total Annual Grazing Production Benefits	\$327,604	
Beneficial Effects of Proposed RMS System		
Reduces Soil Erosion		
Improves plant condition, health and vigor		
Increases Available Stockwater Supply		
Potentially improves economic gains		



3.0 Pasture/Hay Land

3.1 Non-irrigated Pasture/Hay Land

3.1.1 Current Conditions	Grazed	Ungrazed	Total	
Total Pasture/Hay Land	25,000	0	25,000	Acres
Pasture/Hay Land Needing Treatment	19,000	0	19,000	Acres
Typical Pasture/Hay Land Management Unit	80			

* RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.

** Progressive level defines a management unit that does not have all resource concerns treated to the RMS level.

Note: For this analysis, all untreated units and progressive systems will be treated to RMS level.

Current Conditions for Non-irrigated Pasture/Hayland						
Pasture	Quantity		Costs		Effects	Note: Effects are numerical values placed on benchmark conditions and degree of change in condition by conservation system(s) application. Scale range from -5 (most damaging to resources) to +5 (least damaging, best protection offered by treatment).
	Unit	Quantity	Investment Cost	Annual O&M Cost	Plant Condition	
BM1	Ac.	19,000			-3	
Pond	No.	119				
Watering Facility	No.	119				
Pipeline	Ft.	23,750				
Fence	Mi.	356				
BM2	Ac.	6,000			+1	
Prescribed Grazing	Ac.	6,000				
Pond	No.	9				
Watering Facility	No.	66				
Pipeline	Ft.	13,125				
Fence	Mi.	113				

Desired/Estimated Participation Rates			
Proposed Practice Change	Rate	Acres	
Pasture/Hay Land System	66%	12,540	

3.1.2 Future Conditions	Total	BM1	BM2	RMS
Pasture/Hay Land	25,000	6,460	6,000	12,540

Future Conditions for Non-irrigated Pasture/Hay Land						
Pasture/Hay Land	Quantity		Costs		Effects	Implementation
	Unit	Quantity	Investment Cost	Annual O&M Cost	Plant Condition	EQUIP WHIP WRP Other
BM1	Ac.	6,460			-3	
Pond	No.	10		\$1,211		
Water Facility	No.	30		\$3,634		
Fence	Mi.	81		\$17,054		
BM2	Ac.	6,000			+1	
Prescribed Grazing	Ac.	6,000		\$5,940		
Pond	No.	9		\$1,125		
Water Facility	No.	28		\$3,375		
Pipeline	Ft.	73,125		\$1,316		
Fence	Mi.	75		\$15,840		
RMS	Ac.	12,540			+3	
Prescribed Grazing	Ac.	12,540	\$37,620	\$12,415		X
Nutrient Management	Ac.	12,540	\$100,320	\$10,032		X
Pest Management	Ac.	12,540	\$75,240	\$7,524		X
Water Facility	No.	157	\$940,500	\$18,810		X
Pipeline	Ft.	172,425	\$310,365	\$3,104		X
Total RMS Costs			\$1,464,045	\$101,380		

3.1.3 Potential RMS Effects Summary for Non-irrigated Pasture/Hay Land		
Cost Items and Programs	Costs	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		\$29,971
Operator Investment (25% Cost Share)	\$366,011	
Federal Costs (75% Cost Share)	\$1,098,034	
Total RMS Costs	\$1,464,045	\$101,380
Estimated Level of Participation	66%	
Total acres projected to be in RMS System	12,540	
Total Annual Forage Production Benefits	\$15,654	
Beneficial Effects of Proposed RMS System		
Improves plant condition, health and vigor		



4.0 Wildlife

4.1 Wildlife - Private

4.1.1 Current Conditions	Wildlife	Private	Public	Total	
Total Wildlife	10,000	8,000	2,000	10,000	Acres
Wildlife Needing Treatment	7,500	6,000	1,500	7,500	Acres
Wildlife Currently at RMS Level**	100	80	20	100	Acres
Wildlife Currently at Progressive Level***	200	160	40	200	Acres
Wildlife Currently at Untreated Level	9,700	7,760	1,940	9,700	Acres

* RMS level is a level of treatment that meets or exceeds NRCS quality criteria as defined in the electronic Field Office Technical Guide.

** Progressive level defines a management unit that does not have all resource concerns treated to the RMS level.

Note: For this analysis, identified treatment units will be treated to RMS level at the expected adoption rate.

Current Conditions for Wildlife - Private

Management Systems	Quantity	Costs	Effects	Note:
	Unit	Investment Cost	Annual O&M Cost	Animal: Fish and Wildlife
Practices	Quantity			
BM	Ac.	7,760		-4
No Treatment	Ac.	7,760		
RMS	Ac.	240		+3
Upland Wildlife Habitat Management	Ac.	240		

Desired/Estimated Participation Rates

Proposed Practice Change	Rate	Acres
Conservation System Wildlife - Private	66%	3,960
Conservation System Wildlife - Public	0%	0
Total		3,960

4.1.2 Future Conditions	Total	BM	RMS
Conservation Systems Wildlife - Private (Ac.)	8,000	3,800	4,200

Future Conditions for Wildlife - Private

Management Systems	Quantity	Costs	Effects	Implementation
	Unit	Investment Cost	Annual O&M Cost	Animal: Fish and Wildlife
Practices	Quantity			
BM1	Ac.	3,800		-4
No Treatment	Ac.	3,800	\$950	
RMS1	Ac.	4,200		+3
Upland Wildlife Habitat Management	Ac.	4,200	\$378,000	\$4,725
Restoration & Management of Declining Habitats	Ac.	1,050	\$115,500	\$1,155
Prescribed Burning	Ac.	4,200	\$8,400	\$8
Wildlife Watering Facility	Ac.	105	\$42,000	\$109
Total RMS Costs		\$543,900	\$6,948	

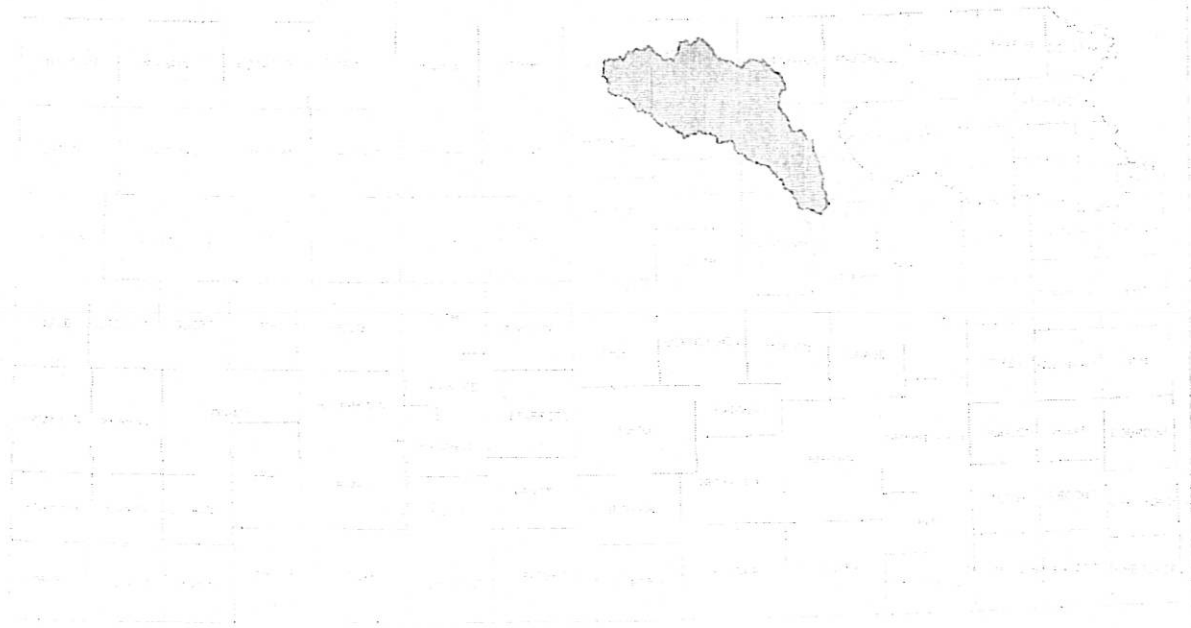
4.1.3 Potential RMS Effects Summary for Wildlife - Private

Cost Items and Programs	Costs	O&M Costs
Potential Farm Bill Programs		
Annual Management Incentives (3 yrs - Incentive Payments)		\$0
Operator Investment (25% Cost Share)	\$135,975	
Federal Costs (75% Cost Share)	\$407,925	
Total RMS Costs	\$543,900	\$6,948
Estimated Level of Participation	66%	
Total acres projected to be in RMS System	4,200	
Total Annual Wildlife Production Benefit	\$5,508	
Beneficial Effects of Proposed RMS System		
Improves Wildlife Stand Health and Plant Condition		

KANSAS

Rapid Watershed Assessment

Lower Republican Watershed **Hydrologic Unit Code – 10250017**



December 2006

Produced by:

**United States Department of Agriculture
Natural Resources Conservation Service
760 South Broadway
Salina, Kansas 67401**

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Resource Profile

1.0 Purpose

This rapid watershed assessment (RWA) organizes resource information into one document that local conservationists, units of government, and others can use to identify existing resource conditions and conservation opportunities. This will enable the user to direct technical and financial resources to the local needs in the watershed. This RWA provides a brief description of the Lower Republican sub-basins' natural resources, resource concerns, conservation needs, and ability to resolve natural resource issues and concerns.

2.0 Introduction

The Lower Republican 8-Digit Hydrologic Unit Code (HUC) sub-basin is comprised of 1,265,443 acres in north central Kansas and includes the counties of Jewell, Republic, Washington, Mitchell, Cloud, Clay, Riley, Dickinson, and Geary. According to the National Land Cover Data (NLCD), approximately 50 percent of the sub-basin is in grain and row crop; 42 percent is in grassland, pasture, and hay; and the rest is made up of other various land uses. This sub-basin is located in the Lower Republican watershed basin and drains into Milford Reservoir as it flows from northwest to southeast.

Relief Map



Resource concerns are numerous in the sub-basin. They include, but are not limited to, soil erosion, soil condition, insufficient water quantity, deteriorated water quality, deteriorating plant conditions, inadequate fish and wildlife cover and food, and inadequate stock water. Economic issues such as the high capital costs of crop production/farm operation and unreliable profits may delay the acceptance and implementation of conservation on agricultural lands in the sub-basin.

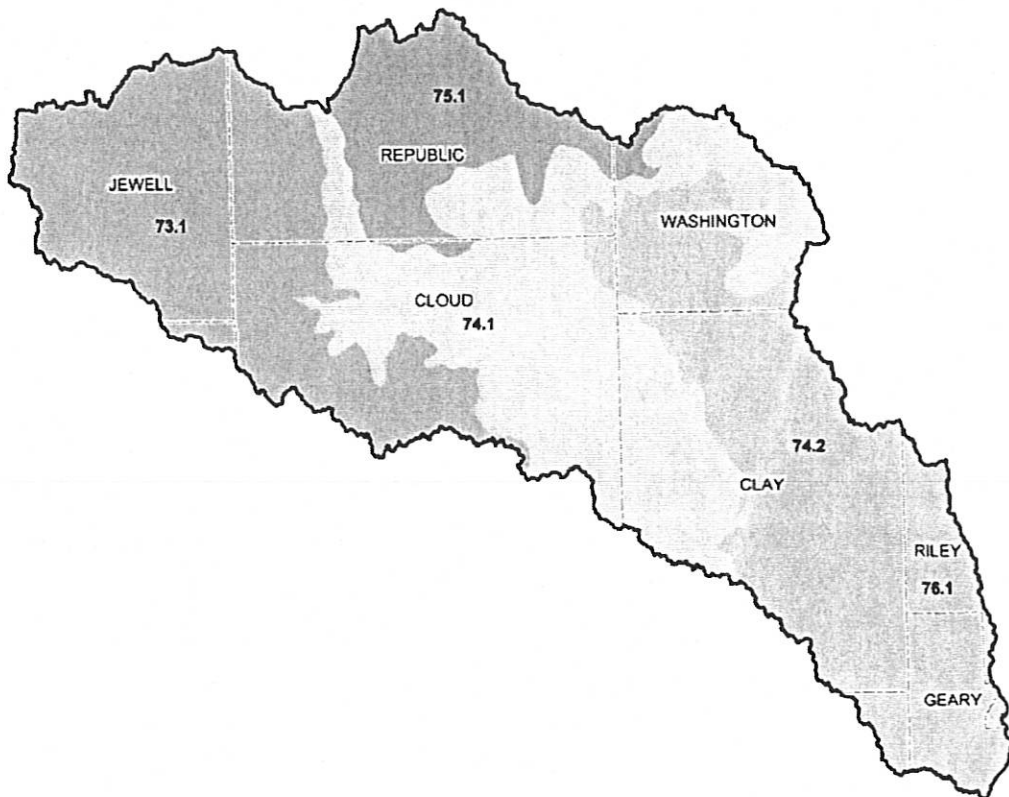
There are approximately 580 farms and 570 operators in the Lower Republican sub-basin. The estimated farm size in 2002 was 707 acres, an increase from 566 acres in the 1987 estimate.

Nine Natural Resources Conservation Service (NRCS) service centers, nine county conservation districts, the Dry Creek Watershed District, and the Kansas Crossroads (forming) Resource Conservation and Development (RC&D) area provide conservation assistance in the sub-basin.

3.0 Physical Description

The physical description of the Lower Republican sub-basin provides detailed information so that the user can better understand the natural resources associated with this geographical land unit.

3.1 Common Resource Area (CRA) Map¹



73.1 – Rolling Plains and Breaks: The Rolling Plains and Breaks CRA is dissected plains having broad undulating to rolling ridge-tops, loess mantled, and hilly to steep side-slopes. Local relief reaches 300 feet and is dissected with narrow drainage ways and river valleys. Soils are deep on the ridge-tops and moderately deep to shallow on the side-slopes. Pre-settlement vegetation was mid grass prairies. Most of this land is in farms, both small grain crops and native grasses.

74.1 – Central Kansas Sandstone Hills: The Central Kansas Sandstone Hills CRA is undulating to hilly plains interrupted by escarpments in which Cretaceous sandstone bedrock is regularly exposed. Local relief reaches 300 feet and is dissected with broad river valleys. Soils are shallow to moderately deep underlain by sandstone or shale bedrock. Pre-settlement vegetation was mid grass prairies. Most of this land is in farms, both native grasses and cropland.

74.2 – Central Kansas Alluvial Plain: The Central Kansas Alluvial Plains CRA is a level to nearly level plain mantled by loess and underlain by unconsolidated alluvial sediments. This CRA inter-fingers in the Central Kansas Sandstone Hills as broad river valleys and terraces with a local relief in the tens of feet. Pre-settlement vegetation was tall to mid grass prairies. Most of this land is in farms, dominantly small grains and hay.

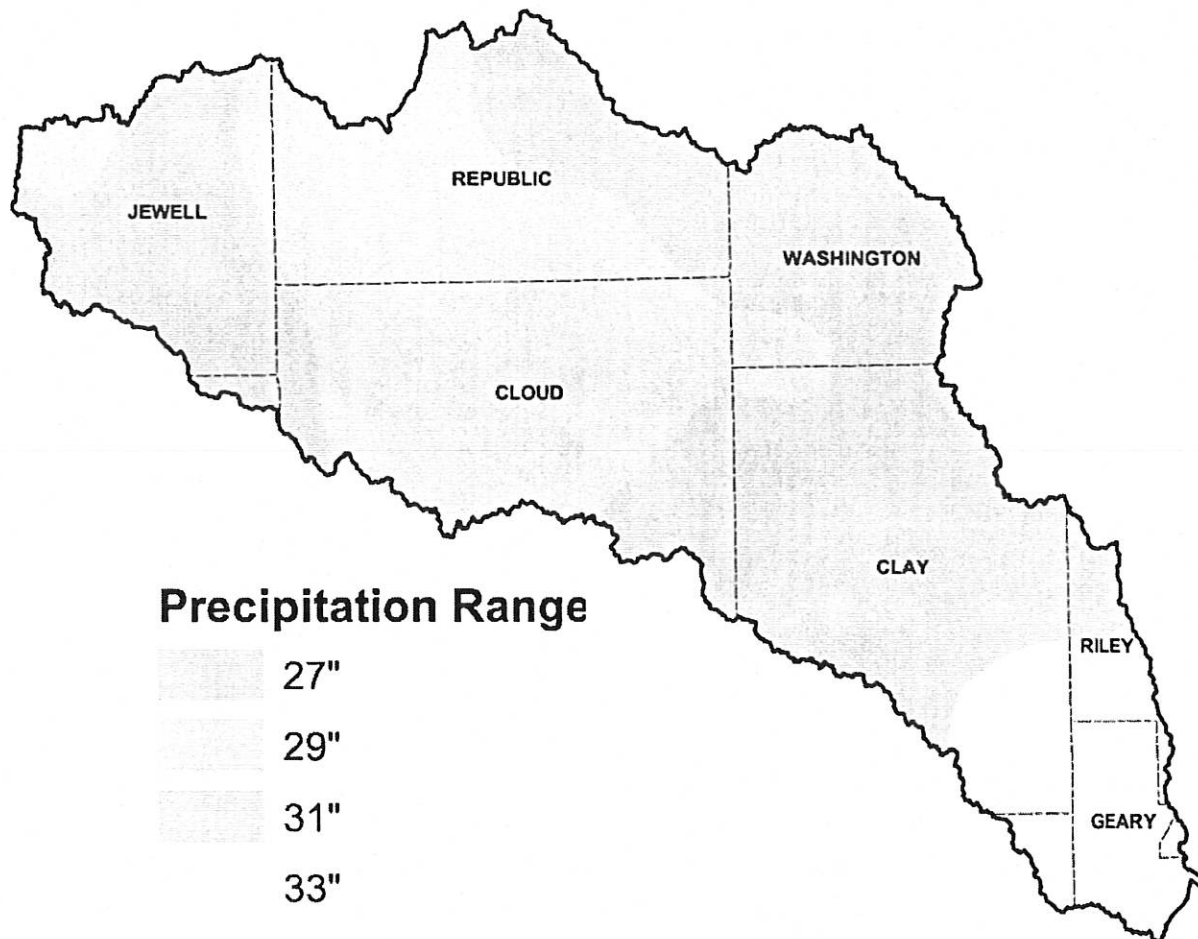
75.1 – Central Loess Plains: The Central Loess Plains CRA is a nearly level to gently rolling plains mantled by thick beds of loess. Local relief reaches 100 feet with narrow streams. Pre-settlement vegetation was tall to mid grass prairies. Most of this land is in farms, dominantly corn under irrigation from wells.

76.1 – Bluestem Hills: The Bluestem Hills CRA is a rolling plain interrupted by high, ragged escarpments in which limestone bedrock is regularly exposed. Local relief reaches 250 feet in the escarpment zones. Valley bottoms are narrow with steep sided slopes. Geologic parent materials are mainly thin-bedded Permian limestones and shales. Pre-settlement vegetation was tallgrass prairie. The land is in ranches.

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3.2 Precipitation Map²

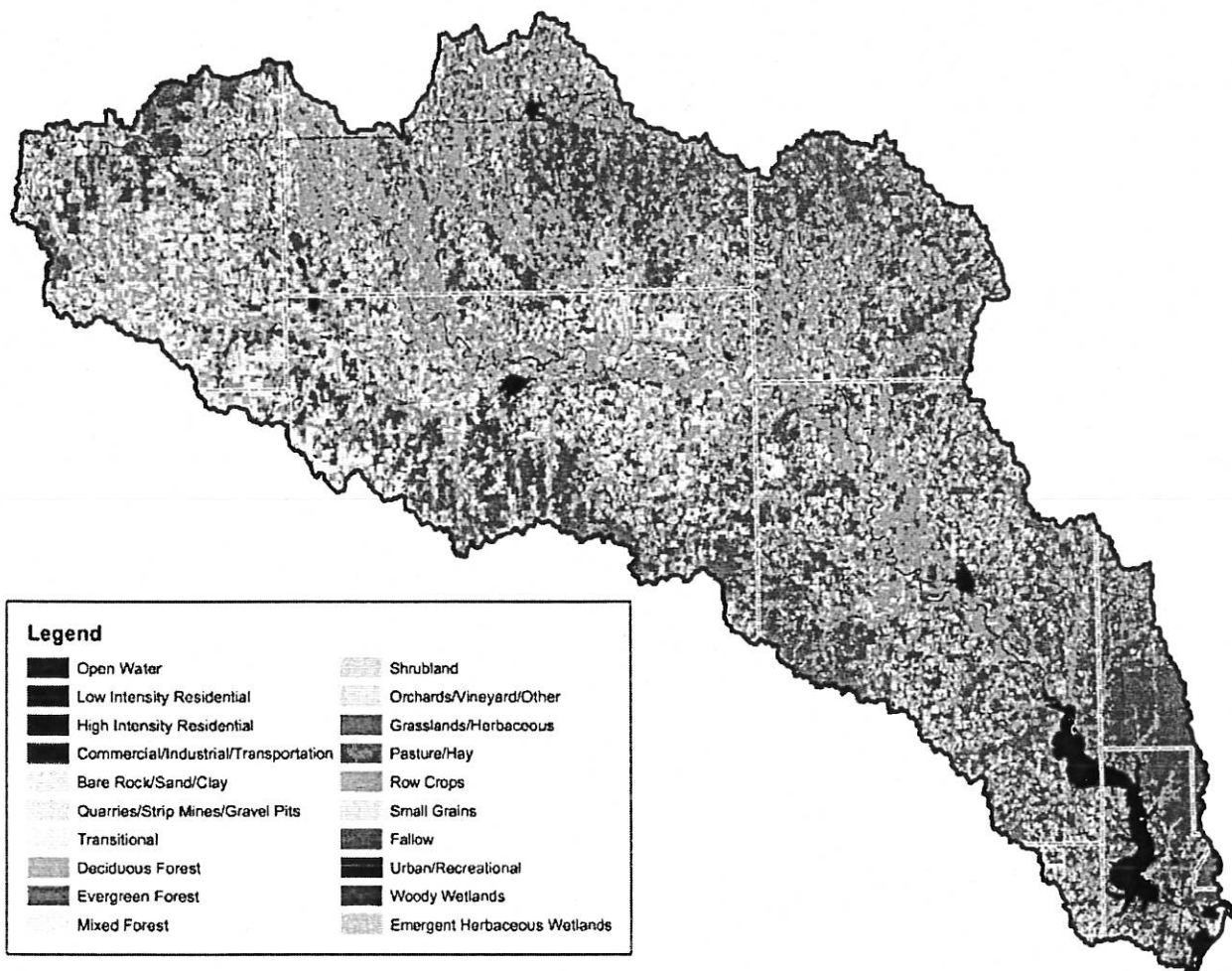
The map below depicts the average precipitation occurring within the sub-basin.



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3.3 Land Use and Land Cover Distribution Map⁴³

The map below represents the distribution of land cover and land use as defined by the NLCD.





3.3.1 Land Use and Land Cover Summary Table^{/3}

Land Cover/Land Use	Ownership						Totals	%
	Public		Private		Tribal			
	Acres	%	Acres	%	Acres	%		
Open Water	16,020	1	9,787	1			25,807	2
Low Intensity Residential			3,872	*			3,872	0
High Intensity Residential			708	*			708	0
Commercial/Industrial/Transportation			3,590	*			3,590	0
Bare Rock/Sand/Clay			104	*			104	0
Quarries/Strip Mines/Gravel Pits			92	*			92	0
Deciduous Forest	9,000	*	39,495	3			48,495	4
Evergreen Forest			1,133	*			1,133	0
Mixed Forest			29	*			29	0
Shrubland			2,323	*			2,323	0
Grasslands/Herbaceous	14,339	1	406,474	32			420,813	33
Pasture/Hay			116,048	9			116,048	9
Row Crops			344,532	27			344,532	27
Small Grains			291,732	23			291,732	23
Fallow			22	*			22	0
Urban/Recreational	1,084	*	1197	*			2,281	0
Woody Wetlands			144	*			144	0
Emergent Herbaceous Wetlands	2,300	*	1,420	*			3,720	0
HUC Totals ^a	42,743	3	1,222,702	97	0	0	1,265,443	100

*: Less than 1 percent of total acres.

^a: Totals are approximate due to rounding and small unknown acreages.

Special Considerations for This 8-Digit HUC:

- Small grains and row crops are predominant commodities grown in rotation on approximately 50 percent of the HUC.
- Grasslands/Herbaceous and Pasture/Hay make up approximately 42 percent of the watershed.
- Forest makes up approximately 4 percent of the watershed.
- Urban land comprises less than 1 percent of the HUC.

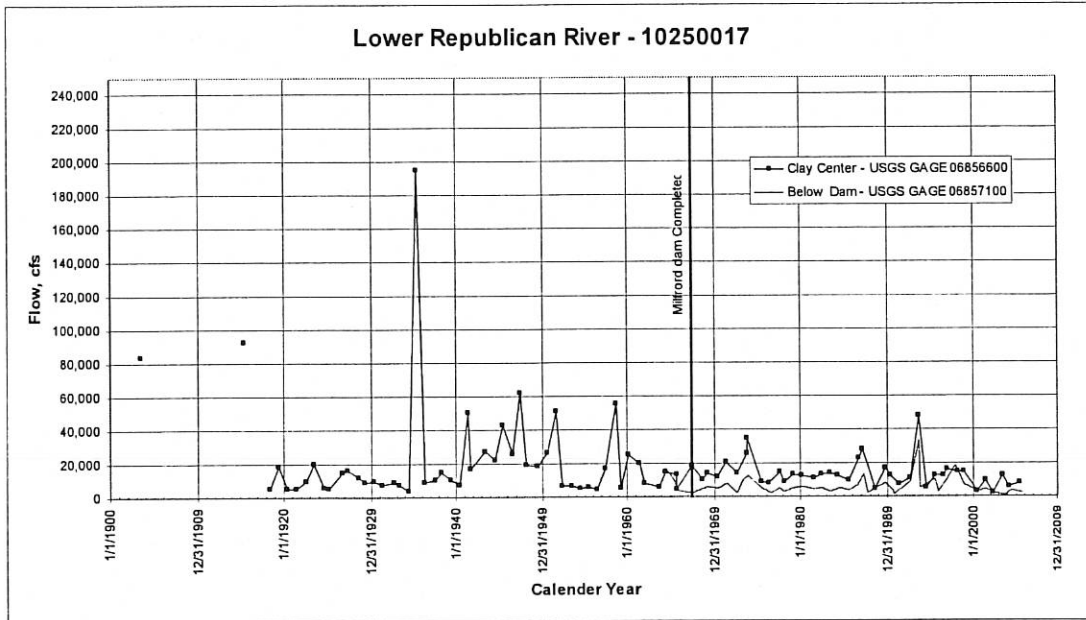
Irrigated Lands ^{/4}	Percent of Cropland	Percent of HUC
	<10%	<5%

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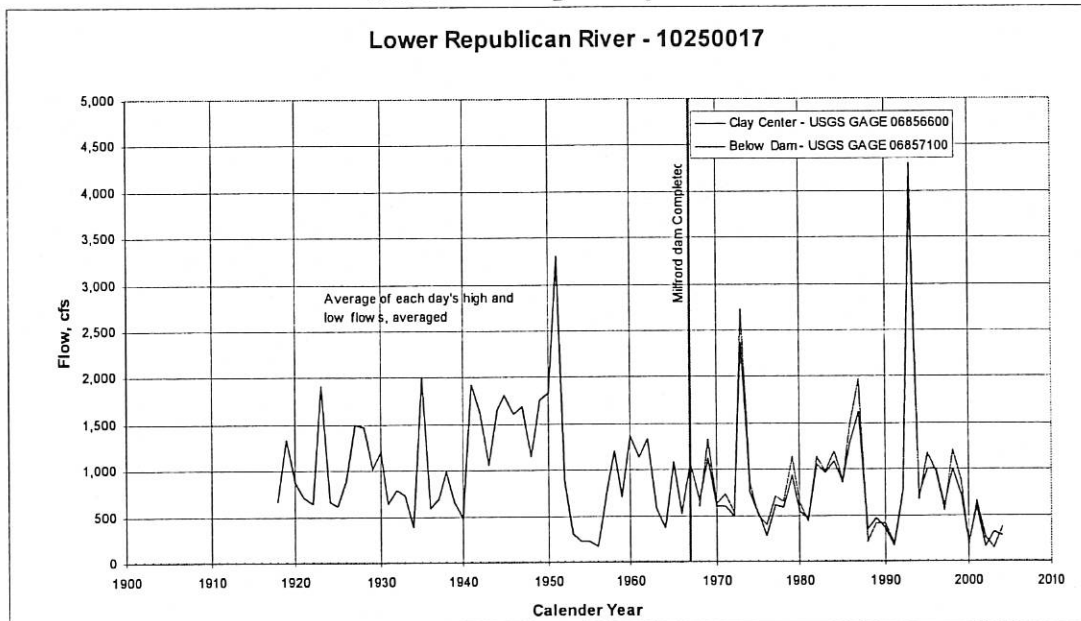
3.4 Stream Flow Data¹⁵

Stream flow data has been collected since 1900. There are three known U. S. Geological Survey (USGS) stream gage stations located within the sub-basin. For this assessment, data was collected from two stream gage stations on the Republican River: one near Clay Center, Kansas, and one below Milford Dam.

Annual Peak Flow



Annual Average Daily Flow



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3.5 Other Physical Descriptions

Stream Data ^{/5} Total Miles of Streams in HUC		Total Miles – Major (100K Hydro Geographic Information System [GIS] Layer)		746	
				ACRES	PERCENT
Land Cover/Use ^{/3} Based on a 100-foot stretch on both sides of all streams in the 100K Hydro GIS Layer	Open Water			22,013	14
	Low Intensity Residential			116	0
	High Intensity Residential			20	0
	Commercial/Industrial/Transportation			288	0
	Bare Rock/Sand/Clay			8	0
	Quarries/Strip Mines/Gravel Pits			9	0
	Deciduous Forest			20,708	13
	Evergreen Forest			604	0
	Mixed Forest			5	0
	Shrubland			337	0
	Grasslands/Herbaceous			43,313	27
	Pasture/Hay			20,258	13
	Row Crops			27,012	17
	Small Grains			21,577	14
	Fallow			2	0
	Urban/Recreational			100	0
	Woody Wetlands			26	0
	Emergent Herbaceous Wetlands			1,214	1
	Total Acres of 100-foot Stream Buffers				157,611
Land Capability Class ^{/4}	1 – slight limitations			920,200	73
	2 – moderate limitations				
	3 – severe limitations				
	4 – very severe limitations			227,400	18
	5 – no erosion hazard, but other limitations				
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest				
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat				
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply				
	Total				1,147,600



4.0 Resource Concerns

Resource concerns are issues related to the natural environment. Natural resources include soil, water, air, plants, animals, and humans (SWAPA +H). Local conservationists identified major resource issues by land use that affect the Lower Republican sub-basin.

4.1 Summary of Resource Concerns

Resource Concerns/Issues by Land Use								
SWAPA +H Concerns	Specific Resource Concern/Issue	Pasture/Hay	Grain Crops	Row Crops	Grazed Range	Forest	Wildlife	Urban
Soil Erosion	Sheet and Rill		X	X				
	Ephemeral Gully		X	X				
	Classic Gully				X			
Soil Condition	Organic Matter Depletion		X	X				
	Compaction		X	X				
	Contaminants: Commercial Fertilizer – Phosphorus		X	X				
Water Quality, Surface	Excessive Nutrients and Organics		X	X				
	Excessive Suspended Sediment and Turbidity		X	X				
Plant Condition	Productivity, Health and Vigor	X			X			
	Noxious and Invasive Plants	X			X			
	Forage Quality and Palatability	X			X			
Animal: Fish and Wildlife	Inadequate Food						X	
	Inadequate Cover/Shelter						X	
	Habitat Fragmentation						X	
Animal: Domestic	Inadequate Stock Water				X			
Human Economics	High Risk and Uncertainty		X	X				
	High Capital/Financial Costs		X	X	X			
	Low or Unreliable Profitability		X	X				

Pasture/Hay

- Pastureland is commonly over-utilized, lacks needed fertility, affected by timing of grazing, and is affected by invasive weeds.
- Hay land lacks needed fertility, affected by timing of haying and invasive weeds.
- Invasive/noxious plant species are present (e.g. *Serecia lespedeza*, Johnson Grass).

Grain and Row Crops

- Residue, nutrient, and pest management; vegetative and structural practices are necessary to control erosion, protect water quality, and improve soil conditions.
- For cropland, sheet and rill erosion is greater on steeper slopes.
- Over application of nutrients and organics has created surface water quality concerns.

Grazed Range

- Classic gullies are present where the grass resource has been over utilized.
- Rangeland is commonly over-utilized, affected by timing of grazing, invasive species persist, all of which affects forage quality and palatability.
- Invasive/noxious plant species are present (e.g. *Serecia lespedeza*).

Wildlife

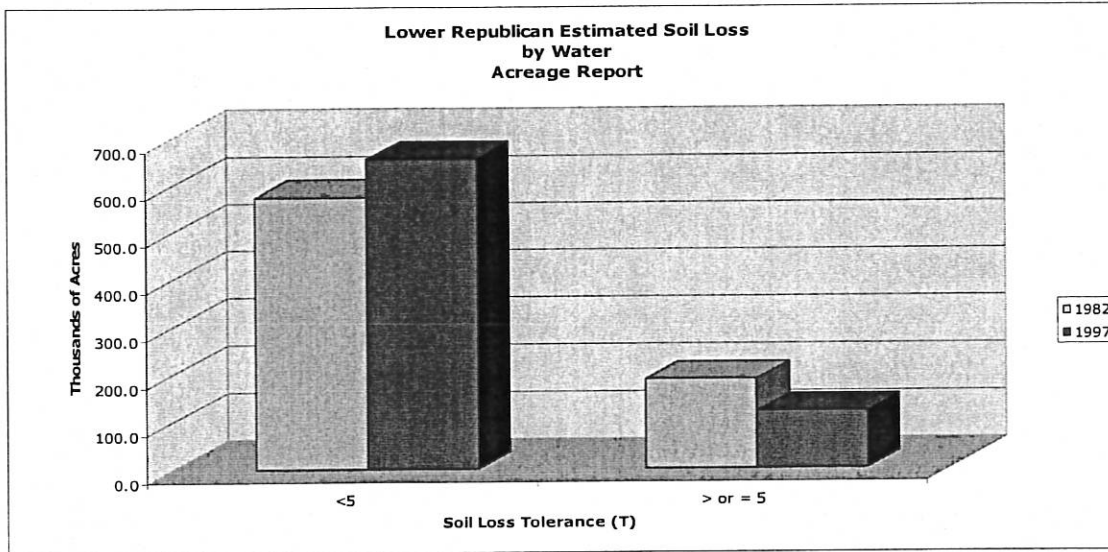
- In general, wildlife throughout the watershed lack available food abundance and distribution, available cover and shelter for brood rearing, and continuity of habitat.

General

- Inputs needed to manage large agricultural operations, costs of production, and low commodity values require large capital outlay and place financial burdens on landowners and producers.

4.2 Estimated Soil Loss^{/4}

Soil loss through wind and water erosion is critical to consider for dealing with air and water quality issues. As airborne particulate, soil particles are a major contributor to air quality concerns. Soil loss through water erosion causes water quality impairments, as pollutants are attached to soil colloids and are transported into the stream systems. Erosion by water was identified as a concern.



- From 1982 to 1997, the National Resources Inventory (NRI) estimates indicate a reduction of approximately 70,000 acres of soils eroding over 5 tons on agricultural lands has occurred. In 1997 there were 120,000 acres eroding above the sustainable level of 5 tons per acre per year by water erosion. This reflects slightly more than 15 percent of agricultural land may need erosion treatment.
- Controlling erosion not only sustains the long-term productivity of the land, but it also affects the amount of soil, pesticides, fertilizer, and other substances that move into the nation's waters.
- Through NRCS programs, many farmers and ranchers have applied conservation practices to reduce the effects of erosion by water. More may need to be done.

4.3 Water Quality Conditions^{/13}

The Kansas Department of Health and Environment (KDHE) is responsible for monitoring water quality conditions in the state of Kansas. This section has been provided by KDHE.

For up-to-date water quality condition information, visit the KHDE web-site at:
http://www.kdheks.gov/befs/download/KS2006_305b_Reoprts.pdf.

4.3.1 Confined Animal Feeding Operations

In Kansas, confined animal feeding operations (CAFOs) with an animal unit capacity of 300 or more must register with the KDHE. Waste disposal practices and the wastewater effluent quality of these registered CAFOs are closely monitored by the KDHE to determine the need for runoff control practices or structure in order to protect the waters of the state of Kansas. Because of this monitoring, registered CAFOs are not considered a significant threat to water resources within the watershed. A portion of the state's livestock population exists on small, unregistered farms. These small, unregistered livestock operations may contribute a significant source of fecal coliform bacteria and nutrients, depending on the presence and condition of waste management systems and proximity to water resources.

Confined Animal Feeding Operations Registry Table						
Animal/Operation Type	Dairy	Feedlot	Poultry	Swine	Truck-wash	Other
Number of Permitted Farms	12	102	1	51	0	1
Number of Permitted Animal Units	3,356	56,335	2,607	38,125	0	130

4.3.2 Public Water Supply Systems

In the State of Kansas, a public water supply system is defined by Kansas Statutes Annotated (K.S.A.) 65-162a and Kansas Administrative Regulations (K.A.R.) 28-15a-2 as a "system for delivery to the public of piped water for human consumption that has at least 10 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year." These systems are regulated by the state to assure the citizenry safe and pathogen-free drinking water. The KDHE oversees more than 1,086 statewide public water supply systems including municipalities, rural water districts, and privately owned systems. These systems may serve a small community of several families to a city of more than 300,000 persons.

There are 112 Active Public Water Supply Sites located within this watershed. Though water is drawn from surface water within the watershed, much of public water supply for the area is provided by two groundwater aquifers. A portion of the Dakota aquifer exists in the northwest section of the watershed and is often used for rural domestic water supply. Alluvial aquifers of the Republican River and its tributaries exist throughout the watershed and provide the primary water source for many public water supplies. Water quality in alluvial aquifers is generally good; however nitrates, minerals, pesticides, and bacteria can be pollutant concerns.

Source Water Assessment: The 1996 amendments to the Safe Drinking Water Act required each state to develop a Source Water Assessment Program (SWAP). Additionally, each state was required to develop a Source Water Assessment (SWA) for each public water supply that treats and distributes raw source water. In Kansas, there are approximately 763 public water supplies that required SWAs. A SWA includes the following: delineation of the source water assessment area; inventory of potential contaminant sources; and susceptibility analysis. The SWA must also be made available to the public. KDHE's Watershed Management Section has implemented the Kansas SWAP plan, and all SWAs are completed.

The Safe Drinking Water Act did not require protection planning to be part of the SWAP process. On a voluntary basis, KDHE encourages public water supplies and their surrounding communities to use the SWAs as the foundation for future protection planning efforts. Source water protection information will be posted on this site as it is compiled. To obtain a copy of SWAs in this watershed please visit: <http://www.kdheks.gov/nps/swap/SWreports.html>.

4.3.3 Designated Uses

According to the Kansas Surface Water Register, the most *common* designated uses for streams and rivers in this watershed include: expected and special aquatic life use, primary and secondary contact recreation, and food procurement. The table below lists designated uses by stream and impairments in the watershed.

Designated Uses - Streams								
Stream Name	AL	CR	DS	FP	GR	IW	IR	LW
Beaver Cr	E	C, b		X				
Buffalo Cr, East	E	b						
Buffalo Cr, Middle	E	C		X				
Cheyenne Cr	E	b						
Coal Cr	E	b						
Dry Cr	E	b						
East Cr	E	b						
Elk Cr	E	C		X				
Elk Cr, W Fk	E	b		X				
Elm Cr	E	C		X				
Elm Cr, E Br	E	b						
Elm Cr, W Br	E	b						
Finney Cr	E	b						
Five Cr	E	b						
Fourmile Cr	E	C						
Hay Cr	E	b						
Huntress Cr	E	B						
Lincoln Cr	E	b						
Marsh Cr	E	a		X				
Marsh Cr, East	E	b		X				
Marsh Cr, West	E	b		X				
Mud Cr	E	b						
Mulberry Cr	E	b		X				
Oak Cr	E	b						
Otter Cr	E	C						
Parsons Cr	E	b						
Peats Cr	E	b						
Republican R	S	C	X	X	X	X	X	X
Riley Cr	E	b		X				
Rush Cr	E	b						
Salt Cr	E	C		X				
Salt Cr, West	E	b		X				
Spring Cr	E	b						
Timber Cr	E	C	X					
Turkey Cr	E	b						
Upton Cr	E	b						
Whites Cr	E	b		X				
Wolf Cr	E	C		X				

AL = Aquatic Life Support
IW = Industrial Water Supply
FP = Food Procurement

GR = Groundwater Recharge
DS = Domestic Water Supply
LW = Livestock Water Supply

CR = Contact Recreation
IR = Irrigation Water Supply

E = Expected Aquatic Life Use Water

B = Primary contact recreation stream segment is by law or written permission of the landowner open to and accessible by the public

C = Primary contact recreation stream segment is not open to and accessible by the public under Kansas law

a = Secondary contact recreation stream segment is by law or written permission of the landowner open and accessible by the public

b = Secondary contact recreation stream segment is not open to and accessible by the public under Kansas law

X = Referenced stream segment is assigned the indicated designated use



Designated Uses - Lakes								
Lake Name	AL	CR	DS	FP	GR	IW	IR	LW
Belleville City Lake	E	B		X				
Jamestown W.A.	E			X				
Milford Lake	E	A	X	X		X		
Milford W.A.	E			X				
Rimrock Park Lake	E	B	O	X		O	O	O

AL = Aquatic Life Support
IW = Industrial Water Supply
FP = Food Procurement

GR = Groundwater Recharge
DS = Domestic Water Supply
LW = Livestock Water Supply

CR = Contact Recreation
IR = Irrigation Water Supply

E = Expected Aquatic Life Use Water
A = Primary contact recreation stream segment is a designated public swimming area
B = Primary contact recreation stream segment is by law or written permission of the landowner open to and accessible by the public
X = Referenced stream segment is assigned the indicated designated use

4.3.4 Total Maximum Daily Loads

Total Maximum Daily Load (TMDLs): Total Maximum Daily Loads (TMDLs) are limits on the amount of pollutant entering a stream or lake, while still attaining water quality standards. The water quality standards identify the designated uses of streams, lakes, and wetlands and the level of water quality necessary to fully support these uses. The process of developing TMDLs in Kansas determines:

1. The pollutants causing water quality impairments.
2. The magnitude of the impairment relative to applicable water quality standards.
3. The overall level of pollution reduction needed to attain achievement of water quality standards.
4. The allocation of pollutant loads to be distributed among point and non-point sources in the watershed affecting the water quality limited water body.
5. Suggested corrective actions and management practices to be implemented in order to achieve the load allocations, TMDLs, and water quality standards.
6. The monitoring and evaluation strategies needed to assess the impact of corrective actions in achieving TMDLs and water quality standards.
7. Provisions for future revision of TMDLs based on those evaluations.

The following table shows stream miles within HUC 8 10250017 that are listed on the 303d list. Section 303(d) of the Clean Water Act requires states to identify and list all water bodies where state water quality standards are not being met. Thereafter, TMDLs comprising quantitative objectives and strategies have been developed for these impaired waters within the watershed in order to achieve their water quality standards. For additional TMDL information or to download the TMDL report, visit <http://www.kdheks.gov/tmdl/index.htm>.



Peoples Exchange Bank

January 22, 2007

Senate Agriculture Committee
Kansas Statehouse
Topeka, Kansas

Ladies and Gentlemen:

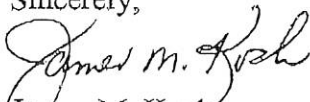
I write this letter in strong support of Senate Bill No. 89. I do so from the perspective of a landowner and an active farmer with land and irrigation rights in the Republican River Basin and from the perspective of a community banker in North Central Kansas serving a broad array of customers with a very direct interest in water.

Water is a most precious resource; in fact, it may be the most precious resource that we have. Wise use and conservation of that resource is critical. Since it appears likely that the State of Kansas will receive cash in lieu of water from the water litigation with Nebraska and Colorado, it is only reasonable that the moneys recovered should be directed to water conservation projects. Thus, the focus of Senate Bill No. 89 is very appropriate.

The reduction in stream flow in the Republican River is a major concern for North Central Kansas. It has hindered and will continue to hinder future economic development. Thus, it is critical that we find ways to conserve what stream flow that we have and to efficiently use all of the water supplies that we do have. The programs to be funded by this bill will benefit not only those living in the Upper and Lower Republican River Basin, but will also benefit those further downstream in the Kansas River Basin.

Again, I strongly urge your favorable consideration of Senate Bill No. 89. It offers an opportunity for a positive outcome for all of Kansas and offers special consideration to those areas that have been mostly adversely affected by the actions or lack thereof of the defendants in the water litigation.

Sincerely,


James M. Koch
President

*Senate Agriculture Committee
1-24-07
Attachment 4*

1404 28th Street • PO Box 160 • Belleville, Kansas 66935-0160
(785) 527-2213 • Fax (785) 527-5750 • www.pebank.net

1-24-2007
Room 423-5
8:30 a.m.

Mr. Chairman, Members of the Senate Ag Committee,

I want to thank you for allowing me the opportunity to speak on behalf of Senate Bill No. 89.

My name is Thayne Larson and am a life long resident of Republic County which is in the furthest north county of the lower Republic Basin which borders Nebraska.

I am a farmer and direct descendant of the early pioneers that homesteaded and settled this land in 1861. We still farm and irrigate some of this beautiful Republican River Valley soil. My wife and I and family started farming in 1972. We raise alfalfa, corn, wheat and soybeans in our operation. We also, produce, market and process alfalfa for the cattle and dairy industry throughout the United States but primarily in Kansas and Nebraska. Our particular operation uses water from alluvial wells, surface water from the Republican River, and also water that is irrigated through the canal system of the Kansas Bostwick Irrigation District.

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In the 35 years of my farming career, I have experienced and witnessed the value of water and what it means to the rural economy.

I have spent, in my farming career, tracking water issues and gaining knowledge of the allocation and appropriation issues that we face in the lower Republican basin. While I have reluctantly acknowledged the strict water laws that we have enacted in the State of Kansas, in particular, the \ Republican Basin, I have witnessed just a few miles away in the state of Nebraska, how their farmers and indirectly our competitors, have been able to irrigate freely and therefore drive an economy that we have not been able to achieve in Kansas.

Although, I could talk at length about the personal financial loss by not having the supply of water to use in agriculture production, I'm more interested in telling you how the entire region has suffered economically due to water availability that is a result of the water policy of surrounding states. To just mention one point as an example, the Kansas Bostwick Irrigation District, of which I am a member, is able to irrigate just 60 percent of the acres that it is allowed to irrigate because of insufficient delivery of water. The nineteen thousand plus (19,000 +) acres that are not irrigated causes a regional economic loss in excess of six million dollars (\$6,000,000.00) just

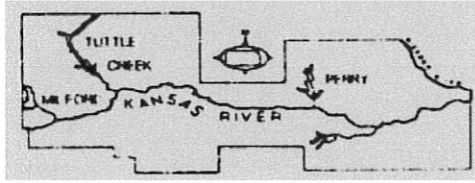
for the 2006 crop year alone. In visiting with our irrigation district manager, he would be glad to provide further details that may be more exact for not only this year but for the previous years and projected losses from future years.

I believe this bill would be the start of a process to return to the basin, the financial resources that could be used for water efficiency projects that will allow individual farmers, businesses and communities to stretch their water allotments through water conservation projects. The economic benefit of this valuable resource will provide for a driving economy that will benefit the lower Republican Basin and ultimately the entire state of Kansas.

Thank you for your time and I will be glad to answer any questions that you have.

Thayne A. Larson

The Kansas River



Water Assurance District No. 1

212 SW 7th Street – Topeka, Kansas 66603-3717

**Agriculture Committee
Kansas State Senate
2007 Legislative Session**

Senate Bill 0089

Kent Weatherby, Conferee

My name is Kent Weatherby. I am General Counsel for the Kansas River Water Assurance District #1. I will hereafter refer to that organization as KRWAD. KRWAD is a special corporation authorized by Kansas statutes, State Water Marketing Program,¹ to provide drought contingency water to the municipalities and industries below the federal reservoirs in Kansas. KRWAD provides that function to, among others, the municipalities of Milford, Manhattan, Topeka, Lawrence, and Johnson County as well as Westar Energy and Kansas City BPU.

KRWAD has contracted for 55,000 acre feet of storage in Milford Reservoir, along with sizable storage capacity in Tuttle Creek and Perry Reservoirs. We appear before you today in favor of Senate Bill 0089.

KRWAD has made an investment of in excess of \$8,000,000 of which over \$2,000,000 is for storage capacity in Milford Reservoir. Currently that storage capacity is maintained by the State of Kansas, the State Water Marketing Program² and the State Water Assurance Program.

We believe an oversight occurred in the drafting of the bill before you by the exclusion of “reservoir maintenance at Milford Reservoir” as an authorized use of the funds. We therefore urge you to consider the inclusion of that language at section 1 (e) (8) on lines 17 and 18 on page two of the bill or by the addition of “reservoir maintenance” as a “type of project(s) that may be funded under subsections (b), (c) and (d)” of the bill.

Thank you. I would be happy to answer any question the committee may have.

¹ K.S.A. 82a-1330 et seq

² K.S.A. 82a-1305 et seq

*Senate Agriculture
Committee
1-24-07
Attachment 6*



**Kansas Grain and Feed Association
Kansas Agribusiness Retailers Association
816 SW Tyler, Topeka, KS 66611
785-234-0461**



Senate Agriculture Committee

Regarding SB 89

January 24, 2007

I am Mary Jane Stankiewicz, the Vice President and General Counsel for the Kansas Grain and Feed Association and the Kansas Agribusiness Retailers Association. The KGFA and KARA associations represent the grain handling industry and the agricultural input (seed, fertilizer, chemicals, etc) to the farming communities across the state of Kansas.

We have been an active participant in a number of discussions regarding water because of the close and interdependent relationship between our industry and the farming sector and both of these industries are heavily dependent on water.

While all Kansans would prefer that our citizens are given the lawful amount of water out of the Republican River, we are aware that this will probably not be the case and that Nebraska may be required to pay Kansas money instead. KGFA and KARA applaud the legislature for taking the first step in deciding how this money is divided and dedicated prior to the receipt of the money. The foresight shown by legislators a number of years ago in setting out the way the Kansas v. Colorado money would be handles has proven to be a very wise and prudent step. Therefore, we are supportive of this discussion of how potential money received from the Republican River Compact would be handled.

Since we believe the statutes dealing with the Kansas v. Colorado compact funds were well done, we would like to point out some of the differences and encourage you to consider amending this legislation to mirror the Kansas v. Colorado statutes found at K.S.A. 82a-1801 and 82a-1803. Some of the key differences are the following:

- Litigation funding – There is no provision that sets aside any funding for future litigation or funding and we think this is a mistake. The litigation costs for the Kansas v. Colorado were over \$19m thus showing us that these lawsuits can be long and costly but imperative to the livelihood of our state. Unfortunately, even when you win, there are still compliance

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and monitoring costs that ran up a bill of over \$500,000 during the last year.

Nebraska has openly stated that one of the reasons that they were so willing to enter into negotiations with Kansas is the fact that we have a large war chest. During the interim committee hearings this fall, the Kansas Attorney General's office estimated that the cost for one year of negotiation and possible court costs regarding Nebraska would cost Kansas over a \$1m. While no one is a fan of paying seemingly large sums of money to attorneys, it is a necessary item in these types of situations and may actually save us time and money in the long run.

Furthermore, we have situations developing involving Missouri and Oklahoma and the resolution of these issues is unknown at this time. Therefore, there will not be a lack of water issues to be dealt with in the future and it will be imperative that we are able to adequately fund and defend our position. Therefore, we would urge you to add a litigation funding component to this bill.

- Purchase, lease or other acquisition of water rights – There are 2 sections (6) and (9) that refer to the purchase or lease of water rights. While we recognize that one specifically denotes state or federal conservation programs, we do not think this distinction is necessary. If there are other reasons for the distinction then perhaps the sections need clarification.

We are not sure why there are the deviations from the previous language used in the Obviously, our associations are not fans of the use of this money for a conservation reserve enhancement program, but we have never argued that the state did not have the statutory right to use the money for these purposes we have only argued whether this is the most appropriate use of the money or whether it achieves the "greatest water conservation efficiency for the general good" as set forth in Section 3.

Once again, we are very pleased that the legislature is deciding how to distribute the money prior to the receipt of the money. We think this will allow everyone to give it careful consideration and that the decisions will be made in a thoughtful and prudent manner.

Thank you for your time and attention. I will be happy to stand for any questions at the appropriate time.

PUBLIC POLICY STATEMENT

SENATE COMMITTEE ON AGRICULTURE

RE: SB 89 – an act concerning the Republican River and disposition of litigation money.

**January 24, 2007
Topeka, Kansas**

**Testimony provided by:
Brad Harrelson
State Policy Director
KFB Governmental Relations**

Chairman Taddiken, and members of the Senate Committee on Agriculture, thank you for the opportunity to appear before you today. I am Brad Harrelson, State Policy Director—Governmental Relations for Kansas Farm Bureau. KFB is the state's largest general farm organization representing more than 40,000 farm and ranch families through our 105 county Farm Bureau Associations.

We believe that the legislature was wise in their decision to have a plan in place in the event that the state was awarded damages from Colorado resulting from the Ark River Litigation Settlement. We also believe that it would be wise to be prepared for the possibility in the Republican River settlement if Nebraska does not fulfill their obligations to Kansas.

Our members who hold water rights in the upper Republican valley have kept their end of the bargain and have met compact compliance terms so that Nebraska has received the amount of water required by the compact. Those members have suffered reduced crop yields and crop failures in order to ensure compact compliance. Our members who hold water rights in the lower Republican valley have not been as fortunate as Nebraskans. Because it appears that Nebraska will not comply with terms of the compact settlement agreement, water right holders from the state line to Milford

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reservoir have had their rights administered for several years. Nebraska's lack of compliance has forced water rights holders to reduce or eliminate irrigation, suffer yield reductions or crop failures, and negatively impacted the regional economy in the lower Republican valley. It seems it would be important to consider these sacrifices and losses in the dispensation of any compensation monies delivered to Kansas.

We certainly support the concept that SB 89 proposes and we encourage the committee to act favorably on this legislation. However, we would like to pose a couple of questions regarding the bill. In Section 2, subsections (b),(c),and (d), the funds created allow paying for all or portion of projects for water management, conservation, administration and delivery. Why should compact compensation dollars be used for administration of water rights? Are these dollars to be used by the Division of Water Resources (DWR) for more personnel?

Our second question is about the types of projects that can be funded. Section 2, subsection (e), item 4 allows for monies to be expended for implementation of water management plans. Should compensation dollars be expended for further regulation of water rights holders in the affected area? It is our understanding that water management plans create a mix of voluntary water use reduction programs and administration of water rights. We raise these questions because we believe there has already been adequate administration of water rights in the lower Republican valley and there is no need to enhance that effort.

Finally, we might suggest in Section 3, line 30 that as the Director of the Water Office and the Chief Engineer review projects and assign priorities, perhaps the first priority for projects ought to go to those water rights holders who were directly affected by administration of their water rights simply because Nebraska did not fulfill the terms of the compact agreement. This would ensure that those water rights holders had the first opportunity to gain some compensation from any potential penalty money sent to Kansas.

Thank you, once again, for the opportunity to appear before you and share the policy of our members. KFB stands ready to assist you as you consider this important measure. Thank you.



Kansas Cooperative Council

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Toll Free: 888-603-COOP (2667)

Email: council@kansasco-op.coop

www.kansasco-op.coop

Senate Committee on Agriculture

January 24, 2007

Topeka, Kansas

**SB 89 - Establishing the Republican River
Water Conservation Projects Fund.**

Chairman Taddiken and members of the Senate Agriculture Committee, thank you for the opportunity to share our conceptual support for SB 89 establishing the Republican River Water Conservation Projects Fund.

I am Leslie Kaufman and I serve the Kansas Cooperative Council as Executive Director. The Kansas Cooperative Council represents all forms of cooperative businesses across the state -- agricultural, utility, credit, financial and consumer cooperatives. Approximately half of our membership is involved in agriculture/farm supply and marketing.

Our association has been very involved with water issues over the past few years. As we have watched the progress of the Kansas v. Colorado lawsuit, we believe there was a good degree of wisdom in formulating a basic outline for settlement dollars before they ever came to the state. That same type of general thought process is being repeated for the Republican River under SB 89. Implementing a basic framework for distribution and utilization of possible monetary damages that might be recovered prior to actual receipt provides the opportunity to have a real policy debate on the matter. The policy of the framework receives the focus rather than getting tied-up in a battle over the dollars.

Kansas is currently well-positioned to protect our water interests in large part because we have the monetary resources to take necessary measures to enforce our rights. The dedication of a portion of settlement dollars from the Kansas v. Colorado case for the purpose of litigation was a well-reasoned move. Although the litigation fund is solidly funded, water litigation can be extremely expensive and a "war chest" can be depleted in a relatively short time period. Thus, we think setting aside a portion of any Republic River settlement proceeds for water litigation, as was done in anticipation of the Kansas v. Colorado settlement, is a good roadmap to follow. We encourage you to set aside a portion of any Republican River recovery into a litigation fund dedicated to water litigation related expenses.

As many of you are aware, our association supports irrigation transition programs that allow continued agriculture production and dryland farming on affected acres. We have not supported plans that prohibit crop production on land enrolled in an irrigation program and rely on prescriptive land management requirements to address water usage. As such, the provision of SB 89 that allows a portion of any proceeds from a Republican River settlement to be used for "cost share for state or federal conservation programs that save water" (page 2, lines 13-14) is concerning to us as certain federal cost-share programs currently prohibit dryland farming. We

The Mission of the Kansas Cooperative Council is to promote, support and advance the interests and understanding of agricultural, utility, credit and consumer cooperatives and their members through legislation and regulatory efforts, education and public relations.

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would encourage the committee to place a qualifier in this provision limiting the use of such funds for cost-share programs that allow for dryland farming.

Thank you for allowing us to comment on SB 89. We believe the framework outlined in the bill, particularly if our suggestions noted above are adopted, will provide a beneficial roadmap for the state when it comes to allotting any potential settlement dollars.

Thank you.