

MINUTES OF THE HOUSE AGRICULTURE AND NATURAL RESOURCES COMMITTEE

The meeting was called to order by Chairman John Faber at 3:30 P.M. on January 17, 2007 in Room 423-S of the Capitol.

All members were present.

Committee staff present:

Raney Gilliland, Kansas Legislative Research Department  
Emalene Correll, Kansas Legislative Research Department  
Jason Thompson, Revisor of Statutes  
Florence Deeter, Committee Assistant

Conferees appearing before the committee:

Karl Muldener, Bureau of Water, Kansas Department of Health and Environment  
David Pope, Department of Agriculture, Division of Water Resources  
Tracy Streeter, Director, Kansas Water Office  
Bill Harrison, State Geologist, Kansas Geological Survey

Others attending:

See attached list.

**Hearing on Water Issues and Related Material.**

The Chairman recognized Representative Clay Aurand, who introduced a former agriculture committee chairman, Cliff Campbell, from Mitchell County. Mr. Campbell chaired the committee twenty years ago and is a constituent of Representative Aurand.

Karl Muldener, Bureau Chief, Kansas Department of Health and Environment (KDHE), indicated the primary role of the department is to assure quality water (Attachment 1). He stated the federal laws set standards and establish monitoring systems for over 100 substances found in drinking water. A court ordered plan is in place called Total Maximum Daily Load (TMDL) and is designed primarily to improve water quality. The discharge of wastewater is also under the control of KDHE. A program called Watershed Restoration and Protection Strategy (WRAPS) is being used to encourage local entities' interest in watershed initiatives.

David Pope, Chief Engineer, Division of Water Resources, KDHE, gave an overview of the Water Appropriation Act, explaining property rights, vested rights, appropriation rights, and domestic water rights (Attachment 2). The bureau functions as the regulatory agency responsible for administration of various laws related to conservation and management of water resources. Permits are required for other than domestic water usage and full annual reports must be filed by March 1<sup>st</sup>. He explained there are the five groundwater management districts, which were begun in the 1970's. Intensive Groundwater Use Control Areas (IGUCA) established by statute in 1977, are used by the Chief Engineer to deal with water issues in specific areas and is an additional tool to be used in the event there is a long-term problem.

Mr. Pope commented on the water usage maps included in his testimony by saying the closed areas reveal water availability within a two-mile radius, and, giving consideration to other factors, allows determination of new water permits. The policy is quite restrictive and is intended to monitor depletion levels.

Tracy Streeter, Director, Kansas Water Office (KWO), brought information regarding the operational programs and responsibilities within the KWO (Attachment 3). KWO and the Kansas Water Authority (KWA) share in the planning and coordination for managing water resources. The State Water Plan Fund (SWPF), instituted in 1989, is also managed by the KWO with a fiscal amount this year of \$3.2 million. Eighty-five percent of those funds will go to provide lake restoration and protection. A new Clean Drinking Water Fee Fund is in place. These fees, paid by municipalities and public water facilities, go into the State General Fund (SGF). Water is provided to municipal and industrial entities through the Water Marketing and Water Assurance Programs across the state.

Mr. Streeter referred the members to the KWA annual report on page 22 showing the breakdown of various revenue reports (Attachment 4). A popular, yet controversial program, is the Weather Modification program.

CONTINUATION SHEET

MINUTES OF THE House Agriculture and Natural Resources Committee at 3:30 P.M. on January 17, 2007 in Room 423-S of the Capitol.

Four airplanes are in service to help alleviate hail storms and weather fronts. His testimony included a brief written history of Kansas water planning.

Mr. Streeter will provide a draft report on the Tri-State Coalition, a study performed by the Corps of Engineers.

Bill Harrison, State Geologist, Kansas Geological Survey (KGS), gave a power-point presentation of water levels in Kansas (Attachment 4). KGS is a non-academic, research-only group from the University of Kansas. Their focus is to conduct studies, research projects, investigate geological natural resources of the state, and provide reports on those investigations. He stated that every five years the United States Geological Survey Water Division compiles a document of every state describing how the state's water is used; Kansas has a higher dependency on groundwater for overall needs than any other state.

Mr. Harrison introduced Brownie Wilson, who provided information on precipitation, water right allocations by county, locations of aquifers, water level measurements, and ground water usage (Attachment 5).

Chairman Faber announced a briefing tomorrow from Wildlife and Parks. Deer Management in Kansas and a report on the Deer Task Force will be the topics heard.

A sub-committee on pesticide licensure laws is being formed and will be announced by the Chairman.

The meeting adjourned at 5:20 p.m.



# HOUSE AGRICULTURE COMMITTEE GUEST LIST

DATE: January 17, 2007

NAME	REPRESENTING
Jim Butler	Kansas Geo. Survey
LANE LETOURNEAU	KDA
Carole Jordan	KDA
<del>Steve Adams</del>	KDWP
Joe Furd	KWO
Tina Alder	KDA
Paul Graves	KDA
Kim Christiansen	KWO
Susan Stover	KWO
Bill Harnson	Ks. Geological Survey
Rex Buckman	" " "
Karl Mueldecker	
SEAN MILLER	
Tom Thompson	Sierra Club
ALEX ZADINA	" "
Lindsey Douglas	Hein Law Firm
<del>Wendy Adams</del>	KAPA
Wendy Adams	KRMCA
Mary Ann Starkiewicz	KGFA

# HOUSE AGRICULTURE COMMITTEE GUEST LIST

DATE: January 17, 2007

NAME	REPRESENTING
CV Cotsoradis	KDA
Tracy Stuber	KWO
Tom Bruno	Bruno + Assoc.



*Kathleen Sebelius, Governor  
Roderick L. Bremby, Secretary*

DEPARTMENT OF HEALTH  
AND ENVIRONMENT

[www.kdheks.gov](http://www.kdheks.gov)

Division of Environment

Testimony to  
Agriculture and Natural Resources Committee  
KDHE Water Program Briefing  
Presented by Karl Mueldener  
January 17, 2007

Chairperson Faber, members of the Committee. My name is Karl Mueldener, Director of KDHE's Bureau of Water. Committee staff asked that I visit today regarding the basic role of KDHE's water programs.

KDHE's primary role in regulation of water is water quality. Water quantity and state water planning are the responsibility of the Department of Agriculture and the Water Office, respectively. Much of KDHE's water quality work is done in conjunction with and under the authority of the two Federal laws: the Clean Water Act and the Safe Drinking Water Act. KDHE has been granted authority to administer these federal laws. Federal environmental laws dating back to the 1970's have dominated state program efforts. Other Federal laws from that era include the Clean Air Act, Fungicide and Rodenticide Act (pesticides), Toxic Substance Control Act, Superfund, and Resource Conservation and Recovery Act.

#### Public Water Supplies

KDHE regulates 1054 public drinking water supply systems. Federal law sets national standards for the quality of drinking water. The Federal law also established a rigorous monitoring program for approximately 100 drinking water substances. Examples of substances monitored include: bacteria, cryptosporidium, radionuclides, pesticides, and the byproducts of disinfection, chlorine residuals, inorganic, and organic chemicals. While the Federal approach centered on monitoring the quality of drinking water, KDHE has continued to stress what can be described as "multiple barriers." Monitoring drinking water quality is an important role, but so is assuring that water works are well designed and built, operated by knowledgeable personnel, properly disinfecting, have a good raw water source, and that the system is reliable.

Kansas water suppliers face many challenges in supplying the quality of water demanded by today's standards. Beyond stricter standards, suppliers must find and retain trained operations

BUREAU OF WATER  
CURTIS STATE OFFICE BUILDING, 1000 SW JACKSON ST., STE. 420,  
Voice 785-296-5500 Fax 785-296-0086

**HS AGRICULTURE AND NATURAL  
RESOURCES COMMITTEE  
1-17-2007  
ATTACHMENT 1**

# Basic Kansas Water Law

House Agriculture and Natural Resources Committee

BY

Kansas Department of Agriculture  
Division of Water Resources  
David L. Pope, Chief Engineer  
Wednesday January 17, 2007

staff and keep up with the ever more complex regulatory demands. For Kansas the number of very small drinking water systems aggravates these challenges. Fifty-eight percent (58%) of Kansas water supplies serve less than 330 people. Ninety-two (92%) serve less than 3,300 people. This is a small population on which to base a utility.

### Wastewater and Water Quality

KDHE is responsible for restoring and maintaining the quality of Kansas's waters. Quality standards are set for streams and lakes. These standards, called Water Quality Standards, are essentially the measuring stick used to assess the cleanliness of a stream or lake. Stream and lake quality is monitored and reports are prepared listing impaired waters. Impaired waters violate some quality parameters of the standards and a plan to correct the impairment must be prepared. This plan to improve the waters quality is called Total Maximum Daily Load, or TMDL. Kansas has been operating since 1998 under a court order to develop TMDLs. The first round of TMDLs has been completed in full compliance with the court order.

A major activity in protecting water quality is the regulation or control of wastewater. KDHE regulates wastewater control infrastructure through a permit system, which sets operational parameters on wastewater systems, particularly the quality of water, which may be discharged. Permitted wastewater systems regulated by the state include the following types and numbers: Municipal/Commercial 990, Industrial 580, Livestock 1650, Stormwater 2500.

### Nonpoint Sources

Water pollution sources can be generally identified as either point or nonpoint. While point sources, or direct discharges, are regulated through permits, nonpoint sources are not regulated. Section 319 of the Clean Water Act provides funding for states to help address, voluntarily, nonpoint source pollution. This money may be used for planning and demonstration work leading to reduction of nonpoint pollution. Examples of projects funded include: watershed specialists through Kansas State University Extension, Cheney and Hillsdale Reservoir Watershed Initiatives, Kansas Environmental Leadership Program, development of management practices for small livestock operations and related land management practices which can improve water quality.

A current major emphasis is being placed on a program under the water plan to stimulate local watershed initiatives. This initiative is called WRAPS or Watershed Restoration and Protection Strategy. WRAPS is entering its' third year and is well received by local interests and enjoys broad agency support.



# Basic Kansas Water Law

House Agriculture and Natural Resources Committee

BY

Kansas Department of Agriculture  
Division of Water Resources  
David L. Pope, Chief Engineer  
Wednesday January 17, 2007

## Limited Water in Kansas

- Kansas is on the eastern edge of arid/semi-arid Western US: variability in hydrologic conditions across the state
  - Average precipitation ranges from as low as 16 inches in western Kansas to as high as 40 inches in eastern Kansas
  - Droughts can be persistent
- Western Kansas
  - Primarily relies on the Ogallala-High Plains aquifer for its water supply
- Eastern Kansas
  - Primarily relies on surface water supplies
- Central Kansas is a mixture of surface and groundwater

## Kansas Water Law

- At statehood, the KS Constitution said nothing about water rights
- Under the common law, the Riparian Doctrine was used for surface water and Absolute Ownership Rule for groundwater
- Early state laws allowed appropriation of surface water and authority for the chief engineer to issue groundwater use permits
- Kansas Supreme Court struck down law
- The result was the Water Appropriation Act, effective June 28, 1945
- The Water Appropriation Act has subsequently been upheld by the Supreme Court in several cases

## Water Appropriation Act

- All water is dedicated to the use of the people of Kansas, subject to control and regulation
- Existing uses were allowed to claim Vested Rights
- Subject to Vested Rights, the right to use water is based on "First in time is first in right" priority system
- Limits appropriation rights to reasonable needs
- Allows a limited resource to be allocated for beneficial use and to protect minimum desirable streamflows
- Protects investments, property rights and the resource

## Water Appropriation Act

- Chief Engineer is charged with administering the act (K.S.A 82a-701 et seq.)
- Single priority system for ground and surface water
- A "water right" is not to the ownership of water, but it is a real property right to divert and use water for beneficial purposes with certain limitations.
- No two appropriation rights have the same priority date

## Water Appropriation Act

- "Vested right" is based on use of water on or before June 28, 1945 (Approximately 2,000 vested water rights established)
- "Appropriation right" is a water right that was acquired under the Act after June 28, 1945
- "Domestic water right" is use of water for household purposes, watering of livestock, poultry, farm and domestic animals and for irrigation of not more than 2 acres (no permit is necessary for domestic)

## Water Appropriation Act

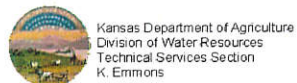
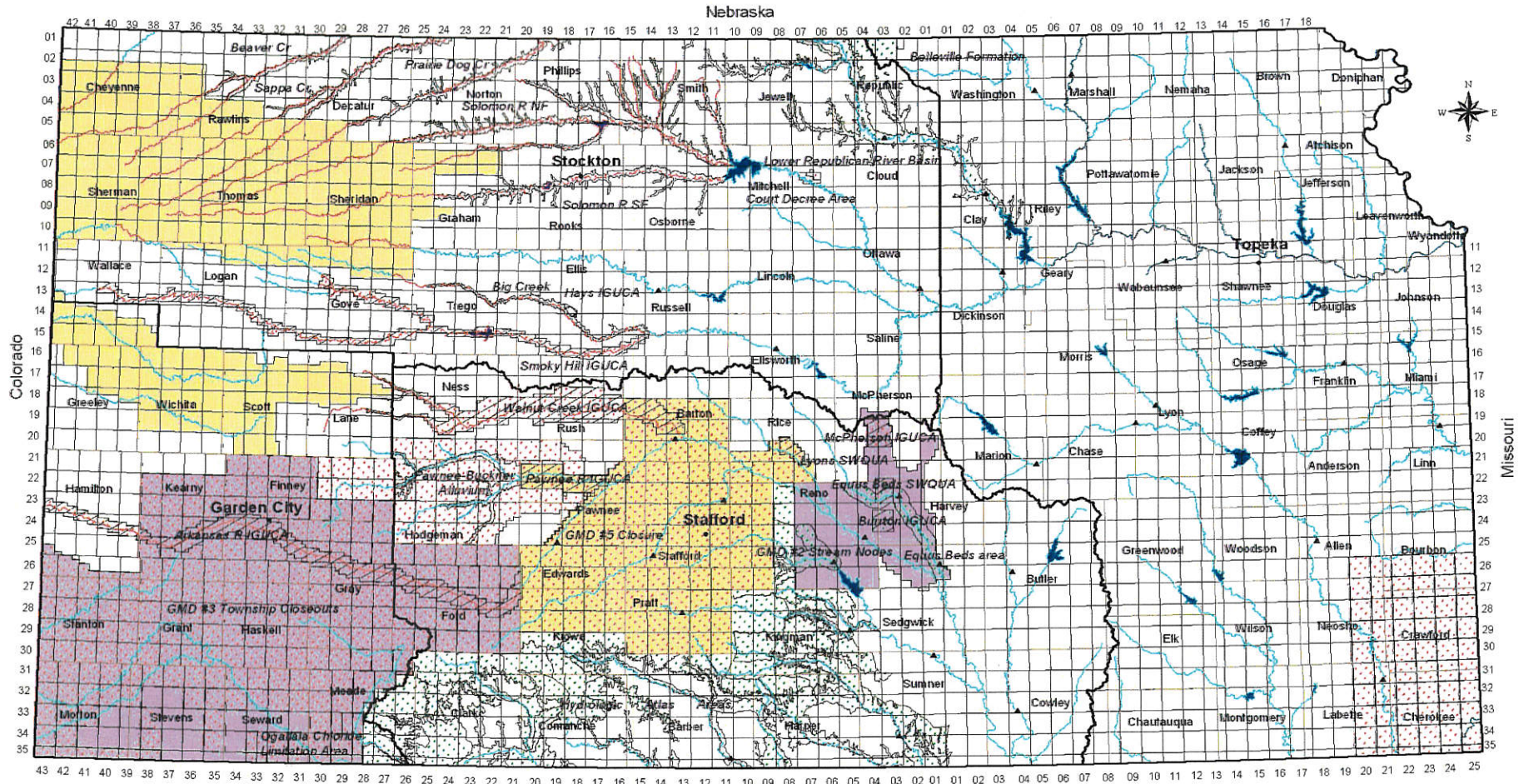
- All uses of water for other than domestic and other minor uses require a permit
- The filing of an application establishes the priority date but it must meet criteria to be approved
- Permits include conditions (authorized purpose, place of use, pt of diversion, and maximum annual quantity...)
- Annual water use report required to be filed by March 1
- A water right is perfected by actual use
- A water right can be forfeited for failing to use water for five successive years without due and sufficient cause

## Water Appropriation Act

- Rules and Regulations are promulgated to implement the Act
- Five Groundwater Management Districts (GMDs) created in the 1970's in Kansas
  - Local control within state law
  - Chief Engineer can also adopt regulations recommended by the GMD that are effective only within that district
- All areas now closed or subject to safe yield



# Closed and Restricted Areas



- GMD #1, #4, #5
- GMD #2, #3
- IGUCA or SWQUA

- Closed Area, generally excluding temporary and other small uses in some cases. See regulation for details.
- Area subject to Special Restrictions. See regulation for requirements.

- Closed Streams, generally excluding temporary and other small uses in some cases. See regulation for details.
- Restricted Streams, specific restrictions for streams and alluvium given in regulation.
- Streams, surface water generally available. Includes Missouri River.

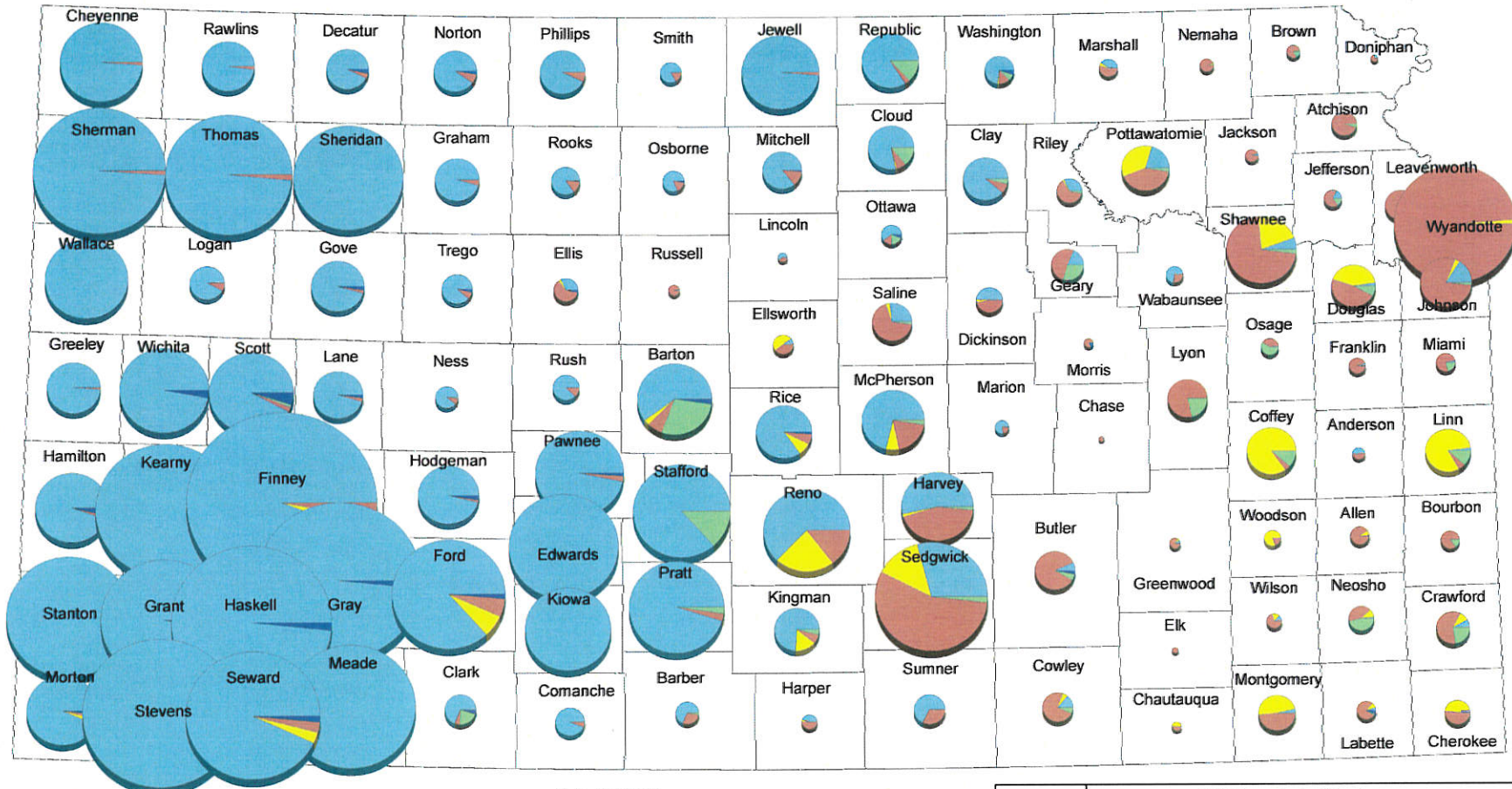
- Field Office Boundary
- Regional Field Offices
- County
- Name of affected area
- MDS Gaging Stations

Disclaimer-Features on this map represent conditions as of the date of the map and are subject to change. The user is referred to specific policies, regulations, and/or orders of the Chief Engineer.

July 18, 2008



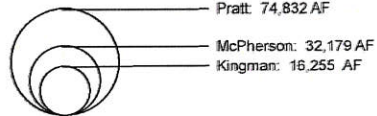
## 2004 Reported Water Use, by Type of Use for Kansas Counties



This map is funded by an appropriation from the State Water Plan Fund.



Kansas Department of Agriculture  
Division of Water Resources  
Water Use Unit  
March 13, 2006



### Use Made of Water

- Irrigation
- Municipal
- Industrial
- Recreation
- Stockwater

County	2004 Groundwater Diversions					TOTAL
	IRR	IND	MUN	STK	REC	
Finney	276875	8870	7703	2578	3	296029
Gray	216424	23	1162	3400	1	221010
Haskell	205994	92	769	3249	7	210111
Stevens	196749	114	1341	841	0	199045

All quantities in acre-feet; as reported to the Division of Water Resources

## Water Management

- During periods of shortage, junior water rights may be curtailed to satisfy senior rights and MDS
- Releases from storage may be protected
- Statutes provide additional comprehensive tools to deal with long-term water problems
- With approval, changes to existing water rights may be made to allow new and different uses to be met or to change the point of diversion and place of use

## Water Management

- Actions are taken to protect water rights and the associated aquifer and stream systems in targeted areas. These efforts include compliance and enforcement actions, resolution of impairment complaints, and implementation of conservation and management programs in these areas
- These activities include, but are not limited to:
  - Require and inspect water meters
  - Field investigations and studies
  - Enforcement to prevent over pumping, etc.
  - Protect minimum desirable stream flow
  - Other administrative actions

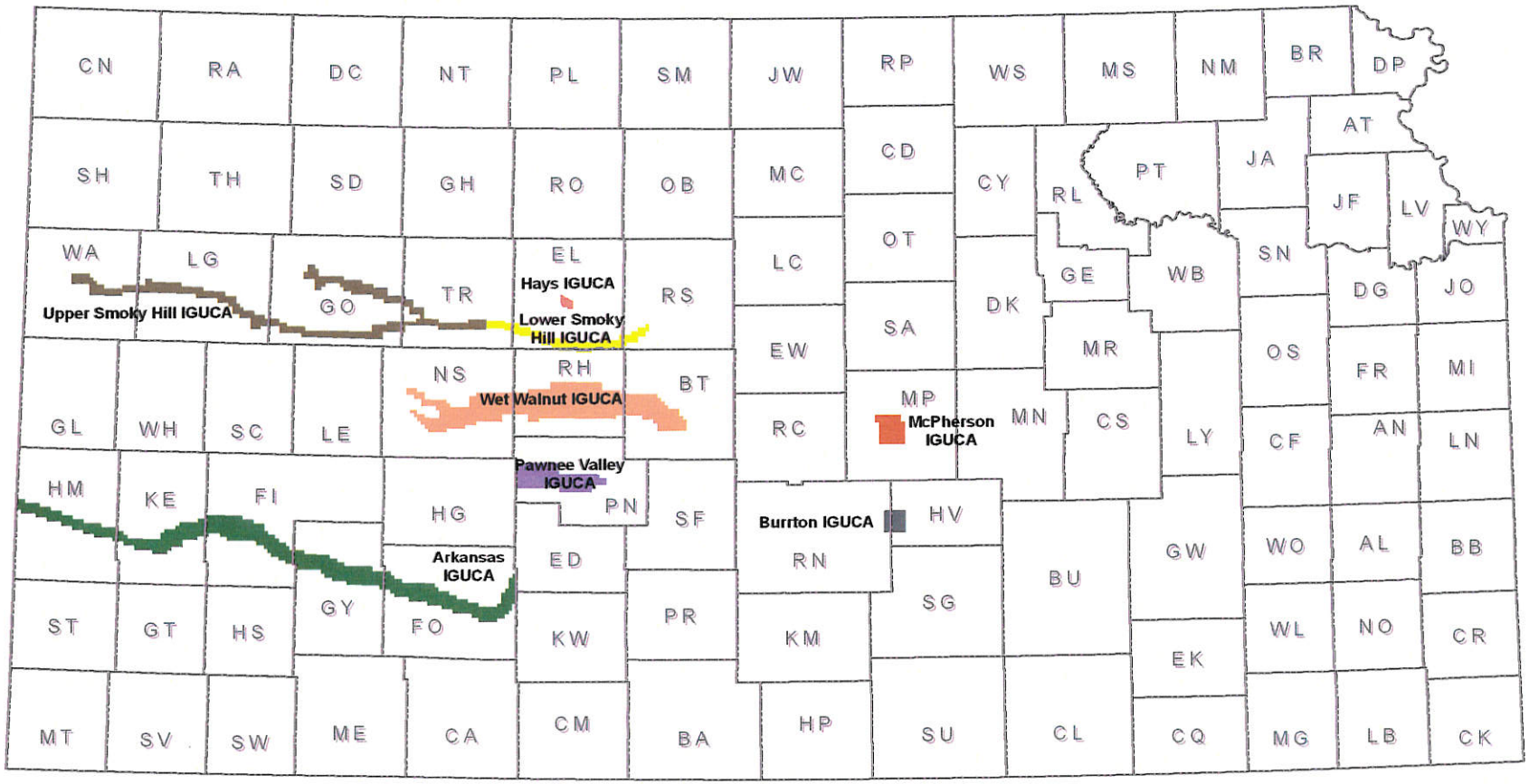
## Intensive Groundwater Use Control Areas (IGUCA)

- IGUCA statutes recommended in 1977 by Governor's Task Force
- Statutes passed in 1978 as part of the Groundwater Management District Act (K.S.A. 82a-1036 to 1040)
- An IGUCA can be designated by the Chief Engineer to deal with certain water problems in a specific area
  - Groundwater declines
  - Withdrawals exceeding the rate of recharge
  - Preventable waste of water
  - Unreasonable deterioration of the water quality
  - Other reasons that require regulation in the public interest

## Intensive Groundwater Use Control Areas (IGUCA)

- Currently there are 8 IGUCA's in Kansas
- They can be used to address long-term water problems in a specific area
- Formal public hearings are held to allow presentation of evidence and to receive public input
- If an IGUCA is designated, corrective control provisions are implemented through an order
- Advisory committees/Task Forces have been established to make recommendations re controls
- IGUCA's can and have been amended

# Intensive Groundwater Use Control Areas in Kansas

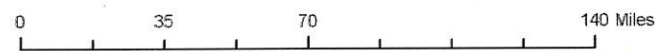


### Legend

- Arkansas IGUCA
- Hays IGUCA
- McPherson IGUCA
- Upper Smoky Hill IGUCA
- Burrton IGUCA
- Lower Smoky Hill IGUCA
- Pawnee Valley IGUCA
- Wet Walnut IGUCA



Kansas Department of Agriculture  
Division of Water Resources  
January 12, 2007



## Intensive Groundwater Use Control Areas (IGUCA)

Implementation of an IGUCA provides the Chief Engineer tools to address long-term water problems in addition to the Water Appropriation Act

- Close area to new permits and refuse applications
- Apportioning the permissible withdrawal of water among water rights in accordance with priority
- Reducing the permissible withdrawal of water
- Other options that will resolve the problem

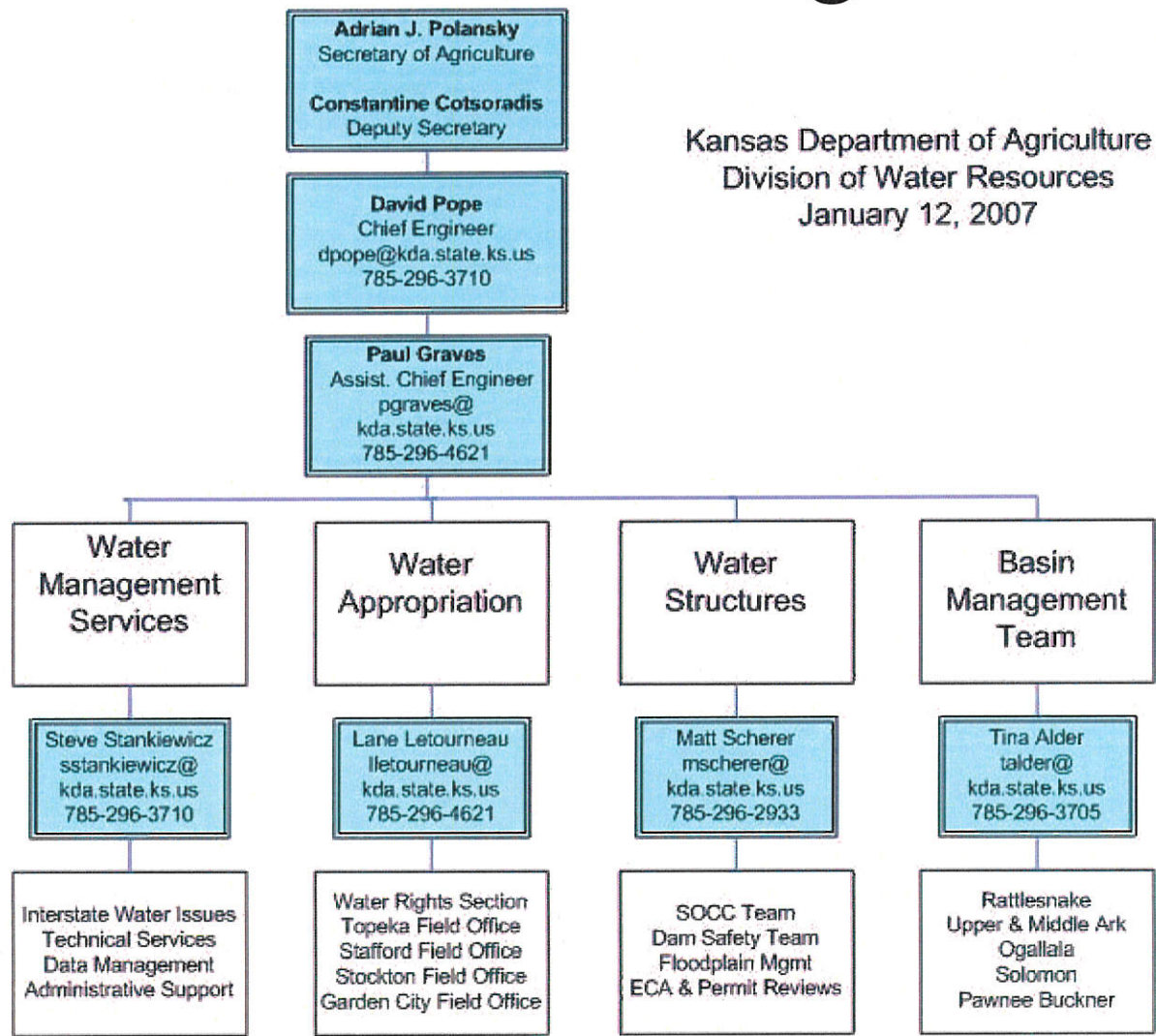
## Summary

- Kansas is fortunate to have a comprehensive set of water laws to deal with the variability of the water resource and the nature of the specific problems
- KDA-DWR works with GMDs and other local entities, state, federal, private and public interests across the state to manage water
- KDA-DWR also has the responsibility for water structures (Dams and levees), basin management team, and water management services, which includes the four interstate river compacts



# KDA-DWR Programs

Kansas Department of Agriculture  
Division of Water Resources  
January 12, 2007





# K A N S A S

TRACY STREETER, DIRECTOR

KANSAS WATER OFFICE

KATHLEEN SEBELIUS, GOVERNOR

Kansas Water Office Testimony  
To the  
House Agriculture and Natural Resources Committee

January 17, 2007

Chairman Faber and members of the Committee, I am Tracy Streeter, Director of the Kansas Water Office. I am please to appear before you today to provide an overview of the role the Kansas Water Office performs regarding water resources policy, planning, operation and coordination. I was also pleased to see that many members of this Committee were able to attend the Water Issues Briefing last week.

The Kansas Water Office and the Kansas Water Authority were established in 1981. The Kansas Water Office with 22.5 staff is the water planning, policy, coordination and water marketing agency for the state. The primary statutory function of the agency is the development and implementation of the State Water Plan. State law requires the Kansas Water Office (KWO) to "Formulate on a continuing basis a comprehensive State Water Plan for the management, conservation and development of the water resources of the state. Such State Water Plan shall include sections corresponding with water planning areas as determined by the office." (K.S.A. 74-2608 *et seq.*)

The Kansas Water Authority is comprised of 24-members which include 13 private citizen members and 11 ex-officio members. The attached annual report includes a map which identifies the location and whom the appointed members represent. Their role is to advise the Governor and the Legislature on water policy issues. The Kansas Water Authority is responsible for approving water storage sales, the State Water Plan, federal contracts, regulations and legislation proposed by the Kansas Water Office. The Authority meets five to six times a year to discuss and make decisions on priority water issues, policies and related budget recommendations.

In developing the Kansas Water Plan, citizen/public input is obtained through 12 Basin Advisory Committees correlated with the 12 major River Basins in Kansas. The KWA/KWO is in the process of re-invigorating these Committees. Each Committee consists of representatives of water-use categories and general public, as determined suitable by the BAC.

The KWO is also responsible for managing the State Water Plan Fund (SWPF). This Fund was created by the 1989 Legislature to provide a permanent, dedicated and stable source of funding for water-related programs and projects identified in the *Kansas Water Plan*. The statutory authorization for the State Water Plan Fund is K.S.A. 82a-951, which states in part,

...Such moneys shall be used only for the establishment and implementation of water-related projects or programs, and related technical assistance, and shall not be used for: (1) Replacing full time equivalent positions of any state agency; or (2) recreational projects which do not meet one or more of the long-range goals, objectives and considerations set forth in the state water resource planning act." Funding for the SWPF includes demand transfers from the State General Fund, Economic Development Initiatives Fund and revenues from municipal, industrial and stockwater fees; fertilizer and pesticide fees, sand royalties and certain pollution fines and penalties collected by the Kansas Department of Health and Environment.

The Kansas Water Authority Budget Committee meets during the Spring and Summer months to review SWPF revenue estimates and develop budget recommendations for the coming year. At their August meeting, the KWA debates and ultimately approves recommendations for SWPF dollars for use by Kansas water agencies in developing their Budget Requests for submittal to the Division of Budget.

In addition to the planning and coordination function of the agency, the KWO has a few operational programs. The State through the KWO owns water supply storage in 13 Corps of Engineers reservoirs. We in turn provide municipal and industrial water supply through the Water Marketing and Water Assurance Programs to more than half the population of the State. The KWO also is responsible for developing water conservation guidelines and providing technical assistance to water users. Finally, a minor responsibility is the permitting and licensing of weather modification activities in Kansas.

I have attached fact sheets on these programs which provide additional detail. Thank you for the opportunity to visit with you today about the KWO responsibilities. I will be happy to answer any questions you may have at the appropriate time.

# KANSAS WATER OFFICE & KANSAS WATER AUTHORITY RESPONSIBILITIES

Fact Sheet No. 3

April 2004

Kansas Water Office

## BACKGROUND

The Kansas Water Office and the Kansas Water Authority were established in 1981. The Kansas Water Office with 22.5 employees is the water planning, policy, coordination and marketing agency for the state. The Kansas Water Authority is statutorily within and a part of the Kansas Water Office. It advises the Governor, Legislature and the Director of the Kansas Water Office on water policy issues. The Kansas Water Authority is responsible for approving water storage sales, the State Water Plan, federal contracts, regulations and legislation proposed by the Kansas Water Office.

The primary statutory function of the agency is the development and implementation of the State Water Plan. State law requires the Kansas Water Office to "Formulate on a continuing basis a comprehensive State Water Plan for the management, conservation and development of the water resources of the state. Such State Water Plan shall include sections corresponding with water planning areas as determined by the office." (K.S.A. 74-2608 *et seq.*)

To accomplish this goal, the agency is given further statutory responsibility to:

## KEY RESPONSIBILITIES OF THE KANSAS WATER OFFICE

1. Administer the State Water Resources Plan Act. Work out a plan of water resources management, conservation and development for water planning areas in the state. (K.S.A. 82a-901 *et seq.*) (K.S.A. 74-2608 (b).)
2. Conduct public water supply planning. (K.S.A. 74-2616)
3. Administer the State Water Plan Storage Act (Water Marketing Program). (K.S.A. 82a-1301 *et seq.*)
4. Administer the Water Assurance Program Act. (K.S.A. 82a-1345 *et seq.*)

5. Manage the State Water Plan Fund. (K.S.A. 82a-951)
6. Administer the Weather Modification Act. (K.S.A. 82a-1411)
7. Coordinate water related activities of state, local and federal government. (K.S.A. 82a-931)
8. Negotiate for the inclusion of storage in federal projects or releases of water from such storage agreements with the federal government. (K.S.A. 82a-915 & 82a-933)
9. Coordinate water related research. (K.S.A. 82a-941)
10. Issue bonds related to the purchase of water supply storage in federal reservoirs. (K.S.A. 82a-1316)
11. Collect and compile information pertaining to the water resources of the state. (K.S.A. 74-2608 (a).)
12. Develop and maintain guidelines for water conservation plans and practices. (K.S.A. 74-2608 (c).)
13. Establish guidelines for conditions indicative of drought. When such conditions are met, advise the Governor, and recommend that the Governor's Drought Response Team be assembled. (K.S.A. 74-2608 (d).)

## KEY RESPONSIBILITIES OF THE KANSAS WATER AUTHORITY

1. Consult with and be advisory to the Governor, Legislature and Director of the Kansas Water Office on water management issues. (K.S.A. 74-2622(d)(1).)
2. Review plans of any state or local agency related to the water resources of the state. Review and evaluate water resource budget estimates for state agencies. (K.S.A. 74-2622(d)(2) & (9).)
3. Study laws related to water resource management issues and make recommendations on new or amendatory legislation to the Governor and Legislature. (K.S.A. 74-2622(d)(3).)

4. Make recommendations to the Governor, Legislature, state agencies and political subdivisions of the state for the coordination of water resource management activities. (K.S.A. 74-2622 (d)(4)&(5).)
5. Approve amendments to the State Water Plan Water Planning Act and other legislation that the Kansas Water Office may propose.
6. Approve contracts with water marketing customers related to the State Water Plan Storage Act. (K.S.A. 74-2622 (d)(6).)
7. Approve pricing of water for sale under the marketing program. (K.S.A. 74-2622 (d)(7).)
8. Approve any agreement with the federal government by the Kansas Water Office. (K.S.A. 74-2622 (d)(8).)
9. Kansas Water Office proposed rules and regulations. (74-2622 (d)(10).)
10. Approve conservation plan guidelines and practices. (K.S.A. 74-2622(d)(11).)

#### **Kansas Water Authority Membership**

The 24-member Kansas Water Authority is comprised of 13 private citizen members and ten ex officio members.

The 13 private citizen members serve as follows:

- 1) appointment by the Governor (this member serves as chairperson of the Kansas Water Authority);
- 2) appointment by the President of the Senate;
- 3) appointment by the Speaker of the House of Representatives;
- 4) a representative of large municipal water uses;
- 5) a representative of small municipal water users;
- 6) a board member of western Kansas groundwater management district;
- 7) a board member of a central Kansas groundwater management district;

- 8) a member of the Kansas Association of Conservation Districts;
- 9) a representative of industrial water users;
- 10) a member of the State Association of Watershed Districts;
- 11) a member with a demonstrated background and interest in water use, conservation and environmental issues;
- 12) and 13) two representatives of the general public appointed by the Governor.

The 11 ex officio members are as follows:

- 1) the State Geologist;
- 2) the State Biologist;
- 3) the Chief Engineer of the Division of Water Resources of the Kansas Department of Agriculture;
- 4) the Director of the Division of Environment of the Kansas Department of Health and Environment;
- 5) the Director of the Kansas Water Office (this member serves as Secretary of the Kansas Water Authority);
- 6) the Director of the Agricultural Experiment Station of Kansas State University;
- 7) Chairman of the Kansas Corporation Commission;
- 8) Secretary of the Kansas Department of Wildlife and Parks;
- 9) the Secretary of the Kansas Department of Commerce;
- 10) the Executive Director of the State Conservation Commission; and
- 11) the Secretary of the Kansas Department of Agriculture. (K.S.A. 74-2622 *et seq.*)

#### **ADDITIONAL INFORMATION**

Further information on this and other *Kansas Water Plan* related programs can be obtained from the Kansas Water Office, 901 S. Kansas Ave., Topeka, KS 66612-1249. Call (785) 296-3185 or toll free (888) KAN-WATER. The Kansas Water Office WEB site is [www.kwo.org](http://www.kwo.org).



# THE KANSAS WATER PLAN

Fact Sheet No. 1

December 2004

Kansas Water Office

## PURPOSE

The *Kansas Water Plan* is one of the primary tools used by the State of Kansas to coordinate the management, conservation and development of the water resources of the state. The Water Plan sets out the way to achieve the goals identified in the State Water Resources Planning Act (K.S.A. 82a-901, *et seq.*). It is updated as needed to provide recommendations on how the state can best achieve the proper utilization and control of the water resources of the state.

The Kansas Water Office is the water planning agency for the state, and is mandated under K.S.A. 82a-903 to ". . . formulate on a continuing basis a comprehensive state water plan for the management, conservation and development of the water resources of the state". Within and a part of the Kansas Water Office is the Kansas Water Authority which is comprised of 24 members.

## PROCESS

One of the primary duties of the Kansas Water Authority is to consider and approve policy recommendations for inclusion in *the Kansas Water Plan*. Once approved, the Kansas Water Authority submits these recommendations to the Governor and Legislature for their consideration.

**There are two sections in the *Kansas Water Plan*.**

**Policy Section:** This section contains all the policy proposals recommended by the Kansas Water Authority to be implemented by passage of authorizing legislation and/or budgetary appropriations. This section also contains recommendations on the implementation steps for programs that have both statewide and local application. These recommendations can be found at <http://www.kwo.org>.

The Kansas Water Authority has authorized a rigorous and systematic process to develop policy recommendations. However, it is also designed to be responsive to emerging issues. Development of a policy issue can be started at any time, and while every step in the process is followed in every instance, the process can be expanded or collapsed as an issue demands. See Table 1.

**Basin Section:** This section of the *Kansas Water Plan* contains all the priorities for each water basin and recommendations for the operation of state programs that can assist in addressing priority issues. These priorities can be found at <http://www.kwo.org>. Like the policy planning process, there is a process specific to identifying new basin issues and approving them for inclusion in the basin section of *Kansas Water Plan*. See Table 2.

The Division of Water Resources of the Kansas Department of Agriculture, State Geological Survey, the Division of Environment of the Department of Health and Environment, Department of Wildlife and Parks, State Conservation Commission and "other interested state agencies" are designated by statute to work with the Water Office in formulation of the *Kansas Water Plan*. (K.S.A. 82a-903)

## PUBLIC INPUT

The need to seek public input in the planning process is set out in K.S.A. 82a-903 and states that: "The Kansas Water Office and the Kansas Water Authority shall seek advice from the general public and from committees consisting of individuals with knowledge of and interest in water issues and in the water planning areas."

The *Kansas Water Plan* is formulated through an established planning process, which emphasizes public participation through basin

advisory committees, public meetings and public hearings. Basin Advisory Committees are made up of volunteer citizens located within each of the 12 major river basins in the state to provide advice on formulation and implementation of the Basin Sections of the *Kansas Water Plan*. Each committee has 11 members representing water use categories of municipal, other public water suppliers, domestic, irrigation, industry and recreation, as well as at large members.

### **IMPLEMENTATION**

Implementation of the *Kansas Water Plan* is accomplished in part by the passage of necessary legislation and through funding of specific programs or projects. The *Kansas Water Plan* serves as guidance to the agencies for preparation of budgets to implement the *Kansas Water Plan*.

Creation of the State Water Plan Fund in 1989 provided a dedicated source of revenue to supplement funding for implementation of the *Kansas Water Plan*. The Kansas Water Authority provides feedback at its June meeting on proposed expenditures by agencies represented on the Governor's Natural Resources Sub-Committee of the Cabinet for the upcoming legislative session in January. The Authority also provides further

feedback prior to the submission of agency budgets in September of each year. Then, prior to December 1 of each year, the Kansas Water Authority reports to the Governor and Legislature on actions necessary to implement the Plan, including legislation, coordination and appropriations of money, especially from the State Water Plan Fund (K.S.A. 74-2622(c)(5); 82a-951(b)).

### **ASSESSMENT**

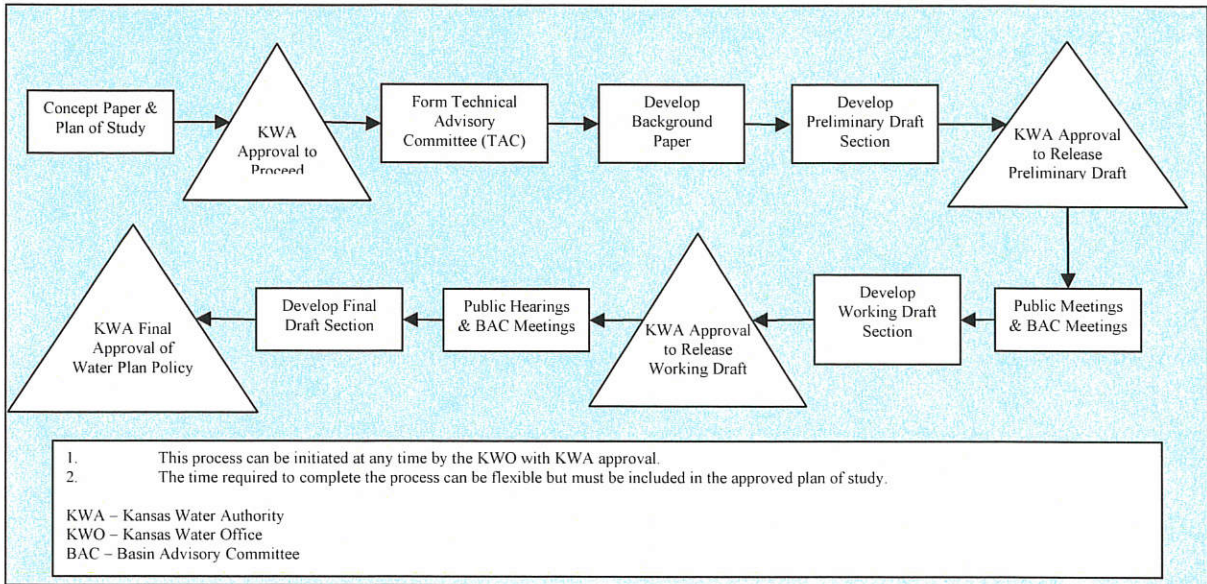
Assessments are be made on an on-going basis to see what progress the State is making on the 2010 and 2015 Objectives approved by the Kansas Water Authority. They provide valuable information to planners and program managers as they target funding and resources. Each completed assessment is summarized in assessment notebooks for the state and by the basin, and can be found at <http://www.kwo.org>.

### **ADDITIONAL INFORMATION**

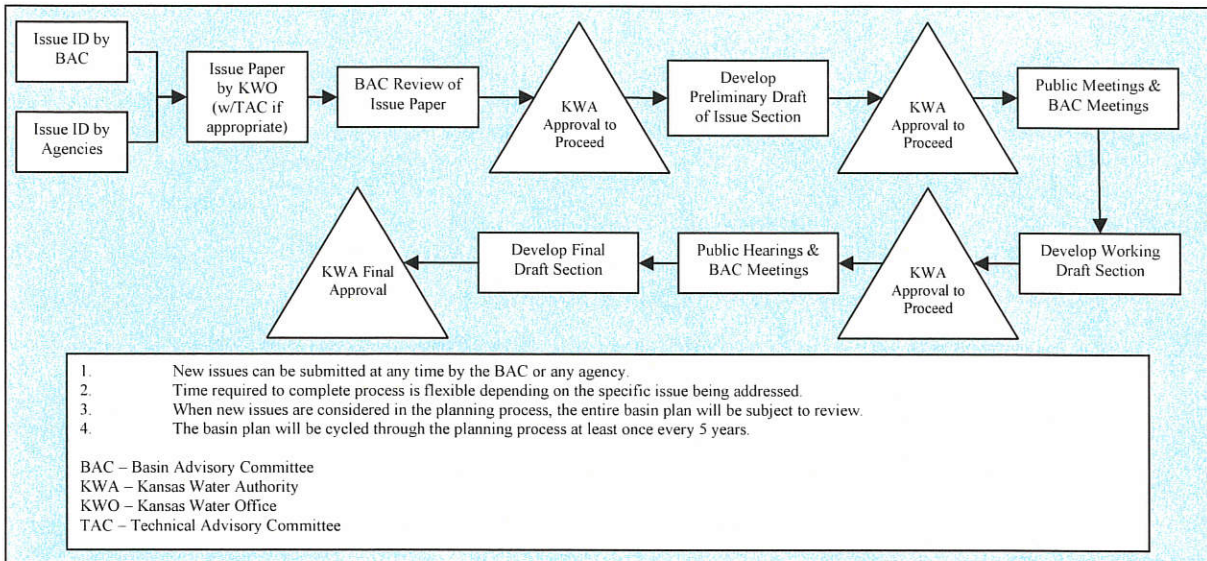
Further information on this subject or other *Kansas Water Plan* related programs can be obtained from: Kansas Water Office, 901 S. Kansas Avenue, Topeka, KS 66612-1249, phone (785-296-3185), toll free (1-888-KAN-WATER) or check our WEB site at <http://www.kwo.org>.



**Table 1  
Kansas Water Plan - Policy Issue Planning Process**



**Table 2  
Kansas Water Plan - Basin Issue Planning Process**



# A BRIEF HISTORY OF KANSAS WATER PLANNING

Fact Sheet No. 24

January 2001

Kansas Water Office

## 1917-1955

The Kansas Water Commission was created by the 1917 Legislature to “. . . work out a systematic general plan for the complete development of each watershed in the state . . .” However, no planning funds were provided. In 1927, the Kansas Water Commission was abolished and its planning functions were assigned to the Division of Water Resources, State Board of Agriculture. In 1947, a plan was officially adopted for the Neosho River Basin.

## 1955-1961

In 1955, the newly created Kansas Water Resources Board was directed to “. . . work out a state plan of water resources development for each watershed in the state. . .” In 1958, an amendment to the Kansas Constitution removed the prohibition against state financial involvement in water projects. Also in 1958 the Federal Water Supply Act authorized a portion of the costs of a federal multipurpose reservoir project to be allocated to future municipal and industrial water supply.

## 1963-1965

In 1963, the Legislature enacted the State Water Plan Act, which directed the Board to present to the Legislature a comprehensive state water plan. In 1965, the Board submitted a draft of proposed legislation which was enacted as the State Water Plan.

## 1966-1969

In 1966, the Board prepared reports on special water districts, groundwater, water quality control needs, irrigation, water law, and water demands for industrial, municipal and rural domestic uses. In 1968, the Board, and the Bureau of Reclamation, began studies to analyze the land and water resources of Kansas. Included in these studies were projections of the economy,

population and water needs for the years 1985 and 2000.

## 1970-1974

The Board concentrated on studies of mineral intrusion areas and modifications to the 1968 Groundwater Management District Act. Two significant pieces of legislation were enacted during this period: the 1972 Groundwater Management District Act and the 1974 State Water Plan Storage Act.

## 1978-1982

In 1978, the final report of a two-year study by a governor’s task force on water resources contained 39 recommendations regarding the state’s legal, policy and administrative water issues. In 1979, the Board began to revise the State Water Plan, placing increased emphasis on conservation and management. In 1981, the revised plan was passed by the Legislature. On July 1, 1981, the Kansas Water Resources Board was abolished and renamed the Kansas Water Office. A 16-member Kansas Water Authority was created and assumed many of the duties and responsibilities of the former Board.

## 1983-1986

In 1983, legislation addressing interbasin transfers of water, minimum desirable streamflows and amendments to the State Water Plan Storage Act was enacted.

In the fall of 1983, the Office presented a proposed State Water Plan to the Authority and discussed the plan at public meetings throughout the state.

In November 1984, the *Kansas Water Plan* was approved by the Kansas Water Authority and submitted to the Governor and Legislature. On February 18, 1985, HCR 5010 officially endorsed the planning process of the Kansas Water Office

and requested the state's water agencies to submit legislation to implement the plan's proposals.

In 1985, an 11-member basin advisory committee was established in each of the state's 12 major river basins.

### 1989-1991

Based on legislation passed in 1985, the nation's first water assurance district (the Kansas River Water Assurance District) came "on line" during the drought of 1991.

Creation of the State Water Plan Fund in 1989 provided a dedicated source of revenue for implementation of the *Kansas Water Plan*. This fund provides around \$18 million annually and is comprised of a combination of state general revenues, economic development initiative funds (lottery), and various water use fees on municipal, industrial and stock water uses, and fees on pesticide and fertilizer use. Pollution fines, penalties and sand royalties also contribute to the fund.

Major additions to the *Kansas Water Plan* during this period were "Public Education: A Natural Resources Curriculum for Kansas Schools" (1990), "On-Site Assistance to Public Water Supply System Personnel: (1990), "Water Use Conservation" (1990) and "Coordination of Geographic Based Planning and Implementation Process" (1991).

### 1992

The Kansas Water Office initiated a sub-basin planning effort in 1992 designed to focus planning on specific priority issues that were not identified in the existing basin plans. One such example is the "Upper Arkansas River Corridor Sub-basin Plan."

The Governor's Water Quality Initiative was launched in 1995. It was a multi-agency investigation of surface water contamination from nonpoint source pollution in the Kansas-Lower Republican Basin.

### 1997-Present

The Kansas Water Office and Governor's Office sponsored a vision summit in November 1997, attended by over 200 representatives of the water community that participated in drafting long-range goals for the *Kansas Water Plan*.

In 1998, after extensive discussions, the Kansas Water Authority approved the draft goals

developed from the 1997 vision summit as *Kansas Water Plan* objectives for the year 2010.

The 2010 objectives provide the basis for a revised *Kansas Water Plan* approved by the Kansas Water Authority in 1999.

### Additional Information

Further information on this subject or on many other *Kansas Water Plan* related programs can be obtained from: Kansas Water Office, 901 S. Kansas Avenue, Topeka, KS 66612-1249, phone (785-296-3185), toll free (888-KAN-WATER) or check our WEB site at [www.kwo.org](http://www.kwo.org).



# WATER MARKETING PROGRAM

Fact Sheet No. 7

July 2002

Kansas Water Office

## Background

The roots of the Kansas water marketing program are found in the Federal Water Supply Act of 1958. This law allowed storage space for municipal and industrial water supply to be included in federal reservoir projects if a nonfederal entity gave assurances that "expected future demands for the use of such storage will be made within a period of time which will permit payment of the costs allocated to such purposes within the life of the project." The law also provided for long-term, low interest federal financing. An amendment to the Kansas Constitution, ratified in 1958, allowed the state to take advantage of the provisions of this federal law.

To date, Kansas has signed agreements for repayment of the water supply storage costs in Peason-Skubitz (Big Hill), Clinton, Council Grove, Elk City, Hillsdale, Kanopolis, John Redmond, Marion, Milford and Perry reservoirs. In addition, reserve capacity storage has been purchased in Tuttle Creek, Melvern, and Pomona lakes which can be made available under the Water Marketing Program.

## Purpose

The purpose of the water marketing program is to develop adequate water supply storage to meet, as nearly as practicable, present and anticipated municipal and industrial water needs through the purchase of water supply storage in federal reservoirs, which is then sold to water supply users, in the best interests of the state.

## Overview

The 1974 Legislature enacted the State Water Plan Storage Act, which authorizes the Kansas Water Office to contract with water purchasers for sale of water from any reservoir included in the Kansas Water Marketing Program. Water sold from these reservoirs must be used for municipal or industrial purposes.

To begin the process of obtaining a water supply contract under the marketing program, a prospective purchaser files an application with the Kansas Water Office. The application includes the desired amount and identifies the specific reservoir. The application may remain on file for 10 years. Contract negotiations begin at the applicant's request. All other applicants on file from the reservoir under negotiation are contacted to determine if they wish to begin negotiation at that time.

Successful negotiations between the Kansas Water Office and the applicant produces a contract stating the conditions of the purchase. Common contract provisions include the length of time the contract will remain in force, the reservoir that will be used, the amount of water to be withdrawn, the place of use, billing and payment procedures, metering of water and withdrawal schedules.

The price for water is set annually according to a formula established by state law and is not negotiable. This price may vary from year to year in accordance with the established formula. Purchasers must pay for one-half of the contracted amount of water, even if less than one-half is withdrawn. There is also an annual charge on the contracted but unused volume.

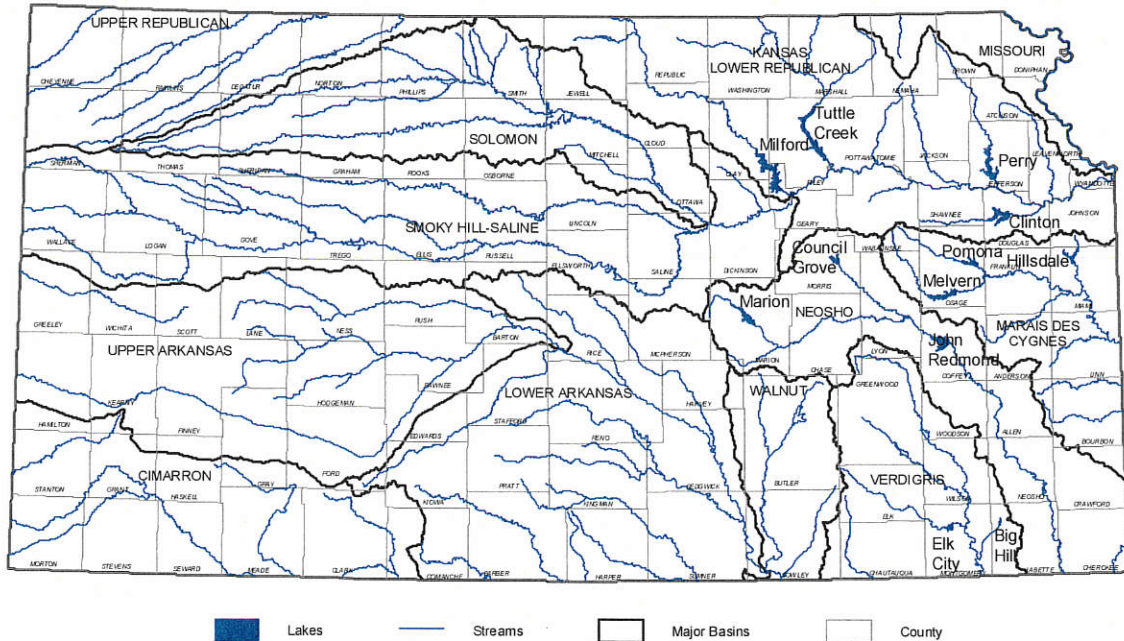
The Kansas Water Office also sells water from reservoirs in the Water Marketing Program on a short-term basis when and where available. These "surplus water" contracts are limited to a term of no more than one year. As in the case of water supply contracts, short-term surplus water contracts have a "take-or-pay" provision. The price is set by the Kansas Water Authority and can be up to double the rate for long term contract.

All contracts negotiated must be reviewed by the Kansas Water Authority and are approved if determined to be in the best interest of the state. Water supply contracts are also reviewed by the Kansas Legislature. The Legislature may disapprove the contract by passage of a concurrent resolution.

## Additional Information

Further information on this subject or on many other *Kansas Water Plan* related programs can be obtained from: Kansas Water Office, 901 S. Kansas Avenue, Topeka, KS 66612-1249, phone (785-296-3185), toll free (888-KAN-WATER) or check our WEB site at [www.kwo.org](http://www.kwo.org).

## Water Marketing Program Lakes



# WATER ASSURANCE PROGRAM

Fact Sheet No. 8

January 2001

Kansas Water Office

## Background

During periods of mild to severe drought, natural streamflow on regulated streams (those with reservoirs) may be significantly reduced. Municipal and industrial water users along the stream who hold valid appropriation rights to the natural flow may find their ability to use the stream is severely limited, at a time when their demand for water is at its highest.

In the past, water in storage from upstream reservoirs was available to these users only under terms of the State Water Marketing Program. In order to participate in the Water Marketing Program, municipal and industrial water users were required to sign a long-term (up to 40 years) contract with the state agreeing to: repay the state for the costs of providing the water; pay for at least 50 percent of the contracted water each year, regardless of actual use; and pay for water lost in transit from the dam to the purchaser's intake if the water delivery system is the stream below the dam. The state recognized that the marketing program might not meet the needs of many municipal and industrial water users since it obligates a purchaser to a long-term financial commitment for water supply from a specific reservoir, which may only be needed during low flow periods.

## Purpose

The purpose of the water assurance program is to allow for coordinated operation of state-owned or controlled water storage space in federal reservoirs in a designated basin to satisfy downstream municipal and industrial water rights during drought conditions. Water right holders are therefore assured to receive enhanced flow during times of drought while the state operates the reservoirs in a basin as a system for increased efficiency in water delivery.

## Overview

The Water Assurance Program Act (K.S.A. 82a-1330 *et seq.*) was enacted in 1986. Under this

law, assurance districts can be organized by eligible water right holders who are located down stream from reservoirs. The process for organization of a district includes: identification of eligible water right holders by the Chief Engineer, filing a petition with the Secretary of State for organization of the proposed district, review and approval of the petition by the Chief Engineer and an election by persons holding the eligible water rights to form a district. Upon organization and formation of a district, participation is mandatory for all eligible water right holders.

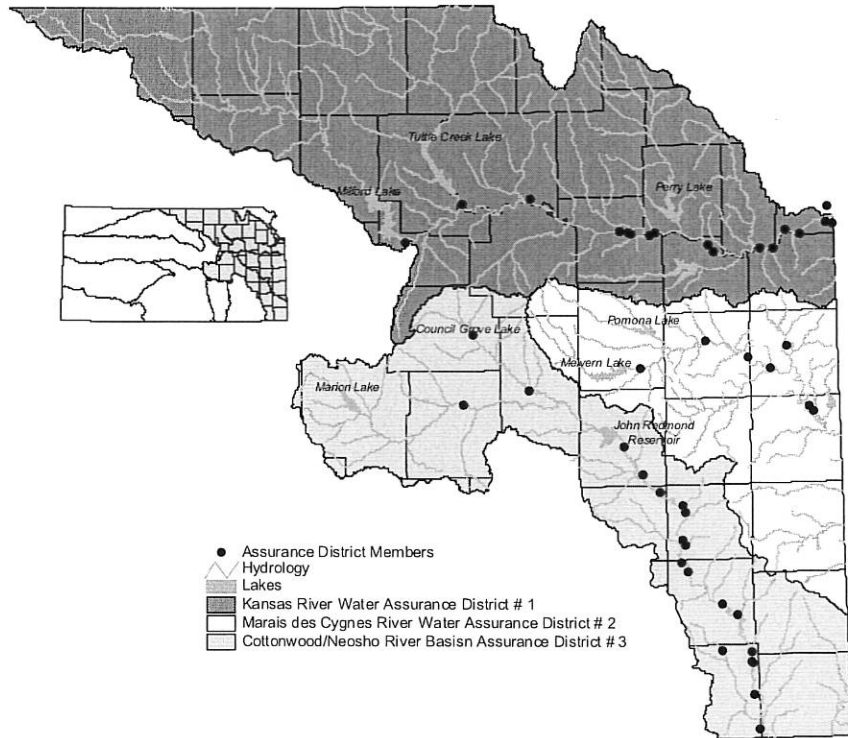
Among the powers granted to an assurance district is authority to levy an annual charge against district members to cover costs to the state in acquiring, operating and maintaining water supply storage needed to satisfy the district's needs. A contract, specifying arrangements for payment of these costs to the state, must be negotiated between the Kansas Water Office and the assurance district. A key element of the contract and the negotiation process is an operations agreement between the Kansas Water Office; Chief Engineer, Division of Water Resources of the Kansas Department of Agriculture; Corps of Engineers; and the assurance district which describes the manner in which the reservoirs will be operated to increase their efficiency and enhance the benefits to members of the assurance district.

To date, three assurance districts have been formed and are operational: Kansas River Water Assurance District No. 1, Marais des Cygnes River Water Assurance District No. 2, and Cottonwood/Neosho River Basins Assurance District No. 3 (See Map).

## Additional Information

Further information on this subject or on many other *Kansas Water Plan* related programs can be obtained from: Kansas Water Office, 901 S. Kansas Avenue, Topeka, KS 66612-1249, phone (785-296-3185), toll free (888-KAN-WATER) or check our WEB site at [www.kwo.org](http://www.kwo.org). A fact sheet is also available on the Water Marketing Program.

# Assurance Districts In Kansas



# WATER CONSERVATION PROGRAM

Fact Sheet No. 16

July 2002

Kansas Water Office

## Background

Water conservation is considered to be any beneficial reduction in water use or in water losses. Water conservation means use efficiency. State policy is guided by the principal that the privilege to use water also bears the responsibility to use it wisely.

Water use conservation plans are required for anyone: a) purchasing water from the State Water Marketing Program (K.S.A. 82a-1311a), b) participating in the Water Assurance District Program (K.S.A. 82a-1348), c) sponsoring or purchasing the public water supply portion of a Multipurpose Small Lakes Program project (K.S.A. 82a-1608), d) transferring water under the Water Transfers Act (K.S.A. 82a-1502) and e) applying for a loan from the State Revolving Fund (K.S.A. 65-163g).

When the Governor declares a State of Drought, the Drought/Emergency Contingency Plan portions of approved conservation plans and state facilities plans are triggered (K.S.A. 48-924(e)).

Through its Water Conservation Program, the Kansas Water Office developed industrial, irrigation and municipal water conservation plan guidelines in 1986. The municipal and irrigation conservation plan guidelines were revised in 1990 and 1993 respectively. Kansas Water Office personnel provide technical assistance to water users who are required to adopt and implement conservation plans, as required by K.S.A. 82a-733(c). Technical assistance to water users is funded with Kansas Water Plan Funds and includes visits to explain the guidelines, craft a conservation plan, and prepare the final copy of the water conservation plan.

## Municipal Water Conservation

As of January 1, 2001, the Kansas Water Office and the Kansas Department of Agriculture, Division of Water Resources has approved 449 municipal water conservation plans, which account for approximately half of

the public water suppliers in Kansas. Since 1994, the Kansas Water Office has made extensive use of two part-time, temporary positions to assist public water suppliers in preparing municipal water conservation plans. During FY 1999, fifty-nine municipal water conservation plans were approved, primarily for public water suppliers who are required by statute to have a municipal water conservation plan in place in order to be considered for approval of a State Revolving Loan Fund Grant.

In August 1999, the Kansas Water Office surveyed public water suppliers who had state-approved municipal water conservation plans based on the 1990 guidelines. The purpose of the survey was to determine the public water suppliers' perception of the quality of water conservation planning assistance provided by the Kansas Water Office and the effectiveness of their plans. A total of 232 survey forms or 84 percent of the 275 forms mailed were returned. Ninety-six percent of the respondents thought that the technical assistance received from the Kansas Water Office was good or excellent and 76 percent thought their water supply systems operated in a more cost-effective manner due to the implementation of their water conservation plan.

In addition, statistical analyses were performed to determine if public water suppliers, who prepared water conservation plans using the 1990 Water Conservation Plan Guidelines, used water more efficiently after their plans were approved, than they did before they were approved. Those analyses found a statistically significant reduction in both unaccounted for water and average gallons per capita day usage after the preparation and implementation of a water conservation plan.

## Irrigation Water Conservation

The Kansas Department of Agriculture, Division of Water Resources has required and approved more than 1,000 irrigation water conservation plans, primarily in the early 1990's. Since 1994, the Kansas Water Office has



provided irrigators with on-site technical assistance in preparing irrigation water conservation plans. This assistance has been provided through contracts with groundwater management districts and by using one of the part-time temporary positions identified in the municipal water conservation narrative.

In February 2000, the Kansas Water Office sent a survey to irrigators for each irrigation water right that had an irrigation plan approved on or before December 31, 1997. The purpose of the survey was to determine the irrigators' perception of the quality of water conservation planning assistance provided by the Kansas Water Office and the effectiveness of their plans. For analysis purposes, the data were summarized on the basis of the responses received from irrigators regarding irrigation water rights with plans for which only a single point of diversion was utilized. There were 200 survey forms for plans prepared using the 1993 guidelines. A total of 140 survey forms or 70 percent of the 200 forms were returned. Eighty-seven percent of the respondents thought that the technical assistance received from the Kansas Water Office was good or excellent and 82 percent

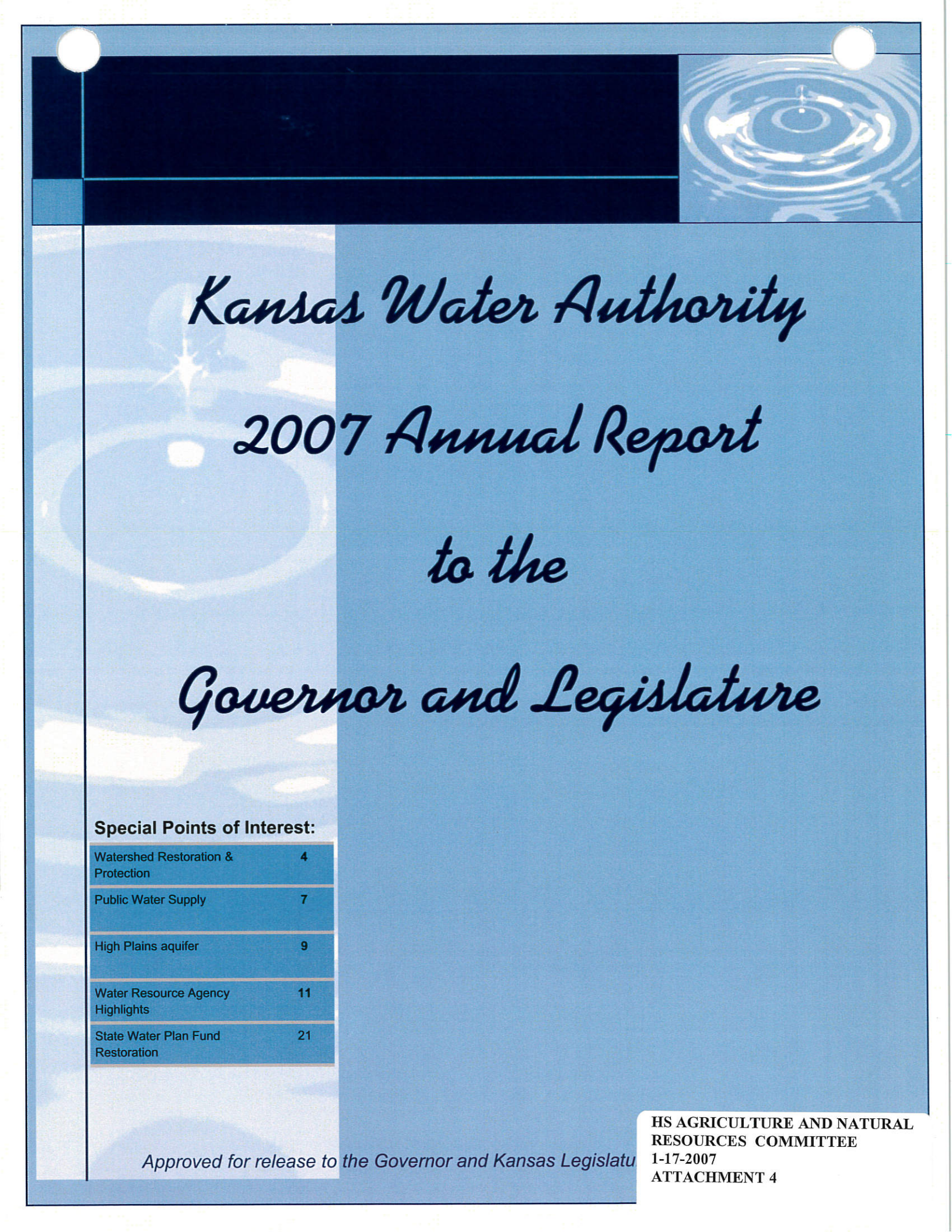
thought their irrigation systems operated in a more cost-effective manner due to the implementation of their water conservation plan.

In addition, statistical analyses were performed to determine the effectiveness of the 1993 Irrigation Water Conservation Plan Guidelines. Those analyses found statistically significant reductions in water use after the preparation and implementation of a water conservation plan (for irrigators using the 1993 Water Conservation Plan Guidelines) in Western Kansas Groundwater Management District No. 1, Northwest Kansas Groundwater Management District No. 4, and in those areas outside of groundwater management district boundaries.

### **Additional Information**

Further information on this subject or on many other *Kansas Water Plan* related programs can be obtained from: Kansas Water Office, 901 S. Kansas Avenue, Topeka, KS 66612-1249, phone (785-296-3185), toll free (888-KAN-WATER) or check our WEB site at [www.kwo.org](http://www.kwo.org).





*Kansas Water Authority*  
*2007 Annual Report*  
*to the*  
*Governor and Legislature*

**Special Points of Interest:**

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*Approved for release to the Governor and Kansas Legislature*

HS AGRICULTURE AND NATURAL  
RESOURCES COMMITTEE  
1-17-2007  
ATTACHMENT 4



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**WATER PLAN PROJECTS INITIATIVE**

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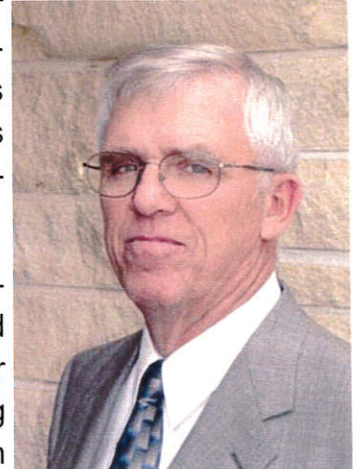
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## Sediment Control Critical to Public Water Supply

Water is an important issue for all Kansans. Gone are the days when water is taken for granted by city or rural residents, by recreational users, by agriculture or any other group who utilizes water. This Annual Report highlights new and on-going efforts to protect and preserve Kansas water resources and includes the Kansas Water Authority's FY 2008 budget recommendations.

The Authority is in the third year of a three-year Water Plan Projects Initiative to work intensively on water issues. Thanks to Governor Sebelius and the Kansas Legislature, \$4.5 million has been restored to the State Water Plan Fund, allowing investment in more water resources projects benefiting Kansans. Last year, the Kansas Water Authority's annual report focused on western Kansas initiatives.



The third year of the Water Plan Projects Initiative primarily focuses on eastern Kansas, specifically on sedimentation and the challenges posed to public water supply. Watershed protection and restoration actions are keys to protecting and preserving the federal reservoirs which provide water storage for more than half of the state's population.

Reservoirs change the state's natural water system, undermining nature's ability to flush streambeds of excess topsoil and silt deposit. As a result, streams deposit sediment in reservoirs, reducing water storage capacity and diminish reservoir water storage capacity, flood protection, and recreation. State Water Plan Funds underwrite on-going sediment research as well as conservation practice development and implementation to combat sedimentation. In addition, the transfer of the Clean Drinking Water Fees to the State Water Plan Fund will provide the necessary funding to begin the restoration of public water supply lakes.

None of this is to diminish the work on-going in western Kansas. Concerted efforts are underway there to make a difference in the rate of decline of the High Plains aquifer. The Water Transition Assistance Program, a five-year pilot program, is geared for permanent retirement of water rights. A complementary federal initiative, the Environmental Quality Incentive Program Quick Response Program, is underway in targeted areas for short-term water use reduction. Under development is a joint state/federal program, the Conservation Reserve Enhancement Program, for permanent water retirement along the Arkansas River corridor.

I hope you enjoy this Annual Report and the extensive efforts Kansas has undertaken to protect our water resources. These efforts illustrate the vital function State Water Plan dollars serve in all areas of Kansas.

A handwritten signature in black ink that reads "Steve Irsik". The signature is written in a cursive, flowing style.

Steve Irsik, Chair, Kansas Water Authority



**Sediment: Central Theme for Several State Water Plan Projects**

Mud flats. The upper reaches of many of the state's federal reservoirs and small lakes have become mud flats. Mud, more correctly called "sediment," originates from top soil, stream banks or lake shores. Sedimentation was an expected result of the reservoir system, limiting the expected life of reservoirs to 50 to 100 years. Sediment effects were taken into account in each reservoir storage space allocation. Kansas' reservoirs are nearing their 50th anniversary. Sediment accumulation for some reservoirs has been faster than originally predicted and has begun to encroach on storage space originally allocated for other uses. This comes at a time when population projections call for more people in eastern Kansas where reservoirs provide water for more than one-half of the state's population.

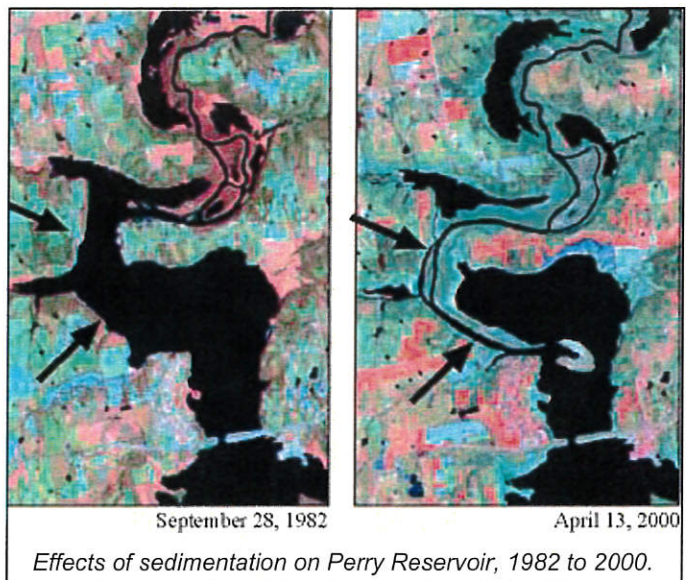


*Sediment in Lake Dabinawa in Jefferson County was removed by the Masters Dredging Company, Inc., and pumped to settling, or material basins. The water was returned to the reservoir without the silt.*

There are some alternatives. Reservoir replacement is possible, but the best large reservoir sites have been used. In addition, the costs and the social, environmental and economic impacts of creating new reservoirs are high. Dredging current reservoirs is an option, but an expensive one. Dredging has been done on small impoundments but before dredging becomes a viable option, research needs to address dredging's long-term effectiveness and how materials are properly disposed.

A better option is to control sediment sources. Several efforts are underway or proposed to address sedimentation issues. A statewide sediment strategy developed by state and federal agencies is intended to assist sediment related research and sediment program implementation. The Kansas Water Resources Institute is coordinating efforts to answer research questions related to erosion control, sediment deposition and effective management practices. Once detailed research proposals are developed, federal and private funds will be sought to complement the FY2008 State Water Plan Fund funding request of \$100,000. Research efforts are bolstered by a \$90,000 grant from the United States Geological Survey. Some of the programs are highlighted in the following information.

Bathymetric or water depth surveys use sonar technology to locate sediment in Kansas small lakes and reservoirs and to measure accumulations. Bathymetric surveys provide sediment information much faster than physical measurements. As part of the statewide sediment strategy, the Kansas Water Office proposes more on-going bathymetric reservoir surveys to determine sediment rates and accumulation. On-going surveys will allow the Kansas Water Office's Water Marketing Program to adjust water storage volumes to protect supply and address customer needs. (See details on the KBS's work on page 12.) **FY2008 Funding Request: \$165,000.**





The **Small Lake Restoration Program** provides funding for renovation and protection of lakes used for public water supply. The State Conservation Commission, charged with overseeing the Small Lake Restoration Program, plans to conduct a small lake restoration project using dredging. The data from this program which is generated by on-going bathymetric surveys, will assist the state in evaluating dredging and other options in other reservoir and lakes. **FY2008 Funding Request: \$2,719,713.**

A multi-faceted effort targets sediment related issues in the upper Neosho River basin and John Redmond Reservoir. Sedimentation in John Redmond Reservoir has significantly reduced available water storage capacity. The State of Kansas has requested a permanent two foot rise in the conservation pool as a interim solution.

The U.S. Army Corps of Engineers authorized the reallocation of storage from the reservoir's flood storage to conservation, provided the action would be offset by riparian restoration, wetland development, and boat ramp construction. Additional study is also planned to identify sediment sources and applicable management strategies for the watershed above John Redmond reservoir.

Watershed Restoration and Protection Strategies (WRAPS) are developed by watershed stakeholders. All 20 of the *Kansas Water Plan* priority federal reservoirs are subject to watershed management activities. Nineteen of them are engaged in the Kansas-WRAPS Program. The twentieth, El Dorado Lake, benefits from watershed management activities that predated the program. WRAPS groups in other watersheds also are eligible for WRAPS funding on a priority basis.

WRAPS projects systematically address watershed issues using advice from local stakeholders and groups. Kansas has a widespread WRAPS initiative, with 39 active WRAPS projects underway, addressing issues in 22.9 million acres- more than 43 percent of Kansas' geography.

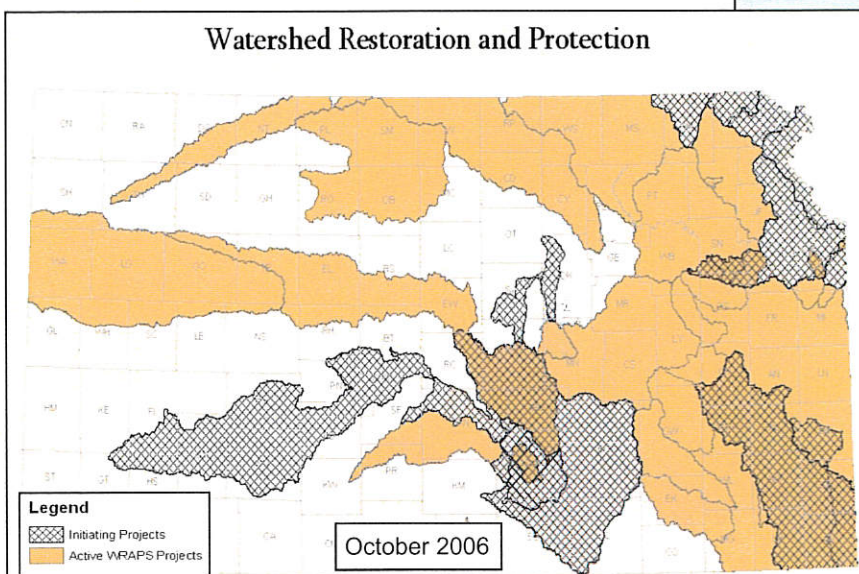
WRAPS initiatives involve 4 steps:

- **Development:** A watershed stakeholder leadership team is established.
- **Assessment:** Watershed conditions are determined and an assessment is made of the effect of an array of management actions.
- **Planning:** Goals and costs are formed into a watershed restoration and protection action plan.
- **Implementation:** The locally developed watershed restoration and protection plan is executed.

About 49 percent of the 39 active projects in the state are in the development phase; 13 percent in the assessment phase and 38 percent in the implementation phase.

WRAPS funding assistance is available through the Kansas WRAPS Fund. In FY2006, this fund consisted of \$800,000 from the State Water Plan Fund combined with \$1.2 million from EPA 319 Funds. A local match is also required to receive WRAPS funding.

***For Fiscal Year, the funding request is \$1,621,489 with additional funding targeted for WRAPS implementation projects.***





Additional assessment work may also be conducted for Marion Reservoir to address recurring algae blooms fueled in part from excessive nutrients in the reservoir. **FY2008 Funding Request: \$500,000.**



Nutrient rich waters foster abundant algae growth that when they die, lead to subsequent taste and odor problems.

and rural flood damage reduction. This program provides cost share assistance to watershed and drainage districts for dams to act to control floods and stabilize grades, trapping sediment and controlling erosion from stream banks and other areas.

In 2004, the Kansas Legislature, recognizing dam impacts, designated State Water Plan Funds for dam rehabilitation. Currently \$601,499 is available, including approximately \$350,000 for new construction projects and \$250,000 for dam rehabilitation and breach inundation area mapping. The breach inundation mapping is critical to provide county and city government information to control or restrict development in an area subject to flooding in a dam breach incident.

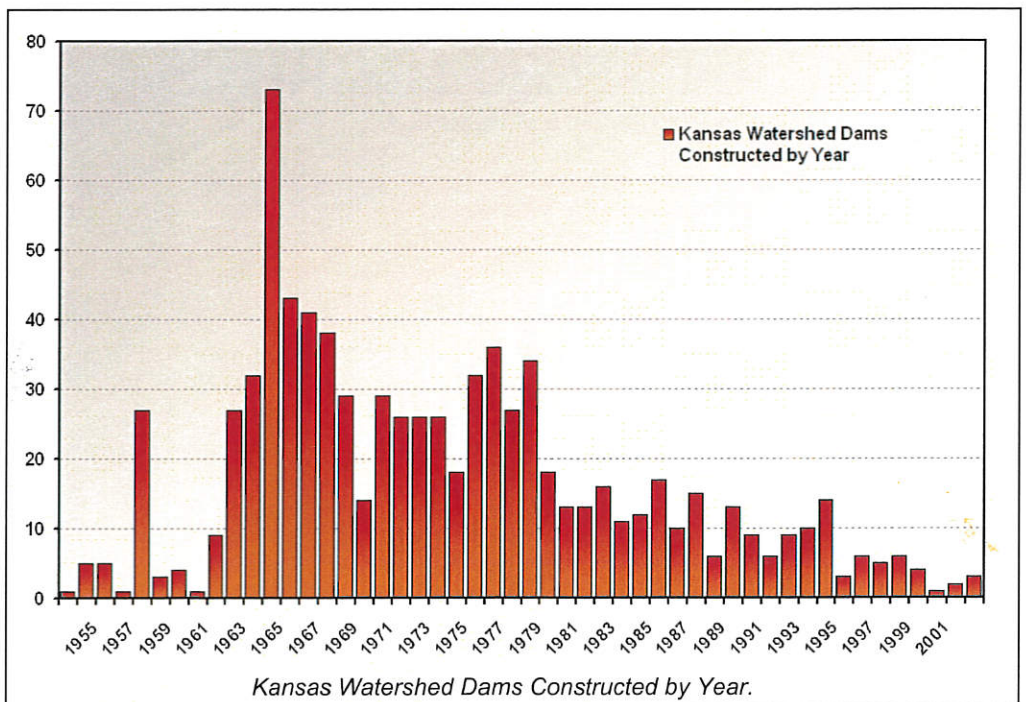
**The FY2008 Funding Request: \$1,055,000, including an additional \$453,501 for new projects above federal reservoirs or rehabilitation/mapping projects.**

Proactive steps to reduce sedimentation are not new. USDA's Continuous Conservation Reserve Program, initiated in 1991, was supplemented in 1997 by the Kansas Water Quality Buffer Initiative administered by the State Conservation Commission. The state provides supplemental annual rental payments to landowners or operators who install buffer strips and riparian forest buffers in targeted water quality areas.

Watershed Restoration and Protection Strategies (WRAPS) are being developed by local watershed stakeholders in communities across the state (See sidebar). WRAPS projects address water quality and related water resources concerns, including sediment related issues.

In the Tuttle Creek Reservoir watershed alone, more than 3,700 acres have been enrolled in the state program. Cropland runoff from fields adjacent to 381 stream miles is filtered to remove sediment and other nonpoint source pollutants, protecting the reservoir.

The Watershed Dam Construction Program provides sediment control





### Turn a Tap and the Water is There for Drinking, Bathing, Sanitation and Recreation.

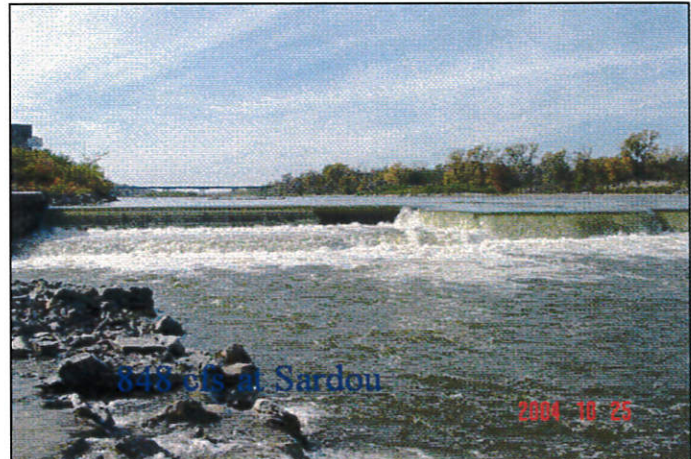
Few household water users understand the complex water supply infrastructure. Water supply infrastructure, the details of which are beyond the scope of this report, includes developing, maintaining, and protecting water supply sources; treating and delivering the water to residences, businesses and industry; forging interlocal agreements for regional supply; ongoing water quality testing; and systematic technical, financial and managerial training.

Public water supplies in eastern Kansas predominantly rely on surface water from federal reservoirs, river systems, multipurpose small lakes or community impoundments. The federal reservoir's water supplies are administered through the Kansas Water Office's Water Marketing and Water Assurance Programs. Those programs face financial challenges in long-term capital debt and rising operation and maintenance costs. Water supply sources face increasing demands and challenges from burgeoning populations, recurring drought, streambed degradation, and sedimentation.

The on-going drought took a hydrologic toll in 2006. Stream flows were at historic lows at more U.S. Geological Survey (USGS) stream gages than ever before. Were it not for the water stored in federal reservoirs for the state's Water Assurance and Marketing programs, numerous streams would have had no flow at all to meet water users' needs. Many communities have implemented water conservation plans, to help conserve water in drought and other times of need. Communities that once were drought vulnerable have addressed supply issues and have tapped into public wholesale water supply districts, joined an assurance district or formed a local alliance to assure a dependable water supply. These actions and plans have worked to reduce the number of drought vulnerable communities.

**Kansas River Degradation.** Degradation, the lowering of the streambed, is occurring in many reaches of the Kansas River. Public water suppliers with intakes on the Kansas River have

spent millions of dollars mitigating degradation effects on infrastructure, including public water supply intakes. A technical advisory committee created by the Kansas Water Office identified the primary causes of this degradation as reservoir operations, Missouri River degradation and aggregate dredging activities. New baseline measurements of streambed elevation, currently in progress between Junction City and Lawrence, will identify future degradation.



*The City of Topeka built a weir on the Kansas River to direct water to its water intake during times of low flow.*

**Water Marketing and Water Assurance.** The Water Marketing and Assurance programs, administered by the Kansas Water Office, have secured water storage in federal reservoirs to provide water supply to a growing percentage of eastern Kansas. The Water Marketing Program has both fixed rate and variable rate customers. In June 2006, the Kansas Water Authority approved a Capital Development and Storage Maintenance Plan (CDSP), which estimates Water Marketing Program costs over the next 35 years, based on predictions of when future use storage space owned by the State of Kansas but not currently under contract, would be called into service. The Plan tries to match available storage to customers' needs to help keep variable rate customers' costs in check.

There is, however, a rapidly growing cost to reservoir water supply storage. CDSP estimates storage debt may exceed \$100 million. Cost containment options are being explored, including debt relief for Hillsdale, adding variable rate customers and other potential revenue streams.



**Regional Solutions.** In western Kansas, ground water provides a majority of water supplies. Declining aquifer levels increase pressure on the all water resource uses. Communities are buying water rights from area landowners to insure future water supply. GMD No. 1 has a four-year water right retirement program called the Environmental Quality Incentive Program Quick Response Area. The program is targeted in areas around public water supply wells. The program is expected to extend water supply availability for communities.

In the tri-state region of Kansas, Oklahoma and Missouri, urban development is pressuring water supplies of the Ozark Plateau aquifer.



*Well measurements are one aspect of the Ozark aquifer studies.*

DWR adopted a moratorium regulation on new appropriations from the Ozark Plateau aquifer in 2004 pending further studies. Studies underwritten, in whole or in part, by the SWPF, include establishment of a monitoring well network by KGS and USGS modeling to simulate ground water flow and its interaction with surface water. The studies will also assess water quality changes, within the Ozark Aquifer system in Kansas and Missouri. State and federal agencies continue to work with public water suppliers through the Tri-State Water Resource Coalition assessing needs and securing a long-term supply of good quality, affordable water.

Southcentral Kansas is experiencing rapid population growth. Current water supply in the region is sufficient to meet projected demands

until 2050, the supply is not strategically located for the growth areas and some sources are of poor quality. Working with a coalition of local suppliers, the Bureau of Reclamation and the State of Kansas initiated a cost-shared study in September 2005 to address supply, treatment and distribution issues.

### **On-site Technical Assistance.**

Kansas' local public water utilities are resourceful, but having experts on call is always a benefit. The Kansas Legislature's redirection of the Clean Drinking Water Fee Fund from the State General Fund to the State Water Plan Fund allows that fund to provide \$500,000 of on-site technical assistance to local public water utilities through a contract with the Kansas Rural Water Association. Response has been positive and the KRWA on-site technical assistance will continue.

Technical assistance includes services to enhance public water suppliers' abilities to manage the physical, fiscal and policy aspects of their operations and assistance with leak detection, metering, conservation plans, Kansas water right laws, inter-local agreements, dispute resolutions and other supplier-specific needs. Complementary technical, financial and managerial support for public water suppliers also is available from the KDHE. **FY2008 Funding Request: \$479,949.**



*A Kansas Rural Water Association (KRWA) staff member repairs an emergency water leak in the City of Matfield Green's storage tank.*



## Leveraging Federal Monies to Voluntarily Reduce Ground Water Declines

Kansas' High Plains aquifer has experienced large water level declines for many years. Efforts are underway to further define aquifer conditions, improve management tools and provide programs to slow declines. State and local efforts, both voluntary and mandatory, are being developed and implemented to extend the useful life of this aquifer to meet needs, today and in the future.

Water right retirement programs that pay irrigators not to use water rights to extend the life of the High Plains aquifer are gaining momentum. Programs are being developed using a variety of incentives for dryland farming with water rights protected, dryland farming with water rights permanently retired, and a CRP-type program with permanent water right retirements.

Voluntary conservation measures and state regulation are vital in protecting the aquifer, stream systems, and associated water rights. They include traditional compliance activities such as the Blatant Recurring Overpumper (BRO) Program, administration and management strategies developed in concert with local stakeholders and Groundwater Management Districts.

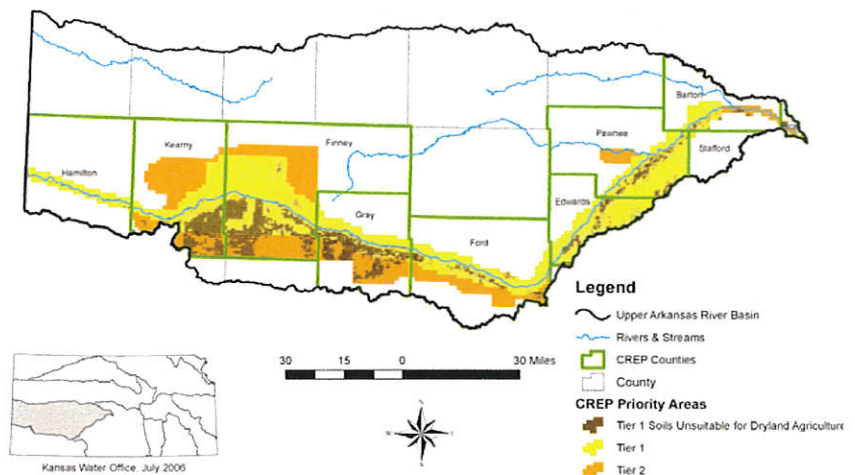
**WaterTAP.** Water Transition Assistance Program (Water TAP), is a five-year, pilot project to purchase and retire irrigation water rights in targeted areas; land can be dryland cropped after retirement. Targeted areas include the Prairie Dog Creek in northwest Kansas, a tributary of the Republican River; and Rattlesnake Creek in southcentral Kansas, which flows into the Quivira National Wildlife Refuge.

Irrigators will be paid based on the consumptive water use their permanent water right retirement takes out of the system. The State Conservation Commission will administer the program. **FY 2008 request: \$1.5 million.**

**Conservation Reserve Enhancement Program (CREP).** The State of Kansas is developing a program to partner with the United States Department of Agriculture (USDA) to pay irrigators along the Upper Arkansas River corridor to plant acres to grass. The focus is on irrigated lands adjacent to, and influencing the Arkansas River. CREP programs are 80:20 federal / non-federal cost share. State and local dollars contribute 10% in direct payments and 10% on in-kind activities. Kansas has committed \$5 million for incentive payments to farmers

Reducing irrigation demands on the stream-aquifer system will slow the aquifer declines,

Upper Arkansas River  
Conservation Reserve Enhancement Program (CREP)



mitigate the spread of saline river water into the aquifer, and help restore stream and riparian health. Water rights would be permanently retired, saving as much as 149,500 acre feet of water annually.

Landowners enrolling in the proposed CREP would receive a state sign-up payment, cost sharing for grass seeding, well plugging, and 14 to 15 years of irrigated rental rate payments. Leasing the land for hunting is allowed.

CREP programs are well-accepted across the nation. Nebraska, Colorado, and Idaho have recently implemented CREPs to reduce irrigation water use. Twenty six other states have implemented Conservation Reserve Enhancement Programs to address wildlife habitat and water quality concerns.



Well plugging is an important part of water right retirement. An estimated 120 wells a year in the CREP area would be plugged at a \$1,000 cost share per well, through the SCC Nonpoint Pollution Assistance Program. **FY2008 Funding Request: \$120,000.**

**Weather Modification.** The Western Kansas Weather Modification Program, operated since 1975 by the Western KS GMD No. 1, has effectively reduced crop-hail damage since its inception. Finney, Grant, Gray, Greeley, Hamilton, Haskell, Kearny, Lane, Scott, Stanton and Wichita counties participated in the program in 2006.



Seeding the clouds helps reduce damage from hail in Western Kansas.

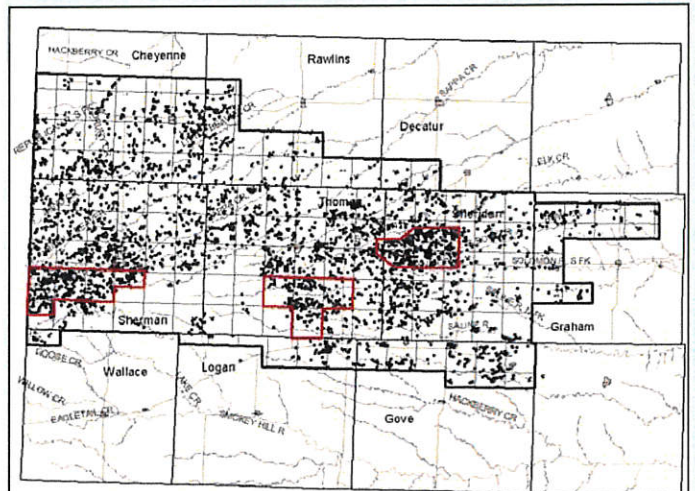
Current funding levels support four aircraft, half the number needed to deliver the program in the coverage area. KWO is working with GMD No. 1 to identify additional funding sources for the program. To sustain the current operation and help secure matching funds, an additional \$120,000 is needed for this program. **FY2008 Funding Request: \$240,000.**

**Tamarisk Control.** Salt cedar and Russian olive are invasive vegetation with negative impacts on native riparian ecosystems in the Cimarron and Upper Arkansas river corridors. The State of Kansas has adopted a 10-year tamarisk control plan that includes mechanical, chemical and biological control methods. Water consumption and the recovery benefits of control will be monitored. (Further information: page 21.) **FY2008 Funding Request: \$260,000 (SCC); \$40,000 (KWO).**

**NW Kansas Model Study.** The Ogallala High Plains Aquifer Special Study (Study) is providing additional aquifer and economic impact information to assist in the development of management plans. It is funded through a U.S. Bureau of Reclamation and Kansas Water Office Agreement, with a 50:50 cost share. Other contributing partners in the study include the Northwest GMD #4 and the Kansas Department of Agriculture, Division of Water Resources. The Republican River Model is being updated and refined to provide more detailed information on three subareas of GMD #4. The model will provide water budgets for these subareas, and project the aquifer response to hypothetical management scenarios. A complementary study of the projected economic impact of the various managements scenarios will be conducted by Kansas State University.

The Division of Water Resources is focused on the North and South Forks of the Solomon above the Kirwin and Webster reservoirs. These are areas that have had a loss of base flow related to the Ogallala and alluvial aquifer declines. A model is being developed for these areas, and will provide information on the aquifer/stream interaction.

Future years of the Ogallala Special Study will allow similar types of assistance in west central and southwest Kansas. **FY2008 Funding Request: \$100,000.**



Groundwater Management District No. 4 Study Areas



**Enhanced Water Management.** In many areas of the Ogallala-High Plains aquifer system, there is not enough water to sustain the future water supply. Enhanced water management couples the voluntary conservation measures with regulatory activities to protect the aquifer, stream systems and the associated water rights. Targeted areas include the upper and middle Arkansas River, Rattlesnake Creek, Pawnee-Buckner, and the Ogallala-High Plains aquifer. The 2006 Legislature approved funding for the program to increase protection of water resources in critical areas of the state. The program involves implementation of traditional compliance activities (e.g., meter inspections) in addition to management strategies developed with input from local stakeholders and the Groundwater Management Districts.



Arkansas River near Kendall, Hamilton County, Kansas  
(Courtesy of Kansas Biological Survey, 2005).

**Results:** Reduce water use in targeted areas by conducting field investigations, ground and surface water monitoring, stream-aquifer interaction studies, compliance actions (meter requirements, minimum desirable streamflow, and overpumping), protection of storage releases, investigations of impairment complaints, administration of water rights during droughts, and implementation of conservation and management actions.

Focusing voluntary and regulatory activities to targeted areas will lessen the number of water rights that are out of compliance, allow for follow-up and tracking of voluntary programs

(WTAP, CREP, Water Banking, EQIP) and to ensure successful implementation of management strategies. In addition, it allows for the assessment of ground and surface water to determine if targeted ground water levels and streamflow (Minimum Desirable Streamflow) are being met, and enhance the public relations by reviewing water rights with municipalities and irrigators.

**Benefits for Kansas.** A more robust approach to protection of water rights and the associated aquifer and stream systems ensures a future water supply for Kansas. It provides a mechanism to achieve the water use goals in the targeted areas to meet water supply demands.

**Dam Safety.** The 2005 *Kansas Water Plan* included a Small Dam Safety and Rehabilitation Policy identifying the needs to upgrade infrastructure and reduce hazards associated with dams, particularly where vulnerability can be mitigated by avoiding development in the area at risk below dams. Kansas Department of Agriculture is working with other agencies to propose legislation addressing these goals.

**Results.** The 2006 Legislature approved funding for state inspection of all significant and high hazard dams (more than 400). In previous years, these dams were inspected by consultants retained by the owners. Assessments of upgrade needs and hazards will be incorporated into state inspection of dams.

**Benefits for Kansas.** More uniform inspection of dam conditions and hazard assessments will be forthcoming. The emphasis will be on keeping individuals and property out of the hazard zone below dams, where possible, through institutional controls. Financial assistance may be provided for upgrading dams where necessary due to deterioration if the hazard classification changes due to downstream development or better information.

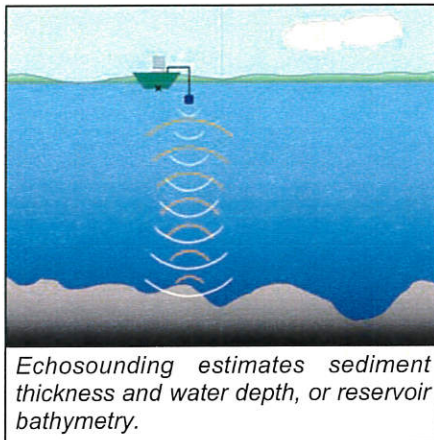


**Scientists Use Sonar to Measure Sediment Deposits.** Soil out of place...washed from farm fields, urban construction sites and sloughed from streambanks...ends up in the bottom of reservoirs. The displaced soil is a detriment that robs a reservoir of its storage space for water and contributes to water quality problems.

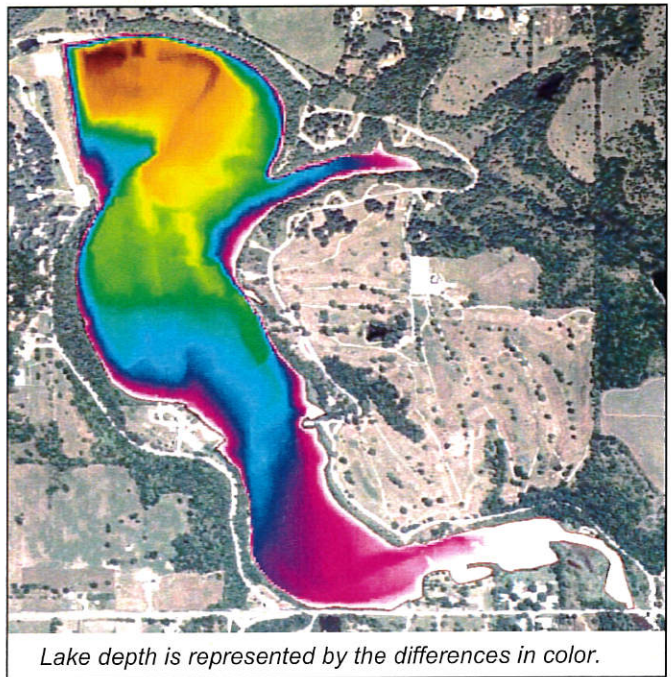
Local, state and federal reservoirs dot the Kansas landscape. They provide drinking water, flood control, irrigation water, and recreation. Since their construction, the more than 300,000 acres of public and private reservoirs and ponds built in the past 100 years have steadily filled with sediments.

Decision makers and policy makers need basic data including water depth, water capacity, and accumulated sediment thickness.

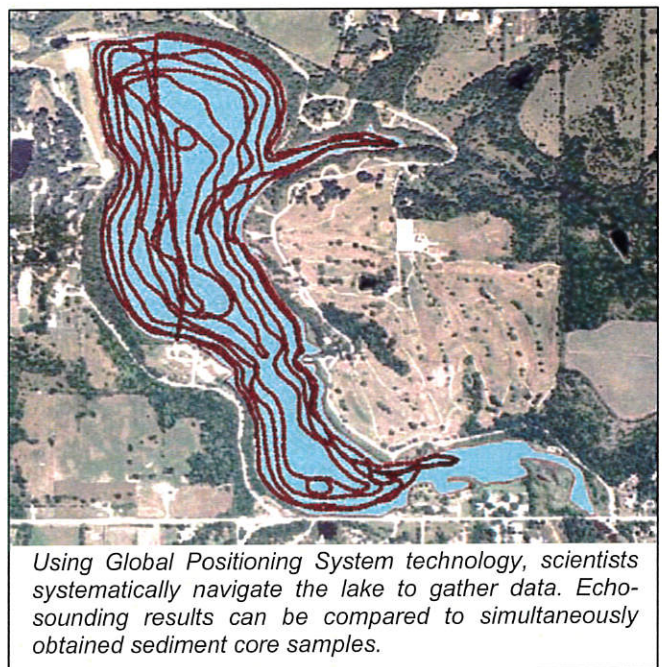
**Results.** The Kansas Biological Survey at the University of Kansas has invested in a state-of-the-art, scientific grade echosounding system for mapping of estimated sediment thickness and water depth, or reservoir bathymetry. Coupled with a Global Positioning System (GPS),



it's possible for the Survey's scientists to systematically navigate the lake to gather data. Results of the echosounding can be compared to simultaneously obtained sediment core samples. The core samples also allow sediment classification and chemical analysis. Images of lake depth created with acoustic sounding can be superimposed on pre-impoundment topographic maps to show changes in a lake's bottom. The sediment and lake depth measurement complements reservoir water quality assessment, all part of the Survey's "Applied Science and Technology for Reservoir Assessment Initiative (ASTRA)."



**Benefits.** Decision makers will be able to identify and prioritize reservoirs based on their sediment load and need for renovation, and easily assess the current condition of a given reservoir. Knowledge of sediment deposition in reservoirs also will help determine the effectiveness of watershed protection practices. In instances where dredging appears to be the best alternative to extend the life of a reservoir, it will give an indication of how much needs to be removed and a check on how much was removed.





**Kansas Buffer Initiative.** Nutrients and pesticides applied to fields are productive inputs for a bountiful food supply. Only when the inputs leave the fields to enter streams and lakes do they become pollutants. To prevent the switch from productive input to pollutant and to reduce loss of soil from farm fields, landowners have employed vegetative strips to buffer and filter their passage.

The Kansas Legislature in 1997 authorized the Kansas Water Quality Buffer Initiative, administered by the State Conservation Commission. It adds incentive payments to the United States Department of Agriculture's Continuous Conservation Reserve Program. A state incentive of 30 percent is offered for farmers who install filter strips and 50 percent for those who plant riparian buffers.

The program is available to landowners in all High Priority Total Maximum Daily Loads watersheds, ones that need water quality improvement for one or more reasons. All watersheds that drain into a federal reservoir providing drinking water also are eligible.

**Results.** Kansas in 2006 ranked second nationally in the number of acres enrolled in all buffer programs. While other states may have more total acres, Kansas has posted increasing interest. Some 34,000 acres of filter and riparian buffer strips have been planted since 1991. Of that amount, 9,700 acres have received the state cost share (first available in 1998).



*Riparian forest buffers and grass filter strips play an important role in maintaining natural resources*

More than one-third of the acreage (3,700) is in the Tuttle Creek Reservoir watershed. Crop-land runoff from fields adjacent to 381 stream miles is filtered to remove sediment and other nonpoint source pollutants.



*Some 381 stream and river miles in the Tuttle Creek Reservoir watershed are protected by stream buffers, assuming an average width of 80 feet.*

Altogether, more than 76,000 acres in Kansas have been placed in buffer practices between 1991 and 2006. Practices include grassed waterways, contour grass strips, wetland restoration, shallow water development and farmable wetland and buffer.

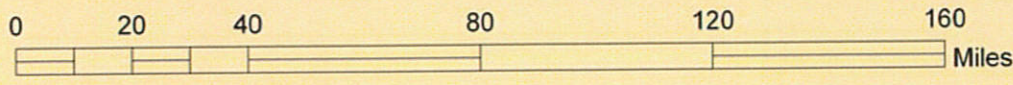
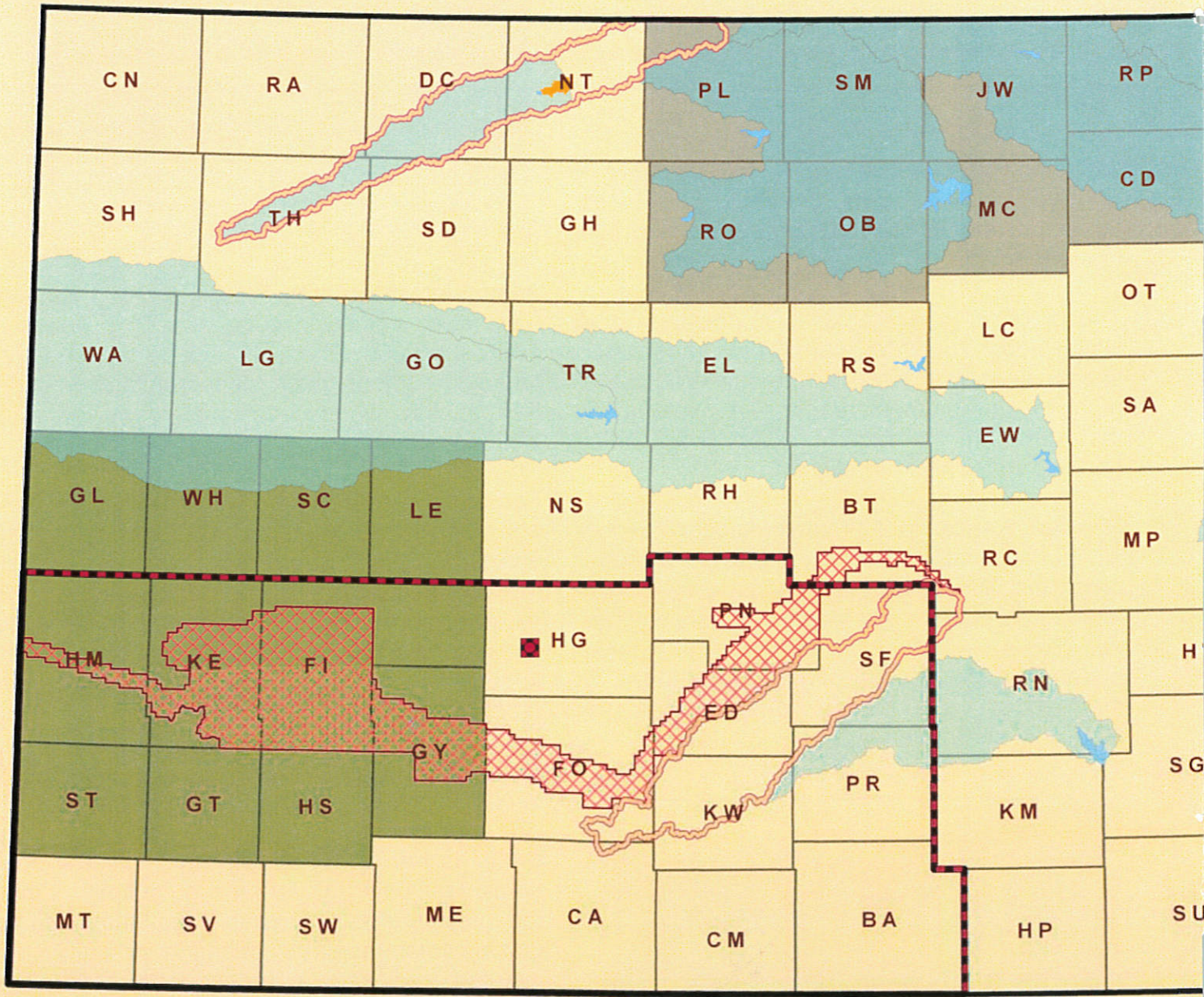
Foremost success came with field border buffers. Kansas received an allocation of 20,000 acres in 2004. The practice was "sold out" almost immediately and Kansas applied for and received an additional allocation of 7,500 acres in March of 2006. Kansas was one of six states to receive additional acres for the field border practice.

**Benefits.** The buffers afford more than water quality improvement by reducing nutrient, pesticide and soil (sedimentation) pollution. They serve as habitat for wildlife and help the economic well-being of the farm community. Once the buffer strips are established, they add to global climate health by taking in, or sequestering, carbon dioxide, a greenhouse gas, from the atmosphere.



# Water Plan Pro.

Phase III FY08 P









**Kansas Total Maximum Daily Loads.** Total Maximum Daily Loads are “pollutant budgets.” They’re used as a starting point to restore Kansas streams and lakes to established water quality standards. The pollutant loads are allocated among point sources such as city waste water treatment plants and non-point sources, both urban and rural.

The Kansas TMDL Program began in 1998 under the direction of a court decree outlining an eight-year schedule to complete TMDLs in the state’s 12 river basins.

**Results.** Kansas successfully completed its obligations under the 1998 court decree on June 20, 2006 when it submitted the chloride TMDLs for the Lower Arkansas River basin. More than 400 TMDLs were developed for surface waters across the state from 1998-2006. They addressed water quality impairments by bacteria, nutrients, sediments, and pesticides. The second round of TMDL development has begun in the Kansas-Lower Republican and Lower Arkansas basins. Each basin will be revisited on a five-year cycle.

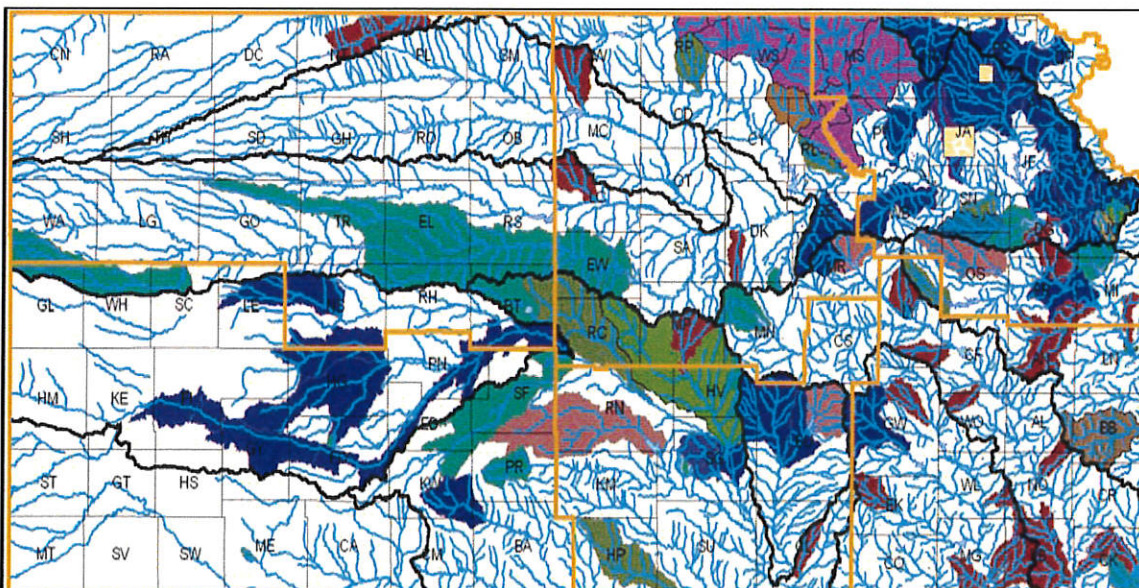
**Benefits.** From their onset, TMDLs are designated with three levels of priority for implemen-

tation: high, medium and low. High priority TMDLs are intended to receive targeted resources for technical, financial and educational assistance to abate current pollution and begin to restore water quality. Using the State Water Planning Process and the twelve Basin Advisory Committees, high priority TMDLs are incorporated into each Basin Plan.

Implementation of the *Kansas Water Plan*, including expenditures of the State Water Plan Fund, is directed toward specific impairments in specific geographic locations. This targeted effort in implementation should realize improved water quality since 2000, with projected attainment of water quality standards in many streams and lakes by 2012.

TMDLs are mere paper reports unless they are linked to actual implementation to improve water quality. TMDLs provide direction to emerging Watershed Restoration and Protection Strategies (WRAPS) that guide local efforts in water quality management. These joint local-state initiatives will emphasize TMDL implementation as part of their strategy to improve the state’s water resources. (See more about WRAPS on page 5.)

**Kansas High Priority TMDL Watersheds**



Watersheds with high priority Total Maximum Daily Loads (TMDLs) are targeted to receive watershed-specific technical, financial and educational assistance to abate current pollution and begin to restore water quality. TMDLs address water quality impairments by bacteria, nutrients, sediments, and pesticides.



**Well Plugging Protects Water Resources.** Oil and gas production, while a major driver of the state's economy, past activity has resulted in environmental costs to the State. Residual oil, gas, and saltwater took a toll on freshwater aquifers and waterways. To prevent further damage, the Kansas Legislature in July 1996 created the "Abandoned Well Plugging and Site Remediation Program" administered by the Kansas Corporation Commission (KCC).



Well plugging at the Whittier School, Coffeyville

**Results.** The KCC has plugged 6,016 abandoned oil and gas wells for which there are no responsible parties since the program began. Of 126 remediation sites inventoried by the KCC since July 1996, sixty sites have been resolved to date.

The KCC plugs about 600 wells a year and oversees 66 remediation sites in Kansas that have environmental concerns related to histori-

cal oil and gas activities. In addition to on-going maintenance and sampling at a number of these 66 sites, the remediation segment of the program in FY2006 initiated the investigation and installation of a project for gas recovery from a local shallow horizon in rural Kingman County. A joint project with the Kansas Biological Survey (KBS) will use KBS aerial photography to locate and rank for plugging and remediation abandoned oil and gas sites in Miami and Franklin counties and other specific sites.

**Benefits.** The program positively affects the water resources of Kansas and enhances the public safety, quality of life and property values of Kansans. More than 7,300 abandoned wells still require action. The current program's sunset date of June 30, 2009 needs to be addressed to further reduce the number of abandoned wells and remediation sites.



Well plugging in east Wichita

ABANDONED WELLS PLUGGED UNDER PROGRAM, FY 2006 (7/01/2005 TO 6/30/2006), TO DATE*		
River Basin Name	Number of Wells Approved / Plugged	Total Costs (to date)
Arkansas – Lower	10	\$109,667
Arkansas – Upper	1	
Kansas / Lower Republican	1	\$2,408
Marais Des Cygnes	250	\$388,882
Neosho	199	\$423,755
Smoky Hill-Saline	14	\$80,924
Verdigris	90	\$198,104
Walnut	6	\$36,159
<b>TOTALS TO DATE</b>	571	\$1,239,899
<b>EST. FINAL FY 2006 WELLS*</b>	600	\$2,160,000

\*FY2006 PLUGGING STILL IN PROGRESS

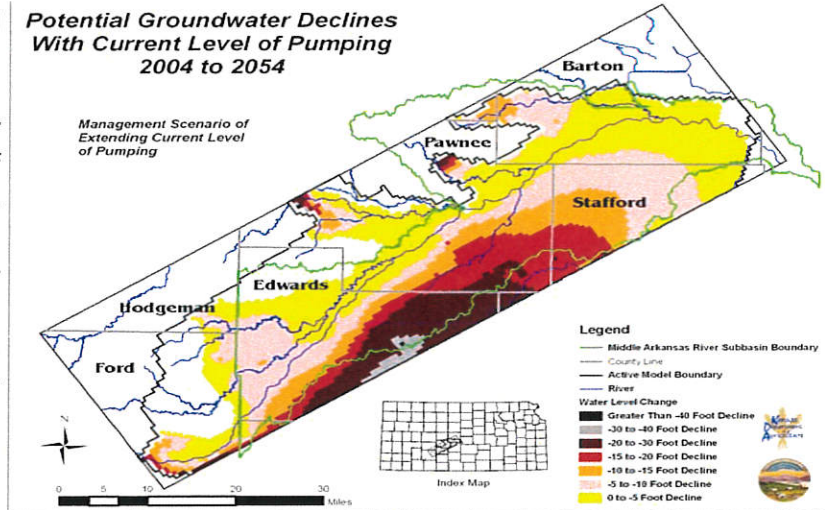


**Groundwater Model Offers Direction for Policymakers' Decisions.** For the last few decades, ground water levels have been declining in most of the High Plains aquifer in the Middle Arkansas River subbasin. The ground water level declines have decreased ground water discharge to the Arkansas River, causing declining stream flow.

crease further. The decrease in lateral ground water outflow may decrease the ground water inflow to the Rattlesnake Creek subbasin that borders the southeast side of the Middle Arkansas subbasin.

The Kansas Geological Survey, under contract with the Kansas Department of Agriculture's Division of Water Resources and the Kansas Water Office, built a calibrated, numerical ground water model to provide advanced information on the nature of stream-aquifer interactions and the effect of ground water pumpage. The information will be used in planning and management of water resources.

*Potential Groundwater Declines With Current Level of Pumping 2004 to 2054*



The numerical ground water model was built for the area extending from northeast Ford County through much of Edwards and Pawnee counties to north-central Stafford and southern Barton counties. The major focus of the project was simulation of ground water flow and stream-aquifer interaction during the period of 1944-2004.

**Results.** Five different scenarios were simulated to project the aquifer responses. Two hypothetical extremes were tested: one where all pumping was stopped, and one with no changes in pumping. Within those extremes were two possible management scenarios: retirement of 25,000 AF of net pumping (pumping minus irrigation return flow) through the Conservation Reserve Enhancement Program (CREP), a voluntary program that pays irrigators an annual rental rate, and the retirement of irrigation water at Circle K Ranch. These four pumping scenarios simulated the period 2005-2054 repeating the 25-year climatic conditions of 1980-2004.

A scenario with continued pumping at current levels indicated that ground water storage levels would continue to decline. Streamflow and lateral outflow of ground water also would de-

If net pumping were reduced by 14 percent in the Middle Arkansas Subbasin (approximately 25,000 AF), through enrollment in the Conservation Reserve Enhancement Program (CREP), the rate of aquifer decline would be decreased. The last scenario considered only water right retirements at Circle K Ranch (Edwards County). A primary beneficiary of this action would be to the Rattlesnake Creek subbasin, which gains lateral ground water flow from the Middle Arkansas subbasin. There are measurable benefits to the aquifer and stream flow, but only in the general vicinity of the ranch.

For more information, visit Kansas Geological Survey's website at [www.kgs.ku.edu/HighPlains/mid\\_ark\\_model.htm](http://www.kgs.ku.edu/HighPlains/mid_ark_model.htm)

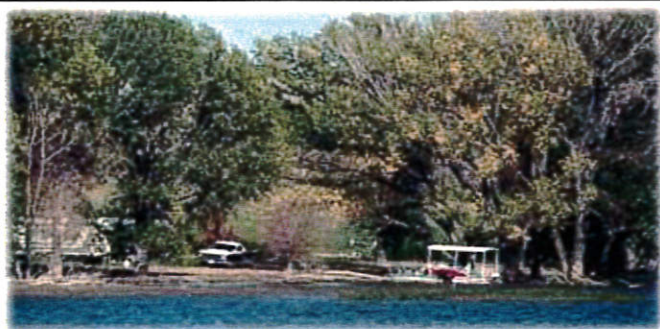
**Benefits.** The model affords regulatory agencies and policy makers with a means to better anticipate the results of their actions. With this information decision makers can insure that proposed remedies will result in improved water management while limiting the impact to the local communities.



**Sebelius Reservoir.** Managing reservoirs for multiple public benefits is a key policy of the *Kansas Water Plan*. Sebelius Reservoir in Norton County, similar to many western reservoirs, has struggled to maintain water levels in recent years. The Kansas Department of Wildlife and Parks, working closely with the Kansas Water Office, Kansas Department of Agriculture, State Conservation Commission and the Almena Irrigation District entered into a cooperative process aimed at stabilizing water levels in the lake.



*Kansas' abundant fishery includes the bluegill, often the first fish caught by young anglers. Painting by Joe Tomilari*



*Maintaining a minimum lake level at Keith Sebelius Reservoir in northwest Kansas will improve its value as a fishery and recreational attraction.*

**Results.** For the past three years, a limited-term cooperative agreement set a minimum pool in the reservoir. When the water level exceeds the minimum, the irrigation district can call for releases as in the past. Once the minimum pool is reached, releases cease in order to protect other uses of the reservoir.

**Benefits for Kansas.** Providing a minimum reservoir pool protects the lake's fishery and waterfowl populations and maintains access to the lake for boaters. Sebelius Reservoir has become an important part of the local/regional economy based on expenditures by visitors to the lake. The agreement provides some protection to this recreational industry. It also provides an additional level of protection to municipal water supply.

**Stream Surveys.** The purpose of the Kansas Department of Wildlife and Parks' statewide stream survey program is to document the current range and distribution of stream species. Other objectives include the establishment of recent baseline data on stream fishes and macroinvertebrates to enhance stream man-

agement decisions and help assess overall conditions of Kansas streams. The Stream Survey Program is a coordinated effort to identify the status of our aquatic resources across the state.

**Results.** Stream fish and invertebrate populations are measured at sites across the state each summer. Results of the survey identify the status of our stream resources and complement the work of other state agencies.

**Benefits for Kansas.** A viable and diverse population of wildlife increases the quality of life for Kansas citizens. Coordinated efforts to evaluate our stream resources help target State Water Plan funds and support water quality protection and management. The Kansas Alliance for Wetlands and Streams and the Kansas Department of Wildlife and Parks used the Stream Survey database to generate a sub-watershed report evaluating fish, mussel, and aquatic macroinvertebrate data collected from more than 1,000 stream surveys in recent years.





**Tamarisk Control Improves Western Kansas Riparian Health.**

In an effort to quantify water consumption by tamarisk, the Kansas Geological Survey (KGS) is conducting an assessment along the Cimarron River in conjunction with a tamarisk control project. Initial estimates of the reduction of ground water consumption resulting from control appear to be in the order of 30-40%. Additional assessments along the Arkansas River will be conducted in 2006 to determine if similar water savings can be achieved through tamarisk control.

**Results.** A 10-year Strategic Plan, completed in early 2006, was endorsed by the Kansas Water Authority, the Natural Resources Subcabinet, and the Governor. Actions are underway. The Kansas Department of Agriculture in August of 2006 completed a survey on the condition and level of tamarisk infestation of the Arkansas and Cimarron Rivers and each of the federal reservoirs in northwest Kansas. It will be used to plan control and monitoring.



*Mechanical, chemical and biological controls are being used to control tamarisk, throughout Western Kansas.*

partment of Agriculture, State Conservation Commission and the Finney County Weed Department.

Landowners in Ford and Barber counties received a tamarisk control grant in the summer of 2006. Their control methods included cutting and use of a basal bark herbicide treatment. The landowners were recruited for the program by the Kansas Alliance for Wetlands and Streams (KAWS). Another control method, use of insects, is being tried.



*Various life stages of Leaf Beetle on tamarisk in Pueblo, CO.*

This year also saw the passing of federal legislation authorizing \$80 million toward tamarisk research and control. The bill and the successful projects implemented in 2006, represent a great step forward in controlling tamarisk in Kansas.

**Benefits.** The plan benefits Kansas as we work to extend and conserve our water resources, particularly areas overlying the High Plains aquifer. Their control increases biodiversity and channel capacity, decreases wild fire threat and protects grazing land.

How much will ground water consumption be reduced if tamarisk is controlled?

In the fall of 2006, more than 200 acres of tamarisk were treated in the Pawnee watershed and areas north of Garden City. It was a joint effort of the Kansas Water Office, Kansas De-



**Restoration of the State Water Plan Fund.** The 2006 Kansas Legislature supported Water Plan Projects Initiative Phase II by restoring \$2.2 million to the State Water Plan Fund to offset dollars used for agencies' operational costs. The 2005 Legislature restored the transfer of \$2.3 million to the SWPF from the State General Fund and the Economic Development Initiative Fund (EDIF).

For FY2008 and Water Plan Projects Initiative III, the Kansas Water Authority seeks the transfer of three key programs for funding purposes to the State General Fund. They are Aid to Conservation Districts, Local Environmental Protection Program and Contamination Remediation.

The Aid to Conservation Districts Program was first funded in 1963 from the State General Fund. Conservation Districts receive up to \$10,000 annually to match funding provided by county commissions. Typically the money is used for general operational costs. **SGF FY2008 Funding request: \$1,048,000.**

Established in 1990, the Local Environmental Protection Program, focuses on private well water and wastewater codes developed and administered by county health departments. The funding, provided through the KDHE since the program began from the State Water Plan Fund, is used by local counties to monitor and implement water quality protection programs. **SGF FY2008 Funding request: \$1,502,737.**

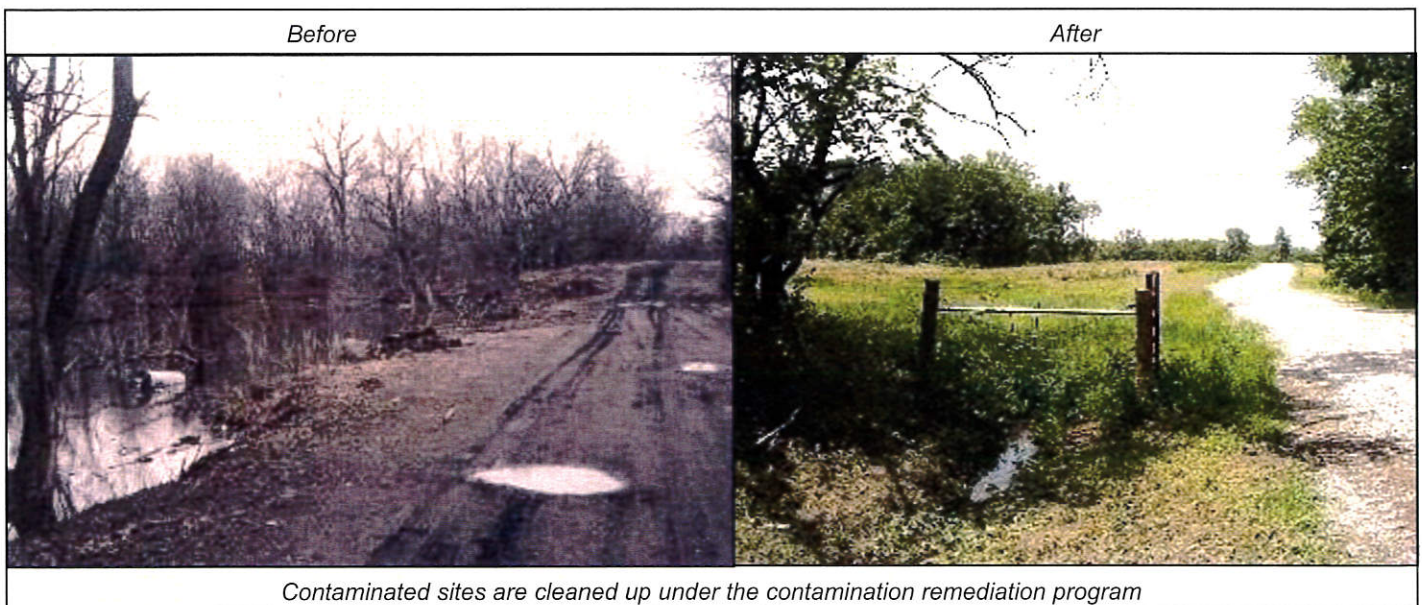
Contamination remediation is a key program within the KDHE Bureau of Environmental Remediation. More than 1,300 contaminated sites without an

identified party responsible for cleanup (orphan sites) need to be addressed. **SGF FY2008 Funding request: \$953,023.**

Last year, the cost of compliance monitoring, data collection and hydrologic computer modeling associated with follow-up to litigation with Colorado and Nebraska over water was paid from the State Water Plan Fund. While less money is needed this year, it's requested that it come from the State General Fund. The funds will allow the state to continue targeted, technical tasks needed to administratively seek compact compliance directly with other states and through the Arkansas and Republican River Compacts.

Of the total request, \$209,217 will be used to continue funding of the three additional staff positions authorized in FY2007. They will enhance monitoring and compliance efforts with Colorado and Nebraska. The rest of the funding for FY2008 (\$375,000) is for contractual services primarily with consultants used for both the Arkansas River and Republican River litigations. **SGF FY2008 Funding Request \$584,217.**

The Kansas Water Authority has approved budget recommendations for these operational programs whose funding source should be shifted from the State Water Plan Fund to the State General Fund beginning in Fiscal Year 2008. **SGF FY2008 Funding Request: \$4,087,977.**





# State Water Plan Resource Estimate

State Water Plan Resource Estimate	Legislative Approved FY2006	Legislative Approved FY2007	KWA Recommendations
Beginning Balance	\$ 7,682,094.00	6,536,803.00	(19,196.00)
Adjustments			
Transfer to State General Fund		\$ -	\$ -
Released Encumbrances	\$ 1,033,652.67	\$ 1,111,571.00	\$ 650,000.00
Transfer to Kansas Corporation Commission	\$ (400,000.00)	\$ (400,000.00)	\$ (400,000.00)
Revenues			
State General Fund Transfer	\$ 6,000,000.00	\$ 6,000,000.00	\$ 6,000,000.00
Economic Development Fund Transfer	\$ 2,000,000.00	\$ 2,000,000.00	\$ 2,000,000.00
<b>Transfers Subtotal</b>	<b>\$ 8,000,000.00</b>	<b>\$ 8,000,000.00</b>	<b>\$ 8,000,000.00</b>
Municipal Water Fees	\$ 3,455,083.86	\$ 3,520,000.00	\$ 3,485,184.00
Industrial Water Fees	\$ 1,104,837.11	\$ 1,051,000.00	\$ 1,129,437.00
Stock Water Fees	\$ 359,111.97	\$ 399,000.00	\$ 366,454.00
Pesticide Registration Fees	\$ 989,800.00	\$ 950,000.00	\$ 965,000.00
Fertilizer Registration Fees	\$ 3,034,327.26	\$ 2,917,600.00	\$ 2,940,000.00
Pollution Fines and Penalties	\$ 140,396.38	\$ 70,000.00	\$ 70,000.00
Sand Royalty Receipts	\$ 225,459.81	\$ 199,000.00	\$ 192,867.00
<b>Fee Receipts Subtotal</b>	<b>\$ 9,309,016.39</b>	<b>\$ 9,106,600.00</b>	<b>\$ 9,148,942.00</b>
2005 KS v. CO Damage Award	\$ -	\$ -	\$ 55,944.00
2006 KS v. CO Damage Award	\$ -	\$ -	\$ 369,982.00
Clean Drinking Water Fee Fund	\$ -	\$ -	\$ 3,199,662.00
<b>Total Receipts</b>	<b>\$ 17,309,016.39</b>	<b>\$ 17,106,600.00</b>	<b>\$ 20,774,530.00</b>
Total Available	\$ 25,624,763.06	\$ 24,354,974.00	\$ 21,005,334.00
Less: Expenditures	\$ 18,786,170.00	\$ 24,374,170.00	\$ 21,024,650.00
<b>Ending Balance</b>	<b>\$ 6,838,593.06</b>	<b>\$ (19,196.00)</b>	<b>\$ (19,316.00)</b>

**State Water Plan Fees, Fines and Royalties**

**Municipal Water Use: 3 cents/1,000 gallons**

**Industrial Water Use: 3 cents/1,000 gallons**

**Stockwater Use: 3 cents/ 1,000 gallons**

**Pesticide: \$100 per pesticide registered**

**Fertilizer: \$1.40 per ton inspected**

**Pollution Fines/Penalties depend on the incident**

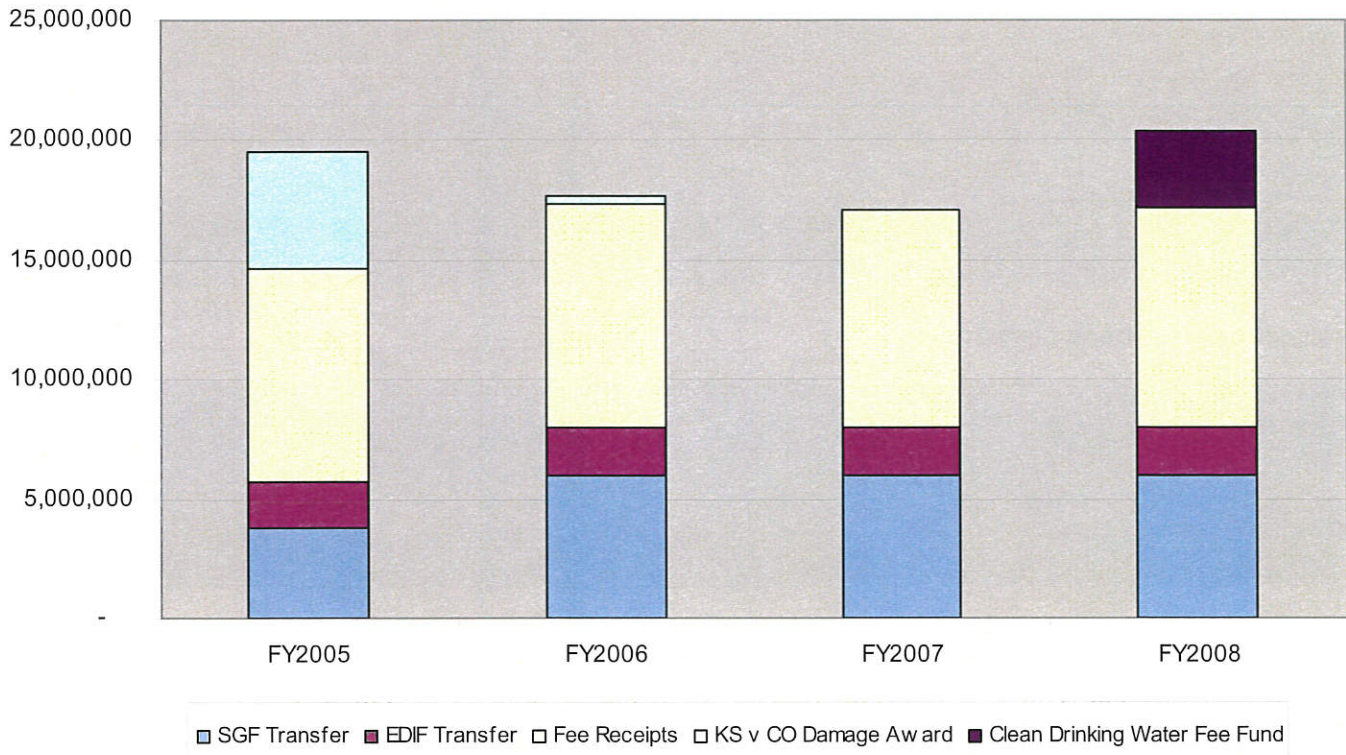
**Sand Royalties: 3.75 cents/ton**



Wildcat Creek, Riley County, Kansas



# FY2005-2008 State Water Plan Fund



Most of the State Water Plan Fund comes from demand transfers from the State General Fund (\$6 million) and Economic Development Initiative Fund (\$2 million) and fees and fines. The State Water Plan Fund was created by the 1989 Legislature to implement the State Water Plan (K.S.A. 82a-903). Subject to appropriations acts, the fund may be used for the establishment and implementation of water-related projects or programs and related technical assistance.

Revenue for the fund is generated by a water protection fee levied on public, industrial, and stock water users; a per ton inspection fee on fertilizer; a registration fee on pesticides; certain fines levied by the Kansas Department of Health and Environment; and sand royalty receipts.

The State Water Plan Fund also will be shored by money from the Clean Drinking Water Fee. Beginning in FY2008, 101/106th (96 percent) of the fee receipts will be deposited in the State Water Plan Fund. Of that amount, 85 percent will be used to renovate and protect lakes used directly as a source of public water supply. The remaining 15 percent will provide on-site technical assistance for public water supply systems. Public water suppliers pay a fee of 3 cents per 1,000 gallons of water sold at retail in lieu of paying sales tax on equipment. Anticipated receipts total \$3,199,662. They would be divided between the budgets of the SCC (\$2,719,713) and the KWO (\$479,949), the agencies responsible for the programs.



# Water Plan Fund Recommendations for FY2008

Agency / Program	Appropriated FY2007	FY2008 SWPF Recommendations	FY2008 SGF Enhancement Shift
<b>Department of Health and Environment</b>			
Contamination Remediation	954,525	0	953,023
TMDL Initiatives	299,274	298,741	0
Local Environmental Protection Program	1,502,737	0	1,502,737
Nonpoint Source Program	290,665	284,654	0
Watershed Restoration and Protection Strategy	800,000	800,000	0
<b>Total--Department of Health and Environment</b>	<b>3,847,201</b>	<b>1,383,395</b>	<b>2,455,760</b>
<b>University of Kansas--Geological Survey</b>	<b>40,000</b>	<b>40,000</b>	<b>0</b>
<b>Department of Agriculture</b>			
Interstate Water Issues	0	0	584,217
Subbasin Water Resources Management	676,483	667,474	0
Water Use	71,121	71,121	0
Kansas v. Colorado Compliance	1,271,017	0	0
<b>Total--Department of Agriculture</b>	<b>2,018,621</b>	<b>738,595</b>	<b>584,217</b>
<b>State Conservation Commission</b>			
Water Resources Cost Share	3,414,359	3,412,218	0
Nonpoint Source Pollution Asst.	2,757,520	2,757,520	0
CREP Well Plugging		120,000	
WRAPS Implementation		821,489	
Aid to Conservation Districts	1,048,000	0	1,048,000
Watershed Dam Construction	601,499	1,055,000	0
Water Quality Buffer Initiative	307,157	350,000	0
Riparian and Wetland Program	251,782	446,782	0
Multipurpose Small Lakes	1,100,000	1,250,000	0
Water Transition Assistance Program	1,184,388	1,500,000	0
Conservation Reserve Enhancement Program	5,000,000	0	0
Lake Restoration/Management	335,000	2,719,713	0
<b>Total--Conservation Commission</b>	<b>15,999,705</b>	<b>14,432,722</b>	<b>1,048,000</b>
<b>Kansas Water Office</b>			
Assessment and Evaluation	884,011	857,605	0
GIS Data Base Development	247,405	250,000	0
MOU—Storage Operations and Maintenance	409,132	733,384	0
PMIB Loan Payment for Storage	237,945	0	0
Streamgaging Program	0	0	0
Technical Assistance to Water Users	266,150	624,949	0
Weather Stations	60,000	100,000	0
Water Resource Education	84,000	84,000	0
Weather Modification	120,000	240,000	0
Neosho River Basin Issues	0	500,000	0
<b>Total--Kansas Water Office</b>	<b>2,308,643</b>	<b>3,389,938</b>	<b>0</b>
<b>Department of Wildlife and Parks</b>			
Keith Sebelius Reservoir/Almena Irrigation District	120,000	1,000,000	0
Stream (Biological) Monitoring	40,000	40,000	0
<b>Total--Department of Wildlife and Parks</b>	<b>160,000</b>	<b>1,040,000</b>	<b>0</b>
<b>Total Water Plan Expenditures</b>	<b>24,374,170</b>	<b>21,024,650</b>	<b>4,087,977</b>



# Strategic Initiatives - FY2007-2008 SWPF

Agency/Program	FY2007	FY2008
<b>WRAPS and Sedimentation Strategies</b>		
KDHE - WRAPS	\$ 800,000	\$ 800,000
KDHE - TMDLs	\$ 299,274	\$ 298,741
KDHE - Local Environmental Protection Program	\$ 1,502,737	\$ -
SCC - WRAPS Implementation	\$ -	\$ 821,849
SCC - Lake Restoration	\$ 335,000	\$ 2,719,713
KWO - Bathymetric Surveys	\$ 40,000	\$ 165,000
KWO - Sediment Management Research	\$ -	\$ 100,000
SCC - Watershed Dam Rehabilitation	\$ 601,499	\$ 1,055,000
KWO - Neosho River Basin Issues	\$ -	\$ 500,000
SCC - Water Quality Buffer Initiative	\$ 307,157	\$ 350,000
<b>WRAPS and Sedimentation Subtotal</b>	<b>\$ 3,885,667</b>	<b>\$ 6,810,303</b>

<b>Regional Public Water Supplies</b>		
KWO - Onsite Technical Assistance	\$ 125,000	\$ 479,949
KWO - Alternative Dispute Resolution Pilot	\$ 40,000	\$ 40,000
KWO - Ozark Regional Ground Water Modeling	\$ 169,000	\$ 70,000
KWO - Wilson Lake Reallocation	\$ 160,000	\$ 25,000
KWO - PWS Engineering Support	\$ 50,000	\$ 50,000
<b>Regional Public Water Supplies Subtotal</b>	<b>\$ 544,000</b>	<b>\$ 664,949</b>

<b>High Plains Aquifer Management</b>		
SCC - Water Transition Assistance Program (WaterTAP)	\$ 1,184,388	\$ 1,500,000
SCC - Conservation Reserve Enhancement Program (CREP)	\$ 5,000,000	\$ -
SCC - CREP Well Plugging	\$ -	\$ 120,000
SCC - Tamarisk Control	\$ 65,000	\$ 260,000
KWO - Tamarisk Control Demo Project Monitoring	\$ 40,000	\$ 40,000
KWO - Weather Modification Program	\$ 120,000	\$ 240,000
KWO - Ogallala Management Support Studies	\$ 86,500	\$ 100,000
KWO - Modeling Management Assistance	\$ 50,000	\$ 100,000
KWO - Mobile Irrigation Lab	\$ 70,000	\$ 75,000
<b>High Plains Aquifer Management Subtotal</b>	<b>\$ 6,615,888</b>	<b>\$ 2,435,000</b>

<b>Capital Development Plan</b>		
KDWP - Keith Sebelius Reservoir Minimum Pool Increase	\$ 120,000	\$ 1,000,000
KWO - Weather Stations	\$ 60,000	\$ 100,000
SCC - Horsethief Reservoir MPSL	\$ 1,100,000	\$ 1,250,000
<b>Capital Development Plan Subtotal</b>	<b>\$ 1,280,000</b>	<b>\$ 2,350,000</b>



## Invest Today for Tomorrow's Infrastructure

**Keith Sebelius Reservoir.** For three years, the State of Kansas has leased a minimum pool in Keith Sebelius Reservoir in Norton County, Kansas from the Almena Irrigation District. Limiting irrigation releases were intended to keep water levels high enough to support the fishery and help sustain the regional economy. The lease period allowed the state to accumulate technical data on water availability, rights in the basin and the relationship between lake operations and the Republican River Compact. The state intends to negotiate a long-term agreement for part of the District's water storage right in the lake. Funding would be used for an engineering analysis required by the Bureau of Reclamation, compliance actions relevant to the Republican River Compact and the purchase of the rights. **FY2008 Funding Request: \$1 million.**



*The State of Kansas plans to negotiate a long-term agreement with the Almena Irrigation District to maintain a minimum water level in Keith Sebelius Reservoir.*

**HorseThief Reservoir.** Located in Hodgeman County, the planned 444-acre multipurpose lake will provide flood protection and recreation. Funds for the project are being raised through private donations, local benefit district taxation, and cost-share money through the state's multipurpose small lake program administered by the SCC. The state's share is \$4.5 million. **FY2008 Funding Request: \$1.25 million.**

**Lake Restoration and Management.** The methods and practicality of renovating and protecting small lakes used for public water supply

will be explored. In FY2006, the State Conservation Commission adopted regulations that will be the basis for selection of specific projects. Funding for the initiative comes from the Clean Drinking Water Fee Fund, the fee paid by water utilities in lieu of sales tax. Legislative action transferred the deposit of the Clean Drinking Water Fee Fund to the State Water Plan Fund for the purposes of renovation and protection and technical assistance to public water suppliers. **FY2008 Funding Request: \$2,719,713.**

**CREP Well Plugging.** The proposed Conservation Reserve Enhancement Program would pay irrigators along the Arkansas River corridor to permanently retire their water rights. This program would plug the wells to both prevent their use and to protect ground water from contamination. **FY2008 Funding Request: \$120,000.**

**Weather Stations.** Accurate weather data is essential to timely, effective crop water management. The 2006 Legislature approved \$60,000 for reconditioning 11 weather stations and buying and installing five new ones in southwestern Kansas. The stations are used by irrigators to match irrigation watering to crop needs.

The Legislature directed the Kansas Water Authority to study the weather stations across the state, regardless of operator, with an eye toward developing a statewide coordinated system. Automated weather systems provide near real-time weather data.

The data may be used for improved regional precipitation monitoring, assessment of potential wind energy production, management of prescribed range and pasture burning, estimation of smoke plume dispersion from prescribed burns or wildfires. Other uses include drought monitoring, flood forecasting, flood warnings and reservoir operations.

FY2008 monies will be used to buy and install at least 11 automated weather stations in 18 counties in the Flint Hills through North Central Kansas. **FY2008 Funding Request: \$100,000.**



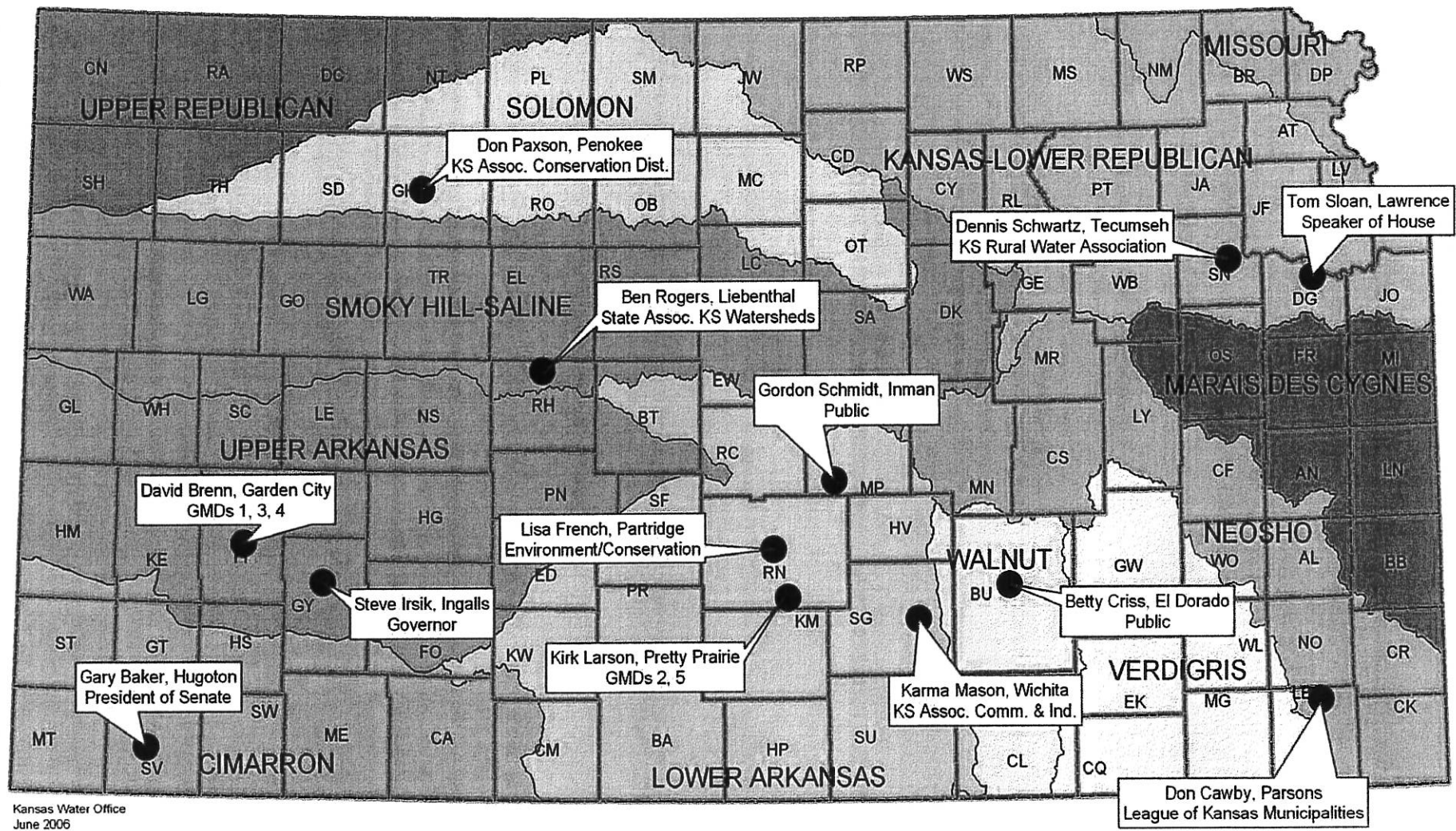
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Capital Development Plan		FY2007	FY2008	FY2009	FY2010	FY2011	FY2012
<b>Kansas Water Office</b>							
Unfunded Liability	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -
Wilson Reservoir Storage **	\$	-	\$ -	\$ -	\$ -	\$ -	\$ -
Marketing & Assurance Capital Costs	\$	1,738,564	\$ 1,738,564	\$ 1,738,564	\$ 2,411,078	\$ 2,411,078	\$ 2,411,078
<b>On-Going Public Water Supply Obligations</b>							
Cedar Bluff Reservoir O&M*	\$	46,807	\$ 75,000	\$ 78,000	\$ -	\$ -	\$ -
Reservoir Purchase (PMIB Loan Payment)	\$	237,945	\$ -	\$ -	\$ -	\$ -	\$ -
MOU Storage O&M*	\$	362,325	\$ 658,384	\$ 391,311	\$ 408,529	\$ 426,504	\$ 445,270
<b>State Conservation Commission</b>							
<b>Irrigation Transition Program</b>							
Water Right Transition Assistance Program	\$	1,184,388	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000
Conservation Reserve Enhancement Program	\$	5,000,000	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Capital Development Programs</b>							
Water Resources Cost-Share (w/Tech Asst.)	\$	3,414,359	\$ 3,412,218	\$ 3,400,000	\$ 3,400,000	\$ 3,400,000	\$ 3,400,000
Nonpoint Source Pollution Asst. (w/Tech Asst.)	\$	2,757,520	\$ 2,757,520	\$ 2,750,000	\$ 2,750,000	\$ 2,750,000	\$ 2,750,000
CREP Well Plugging	\$	-	\$ 120,000	\$ 120,000	\$ 120,000	\$ 120,000	\$ 120,000
WRAPS Implementation	\$	-	\$ 821,489	\$ 800,000	\$ 800,000	\$ 800,000	\$ 800,000
Riparian and Wetland Program	\$	251,782	\$ 446,782	\$ 446,782	\$ 446,782	\$ 446,782	\$ 446,782
Buffer Initiatives	\$	307,157	\$ 350,000	\$ 385,000	\$ 420,000	\$ 455,000	\$ 490,000
Watershed Dam Construction	\$	352,499	\$ 805,000	\$ 805,000	\$ 805,000	\$ 805,000	\$ 805,000
Dam Rehabilitation	\$	250,000	\$ 450,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000
HorseThief Reservoir	\$	1,100,000	\$ 1,250,000	\$ 1,123,176	\$ -	\$ -	\$ -
<b>Reservoir Protection and Maintenance</b>							
Lake Restoration/Management	\$	335,000	\$ 2,719,713	\$ 2,700,000	\$ 2,700,000	\$ 2,700,000	\$ 2,700,000
<b>Kansas Department of Wildlife and Parks</b>							
Keith Sebelius Reservoir Storage	\$	-	\$ 1,000,000	\$ -	\$ -	\$ -	\$ -
<b>Total Annual Cost</b>	\$	17,702,213	\$ 18,467,720	\$ 17,604,181	\$ 17,127,737	\$ 17,180,712	\$ 17,234,479

\* Operation and Maintenance are on-going costs

\*\* The total cost for this project, whether determined through negotiation or appraisal, will exceed \$1 million.





Kansas Water Office  
June 2006

### Kansas Water Authority Ex Officio Members

Fred Cholick  
Agricultural Experiment Station  
Kansas State University

David Pope  
Division of Water Resources  
Kansas Dept. of Agriculture

Adrian Polansky  
Kansas Dept. of Agriculture

Ron Hammerschmidt  
Kansas Dept. of Health & Environment

Greg Foley  
State Conservation Commission

Tracy Streever  
Kansas Water Office

Mike Hayden  
Kansas Dept. of Wildlife & Parks

William Harrison  
Kansas Geological Survey

Howard Fricke  
Kansas Dept. of Commerce

Brian Moline  
Kansas Corporation Commission

Edward Martinko  
Kansas Biological Survey

# Ground-Water Levels in Kansas

A Briefing to the Kansas Legislature

House Agriculture and Natural Resources Committee

January 17, 2007



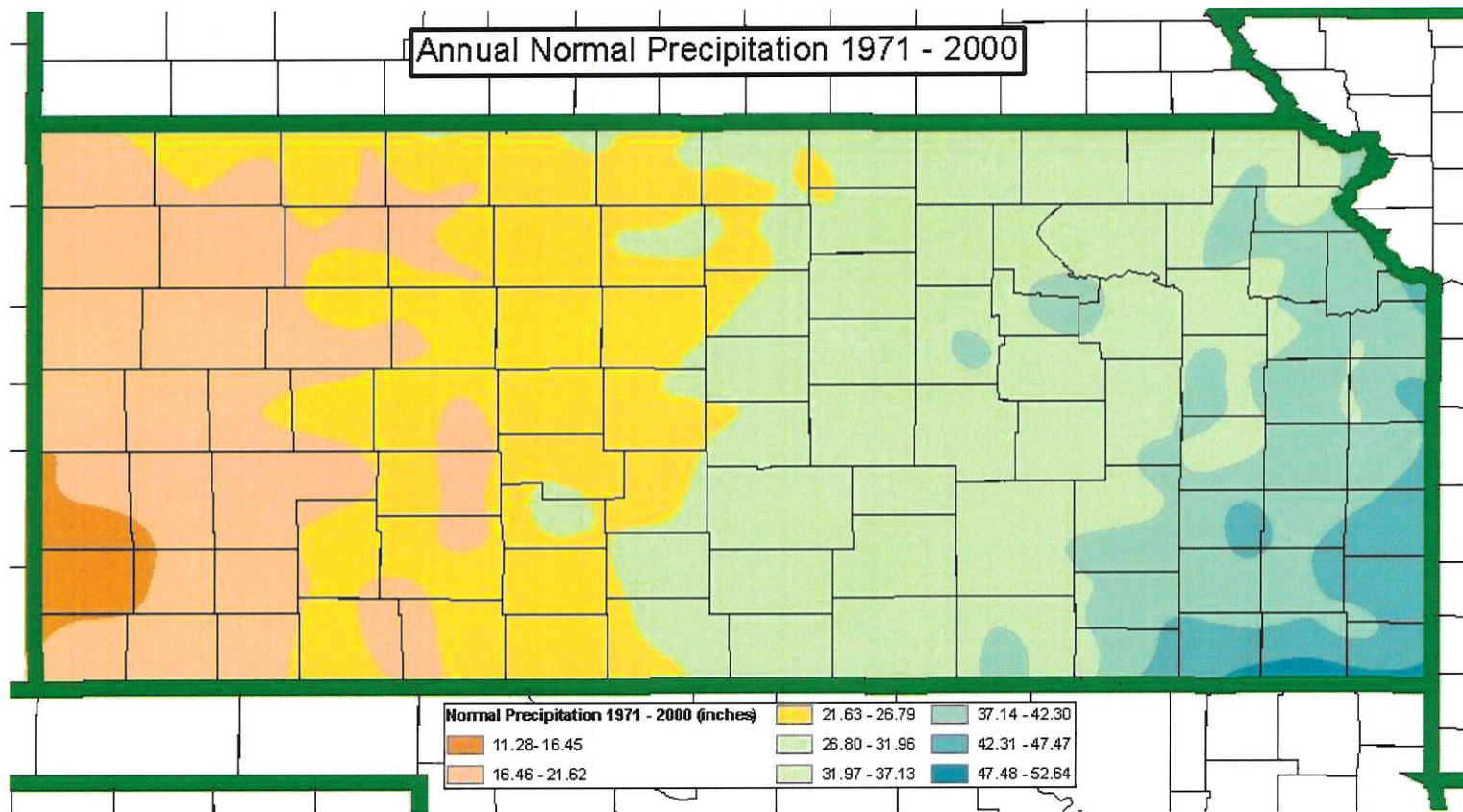
Presented By

Brownie Wilson  
The Kansas Geological Survey  
The University of Kansas

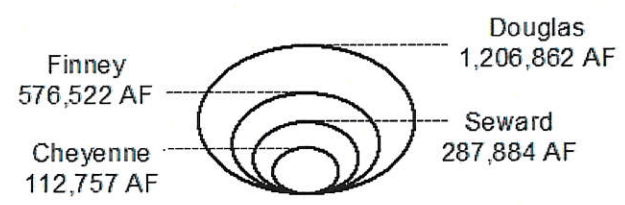
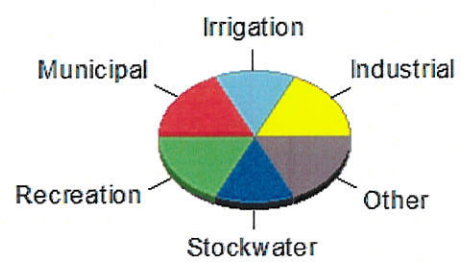
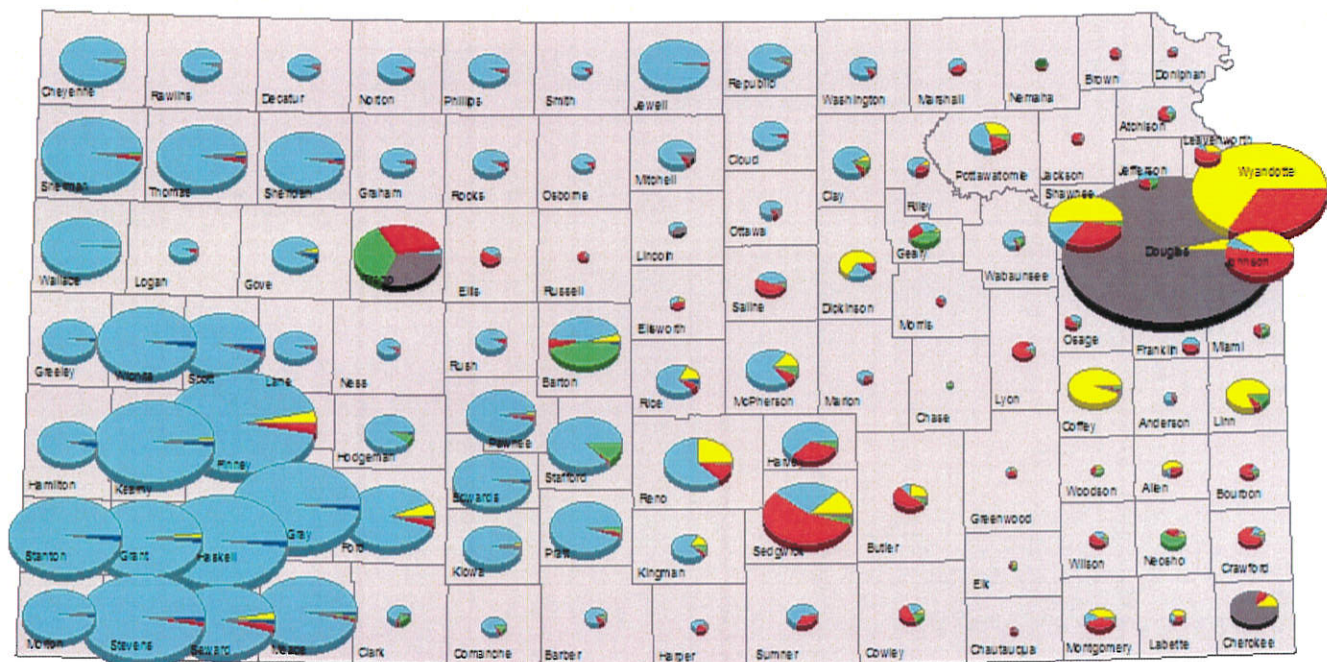


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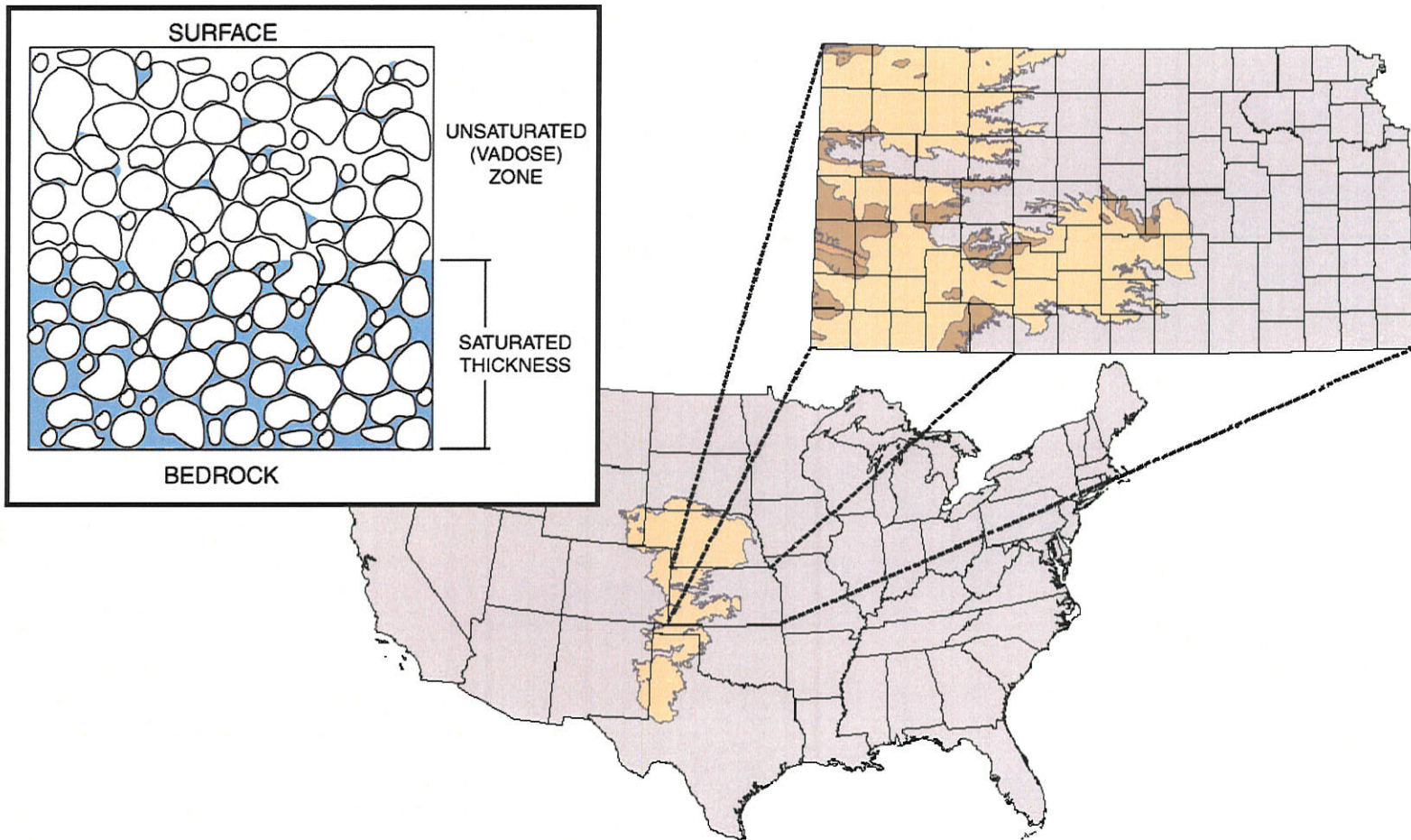
**Figure 1 – Annual Normal Precipitation in Kansas (Source: KSU Weather Library).** Normal precipitation is defined as the average total precipitation over the last 30 year decal period, in this case, 1971 to 2000. Precipitation patterns in Kansas have major influences on the landscape, water resources, and uses made of water in the state.



**Figure 2 – Total Authorized Water Right Allocations, by County.** Water right allocations represent how much water and for what purpose can be diverted each year. In general, municipal and industrial uses are more prevalent in eastern and south-central Kansas while irrigation dominates in western Kansas. Much as this is influenced by the precipitation patterns and available water sources.

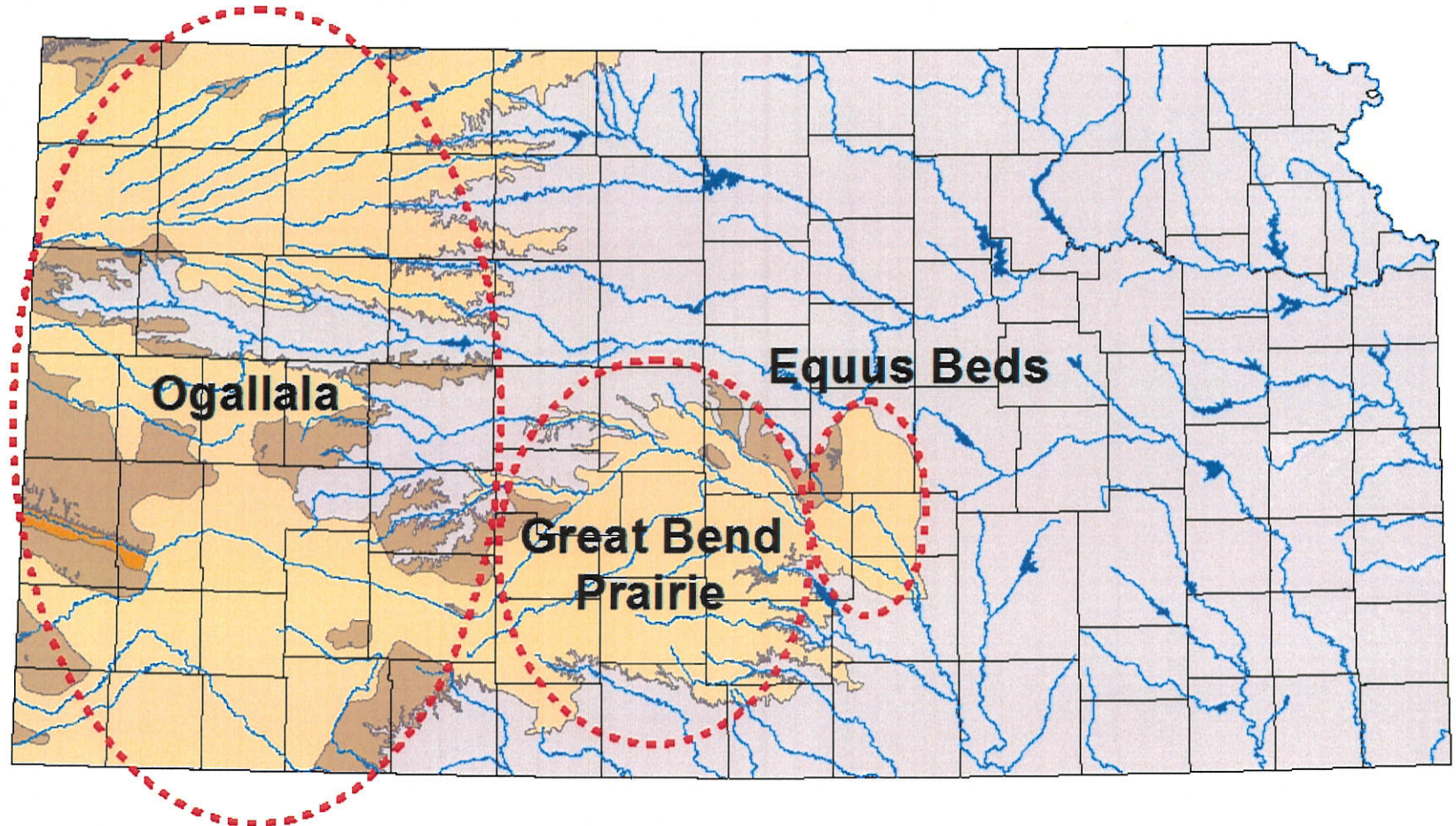






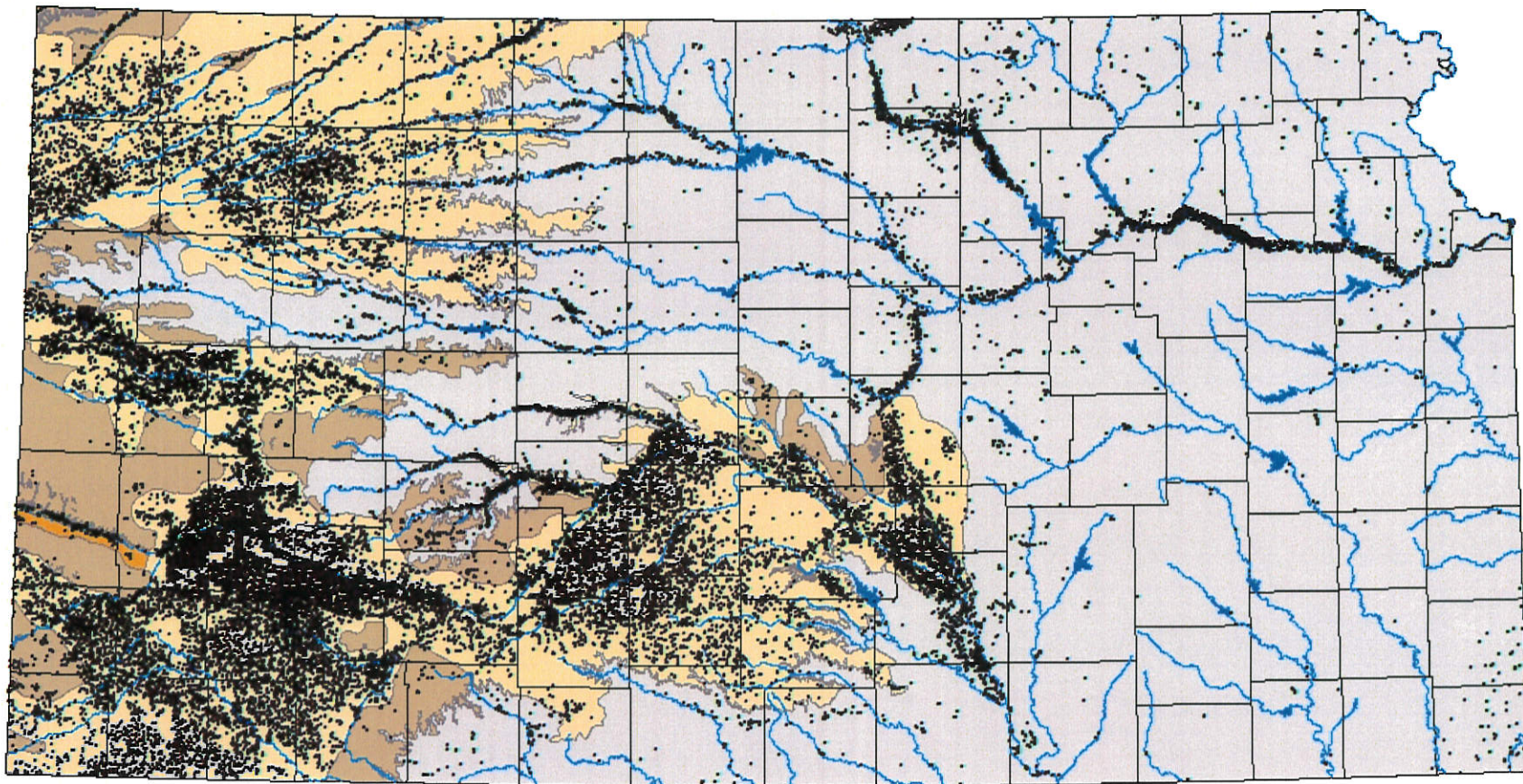
**Figure 4 – The High Plains (HP) Aquifer.** The HP aquifer is one of the largest most accessible ground-water systems in the world. It covers eight states in the continental United States running from South Dakota to Texas. The HP aquifer is the single greatest ground-water resource in Kansas. Often the HP aquifer is called an “underground reservoir”. This implies a person with the proper scuba equipment and access can go swimming underground. This is hardly the case. Water in an aquifer is stored within the pore space between geologic layers as shown by the exaggerated illustration.





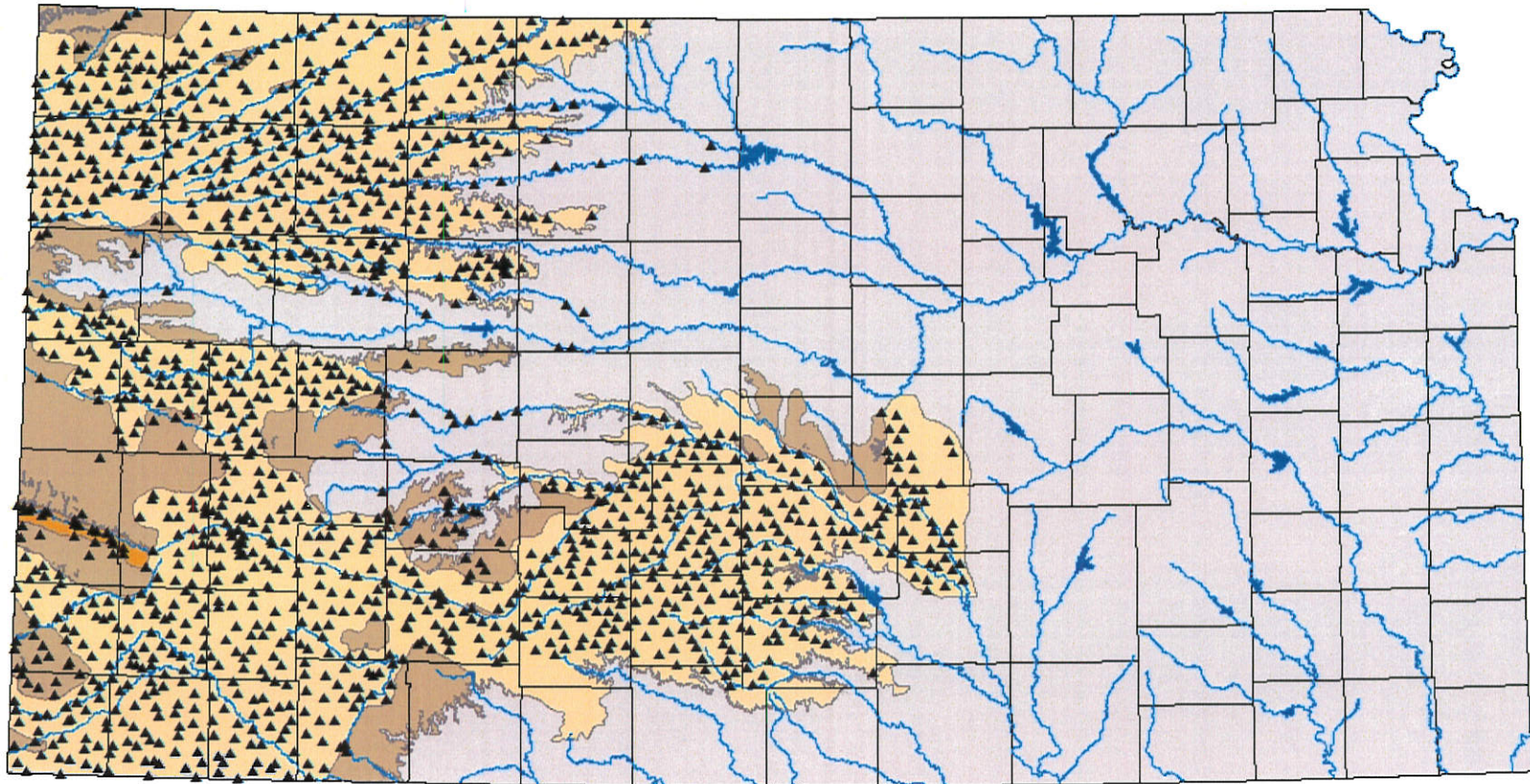
**Figure 5 – Sub-Regional Aquifer Systems.** In Kansas, the HP aquifer is made up of several smaller sub-regional aquifers-- the Ogallala, Great Bend Prairie and Equus Beds. On a national scale, many people and publications will refer to the HP aquifer as the Ogallala. In Kansas, we make a distinction. The Great Bend Prairie and Equus Beds aquifers are generally closer to the land surface (not as deep) and are more responsive to recharge. They are managed as sustainable systems. The Ogallala is generally deeper and, with less annual precipitation, has little natural recharge. Recharge estimates for the Ogallala generally range between 0.5 to 1 inch annually.





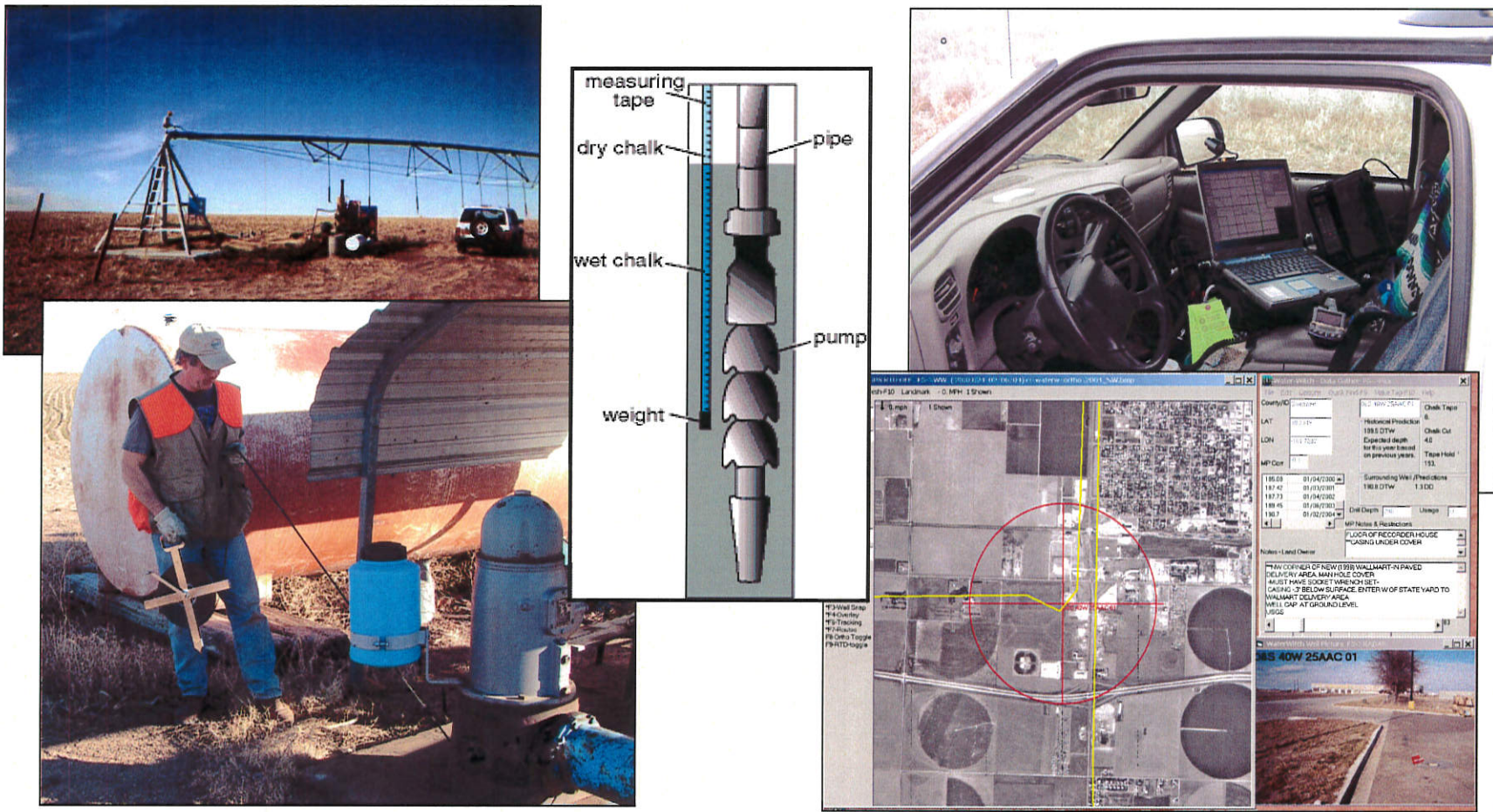
**Figure 6 – Ground-water Well Development for Water Rights.** This map does not include the majority of domestic wells; rather it shows the larger production wells that are required to have a water right. Ground-water development in eastern Kansas is generally confined to alluvial aquifer systems that closely are tied to stream/river surface water flow. The importance of the HP aquifer can readily be seen by the amount of development in south-central and western Kansas.





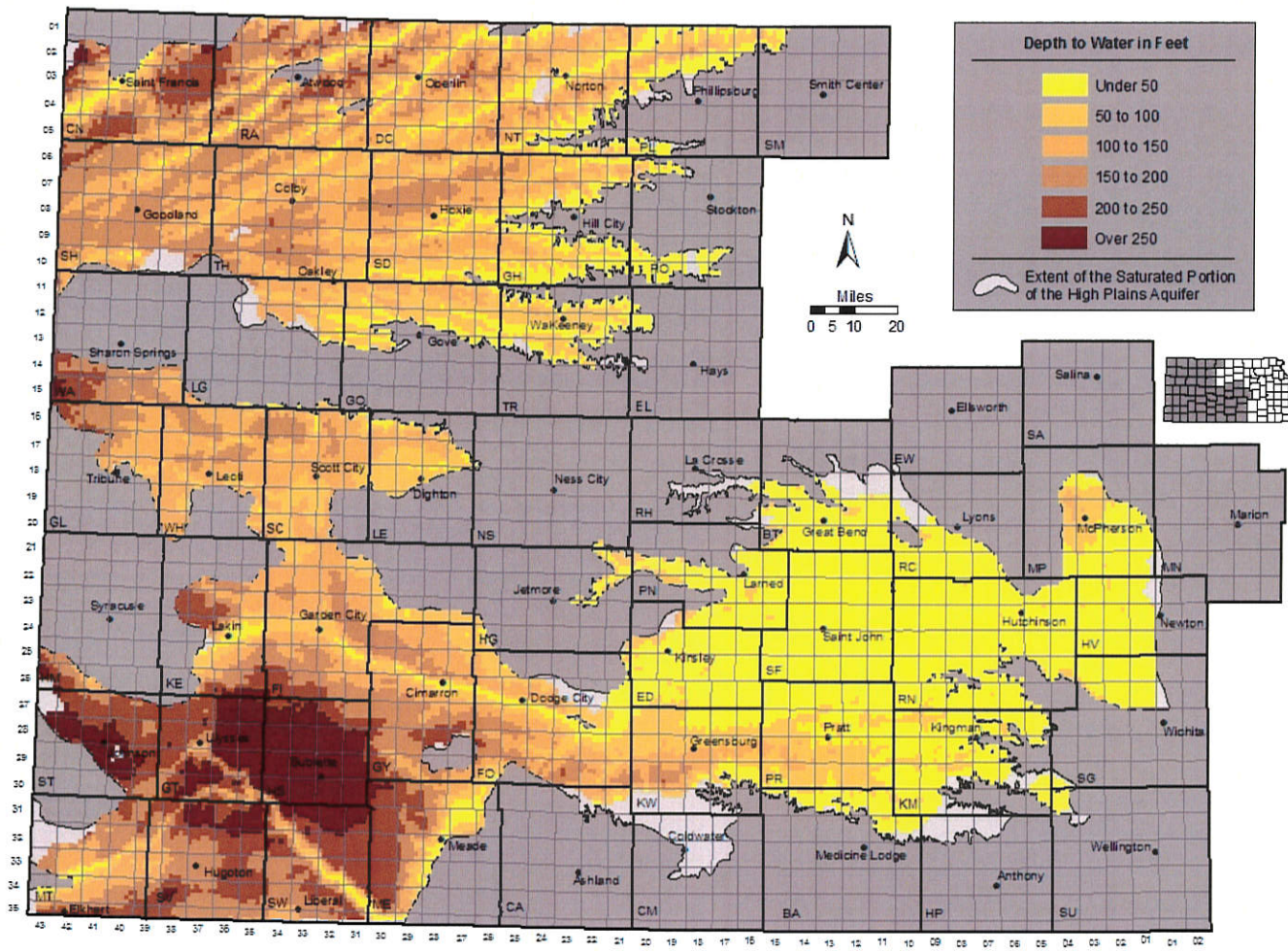
**Figure 7 – Kansas Cooperative Water-Level Measurement Network.** Because of its importance to Kansas, the HP aquifer is the focus of the KGS/DWR cooperative ground-water monitoring program. Each winter, when irrigation is at its lowest level, the KGS and DWR measure the depth to water in roughly 1,400 wells. These wells are shown by the black triangles on the map. In addition, the KGS collects water-level measurements across the state from other agencies, such as the DWR field offices and local Groundwater Management Districts (GMDs), shown by the black triangles. All this data can be access from the online KGS WIZARD database at <http://www.kgs.ku.edu/Magellan/WaterLevels/index.html>.





**Figure 8 – Field Collection.** The monitoring program makes a great effort to measure the same wells every year. The KGS developed customized software tied to global positioning systems (GPS) to assist in finding the wells in the field and store information. The depth-to-water is measured using a steel tape that is incremented to the hundredth of a foot. The bottom of the tape is covered with blue chalk. When the tape is lowered in the well, it crosses the water table and makes a very clear and distinct mark on the chalk covered tape which is called the “cut”. The depth to water can then be calculated based on the distance from the top of the well to the cut.



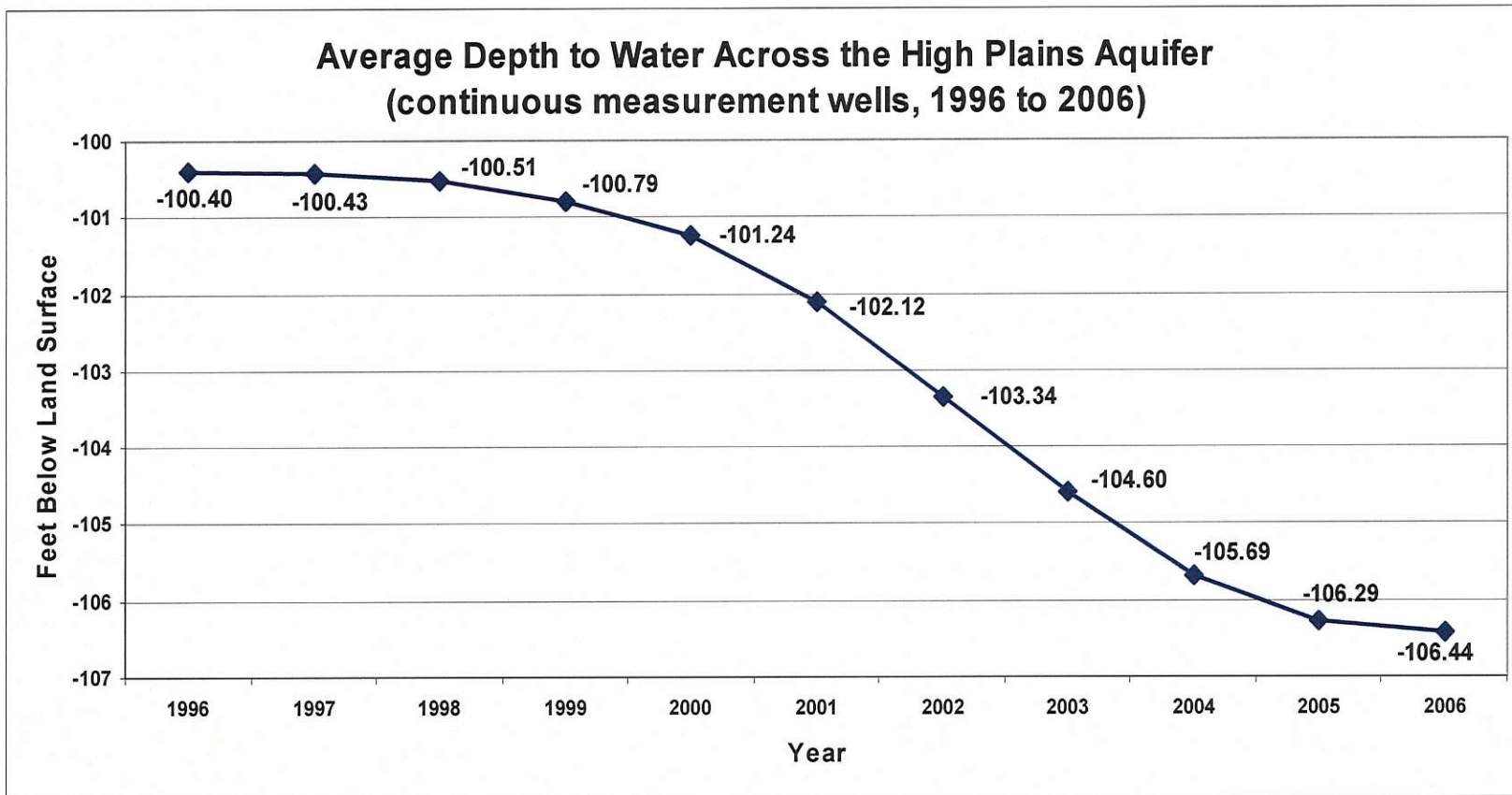


**Figure 9 - Average 2004 to 2006 Depth to Water for the HP Aquifer.** We often use three-year averages since some wells can not be measured every winter for a variety of reasons or some wells are measured multiple times. The Ogallala (in western Kansas) is very diverse in the depth to water but overall it is deeper than the Great Bend Prairie and Equus Beds (in south-central Kansas).

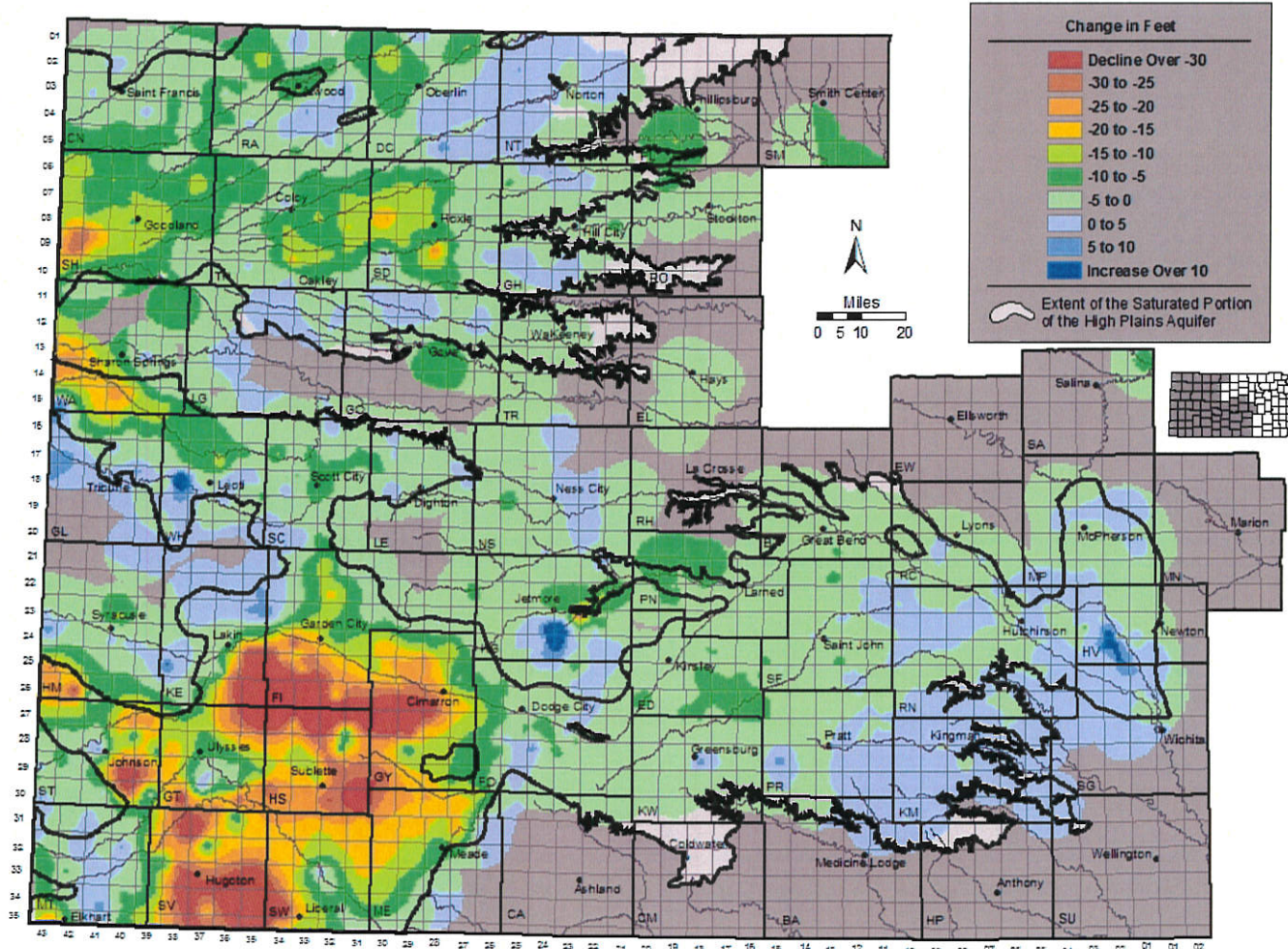






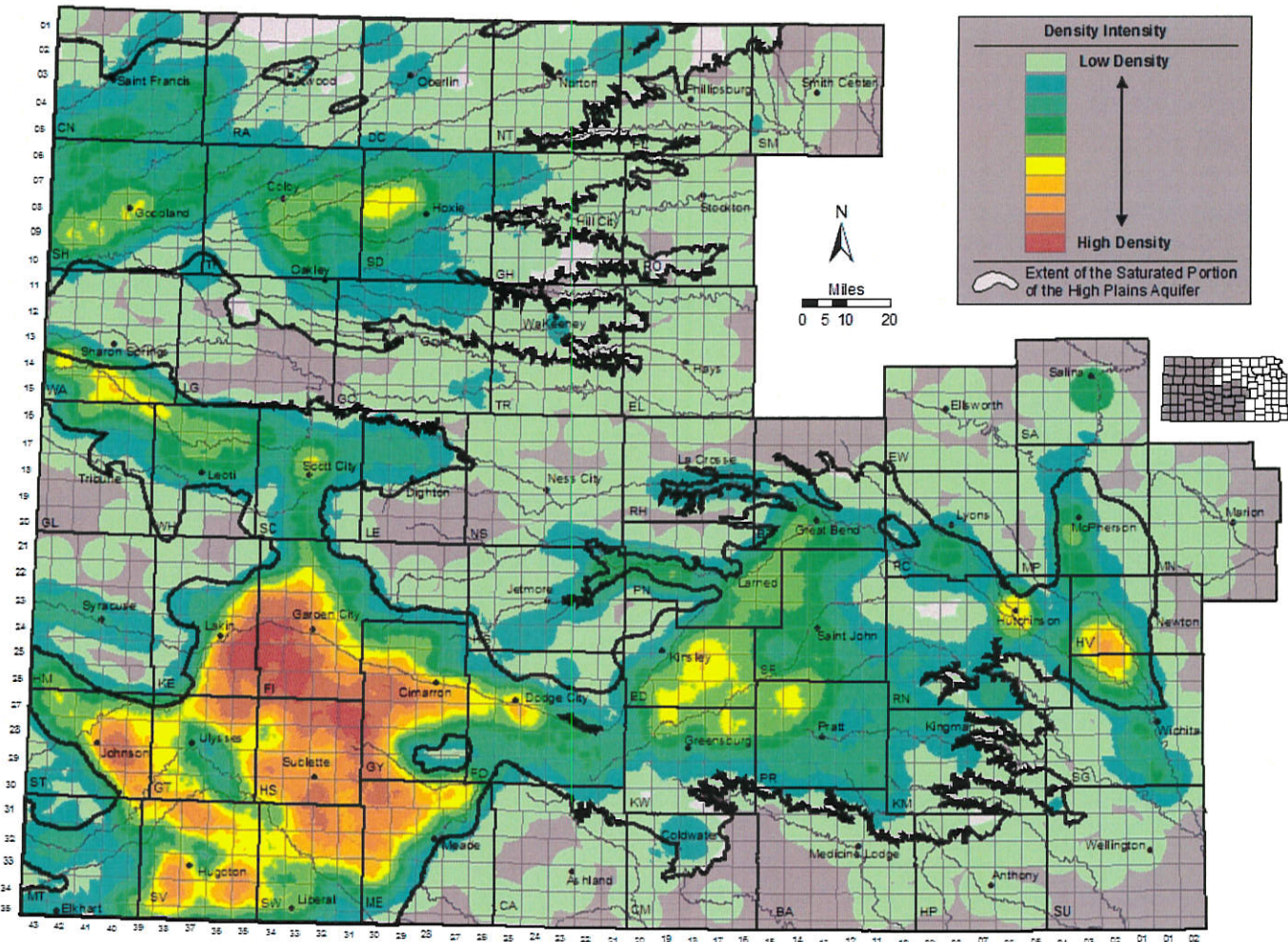


**Figure 11 – Depth to Water Trends.** The average depth to water for all the wells measured from 1996 to 2006 across the HP aquifer is roughly 100 to 105 feet below the land surface. “Continuous measurement wells” are wells that were measured each and every winter from 1996 to 2006. The start of drought conditions in the state in the year 2000 can readily be seen. For the Ogallala aquifer, the influence of precipitation (or lack thereof during a drought) is not directly tied to changes in the water table. Rather precipitation influences pumping and ground-water extraction levels, which in turn influence changes in the water table.



**Figure 12 – Interpolated Change in the Water Table, 1996 to 2006.** Water level changes should be viewed in combination with the saturated thickness of the aquifer. Although some areas of the HP aquifer have declined over 30 feet since 1996, other areas with lesser declines may be more significant if there is less water in storage. This map shows changes at all monitoring wells. Other deeper and less-used aquifer units, such as the Dakota Aquifer and other older sediments, are also shown.

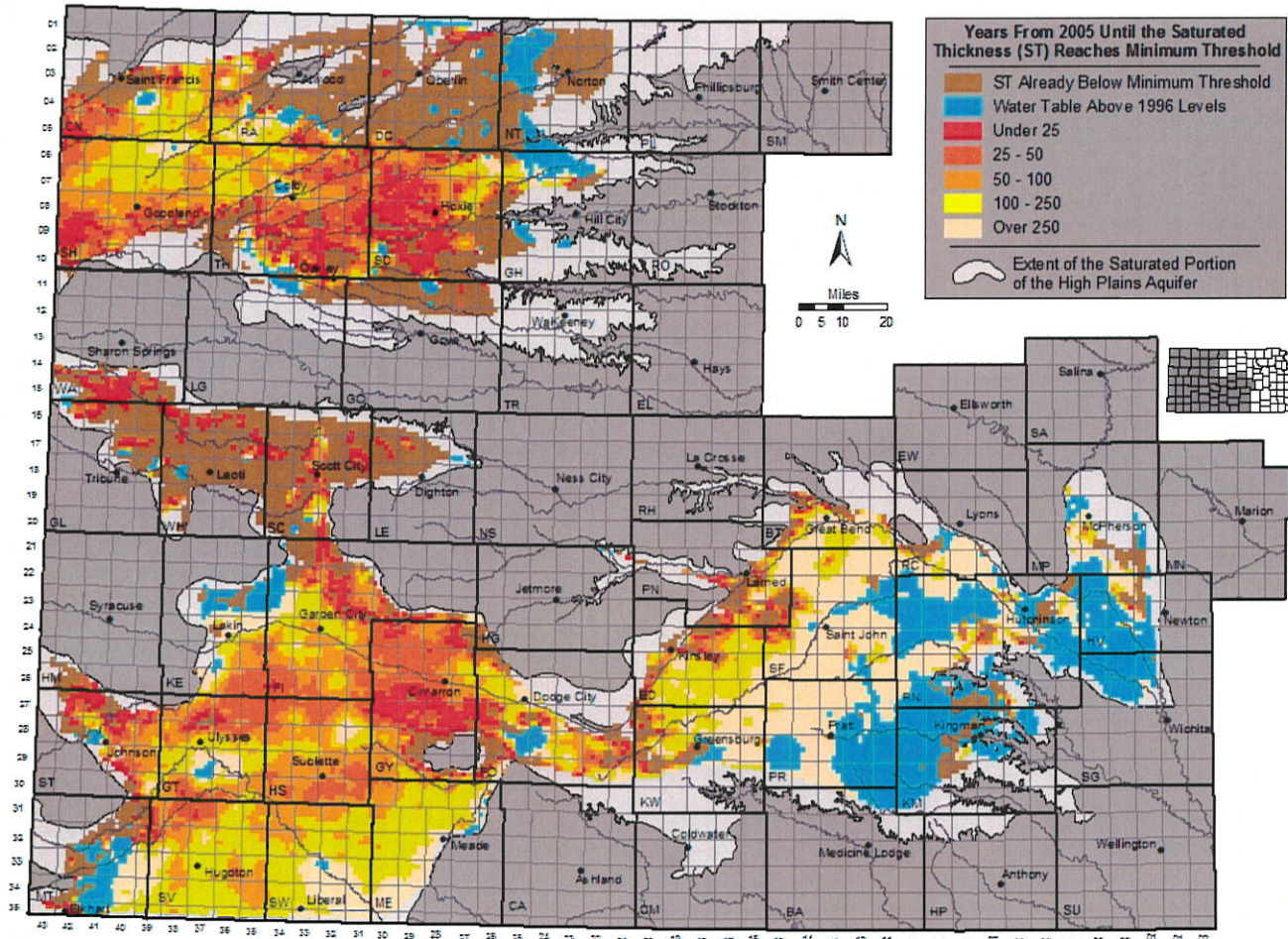




**Figure 13 – Density Distribution of Average Reported Ground-Water Used from 1996 to 2004.** Particularly in the Ogallala aquifer region with its relative low annual recharge rates, decline areas outlined in the previous slide correspond to high water use areas. This further supports the relationship between the influences of precipitation patterns on ground water pumping, which then in turn affects changes in the water table.



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**Figure 14 – Estimated Usable Lifetime.** This map is an estimated projection (NOT A PREDICTION) of how many years until the HP aquifer reaches a point where wells requiring 400 gpm extraction yields will begin to be impaired if ground-water level trends from 1996 to 2006 repeat continuously and unchanged into the future. This methodology is only suitable to the Ogallala portion of the HP aquifer because of its very small annual recharge levels. South-central Kansas does have local issues of ground-water declines but given higher precipitation and recharge levels, this area of the state has a much greater potential to recover.