

Approved: _____

Date 1-22-97

MINUTES OF THE HOUSE COMMITTEE ON ENVIRONMENT.

The meeting was called to order by Chairperson Steve Lloyd at 3:30 p.m. on January 16, 1997 in Room 526-S of the Capitol.

All members were present except: Rep. Kent Glasscock - excused

Committee staff present: Raney Gilliland, Legislative Research Department
Hank Avila, Legislative Research Department
Mary Torrence, Revisor of Statutes
Mary Ann Graham, Committee Secretary

Conferees appearing before the committee: Al LeDoux, Director Kansas Water Office
Tom Stiles, Assistant Director KWO
Rick Miller, State Coordinator KWO
Terry Duvall, Director of Marketing KWO

Others attending: See attached list

Chairman Lloyd called the meeting to order at 3:30 p.m. He welcomed Al LeDoux, Director of the Kansas water office. Mr. LeDoux and staff appeared before the committee for a staff briefing on "State Water Planning in Kansas." (See Attachment 1) A map of Kansas River Basins and Federal Lakes (See Attachment 2) was distributed for review. A Kansas Water Office video, approximately 11 minutes in length, was shown to the committee. Mr. LeDoux introduced three members of the KWO staff who presented various functions of the agency, Tom Stiles, Assistant Director of Coordination and Planning Function; Rick Miller, State Coordinator of the Geographic Information System Functions, and Terry Duvall, Director of Marketing and Storage Programs.

The Chairman welcomed Tom Stiles, Assistant Director, to the committee. Mr. Stiles briefed the committee on the coordination and planning function of the Agency. He provided a copy of "State and Federal Water Programs," (See Attachment 3) a publication that describes state and federal water programs, often referred to as the "redbook." Also an organization chart of the KWO was distributed (See Attachment 4) and a directory of members of the KS Water Authority . (See Attachment 5) Mr. Stiles brought the committee's attention to a copy of "Kansas Water Authority Recommendations for Implementation of the Kansas Water Plan in Fiscal Year 1998," (See Attachment 6) which is an annual report to the Governor and the 1997 Legislature.

Chairman Lloyd welcomed Rick Miller, State Coordinator of Geographic Information System Functions to the committee. Mr. Miller provided the committee with information describing the Kansas Geographic Information Systems Policy Board. (See Attachment 7) and spoke to the committee on the responsibilities and activities of the board. Discussion and questions by the committee followed.

The Chairman welcomed Terry Duvall, Director of Marketing and Storage Programs, to the committee. Ms. Duvall briefed the committee on this function of the Agency. She referred to a map (See Attachment 8) of "Kansas Water Marketing, Water Assurance District and Multipurpose Small Lakes Program Lakes," also a graphic of costs. (See Attachment 9). Discussion and questions followed.

Included in the information provided to the committee was a copy of **HCR 5010** (See Attachment 10), a 1995 Kansas report on Municipal Water Use, (See Attachment 11), a 1995 Kansas report on Irrigation Water Use, (See Attachment 12) a map on Closed and Restricted Areas, (See Attachment 13) and a synopsis of the Kansas Water Resource Agencies. (See Attachment 14)

The Chairman thanked Mr. LeDoux and the staff for their presentation and the committee for their attention.

The meeting adjourned at 5:00 p.m.

The next meeting is scheduled for January 21, 1997

HOUSE ENVIRONMENT COMMITTEE COMMITTEE GUEST LIST

DATE: 1-16-97

NAME	REPRESENTING
Al LeDoux	KWO
Mike Jensen	Ks Park Council
Michelle Peterson	Peterson Public Affairs Group
Tom Brund	Allen Assoc.
DAVE HOLTHAUS	Western Resources
Karl Muedener	KDHE
Jerry Duwall	KWO
Tom Stiles	KWO
Lee Ruff	KDA-DWR
David Lytle	KDA-DWR
Cynthia Abbot	Ks. Audubon Council
Jamie Clover Adams	Governor's Office
Charles Benjamin	KNRC / Ks Sierra Club
Mike Beam	Ks LVSTK Assn.
Rick Miller	Ks Water Office

STATE OF KANSAS



Bill Graves, Governor

KANSAS WATER OFFICE
Al LeDoux
Director

Suite 300
109 SW Ninth
Topeka, Kansas 66612-1249

MEMORANDUM

913-296-3185
FAX 913-296-0878
TTY 913-296-6604

Date: January 16, 1997
To: House Environment Committee
From: Al LeDoux, Director *AL*
Subject: State Water Planning in Kansas

Mr. Chairman, members of the Committee, my name is Al LeDoux, I am the Director of the Kansas Water Office (KWO).

- On July 1, 1981, the KWO and the Kansas Water Authority (KWA) were created. They replaced the Kansas Water Resource Board which had been created in 1955. Water planning, as we know it, was endorsed in 1985 through H.C.R. 5010. In 1989, funding for the *Kansas Water Plan* was dedicated through the State Water Plan Fund.

State water planning in Kansas is accomplished under the direction of the KWA and KWO. The KWO is the water planning, coordination, and marketing agency for our state

- The KWA is a 23-member body with responsibility for advising the Governor, Legislature, and the Director of the KWO on water-policy issues, for approving water-storage sales, for additions and revisions to the *Kansas Water Plan*, federal contracts, and regulations and legislation proposed by the KWO.
- The basin advisory committees each consist of 11 members representing various water users including irrigation, municipal, domestic, industrial, and wildlife and recreation interests. Memberships are approved by the KWA and are for a four-year term.
- The *Kansas Water Plan* serves as a vehicle for coordinating the management, conservation, and development of the water resources of the state. Development of the Plan is outlined in the State Water Resource Planning Act.

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Attachment 1*

- The water planning process in Kansas is coordinated with numerous local, State, and Federal agencies, special interest groups, and the general public. Planning is accomplished through an annual planning cycle.
- Implementation of the *Kansas Water Plan* is accomplished by the passage of legislation or through funding of specific programs or projects. Creation of the State Water Plan Fund in 1989 provided a dedicated source of revenue.

Mr. Chairman and members of the Committee, I would now like to direct your attention to our new KWO video (approximately 11 minutes).

I would also like to introduce three members of the KWO staff who will present to the Committee various functions of our agency:

1. **Tom Stiles**, Assistant Director -- Coordination and Planning Function
2. **Rick Miller** -- State Coordinator of Geographic Information System (GIS) Functions
3. **Terry Duvall** -- Director of Marketing-Storage Programs

AL/HENPRES.MEM/MC

STATE OF KANSAS



Bill Graves, Governor

KANSAS WATER OFFICE
Al LeDoux
Director

Suite 300
109 SW Ninth
Topeka, Kansas 66612-1249

January 1996

913-296-3185
FAX 913-296-0878
TTY 913-296-6604

Dear Fellow Kansans:

This is the third edition of our popular publication that describes state and federal water programs - often referred to as the "redbook." We have changed the name slightly, updated it, and included some additional information we hope will be useful.

This latest edition includes a list of commonly used acronyms, a diagram and description of the hydrologic cycle, and an organizational chart of the state agencies. Also new to this edition is a matrix to help you locate the agency(ies) that have the authority and responsibility to address your questions and concerns.

If the Kansas Water Office can assist you further, please let me know. We can be reached at 913-296-3185.

Respectfully,

A handwritten signature in black ink, appearing to read "Al LeDoux".

Al LeDoux
Director

This publication was printed from funds made available to the Kansas Water Office from the Kansas Department of Agriculture, the Kansas Department of Health and Environment, the Kansas Department of Wildlife and Parks, the State Conservation Commission, and the Kansas Corporation Commission.

*House Environment
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Attachment 3th 2*

Kansas Water Authority

<u>Name</u>	<u>Representing</u>
Tom Bogner	Groundwater Management Districts No. 1, 3, and 4
Alan Crane	Groundwater Management Districts No. 2 and 5
Douglas O. Cruce	Kansas League of Municipalities
Alice Devine	Ex-officio, Kansas Department of Agriculture
Dr. Lee Gerhard	Ex-officio, Kansas Geological Survey
Joe Glassman	Public
William R. Hamm	Association of Kansas Watersheds
Ron Hammerschmidt, Ph.D.	Ex-officio, Kansas Department of Health and Environment
Ray Haner	Kansas Association of Commerce and Industry
Dr. Marc Johnson	Ex-officio, Agricultural Experiment Station
Byron Johnson	President of the Senate
Kent Lamb	Governor of Kansas
Al LeDoux	Ex-officio, Kansas Water Office
Sheila Leiker-Page	Kansas Assn. of Conservation Districts
Kenneth Maechtlen	Public
David Pope	Ex-officio, Div. of Water Resources, Kansas Dept. of Agriculture
Dennis Schwartz	Kansas Rural Water Association
Susan Seltsam	Ex-officio, Kansas Corporation Commission
Gary Sherrer	Ex-officio, Kansas Dept. of Commerce and Housing
John Spurling	Speaker of the House
Tracy Streeter	Ex-officio, State Conservation Commission
Steve Williams	Ex-officio, Kansas Dept. of Wildlife and Parks
Judy Willingham, R.S.	Environmental Interests

AGENCIES AND PROGRAM MATRIX

STATE AND FEDERAL AGENCIES	PROGRAMS	WATER QUALITY						WATER USE/SUPPLY							
		Point Source Pollution	Nonpoint Source Pollution	Data & Research	Municipal	Lakes & Rivers	Groundwater & Aquifers	River Basin Planning	Municipal	Industrial	Irrigation	Recreation	Financial Assistance	Conservation Planning	Research & Data
AG's Dept - Division of Emergency Management															
Cooperative Extension Service, KSU			•	•											
Kansas Biological Survey, KU			•	•		•									
Kansas Corporation Commission		•		•											
Kansas Department of Agriculture			•												
Kansas Department of Ag - Division of Water Resources															
Kansas Department of Health & Environment		•	•	•	•	•		•							
Kansas Department of Wildlife & Parks		•		•		•									
Kansas Geological Survey, KU		•	•	•		•	•								
Kansas State & Extension Forestry			•												
Kansas Water Office				•			•	•	•	•				•	•
State Conservation Commission			•					•	•	•				•	•
U.S. Bureau of Reclamation								•	•	•	•	•	•	•	•
U.S. Corps of Engineers								•	•	•	•	•	•	•	•
U.S. Dept. of Agriculture - Farm Service Agency			•					•	•			•	•	•	•
U.S. Dept. of Ag - Natural Resources Conservation Service			•					•	•	•	•	•	•		
U.S. Dept. of Ag - Rural Economic and Community Development								•							
U.S. Environmental Protection Agency		•	•	•	•	•						•			
U.S. Federal Emergency Management Agency															
U.S. Fish and Wildlife Service				•		•									
U.S. Geological Survey		•	•	•		•	•								•

FISH, WILDLIFE, RECREATION	EDUCATION / INFORMATION	PERMITS							FLOODING			SOIL CONS.		PROGRAMS	
		Water Right	Well Drilling & Plugging	Feedlots	Landfills	Fertilizers & Pesticides	Dams & Levees	Dredging & Clearing	Weather Modification	Planning & Management	Data	Financial Assistance	Cost-Share Assistance		Technical Assistance
●	●								●						AG's Dept - Division of Emergency Management
															Cooperative Extension Service, KSU
			●												Kansas Biological Survey, KU
															Kansas Corporation Commission
															Kansas Department of Agriculture
		●	●						●						Kansas Department of Ag - Division of Water Resources
	●		●	●											Kansas Department of Health and Environment
	●														Kansas Department of Wildlife & Parks
	●														Kansas Geological Survey, KU
	●														Kansas State & Extension Forestry
	●			●	●				●						Kansas Water Office
	●								●		●	●	●		State Conservation Commission
									●	●					U.S. Bureau of Reclamation
									●	●	●				U.S. Corps of Engineers
												●			U.S. Dept. of Agriculture - Farm Service Agency
									●	●	●	●	●		U.S. Dept. of Ag - Natural Resources Conservation Service
	●		●	●	●										U.S. Dept. of Ag - Rural Economic and Community Development
									●						U.S. Environmental Protection Agency
															U.S. Federal Emergency Management Agency
															U.S. Fish and Wildlife Service
	●									●					U.S. Geological Survey

STATE AND FEDERAL AGENCIES

**ADJUTANT GENERAL'S DEPARTMENT
DIVISION OF EMERGENCY MANAGEMENT**

2800 S.W. Topeka Boulevard

Topeka, KS 66601-0300

913-274-1400

FAX 913-274-1427

Emergency Water Supply

Coordination in obtaining water or water supply equipment when a local water system is inoperative, or in the event of a drought.

Statutory Authority

K.S.A. 48-904 et. seq., as amended.

Contact:

Deputy Director, 913-274-1400

Operations Officer, 913-274-1425

Mitigation Planning

State and local planning in mitigating the effects of flooding as well as conservation and development of water resources.

Statutory Authority

Robert T. Stafford Disaster Relief Act,
Section 404.

Contact:

Deputy Director, 913-274-1400

Mitigation Officer, 913-274-1399

Disaster Assistance

Restoration of water supplies and repair of water facilities after a Major Presidential Disaster. This includes processing approved applications for federal funding.

Statutory Authority

Robert T. Stafford Disaster Relief Act,
Section 404.

Contact:

Deputy Director, 913-274-1400

Senior Planner, 913-274-1406

Public Assistance Officer, 913-274-1398

**COOPERATIVE EXTENSION SERVICE
KANSAS STATE UNIVERSITY**

113 Waters Hall
Manhattan, KS 66506
913-532-5820
FAX 913-532-6563

**Education Programs in Water Quality
and Water Use Efficiency**

The Cooperative Extension Services provides educational programs and information across Kansas in water quality and water use efficiency. These programs utilize a program delivery system of state and area based specialists and county extension agents. Educational program needs and goals are developed at the county level by local citizens and delivered by state and area based specialists and county extension agents. Educational programs are currently being developed and delivered in soil conservation, livestock waste management, non-point source pollution prevention, best management practices adoption for pesticide and fertilizer use in crop land and lawn and garden, domestic drinking water, well plugging, grazing land management, private waste management systems, urban pollution problems, irrigation water use efficiency, and dryland water use efficiency. The goal of these educational programs is to conserve and protect natural resources while maintaining the economic competitiveness and profitability of Kansas agriculture.

These programs are developed and delivered in cooperation with local citizens, farm groups, agribusiness, irrigators, groundwater management district and conservation districts, and other local, state and federal agencies. On-farm demonstrations, experiment stations field days, publications, newsletters, news releases, and public meetings are utilized in the delivery of the educational programs.

Statutory Authority

Federal: Smith Lever and subsequent acts. State: K.S.A. 2-608 as amended.

Contact:

Associate Director or
Assistant Director
913-532-5838

State and Extension Forestry Program

The State Forester operates a technical service

program related to the conservation and management of natural and planned forest areas. The program is available to private landowners statewide. State and Extension Forestry cooperates in the riparian and wetlands protection program. The State Forester's objective is to provide technical services in managing riparian areas and establishing riparian tree plantings and other erosion control plantings for long-term beneficial use. The State Forester also provides management guidelines for riparian and wetlands areas.

Assistance from field service foresters is available "on-call" through the local Soil and Water Conservation District, County Extension Office and/or any other agency cooperating with a landowner when input of a forester is desired.

Statutory Authority

K.S.A. 76-425(a) *et seq.*, K.S.A. 2-1915, as amended.

Contact:

District Forester, Northeast
913-532-5833

Research in Water Quality and Efficiency

Research by the Kansas Agricultural Experiment Station in water quality and efficiency is a statewide thrust.

Agricultural Experiment Station-CAMPUS

(1) Natural resources research is directed toward sustainable cropping systems, conserving soil, water and energy resources, erosion control, non-point source pollution and water quality protection, bioremediation of organic and inorganic compounds, and maintaining and improving soil quality.

(2) Water use efficiency is an important research objective both for irrigated and dryland crop production.

Northwest Research-Extension Center-Colby, Kansas

(1) Irrigation research is directed toward efficient use of underground water in conjunction with limited annual precipitation and drip, sprinkler and gravity systems.

(2) Water management research involves improved irrigated and dryland production.

Agricultural Research Center-Hays, Kansas

(1) Soil water management studies are related primarily to dryland crop production. Research encompasses conservation tillage, safe use of chemicals and herbicides, effective management of crop residues and crop and soil management strategies.

Southwest Research-Extension Center-Garden City, Kansas

(1) Irrigation research concerns effective use of energy and underground water. The water use efficiency of center pivot, drip and gravity systems.

(2) Irrigation scheduling and water use efficiency research to conserve and effectively utilize soil and groundwater resources.

Southeast Agricultural Research Center-Parsons, Kansas

(1) Soil and water conservation research is conducted to enhance the water use efficiency of crop and soil management strategies and irrigation from small surface impoundments.

Experiment Fields

(1) Irrigated management under various kinds of water resource regimes is being evaluated: Scandia-from a federal reservoir, St. John-from a rechargeable underground aquifer and Shawnee County-from an alluvial aquifer in the Kansas River valley.

(2) Soil and water conservation research is conducted at 11 different experimental fields. Research results are particularly helpful in providing practical information for farmers and others interested in soil and water conservation, land application of biosolids, appropriate use of pesticides, cropping systems, tillage and management of residues, and nutrient management for optimum yields while minimizing environmental risks.

Statutory Authority

Federal Hatch Act and subsequent acts.

Contact:

Director
913-532-6148

**KANSAS BIOLOGICAL SURVEY
THE UNIVERSITY OF KANSAS**

104 Foley Hall
2041 Constant Avenue
Lawrence, KS 66047-2906
913-864-7725
FAX 913-864-5093

**Water Quality and Freshwater Ecology
Program**

During the past few decades, Kansas has witnessed a rapid rise in the demand for water by competing interests. This demand has brought the realization that the quality and quantity of the state's water resources cannot be taken for granted. The importance of water for agriculture, industry and municipal uses is recognized widely, but its importance to wildlife, recreation and general aesthetics often is overlooked. Information about the kinds, numbers and habitats of aquatic organisms is essential to our understanding of the structure, function and health of rivers, streams, lakes and wetlands.

This program is involved in research to: 1) establish specific water quality/organismal relationships as a basis for water quality indicator species; 2) develop predictive models for evaluating the impacts of chemical and physical habitat alterations on aquatic systems; 3) develop new monitoring protocols and bioassay methods for use by regulatory agencies; and 4) determine the geographic distribution and floral and faunistic composition of Kansas wetlands as a basis for monitoring environmental changes.

Statutory Authority

K.S.A. 76-338.

Contact:

Program Director
913-864-7730

Aquatic Ecotoxicology Program

Since the 1970's, the nation has been acutely aware of the dangers posed by toxic pollutants in the environment and of the need for better information about how these pollutants affect ecosystems. Agriculture, the state's largest industry, uses many chemicals that are applied to the land and transported in runoff to streams and rivers. These chemicals,

along with industrial wastes, effluent from municipal and private wastewater treatment facilities and other toxic substances contribute to the contamination of Kansas surface and groundwater.

Research in this program is designed to examine the fate and effect of hazardous chemicals on the aquatic biota of Kansas. Studies include: 1) ecosystem-level assessments of the impacts of agricultural pesticides on aquatic environments; 2) documentation of the responses of aquatic plants and animals to moderately high concentrations of pesticides found in ponds and reservoirs; 3) single and joint toxicity of co-occurring pesticides to aquatic organisms; and 4) point and non-point source pollution.

Statutory Authority

K.S.A. 76-338.

Contact:

Program Director
913-864-7729

**Kansas Aquatic Mesocosm Program
(KAMP)**

Located in a major agricultural region of the United States, KAMP explores the ecological relationships between agriculture and aquatic ecosystems. The program was established at the University of Kansas in 1977, with a research station of surrogate ecosystems (i.e., mesocosms) that includes manmade ponds, wetlands and a 10-acre reservoir situated in a 100-acre watershed. Mesocosms are experimental arenas that approximate whole aquatic ecosystems. They are established with interacting components similar to those found in natural ecosystems. This allows researchers to examine responses to stress on a smaller, more manageable scale and to predict how stress will affect whole aquatic ecosystems.

In 1987, the Environmental Protection Agency stipulated within the Federal Insecticide, Fungicide

and Rodenticide Act that certain pesticides may require a whole ecosystem hazard assessment as part of the registration process. Research at KAMP from 1977 to 1984, supported by the Environmental Protection Agency, provided a model for such studies. It also led to the Environmental Protection Agency's guidance document for industry about how these studies are to be conducted. Studies of several pesticides have been carried for industry at the KAMP facility under Environmental Protection Agency guidelines. Staff continue to work with the Environmental Protection Agency to refine the use of mesocosms.

Statutory Authority

K.S.A. 76-338.

Contact:

Program Director
913-864-7729

Natural Areas Program

Growing global awareness of the ecological, scientific, recreational, utilitarian and cultural values of natural areas prompted the Kansas Legislature to pass the Natural and Scientific Areas Preservation Act of 1974. This legislation calls for the identification, inventory and protection of the best remaining examples of the state's natural heritage. Administrative authority for the Act was transferred to the Kansas Biological Survey in 1985. In support of the Act, the Kansas Natural Heritage Inventory was formed in 1986 to gather data about the state's significant biological features. The Inventory is a computer-assisted database on rare species and their habitats in Kansas. It is one of 82 data centers in the Natural Heritage Data Network, which spans the Western Hemisphere. The network provides participating data centers with a global perspective on the status and distribution of elements of biological diversity in the hemisphere.

Research activities of this program include: 1) floristic and faunistic surveys; 2) studies of the status and distribution of endangered, threatened and rare species; 3) characterization and identification of natural communities (including palustrine and riverine types); and 4) evaluation of the use of satellite data to identify and evaluate the quality of natural areas in the Great Plains. Program staff work closely with public and private decision-makers to provide early notification of potential natural resource conflicts, to guide land use decisions and to develop conservation priorities.

Statutory Authority

K.S.A. 74-6601 *et seq.*, as amended.

Contact:

Program Director
913-864-3453

KANSAS CORPORATION COMMISSION

Finney State Office Building
130 South Market, Room 2078
Wichita, KS 67202-3810
316-337-6200
FAX 316-337-6211

Plugging and Temporary Abandoned Wells

Oil and gas operators are responsible for proper well plugging as specified in K.S.A. 1986 Supp. 55-179. Operators will receive preliminary plugging guidelines, with respect to those wells that are dry and/or abandoned when the operator notifies the District Office regarding the setting of surface pipe. Before any other well is plugged, the operator must call the District Office to receive verbal plugging orders. K.S.A. 1986 Supp. 55-164 gives the Commission authority to levy administrative fines and to revoke an operator's license if the operator is not in compliance with rules and regulations. The Commission field staff conducts spot checking of well plugging to ensure operators comply with the plugging requirement to protect fresh and usable water.

Commission regulations require an operator to give notice of temporary abandonment of a well within 90 days after operations cease. The Conservation Division may approve the temporary abandonment status when the well is determined to be sound by the Petroleum Industry Regulatory Technician and the operator has a legitimate reason for not plugging the well. Reasons may include: questionable productivity, conversion of the well to another use, etc.

Statutory Authority

Plugging: Authorized by K.S.A. 55-152; implementing K.S.A. 55-152, K.S.A. 55-156, K.S.A. 55-157, K.S.A. 55-159. Temporary Abandonment: Authorized by K.S.A. 55-152, implementing K.S.A. 55-152, K.S.A. 55-159 and K.S.A. 55-128c.

Contact:

Director, Conservation Division or Assistant
General Counsel for Fee Fund Pluggings
Conservation Division
316-337-6200

Environmental Projects and Surface Ponds

Kansas Statutes and Commission regulations further require permitting of prior use. Applications for surface ponds are reviewed by technical and field staff for pond construction and location so that protection of fresh and usable water is assured prior to application approval. Statutes further require that spillage of fluids associated with oil and gas production be immediately reported to the appropriate Kansas Corporation Commission district field office and that all spills and pits containing the spills shall be emptied within 48 hours after the discharge occurs. The Commission also has the responsibility to have operators cleanup pollution to soil and water resources from oil related activities. In certain cases, operators are required to develop plans for cleanup of contamination which are reviewed by technical staff for consistency with Commission objectives.

Statutory Authority

Notice of Intention to Drill: Authorized by K.S.A. 55-152, implementing K.S.A. 55-15. Surface Ponds: Authorized and implementing K.S.A. 55-152.

Contact:

Director, Conservation Division
316-337-6200

Drilling and Production

Kansas statutes require the filing of a notice of an operator's intention to drill a well prior to spudding the well. This assures a technical review of the proposed well construction and location to ensure that fresh and usable water and correlative rights are protected. Kansas statutes and Commission regulations further require permitting of pits used in drilling operations prior to use.

Statutory Authority

Notice of Intention to Drill: Authorized by K.S.A. 55-152, implementing K.S.A. 55-151 and

K.S.A. 55-15. Surface Ponds: Authorized and implementing K.S.A. 55-152.

Contact:

Supervisor, Production Department
Conservation Division
316-337-6200

Underground Injection Control (UIC)

The Federal Safe Drinking Water Act requires the states to meet Environmental Protection Agency standards for regulating underground injection of fluids. The Conservation Division has sole responsibility for implementing the Underground Injection Control program for Class II (oil/gas) wells in Kansas. State statutes require that oil and gas operators have approval prior to fluid injection and that certain records and tests be made. Injection applications are technically reviewed to ensure that fresh and usable water, hydrocarbons and correlative rights will be protected. Operators must report well operating statistics (i.e., injection pressures, rates, etc.). Wells must have mechanical integrity tests run regularly.

Statutory Authority

Authorized by K.S.A. 55-152, K.S.A. 55-901, implementing K.S.A. 55-151, K.S.A. 55-153, K.S.A. 55-901 and K.S.A. 55-1003.

Contact:

Director, Conservation Division
316-337-6200

KANSAS DEPARTMENT OF AGRICULTURE

901 S. Kansas Avenue
Topeka, KS 66612-1281
913-296-2263
FAX 913-296-0673

Fertilizer

The Kansas Fertilizer Law provides for the inspection, registration and sampling of fertilizer products sold, offered or exposed for sale, or distributed in Kansas. Any product found to be in violation of the act is red tagged and taken out of commerce by Agricultural Commodity Assurance Program (ACAP) personnel. The Bulk Fertilizer Containment Act is designed to insure the safe handling and storage of bulk fertilizers and fertilizer materials. Design of all containment facilities must be pre-approved prior to construction to assure compliance with water quality protection and other requirements. Spills and inventory discrepancies are reported, maintenance and inventory records are required and facilities are regularly inspected for compliance. Facilities are red tagged and taken out of service when major violations are found.

Statutory Authority

K.S.A. 2-1201 to 2-1211; K.S.A. 2-1226 to 2-1231.

Contact:

Division of Inspections
913-296-3511

Pesticide Management

The Kansas Pesticide Law requires that persons who apply restricted use pesticides be certified in the appropriate category. Persons who apply pesticides for hire must obtain commercial applicator certification. Businesses that do commercial applications must obtain a business license. Pesticide distribution is regulated through the registration of pesticide products and dealers. All pesticides must be "used" in strict accordance with the labels and labeling of the products used. In addition to label compliance, the pesticide law establishes minimum standards for proper use, storage, and disposal and addresses concerns for human safety, environmental protection, and consumer protection.

The Chemigation Safety Law establishes requirements for the application of pesticides, fertilizers and animal waste through irrigation

systems. Protection is established by requiring the use of certain safety equipment, certification of equipment operators, and permits for all chemigation units. This program includes an annual chemigation use report and a limited amount of well water sampling for possible contamination.

Under a Cooperative Agreement with the federal government, a rigorous enforcement program is maintained along with initiatives to protect water and other natural resources.

Statutory Authority

K.S.A. 2-2438 *et seq.* (KPL); K.S.A. 2-2201 *et seq.* (Ag Chem); K.S.A. 2-3301 *et seq.* (Chemigation); The Federal Insecticide, Fungicide, and Rodenticide Act (F.I.F.R.A.), and related federal statutes.

Contact:

Division of Plant Health
913-296-2263

**KANSAS DEPARTMENT OF AGRICULTURE
DIVISION OF WATER RESOURCES**

901 South Kansas Avenue, 2nd Floor

Topeka, KS 66612-1283

913-296-3717

FAX 913-296-1176

Floodplain Management

This program is responsible for local, state and federal coordination for floodplain management. The Division has been designated by the Governor as the coordinator of the Federal Flood Insurance Program. The Chief Engineer is responsible for approval of floodplain ordinances and regulations to be adopted by city and county governments.

Statutory Authority

K.S.A. 212-766.

Contact:

Water Structures Section
913-296-2933

Interstate Water Matters

Interstate Compacts - The Division of Water Resources, through the Chief Engineer - Director, represents the State of Kansas on four interstate compacts pertaining the apportionment of waters in rivers which flow through Kansas and one or more other states. These compacts are as follows:

Republican River Compact (Colorado, Kansas, Nebraska) K.S.A. 82a-518

Arkansas River Compact (Kansas, Colorado) K.S.A. 82a-520

Arkansas River Basin Compact (Kansas, Oklahoma) K.S.A. 82a-528

Big Blue River Compact (Kansas, Nebraska) K.S.A. 82a-529

Missouri Basin States Association - The Chief Engineer - Director serves as the Kansas director to the Missouri Basin States Association, an organization of the states which share in the drainage of the Missouri River.

Statutory Authority

K.S.A. 82a-518; K.S.A. 82a-520; K.S.A. 82a-528; K.S.A. 82a-529.

Contact:

Chief Engineer

913-296-3717

Levees and Drainage District Program

This program provides for regulation of the construction of levees and dikes and allows the formation of drainage districts to address local works of improvement to deal with drainage problems. Such levee projects are reviewed pursuant to the Environmental Coordination Act prior to approval. K.S.A. 24-126 requires the approval of the Chief Engineer for the construction of dikes and levees parallel to water courses. K.S.A. 24-105 relates to the construction of levees and dikes generally perpendicular to water courses. There are five separate statutes authorizing the formation of drainage districts to deal with a variety of different circumstances. With the enactment of K.S.A. 82a-301 *et seq.*, the Chief Engineer was granted the responsibility to approve plans and grant permits for drainage projects. Drainage projects are intended to provide a mechanism for local entities to join together and create a drainage project when the topography and circumstances require such action.

Statutory Authority

K.S.A. 24-401; K.S.A. 24-601; K.S.A. 24-656; K.S.A. 24-667; K.S.A. 24-701; K.S.A. 82-325-327.

Contact:

Water Structures Section
913-296-2933

Special Management Programs

The Division of Water Resources is involved in several special management programs to address the wide variety of water resource related problems in the State of Kansas. 1) Groundwater Management District Act - This act, authorized by the legislature in 1972, provides for more local input into the management of groundwater resources. 2). Intensive groundwater use control areas - This management program is provided for in the Groundwater Management District Act. It allows for areas

experiencing unusual declines or areas that require special management considerations, such as water quality issues, to be specifically identified for these management programs. 3) The Observation Well Network is a joint program with the U.S. Geological Survey and the Kansas Geological Survey. There are approximately 1,500 observation wells at which water level measurements are taken. 4) Water Assurance District Act - The Division has several responsibilities under the Act including determination of eligible municipal and industrial water right holders, approval of reservoir releases made for water users pursuant to any contract between the District and the Kansas Water Office for use of reservoir storage.

Statutory Authority

K.S.A. 82a-1020 *et seq.*

Contact:

Assistant Chief Engineer
913-296-3717

Stream Obstruction Program

The Stream Obstruction Act requires that anyone desiring to change the course, current or cross section of a stream must have prior written approval of the Chief Engineer. Such projects are reviewed pursuant to the provisions of the Environmental Coordination Act prior to approval. Such activities may include construction of dams, channel modifications and other stream obstructions. Stream obstructions may include pipeline crossings, jetties, revetments or sand dredging obstructions located in a water course. The Water Structures program includes processing applications and approving plans for such projects. In the case of dams, this involves review and approval of engineering plans, inspection of the project during construction and a subsequent inspection after construction is completed to confirm that the facility was built according to the approved plans. Ongoing, periodic inspections of high and significant hazard dams are made to ensure that the structure is safe and is not presenting a threat to the public health and safety. The Division also certifies eligibility for tax reduction benefits for watershed structures and certain other dams built on private property.

Statutory Authority

K.S.A. 82a-301 to 305a, K.S.A. 82a-325-327.

Contact:

Water Structures Section
913-296-2933

Water Appropriations Program

The Water Appropriations Program has six components.

1. Processing of applications received from individuals or entities desiring to appropriate the waters of the state.
2. Processing applications for changes to existing water rights. This procedure allows entities to make changes in the point of diversion, place of use, type of use or any combination thereof for an existing water right.
3. Review and approve conservation plans required of applicants for new permits or certain changes to existing water rights for consistency with approved guidelines.
4. Issuing certificates of appropriation - A certificate is issued after a water right has been perfected in accordance with the terms, conditions and limitations of a permit. The certificate is a document which represents a property right issued by the Chief Engineer certifying that a rate and quantity have been perfected under the terms of the Water Appropriation Act.
5. Water Use - Owners of water rights, except for domestic water right users, are required to file an annual water use report with the Division of Water Resources. Any person failing to submit a water use report is subject to civil penalty not to exceed \$250.00. Persons who knowingly file a document containing false information shall be guilty of a class C misdemeanor. The Division of Water Resources inventories and monitors water use reports. The Division works with the Kansas Water Office and the U.S. Geological Survey to produce publications on water use.
6. The administration and enforcement of water rights, minimum desirable streamflows and protection of releases from reservoir storage are handled by the four field offices located in Topeka, Stockton, Stafford and Garden City. This includes investigation of impairment and wastage complaints.

Statutory Authority

K.S.A. 82a-701 *et seq.*

Contact:

Water Rights Section
913-296-3717

Water Commissioners for field administration

and enforcement are:

1. Dale Mahan, Topeka, FAX 913-267-7566
2. Bruce Falk, Stafford, FAX 316-234-6900
3. Scott Ross, Stockton, FAX 913-425-6842
4. Mark Rude, Garden City, FAX 316-276-9315

Watershed District Program and Multipurpose Small Lakes Programs

The Division has several responsibilities during the formation of a watershed district. This includes determination of the boundaries of the watershed district in cooperation with a steering committee, the approval of the petition submitted by the steering committee and then, after the election if the district is organized, the approval of the general plan submitted for the district. The specific project plans that are submitted by the district must be approved by the Chief Engineer to ensure that they are consistent with statutory requirements and the general plan. In those instances where state cost share funds are invested in the structure, the Chief Engineer is responsible for certifying to the State Conservation Commission that the structure has been built according to the approved plans.

Similar responsibilities exist for projects to be built under the Small Lakes Program in that the sponsor must develop and receive approval of a general plan if the project is not in a watershed district. Such projects also require permitting, inspection and certification to the State Conservation Commission.

Statutory Authority

K.S.A. 24-1201 to 1233, K.S.A. 82a-1604-1608.

Contact:

Water Structures Section
913-296-2933

Water Transfer Act

In 1993, the Legislature amended the Water Transfer Act to provide for regulatory control for the diversion and transportation of 2,000 acre-feet or more per year of water to be moved to a point of use outside a 35 mile radius from the point of diversion of such waters. An application for a water transfer must be submitted to the Chief Engineer. If the application is then acceptable and complete, the act provides for a public hearing. The Chief Engineer of the Division of Water Resources, in conjunction with the Director of the Kansas Water Office, the Secretary of the Kansas Department of Health and

Environment, who constitute the transfer hearing panel, appoint an independent hearing officer to conduct a formal hearing under the Kansas Administrative Procedures Act. The Water Transfer panel must then review the decision of the hearing officer. The hearing panel's decision may be appealed to district court under the provisions of the Kansas Judicial Review Act.

Statutory Authority

K.S.A. 82a-1501 through 1508, as amended.

Contact:

Chief Engineer
931-296-3717

KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

Division of Environment
Forbes Field, Building 740
Topeka, KS 66620-0001
913-296-1535
FAX 913-296-8464

Water Quality Assessment

The water quality assessment program is responsible for: (1) identifying and determining the nature and extent of water quality conditions in Kansas and suitability of water resources for drinking water supplies, aquatic life support, recreation, industrial and agricultural uses and ground water recharge; (2) developing and recommending appropriate corrective actions to correct identified water quality and water pollution problems; and (3) evaluating the effectiveness of implemented pollution control and water quality management measures intended to solve water quality and pollution problems.

These responsibilities are implemented through developing and maintaining water quality standards, reviewing and certifying that water quality impacting actions will not violate water quality standards, operation of water quality monitoring networks, conducting special surveys and investigations and analyzing and interpreting compiled water quality data.

Statutory Authority

K.S.A. 65-165 *et seq.*

Contact:

Office of Science and Support
913-296-6603

Mining Program

The Mining Program is responsible for the regulation of coal mining and the reclamation of abandoned mine lands. This program is administered in Pittsburg. The two subprograms within this program are Administration/Enforcement and Abandoned Mine Lands. The Administration / Enforcement Program is responsible for the administration and enforcement of all laws and regulations applicable to active coal mining. The Abandoned Mine Lands Program is responsible for reclamation of priority problems associated with historical coal mining.

Statutory Authority

K.S.A. 49-401 *et seq.*

Contact:

Bureau of Environmental Remediation
913-296-1660 or 913-296-8540

Nonpoint Source Pollution

The mission of the nonpoint source program is to achieve widespread use of nonpoint source pollution control measures. This will result in reduction of pollution caused by nonpoint sources. The federal Clean Water Act - Sections 101(a)(7) and 319, K.S.A. 75-5657, and the *Kansas Water Plan* provide the fundamental programmatic tools. Principal funding is provided via federal Section 319-nonpoint source pollution control grants and the State Water Plan funds. Funds support — 1) KDHE staff and operations, 2) demonstration projects, 3) special investigations, 4) grants to local governments to develop and implement local environmental protection plans, 5) technical assistance, 6) technology transfer, and 7) information and education. Technical assistance is provided to public and private sector organizations in identifying nonpoint source caused water pollution problems and preparation of a corrective action plan. Nonpoint source pollution control plans prepared by county conservation districts and others are reviewed to assure consistency with Kansas nonpoint source pollution control principles and practices.

Statutory Authority

K.S.A. 75-5657

Contact:

Division of Water
913-296-5500

Confined Livestock Pollution Control Program

The program is responsible for issuance and enforcement of water pollution permits and siting of confined livestock feeding operations. All livestock

feeding operations confining more than 300 animal units must register with KDHE. Any confined livestock feeding operation must comply with state statutes concerning siting and operations found to have a significant water pollution potential must obtain a permit from KDHE and take action to abate the potential.

Statutory Authority

K.S.A. 65-171d

Contact:

Bureau of Water
913-296-5500

Water Projects

Environmental Coordination

Complete reviews as required by the Water Projects Environmental Coordination Act.

Statutory Authority

K.S.A. 82a-325.

Contact:

Bureau of Water
913-296-5500

Public Water Supply

The public water supply program protects public health by providing technical assistance to public water supply systems to assure safe potable water is provided to Kansas residents. Department personnel train water supply system operators, inspect public water supplies, sample both the source water and finished product, review plans and specifications for treatment and distribution systems and review analytical results for compliance with drinking water standards. The department administers all requirements of the 1986 Amendments to the Safe Drinking Water Act relating to public water supplies.

Statutory Authority

K.S.A. 65-156 *et seq.*

Contact:

Bureau of Water
913-296-5500

Environmental Remediation

The Bureau of Environmental Remediation is responsible for environmental emergencies and investigation and long-term cleanup of contaminated areas. The Bureau investigates suspected contamination sites to determine if contamination exists; evaluates the potential threat to public health and the environment from contaminated sites; and maintains the contaminated site list used to establish

priorities for cleanup. The Bureau is the first responder to petroleum and chemical spills and responsible for coordination of cleanup at spill sites; provides oversight of cleanup by private parties at contaminated sites; administration of the federal Superfund Program in Kansas; and administration of the storage tank program for above and underground tanks.

Statutory Authority

K.S.A. 65-161 and 65-164.

Contact:

Bureau of Environmental Remediation
913-296-1660

Hazardous Waste Management

Kansas hazardous waste statutes K.S.A. 65-3430 *et seq.* and regulations K.A.R. 28-31-1 through 28-31-13 require the issuance of permits for storage, treatment and disposal facilities. These statutes and regulations require construction and operation of facilities such that both surface water and ground water are protected. Facilities are required to have an adequate ground water monitoring system. Where ground water has been contaminated, a corrective action program to cleanup ground water must be implemented. The long-term care and monitoring of facilities that cease operation is addressed by post closure care and permitting requirements that can be required forever.

Statutory Authority

K.S.A. 65-3430 *et seq.*

Contact:

Bureau of Waste Management
913-296-6171

Water Pollution Control

The water pollution control program protects public health through control of sources of water pollution. All waste treatment facilities operate under the terms of a permit issued by the department. The permit specifies the degree of treatment required to meet minimum national requirements as well as to assure compliance with state water quality criteria. Department personnel train wastewater treatment systems operators, inspect treatment facilities, review facility monitoring reports for compliance with permit conditions and administer the state revolving loan fund program. Pretreatment of industrial waste prior to discharge into municipal sewer systems are also regulated.

Statutory Authority

K.S.A. 65-165 *et seq.*

Contact:

Bureau of Water
913-296-5500

**Dry Cleaning Facility Release
Trust Fund**

This program is responsible for assessment and remediation of contamination at dry cleaner sites. Authority for this program is mandated by K.S.A. 65-141 through 155. This act requires establishment of performance standards for existing and new dry cleaning facilities, waste removal from closed facilities, and prioritization of dry cleaning sites which are candidates for corrective action. The Dry Cleaner Facility Release Trust Fund was created based on environmental surcharges on gross receipts from dry cleaning services and a fee on the purchase of dry cleaning solvent.

Statutory Authority

K.S.A. 65-141 through 155

Contact:

Bureau of Environmental Remediation
913-296-1660

Solid Waste Management

Solid waste management includes collection, storage, processing, recovery and disposal of solid wastes. The primary focus is on the design and operation of solid waste disposal facilities. These facilities include the following types of landfill: sanitary (municipal refuse), industrial and construction/demolition.

The principal program emphasis is to protect and prevent contamination of surface and ground waters at these solid waste disposal facilities. A monitoring program, which requires sampling and analysis of surface water and ground water monitoring wells, is required at most solid waste disposal facilities.

Statutory Authority

K.S.A. 65-3401 *et seq.*

Contact:

Bureau of Waste Management
913-296-1601

KANSAS DEPARTMENT OF WILDLIFE AND PARKS

900 S.W. Jackson, Suite 502
Topeka, KS 66612-1220
913-296-2281
FAX 913-296-6953

512 S.E. 25th Avenue
Pratt, KS 67124-8174
316-672-5911
FAX 316-672-6020

Pollution and Fish Kill Investigations

When fish kills or other instances of pollution of waters are reported, agency personnel conduct field investigations to determine the extent of the damage, cause(s) if possible, and any remedial action needed. These investigations are conducted in cooperation with the Department of Health and Environment, U.S. Fish and Wildlife Service, Environmental Protection Agency and other state and federal agencies. The objective of this program is to document pollution and fish kill incidents in order to determine causes and extent of damage. Findings are used to provide evidence in the event of regulatory actions and to provide a basis for corrective actions to prevent additional resource damage.

Statutory Authority

K.S.A. 32-702, K.S.A. 32-703, K.S.A. 32-801.

Contact:

Natural Resources Coordinator
913-296-2281

913-296-2281

State Park Planning and Development

Program activities include planning and development of state park facilities on lands under control of the Kansas Department of Wildlife and Parks (KDWP). The objective of the program is to develop KDWP lands in a coordinated manner for day use, camping and a broad spectrum of recreational pursuits in a manner compatible with natural resource management. Development is typically tied to other state and federal agency programs, partly because KDWP managed properties are often located on small fishing lakes or major irrigation, flood control and water supply lakes.

Statutory Authority

K.S.A. 32-807; K.S.A. 32-837.

Contact:

Parks Division
316-672-5911

Land and Water Conservation Fund

Federal Land and Water Fund dollars, generated by a tax on off-continent shelf oil drilling, are used to finance land acquisition and recreation programs. The Land and Water Conservation Fund Program was enacted to preserve, develop and assure access to outdoor recreation resources for all citizens. This program provides matching grants through state and local units of government. The Emergency Wetlands Resources Act of 1986 called for states to develop a wetland priority plan as part of the outdoor recreation plan. A Plan for Kansas Wildlife and Parks: Strategic Plan reflects both wetlands preservation and management priorities for the Department.

Statutory Authority

Federal Land and Water Conservation Fund Act of 1986 (16 U.S.C. ss4601-4 - 4601-11); Emergency Wetlands Act of 1986 (16 U.S.C. 553); K.S.A. 32-824 and 825.

Contact:

Planning Section

Community Lakes Assistance

Communities (city, county, etc.) which control and/or operate public lakes are provided with technical assistance to enhance the fisheries resource. Department field personnel conduct fisheries related surveys and prepare detailed fisheries management plans which are compatible with the operational and recreational desires of the community. The Department also provides small monetary grants to participating communities for use in fisheries development. The Department's objectives for the Community Lakes Assistance Program is to provide communities with the technical advice needed to enhance fisheries management on public lakes and improve the overall quality of fishing.

Statutory Authority

K.S.A. 32-807, K.S.A. 32-829.

Contact:

Fisheries Management Section
316-672-5911

Conservation Easement (for Riparian and Wetland Areas)

Passage of the conservation easement law and recommendations within the State Water Plan provide the legal and state policy direction for the establishment of the Riparian and Wetland Easement Program. Landowners voluntarily enroll eligible areas identified within high priority riparian and wetland regions of the state. Easements could include specific management practices recommended under the Wildlife Habitat Improvement Program (WHIP). By combining the Wildlife Habitat Improvement Program and this program, recovery of impacted riparian and wetland areas could result as well as protecting quality areas already in existence. Easements can be short term (10 year) arrangements or in perpetuity. Benefits would vary by type of easement. Mechanisms also exist to allow donation of easements.

Statutory Authority

K.S.A. 32-807, K.S.A. 58-3810, *et seq.*

Contact:

Wildlife Management Section
316-672-5911

Wildlife Habitat Improvement Program (WHIP)

The Wildlife Habitat Improvement Program is a program in which all Kansas landowners are eligible to participate. The program is designed to improve and develop wildlife habitat on private lands with little or no costs or sacrifice of agricultural production. It is a habitat program that addresses the basic longstanding wildlife problem—habitat loss. Approximately \$80,000 is available annually (subject to annual budget processes) for grass seed, trees, etc. Field staff provide technical advice, planning assistance and often manpower and equipment to perform plantings. Landowners receiving the program grants are under no obligation to provide access to such developed lands. The program's design would be especially useful in providing technical expertise to landowners for sound management of riparian and wetlands areas.

Statutory Authority

K.S.A. 32-702, K.S.A. 32-703, K.S.A. 32-801.

Contact:

Wildlife Management Section
316-672-5911

Environmental Services

The Environmental Services Section is responsible for reviewing publicly funded and state and federally permitted development projects, preparing permits issued by the Kansas Department of Wildlife and Parks for projects impacting threatened and endangered species, utility company inquiries, Kansas Department of Health and Environment solid and hazardous waste proposals, serving on various planning and policy interagency committees as assigned, reviewing 404 notices (Corps of Engineers), Water Projects Environmental Coordination Act reviews (Kansas Department of Agriculture), National Pollution Distribution Elimination System permits and 401 certification proposals (Kansas Department of Health and Environment) and Environmental Protection Agency construction grant proposals. Environmental Services personnel investigate new methods of impact modeling, track threatened or endangered species distributions, and review state and federal environmental legislation.

Statutory Authority

K.S.A. 32-107, K.S.A. 501-510.

Contact:

Environmental Services Section
316-672-5911

Stream Access

This program is designed to provide a systematic approach to implementing general access to navigable Kansas streams. The program compliments and extends previous stream access programs. Performance of this project allows the Kansas Department of Wildlife and Parks to take advantage of future funding that can be applied to access development. Additional access benefits stream anglers and other river recreationists.

The goal of this program is to implement a system of stream access that fosters increased angling and recreational use consistent with regional needs. The system will be developed by recruiting candidate sites, prioritizing their potentials and scheduling development consistent with available funds.

Statutory Authority

K.S.A. 32-807.

Contact:

Public Lands Section
316-672-5911

North American Waterfowl Conservation Act/Habitat Acquisition Program

The North American Waterfowl Management Plan (NAWMP) was established in 1986 by the governments of the United States, Canada and Mexico, with the goal of restoring waterfowl breeding populations to the levels reached during the 1970s. Waterfowl habitat acquisition and enhancement are integral parts of the NAWMP. Federal funding is available through NAWMP to the Kansas Department of Wildlife and Parks to acquire wetlands for the Playa Lakes Joint Venture and wetland listed as high priority in the Regional Wetlands Concept Plan. Funding is program specific and based on the amount of money available.

Statutory Authority

16 U.S.C. 4601-4 through 4601-11, K.S.A. 32-801.

Contact:

Wildlife Management Section
316-672-5911

Wildtrust

Wildtrust is a trust fund that provides the Kansas Department of Wildlife and Parks with a flexible funding source. Wildtrust accepts private, organizational and corporate donations of money, property and real estate. Wildtrust monies are used to finance numerous agency programs and projects. Estate memorials are also an integral part of the Wildtrust program. Wetland and riparian areas can be donated.

Statutory Authority

K.S.A. 32-994.

Contact:

Wildtrust Administrator
316-672-5911

**KANSAS GEOLOGICAL SURVEY
UNIVERSITY OF KANSAS**

305 Moore
Lawrence, KS 66045
913-864-3965
FAX 913-864-5317

Groundwater Contamination Analysis

Protection of the quality of the water resources of Kansas is a matter of highest priority. The assessment of the severity of the threat to water supplies posed by natural and human factors is a critical part of protection efforts. Natural salt contamination is an important limitation on water use in parts of Kansas. Saltwater intrudes into the High Plains aquifer in parts of Groundwater Management Districts 2, 3, and 5 and discharges into the Arkansas River in south-central Kansas. Withdrawal of freshwater from the aquifer can cause upward and lateral movement of saltwater-freshwater interfaces. There is also growing concern on the water quality effects of consumptive water use on water salinity. Saline Arkansas River water crossing the state line into southwest Kansas infiltrates to and contaminates the groundwater as a result of declining groundwater levels. Assessment of human factors includes evaluation of both nonpoint sources of contamination from agricultural chemicals and point sources from contaminant waste sites.

The hydrogeologic and geochemical studies in this program address these problems and allow determination of the fate and transport of contaminants. Many of the investigations include examination of management practices, such as safe-yield policies, for controlling contamination. Research into the understanding and abatement of groundwater pollution is integral to the Kansas Geological Survey's mission. Most of the studies are conducted in cooperation with the groundwater management districts of Kansas, federal and other state agencies, and universities.

Currently this program has eight sub-programs:

- (1) Mineral intrusion in the aquifer of the eastern Great Bend Prairie.
- (2) Mineral intrusion in the aquifer of the western Equus Beds area.
- (3) Water quality and groundwater declines in the upper Arkansas River corridor.

- (4) Evaluation of nonpoint sources of contamination, including sources and factors affecting nitrate movement in soils and ground water.
- (5) Methods for hydrogeologic evaluation of the potential for contaminant transport.
- (6) Application of uncertainty concepts in groundwater modeling.
- (7) Technical modeling support to KDHE for evaluating contamination potential of landfills.
- (8) Geochemical identification of sources of saltwater contamination.

Statutory Authority

K.S.A. 76-322.

Contact:

Geohydrology Section
913-864-3965

Hydrologic Basins and Stream-Aquifer Analysis

The growing water demands in different river basins in Kansas and the new initiatives of state officials in Kansas to develop water planning and management strategies for each basin require more accurate determination of the natural input and output of water to and from each basin. Furthermore, state and local agencies must know the effect of water rights administration and management strategies on water budgets in basins. The water inputs and outputs have several components, including stream-aquifer interactions and natural groundwater recharge to aquifers. Human factors of land and water use modify the predevelopment balance of the surface and groundwater fluxes. Research of the KGS is evaluating and modeling the natural components and the effect of human factors for use in assessing basin plans and management policies. Much of the present focus includes sub-basin studies in the High Plains aquifer of south-central Kansas and the lower Republican River valley of north-central Kansas.

Systematic basin assessment and construction of electronic, GIS, and printed atlases and databases

continues to be a long-term objective of KGS hydrologic programs. Following on the completion of the Solomon Basin atlas, contributions to the Kansas-Lower Republican basin assessment will begin in FY97, along with continued systematic development of Arkansas River basin data resulting from the individual projects described elsewhere. Evaluation of mechanisms of stream-aquifer interactions in alluvial systems in the basins will improve understanding of controls on contaminants in surface waters and the groundwater capture of surface water contaminants by pumping. An understanding of these mechanisms is important for the Governor's Water Quality Plan.

Currently, this program has four sub-programs:

- (1) Water resources management in the Rattlesnake Creek sub-basin
- (2) Water budget and routing model for the Quivira National Wildlife Refuge
- (3) Evaluation of stream-aquifer interactions in the Lower Republican River valley
- (4) Hydrologic analysis of the Kansas-Lower Republican basin and the Upper Arkansas basin

Statutory Authority

K.S.A. 76-322.

Contact:

Geohydrology Section
913-864-3965

Regional Aquifer Analysis

The Dakota aquifer is an important water resource for central and parts of western Kansas. The Dakota Aquifer Program has evaluated characteristics of the aquifer framework, flow system, and water quality. The information is needed for a sound scientific basis on which to formulate management policies for water use and protection by state and local agencies. The dominant management issue relates to long-term sustainable yield under development. The research indicates that the hydrology and water quality of the Dakota aquifer are controlled regionally by the presence or absence of overlying, relatively impervious rock which greatly decreases recharge from above sources and the flushing rate of resident saltwater. In southwestern Kansas where the Dakota directly underlies the High Plains aquifer, model simulations show that the aquifers behaved largely as a single system prior to development. This implies that withdrawal of water resources from one aquifer should eventually impact the other. Areas of the

Dakota overlain by a thick confining layer are generally more sensitive to development and should be closely monitored to avoid overuse and potential dewatering. Fiscal year 1996 is the last year of the Dakota Aquifer Program. The overall objectives of FY96 are to (1) complete the ongoing research projects in the program; (2) report the research results in a variety of formats including, but not limited to, annual reports, data bases, and maps; and (3) decommission the remaining monitoring sites installed during the program or transfer responsibility to state or local agencies or landowners.

Regional aquifer analysis also develops from the combined results of basin, local, and issue specific studies, such as the system-level understanding of the northern Great Bend Prairie aquifer that is resulting from the combined saltwater intrusion and stream-aquifer studies listed under other headings. Understanding of alluvial aquifer dynamics and the interaction of alluvial and regional aquifer systems are also developing from the stream-aquifer, basin, and water quality studies. An important aspect of these investigations is that they evaluate aquifer systems crossing major river basins in Kansas as a whole.

Statutory Authority

K.S.A. 76-322.

Contact:

Geohydrology Section
913-864-3965

KANSAS STATE AND EXTENSION FORESTRY

Kansas State University
2610 Claflin Road
Manhattan, KS 66502-2798
913-537-7050
FAX 913-539-9584

Forest Stewardship Program

The National Forest Stewardship Program of the USDA Forest Service provides for technical assistance and incentive payments for forest stewardship practices. KSEF has opted to focus the Forest Stewardship efforts in riparian forest management with cost-sharing offered for fencing, tree planting and timber stand improvement.

Statutory Authority

K.S.A. 76-425d

Contact:

State Forester
(913) 537-7050

Conservation Tree Planting Program

The tree planting program provides approximately 1 million low-cost tree and shrub seedlings annually for use in conservation plantings including filter strips along streams and rivers and interplanting existing forests to improve the stocking rate and species distribution.

When the forest cover on a watershed is less than 10% of the land area, tree planting has only positive effects on environmental quality. Protection from nonpoint source pollution, long term soil protection, wildlife habitat enhancement, aesthetic values and cleaner air and water are direct results of planting trees in such situations.

Statutory Authority

K.S.A. 76-425d

Contact:

State Forester
913-537-7050

Forest Pest Management

Healthy forests are needed to maximize trapping of nutrients and pesticides. Foresters monitor insect and disease impact in woodlands and conservation tree plantings, and recommend control measures for insect and disease problems.

Statutory Authority

K.S.A. 76-425d

Contact:

State Forester
913-537-7050

Rural Fire Protection

The value of native woodlands, grasslands and crops in reducing soil erosion and water runoff is seriously impeded when that vegetation is destroyed or damaged by wildfires. Our fire program provides assistance to the state's volunteer rural fire departments. Services include wildfire training, Smokey Bear fire prevention materials, and the acquisition and distribution of excess military vehicles for conversion to fire fighting units.

Statutory Authority

K.S.A. 76-425d

Contact:

State Forester
913-537-7050

Landowner Education

Farmers tend to perceive forestry activities as something that will benefit others, but not themselves. Educational programs are provided to create an understanding of the multiple benefits derived from good forest management activities including future income opportunities in order to encourage farmer inputs. Because many of the benefits of good forestry practices are long-term and considered societal in nature, the full range of incentives for landowners who apply them are explored. State Water Resources Cost Sharing, traditional ACP practices, Wildlife Habitat Improvement Program (WHIP), the Riparian and Wetland Protection program as well as KSEF's Stewardship Incentive Program coordinates nicely with riparian forestry needs.

Statutory Authority

K.S.A. 76-425d

Contact:

State Forester
913-537-7050

Contact:

State Forester
913-537-7050

Environmental Education

KSEF's environmental education efforts focus in two areas:

- (1) The state sponsor of Project Learning Tree (PLT); and
- (2) an active participant in the Kansas Advisory Council for Environmental Education (KACEE).

Project Learning Tree emphasizes the use of trees and forests as windows to the total environment. The program is highly regarded by educators because of the ease of integrating educational activities into classroom curricula for kindergarten through grade 12. Children are exposed to environmental issues and taught how to think, rather than what to think, about these issues.

In addition, KSEF co-sponsors a 3 ½ day Environmental Education Workshop annually for teachers (K-12) and other resource professionals. It is based on materials developed by the USDA Forest Service called "Investigating Your Environment." A session on water is conducted as a part of each workshop.

Statutory Authority

K.S.A. 76-425d

Contact:

State Forester
913-537-7050

Riparian and Wetland Protection Program

KSEF works closely with several agencies involved with the WRAP (Wetland and Riparian Areas Program) effort and with direct landowner assistance. An active outreach and education program on riparian issues includes making formal presentations on the values and functions of riparian systems, meeting with school groups, and consulting with individual landowners. Assistance is provided in establishing riparian tree and shrub plantings and bank stabilization projects. We worked closely with the Kansas Department of Wildlife and Parks in developing a series of Best Management Practices (BMP) fact sheets to address a variety of riparian and wetland issues.

Statutory Authority

K.S.A. 76-425d

KANSAS WATER OFFICE

109 S.W. 9th Street, Suite 300

Topeka, KS 66612-1249

913-296-3185

FAX 913-296-0878

Water Marketing Program

The state has purchased, through long-term, low-interest contracts, water supply storage space in twelve federal reservoirs in Kansas. The state makes this water supply available to municipal and industrial water users through contracting procedures established by statute. Revenue from user contracts is used to repay the costs of providing the water supply storage space.

Statutory Authority

K.S.A. 82a-1301 *et seq.*

Contact:

Administration Section
913-296-0863

Water Assurance Program

The Water Assurance Program was conceived in the *Kansas Water Plan* and is an innovative approach to managing water supply in reservoirs. The two traditional methods of obtaining water are the Water Appropriation Act (water rights) and the Water Marketing Program, involving twelve Corps of Engineers reservoirs where the state currently owns storage. To date, 25 cities, rural water districts, public wholesale water districts and industries participate in the Water Marketing Program in four river basins: Kansas, Marais des Cygnes, Cottonwood/Neosho and Verdigris. Most water use in those basins is met through water rights which depend upon natural flows in the streams. However, during periods of drought, downstream water rights can benefit from enhanced streamflow by releasing water from storage in upstream reservoirs. The Water Assurance Program was conceived to secure this water supply benefit for water right holders in compliance with the Federal Water Supply Act of 1958. Assurance districts have been formed in the Kansas, Marais des Cygnes and Cottonwood/Neosho basins.

Statutory Authority

K.S.A. 82a-1330 *et seq.*

Contact:

Administration Section

913-296-0863

Large Reservoir Finance

The Kansas Water Office is authorized by statute to issue and sell revenue bonds for the purpose of paying all or part of the cost of acquiring a site or sites, constructing, reconstructing, improving and expanding large reservoir projects or financing the purchase of storage in existing reservoirs. The revenue bonds may be issued from time to time and sold in amounts which the Director of the Water Office deems necessary for such purposes.

Statutory Authority

K.S.A. 82a-1360 *et seq.*

Contact:

Administration Section
913-296-0863

Weather Modification

The Kansas Water Office has the authority to adopt rules and regulations, issue licenses and permits, conduct hearings, enter into contracts for weather modification activities and to do all other things provided in the Weather Modification Act. The Kansas Water Office is responsible for reviewing requests to determine whether to issue licenses for weather modification activities to persons who apply for such a license. The agency may also issue permits for each specific weather modification project. Permits are issued only after it has been established that the project, as conceived, will provide substantial benefits or that it will advance scientific knowledge. The law further provides that the Kansas Water Office may utilize funds from the state and may accept grants, private gifts and donations from any source for: use in the administration of this Act; to encourage research; and develop projects by public or private agencies through grants, contracts or cooperative agreements to contract for weather modification activities.

Statutory Authority

K.S.A. 82a-1401 *et seq.*

Contact:

Administration Section or
Conservation and Evaluation
913-296-3187

Multipurpose Small Lakes Program

Small lakes play an important role in the management and conservation of the state's water resources. Although hundreds of small lakes projects have been built in Kansas for flood control and watershed protection, additional multipurpose structures will be required in the future to meet the water resource needs of the state.

The Multipurpose Small Lakes Program, which is a part of the *Kansas Water Plan*, provides for "add on" features for the development of a proposed watershed structure to its fullest potential and/or renovation of an existing structure to provide for additional benefits. A planned flood control structure may become multipurpose by adding water supply storage and/or recreation. Conversely, a planned water supply structure may become multipurpose by adding flood control or recreation to the project. Renovation projects may also be treated this way.

Each structure must contain flood control features and meet specific criteria set out in the law to be eligible for funding under the Multipurpose Small Lakes Program. Each project must include adequate land treatment of the drainage area to protect the site from pollution and siltation. The major sponsor of a Multipurpose Small Lakes project must have taxing authority and power of eminent domain. Payback of state funds used for the water supply portion of the structure is required. Processing of the applications is through the State Conservation Commission.

Statutory Authority

K.S.A. 82a-1601 *et seq.*

Contact:

Administration Section
913-296-0863

Geographic Information Systems Policy Board

Coordination of Geographic Information Systems (GIS) development is necessary to avoid redundant data collection and automation; to facilitate the use of uniform standards for data documentation and exchange; and to promote systems compatibility in order to enhance data sharing capabilities. Toward that end, the Governor

has appointed a GIS Policy Board which is comprised of private sector, local, state, and federal government representatives.

The GIS Policy Board is charged with establishing a strategic management plan to guide the development and implementation of GIS technology, to develop and maintain policies, standards, and guidelines that promote cooperation and coordination, and to establish public and private partnerships that further the coordination of GIS related activities. The GIS Policy Board has formed a Technical Advisory Committee to address technical issues and to provide input to the Board. This committee includes sub-committees for planning, standards, and data access and distribution. Staff support for the GIS Policy Board and the Technical Advisory Committee is provided by the Kansas Water Office through the State GIS Coordinator.

Statute Authority

Executive Order.

Contact:

State GIS Coordinator
913-296-0877

Water Supply and Demand Estimates

The objective of this program is to inform the Governor, Legislature, local officials, water resource managers and the general public about the current status and trends in the availability, quantity, quality and use of water resources. To facilitate this objective, water supply and demand reports were prepared by the Kansas Water Office in consultation with a scientific advisory committee representing many local, state and federal water-related agencies. The reports provided a common basis to gauge the current and long-term magnitude of water supply and demand problems across the state.

The initial report and the methodology were first published in 1984 and were revised in 1987.

Statutory Authority

K.S.A. 82a-941.

Contact:

Conservation and Evaluation Section
913-296-3187

State Water Planning

The Kansas Water Office is required to formulate, on a continuing basis, a comprehensive State Water Plan for the management, conservation and development of the water resources of the state. The *Kansas Water Plan* is organized into policy and

basin sections. Policy sections address issues related to water management, conservation, quality and fish, wildlife and recreation in Kansas. These sections contain policy recommendations for statewide program application. Basin sections deal with issues specific to each of the 12 river basins in the state. Each basin section contains guidelines to appropriate state agencies and programs relative to specific issues of water supply, water quality, flooding, fish, wildlife and recreation and environmental protection.

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 comprise citizens located within the basin to provide advice on formulation and implementation of the *Kansas Water Plan*. Each basin has such a committee and input received by the Office is relayed to the Kansas Water Authority as part of the information necessary to act on specific policy or basin sections.

With the establishment of the State Water Plan Fund in 1990, the Office and the Water Authority develops an annual implementation plan to identify priority programs and direction for the upcoming fiscal year. State agencies use the implementation plan to develop their program budget requests for State Water Plan Funds over the summer. The Water Authority uses the implementation plan to determine priorities for funding for those programs, prior to submitting recommendations to the Governor and the Legislature.

Statutory Authority

K.S.A. 82a-901, *et seq.*

Contact:

Planning Section
913-296-0876

**Basic Data Collection and Research
Coordination**

The Kansas Water Office maintains a cooperative agreement with the U.S. Geological Survey to collect and analyze surface water data from gaging stations located on Kansas streams and lakes. The Office uses these data to develop, implement and monitor water management programs including water resource assessment, reservoir operations, streamflow protection and flood monitoring. The Office also enlists the aid of research agencies such as the U.S. Geological Survey, Kansas Geological Survey, Kansas Biological Survey, Kansas University and

Kansas State University to investigate physical, chemical and biological characteristics of surface and ground water. Such research is undertaken in order to implement some aspect of the *Kansas Water Plan*.

Statutory Authority

K.S.A. 74-2608.

Contact:

Hydrology Section
913-296-0872

Minimum Desirable Streamflows

Minimum desirable streamflows are streamflows that maintain or preserve baseflows for instream uses of water quality, fish, wildlife, aquatic life, recreation, aesthetics and domestic uses from unacceptable stream depletions by additional appropriation. Minimum desirable streamflows are junior in priority to vested and senior water appropriation rights filed before April 12, 1984. Designation of minimum desirable streamflows on a stream attempts to prevent the stream from dwindling because of water diversions. They cannot guarantee maintaining those desired flow levels during drought conditions.

The Kansas Water Office monitors streamflow levels across the state, particularly those with minimum desirable streamflow designations. Should flows fall below the designated level, the Office informs the Division of Water Resources of the Kansas Department of Agriculture and requests administration of all junior rights on the impacted stream. Currently, there are 23 streams in the state with minimum desirable streamflows in place.

Statutory Authority

K.S.A. 82a-703a,b,c, 1987 Supp. K.S.A. 82a-928(i).

Contact:

Hydrology Section
913-296-0872

Lake Level Management

The Kansas Water Office is charged with making lake level fluctuation recommendations to the Corps of Engineers and the Bureau of Reclamation. These two agencies are responsible for the operation and maintenance of the state's 24 federal lakes. Proposed lake level management plans are initiated by field staff of the Kansas Department of Wildlife and Parks. Such plans are submitted to the Office for review. The Office judges the plan in terms of its seasonal fluctuations of the lake, the

impact on other uses of the lake, including water supply and flood control, public input and assessment of the likelihood of successfully achieving the plan and realizing the benefits to the fish and waterfowl resources at the lake.

Statutory Authority

K.S.A. 82a-901, *et seq.*, K.S.A. 82a-1305.

Contact:

Hydrology Section
913-296-0872

Water Transfers

Water transfers involve the diversion and transport of 2000 acre-feet of water per year beyond a 35 mile radius from the point of diversion. Should such diversion occur, the Chief Engineer of the Division of Water Resources will convene a water transfer panel comprising himself, the Director of the Kansas Water Office and the Secretary of the Department of Health and Environment or the Director of the Division of Environment. The panel will select a hearing officer to conduct a hearing to help determine the benefits and impacts in the state by such a transfer. The hearing officer will issue an initial order approving or disapproving the transfer. That order is reviewed by the water transfer panel which will then issue a final order regarding the transfer application.

Statutory Authority

1993 Supp. K.S.A. 82a-1501, *et seq.*

Contact:

Assistant Director
913-296-4094

Drought

When the Kansas Water Office determines that drought conditions exist in an area of the state, it shall advise the Governor and recommend the assembling of a Governor's Drought Response Team. The Office uses the Palmer Drought Index to make the determination if drought has settled into the regions of the state. If index values in the state are at or below a value of negative two (-2), the Office triggers the drought advisory to the Governor.

Statutory Authority

1991 Supp. K.S.A. 74-2608.

Contact:

Assistant Director
913-296-4094

Water Conservation Plan Program

The Kansas Water Office has the statutory authority, subject to approval by the Kansas Water Authority, to develop and maintain guidelines for water conservation plans and practices. The Kansas Water Office is also charged with the responsibility to provide, or arrange to provide, technical assistance for water users who are required to adopt and implement water conservation plans and practices. In 1986, water conservation plan guidelines were prepared for industrial, irrigation and municipal water users. Subsequently, the Municipal Water Conservation Plan Guidelines were revised in 1990 and the Irrigation Water Conservation Plan Guidelines were revised in 1994.

Statutory Authority

K.S.A. 74-2608, K.S.A. 82a-733, K.S.A. 82a-1306, K.S.A. 82a-1311a, K.S.A. 82a-1348, K.S.A. 82a-1502 and K.S.A. 82a-1608.

Contact:

Conservation and Evaluation Section
913-296-3187

Public Information and Education

An important function of the water and related land resources planning function of the Office is providing information and education opportunities to the public about Kansas' water resources. The Office holds several public meetings and hearings yearly on proposed water planning issues, and seeks opportunities whenever possible, to tell the public about our valuable water resources.

The Kansas Geographic Alliance (KGA) implements the *Kansas Water Plan* Management Subsection "Public Education: A Natural Resources Curriculum for Kansas Schools," approved by the Kansas Water Authority in July 1990. It is funded by a matching partnership grant from the National Geographic Society and the *Kansas Water Plan* Fund. It has developed a natural resources curriculum that highlights Kansas water resources, publishes an internationally acclaimed journal, and provides teacher training and support through the Geography Resource Center located on the campuses of Kansas State University and Fort Hays State University.

Contact:

Information/Education Section
913-296-0866

STATE CONSERVATION COMMISSION

109 S.W. 9th Street, Suite 500

Topeka, KS 66612-1299

913-296-3600

FAX 913-296-6172

State Aid to Conservation Districts

913-296-3600

Provides state funds to match county funds appropriated by county commissioners for the operation of county conservation districts in Kansas. Maximum state match is up to \$10,000 in state funds per district. Each county can provide general fund money up to \$10,000 and/or a special mill levy, not to exceed two mills or \$55,000, whichever is less, for maximum county funds of \$65,000. Johnson and Sedgwick counties are exempt from the General Fund limitation.

Statutory Authority

K.S.A. 2-1907c.

Contact:

Resource Administrator
913-296-3600

Water Resources Cost-Share Program

Provides state cost-share assistance to landowners for the establishment of enduring water conservation practices to protect and improve the quality and quantity of Kansas water resources. These practices, which are not generally a part of normal farming operations, are in the public interest and contribute to the protection and enhancement of water resources. The program is administered at the local level by the 105 county conservation districts.

Statutory Authority

K.S.A. 2-1915, as amended.

Contact:

Resource Administrator
913-296-3600

Non-Point Source Pollution Control Fund

Provides state financial assistance for non-point pollution control projects for the protection or restoration of surface and groundwater quality. The program is administered at the local level by the county conservation districts.

Statutory Authority

K.S.A. 2-1901 et seq., 82a-903, 82a-951.

Contact:

Program Specialist

State Assistance to Watershed Dam Construction

Provides cost-share assistance to watershed districts and other special purpose districts for the implementation of structural and non-structural practices which reduce flood damages. (Non-P.L. 566 structures) All watershed district general plans and watershed construction program plans and specifications must be approved by the Chief Engineer, Division of Water Resources, State Department of Agriculture.

Statutory Authority

K.S.A. 2-1905 as amended, and K.S.A. 24-1213 to 1218.

Contact:

Resource Administrator
913-296-3600

Multipurpose Small Lakes Program

This program was developed out of the State Water Plan. It provides state cost-share assistance to a governmental entity for the construction or renovation of a dam for flood control and water supply and/or recreation purposes. A local non-point source pollution control plan is required to protect the site from pollution.

Statutory Authority

K.S.A. 82-1601, et seq., as amended.

Contact:

Resource Administrator
913-296-3600

Water Rights Purchase Program

Provides state cost-share assistance with a local entity to purchase a water right to restore base flows in designated streams and/or slow or reverse the decline of groundwater levels in specific aquifers.

Statutory Authority

K.S.A. 82a-701 and K.S.A. 2-1915 and 1918.

Contact:

Resource Administrator
913-296-3600

Watershed Planning Assistance Program

Provides state financial assistance for obtaining engineering services and environmental assessments for the development of general plans and other flood control and rehabilitation projects in watershed districts.

Statutory Authority

K.S.A. 2-1902, 1904, 1915, as amended.

Contact:

Resource Administrator
913-296-3600

**Riparian and Wetland
Protection Program**

A program developed out of the State Water Plan and implemented by the conservation districts to address the conservation and management of riparian areas and wetlands. Financial assistance is provided to implement practices such as streambank stabilization, wetland enhancement and other innovative bio-engineering practices.

Statutory Authority

K.S.A. 2-1915, as amended.

Contact:

Resource Administrator
913-296-3600

Stream Rehabilitation Program

A program developed out of the State Water Plan for streams in the state that have been adversely altered by channel modification activities. Provides for flood control, reduction of sedimentation and pollution, stream stabilization and improvement of fish and wildlife habitat.

Statutory Authority

K.S.A. 2-1915, as amended.

Contact:

Resource Administrator
913-296-3600

**U.S. BUREAU OF RECLAMATION
NEBRASKA-KANSAS AREA OFFICE**

P.O. Box 1607
Grand Island, NE 68802
308-389-4622
FAX 308-389-4780

**General Investigations Program
Planning**

Bureau of Reclamation investigations and reports are authorized under Federal Reclamation Law which is the Reclamation Act of June 17, 1902, 32 Stat. 388, as amended. The Water Resources Planning Act, Public Law 89-90, established the Principles and Standards for federal participation in the preparation of regional or river basin studies and for the formulation and evaluation of federally assisted water and related land resources projects.

Within the framework of the laws, the Bureau of Reclamation's Planning Program produces river basin reports, specialized technical reports, concluding reports, status reports, appraisal reports, feasibility reports and definite plan reports. The reports listed above could propose construction of project features or recommend utilizing existing structures and features to more efficiently and effectively solve an area's water resource problem. Types of investigations undertaken in the Planning Program include the following areas: irrigation, municipal and industrial, power, flood control, recreation and environmental.

Planning for the Bureau of Reclamation's Great Plains Region, which includes all of Kansas, is the responsibility of the Regional Director in Billings, Montana. Current planning procedures provide for establishment of a multi-disciplinary team to manage and be responsible for technical studies under the direction of a team leader. This team could involve the technical disciplines of soils, hydrology, geology and seismology, environmental effects, economics, engineering and social factors.

Statutory Authority

Federal Reclamation Act of June 17, 1902, as amended.

Contact:

Area Manager
Nebraska-Kansas Area Office
308-381-5501 or 389-4622

Water Conservation Advisory Center

The Bureau of Reclamation's Great Plains Region has established a Water Conservation Advisory Center to coordinate their water conservation efforts. The Center serves as a contact point for information about water conservation and related Reclamation programs.

Through technical assistance, the Center will help identify and implement conservation initiatives in new and ongoing programs. The Center will assist in the development of project/district water use enhancement plans and river basin assessments.

Contact:

Water Conservation Officer
P.O. Box 36900
Billings, Montana
406-247-7707

Wetland Development Program

The goal of this project is to develop, restore, and enhance wetland and riparian areas on Reclamation and other Department of Interior Lands. Cooperative arrangements are developed with federal, state, local and conservation organizations to enhance wetland values.

Statutory Authority

Not applicable.

Contact:

Area Manager
Bureau of Reclamation
P.O. Box 1607
Grand Island, NE 68802
308-381-5501

U.S. CORPS OF ENGINEERS

Kansas City District
700 Federal Building
Kansas City, MO 64106-2896
816-426-3201
FAX 816-426-2142

Tulsa District
P.O. Box 61
Tulsa, OK 74121-0061
918-669-7185
FAX 918-669-7546

Planning Assistance to States

The Chief of Engineers is authorized to cooperate with states in the preparation of plans for the development, utilization and conservation of water and related land resources of drainage basins located within the boundaries of the state. Assistance is provided on the basis of state requests rather than through Congressional study authorizations. The work items can vary with each state's need to plan for the management of water and related land resources unique to their region. Floodplain data, water supply planning, drought contingency planning, reservoir yield analyses and river basin corridor land usage pamphlets/reports are examples of assistance provided under this authority.

Statutory Authority

Section 22 of the Water Resources Development Act of 1974, as amended.

Contact:

Kansas City District
Chief, Formulation Section
816-426-3062

Tulsa District
Coordinator, Basin Planning Branch
918-669-7185

Emergency Response and Recovery

Corps assistance for emergency/disaster response and recovery is available under Corps authorities such as P.L. 84-99, Flood Control and Coastal Emergencies, or in support of other agencies, particularly the Federal Emergency Management Agency under P.L. 93-288 and EO 12148. Corps response activities under the P.L. 84-99 authority include the following emergency operations: flood fight, rescue and emergency relief activities; emergency repair and restoration of flood control structures which are threatened, damaged or destroyed by flood; emergency protection of existing

federal hurricane or shore protection works; preventive work performed prior to flooding when conditions pose a flood threat to life or property; providing emergency supplies of clean water to any locality confronted with a contaminated water source causing or likely to cause a substantial threat to public health and welfare; and provision of water supplies to drought-distressed areas by well drilling on a reimbursable basis or transportation of water at federal cost.

In support of the Federal Emergency Management Agency's disaster response and recovery activities, Corps mission assignments have included: emergency debris removal, preliminary damage assessments, detailed damage survey reports, temporary housing, emergency snow removal, contracting and construction management and other support which calls upon the Corps engineering, contracting and construction expertise.

Statutory Authority

Public Law 84-99, Public Law 93-288.

Contact:

Kansas City District
Chief, Readiness Branch
816-426-6135

Tulsa District
Chief, Emergency Management/Security
and Law Enforcement Branch
918-669-7325

Hydropower

The Corps has played a significant role in meeting the nation's electric power generation needs by building and operating hydropower plants in connection with its large multiple-purpose dams. In a series of laws and resolutions dating back to the Rivers and Harbors Act of 1909, Congress has directed the Corps of Engineers to give consideration in its reports to various water uses including

hydroelectric power.

The Corps continues to consider the potential for hydroelectric power development during the planning process for all water resources projects involving dams and reservoirs. In most instances, however, hydropower facilities at Corps projects are now developed by nonfederal interests without federal assistance. The Corps becomes involved with planning, construction and operating hydropower projects only when it is impractical for nonfederal interests to do so.

Statutory Authority

Rivers and Harbors Act of 1909, as amended.

Contact:

Kansas City District
Chief, Formulation Section
816-426-3062

Tulsa District
Chief, Basin Planning Branch
918-669-7185

Missouri River Navigation

This program involves the operation and maintenance of the Missouri River Bank Stabilization and Navigation Project. The project, which was completed in 1982, provides for a nine foot channel, 300 feet wide, from the mouth of the river to Sioux City, a distance of 735 miles (1960 river mileage).

The project is of the open-river regulation type, with no dams or barriers to form slack water pools. The main commodities shipped are grain, steel products, petroleum products, coke, chemicals, fertilizer, minerals, molasses, building materials, machinery and vegetable and animal products.

Statutory Authority

River and Harbor Acts of 1912, 1927 and 1945.

Contact:

Kansas City District
Chief, Operations Technical Support Branch
816-426-5756

Flood Damage Reduction

Congress, in the Flood Control Act of 1936, established a nationwide policy that flood control on navigable waters or their tributaries is in the interest of the general public welfare and is a proper activity of the federal government in cooperation with the states and local entities. The federal government may improve streams or participate in improvements for flood control purposes if the benefits to

whomsoever they may accrue are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected. The scope of federal interest today includes consideration of all alternatives in controlling flood waters, reducing the susceptibility of property to flood damage and relieving human and financial losses.

Statutory Authority

Flood Control Act of 1936, Section 206 of the Flood Control Act of 1960 and Executive Order 11988.

Contact:

Kansas City District
Chief, Formulation Section
816-426-3062

Tulsa District
Chief, Basin Planning Branch
918-669-7185

Recreation

The Flood Control Act of 1944, as amended, provides authority to construct, maintain and operate public and recreational facilities at water resources development projects under the control of the Secretary of the Army, and to permit the construction, maintenance and operation of such facilities. It also provides that the water areas of projects shall be open to public use - generally for boating, overnight camping, fishing and other recreational purposes.

The Kansas City District constructed, operates and maintains, recreational facilities at several Kansas lakes. These lakes are Clinton, Kanopolis, Melvern, Milford, Perry, Pomona, Tuttle Creek and Wilson. Tulsa District operates and maintains similar recreational facilities at lakes in southern Kansas. These lakes are John Redmond, Council Grove, Marion, Elk City, El Dorado, Fall River/Toronto and Pearson-Skubitz Big Hill.

Statutory Authority

Flood Control Act of 1944, as amended.

Contact:

Kansas City District
Natural Resources Management Section
816-426-5758

Tulsa District
Chief, Natural Resource Management
Operations Division
918-669-7404

Regulatory Program

Within its regulatory program, the Corps of Engineers has a mandate to protect navigation by regulating construction by others in navigable waterways under Section 10 of the Rivers and Harbors Act of 1899. Section 404 of the Clean Water Act, which further refined the 1972 Federal Water Pollution Control Act related court decisions greatly broadened the Corps' regulatory authority to include the discharge of dredged or fill material into "waters of the United States," a term which includes certain wetlands and other valuable aquatic areas. Section 404 of the Clean Water Act requires notification of the public and opportunity for public hearings before the issuance of a permit.

The Corps regulatory program now focuses primarily on weighing the economic and environmental benefits of development versus ecosystem preservation in deciding whether a permit for a proposed activity would be "contrary to the public interest." When reviewing permit applications, the Corps looks at all the relevant factors including conservation, economics, aesthetics, general environmental concerns, historic values, wetland values, fish and wildlife values, flood damage prevention, land use classifications, navigation, recreation, water supply, water quality, energy needs, food production and the general welfare of the public. The Corps of Engineers has introduced a number of nationwide permits which require little or no processing; and taken other measures to streamline the permit application process while maintaining environmental safeguards. The Kansas City District has also issued general permits for certain types of minor works in specific areas which require only minimal processing.

Statutory Authority

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344).

Contact:

Kansas City District
Chief, Regulatory Branch
816-426-3645

Tulsa District
Chief, Regulatory Branch
Operations Division
918-669-7400

Water Supply

The Water Supply Act of 1958, as amended, authorizes the federal government to assist nonfederal interests in the development of water supply at federal lake projects. The Kansas City District has included water supply storage in five Kansas lakes under this authority. They are Milford, Perry, Clinton, Hillsdale and Pomona. The State of Kansas has purchased storage in all of these lakes. At Pomona, a small portion is under contract to a rural water district. Additionally, the Post Rock Rural Water District has contracted for surplus water at Kanopolis Lake.

A Memorandum of Understanding between the State of Kansas and the Department of the Army provides terms for the state to purchase water supply storage in Tuttle Creek, Melvern and Pomona lakes in the Kansas City District, as well as John Redmond, Marion, Council Grove, Elk City, Toronto and Fall River lakes in the Tulsa District.

Statutory Authority

Water Supply Act of 1958, as amended.

Contact:

Kansas City District
Chief, Formulation Section
816-426-3062

Tulsa District
Chief, Hydrologic Engineering Section
918-669-7093

Streambank and Shoreline Protection for Public Facilities

The Corps is authorized to develop and construct emergency streambank and shoreline protection projects to protect endangered highways, highway bridge approaches, public work facilities such as water and sewer lines, churches, public and private nonprofit schools and hospitals and other nonprofit public facilities. Each project is limited to a federal cost of \$500,000, must be cost effective and must be cost shared in accordance with the Water Resources Development Act of 1986 (P.L. 99-662).

Statutory Authority

Section 14 of the Flood Control Act of 1946, as amended.

Contact:

Kansas City District
Chief, Formulation Section
816-426-3062

Tulsa District
Coordinator, General Planning Branch
918-669-7196

Snagging and Clearing for Flood Control

The Corps is authorized to make improvements for flood control by removing accumulated snags and other debris and by clearing and straightening channels in streams. A federal cost of not more than \$500,000 can be expended on any one tributary annually. This cost limitation includes all project-related costs for feasibility studies, planning, engineering, construction, supervision and administration. Projects must be cost efficient and must be cost shared.

Statutory Authority

Section 208 of the 1954 Flood Control Act, as amended.

Contact:

Kansas City District
Chief, Formulation Section
816-426-3062

Tulsa District
Coordinator, General Planning Branch
Planning Division
918-669-7196

Floodplain Management Services

Under the Floodplain Management Services Program, the Corps provides (on request) flood hazard information, technical assistance and planning guidance to other federal agencies, states, local governments and private individuals. This data and assistance is designed to aid them in planning for floods and providing for the regulation of floodplain areas, thus, avoiding unwise development in flood-prone areas. Some of these services are provided on a cost-reimbursable basis.

Statutory Authority

Section 206 of the Flood Control Act of 1960 and Executive Order 11988.

Contact:

Kansas City District
Hydrology and Hydraulics Section
816-426-3674

Tulsa District
Coordinator, Floodplain Management Services
918-669-7197

Small Flood Control Projects

The Corps is authorized to develop and construct small flood control projects. A project is adopted for construction only after detailed investigation and study clearly show the engineering feasibility and economic justification of the improvement. Each project is limited to a federal cost of not more than \$5 million. This cost limitation includes all project-related costs for feasibility studies, planning, engineering, construction, supervision and administration. Water project costs are shared with a nonfederal sponsor in accordance with the Water Resources Development Act of 1986 (P.L. 99-662).

Statutory Authority

Section 205 of the 1948 Flood Control Act, as amended.

Contact:

Kansas City District
Chief, Formulation Section
816-426-3062

Tulsa District
Coordinator, General Planning Branch
Planning Division
918-669-7196

Environmental Restoration

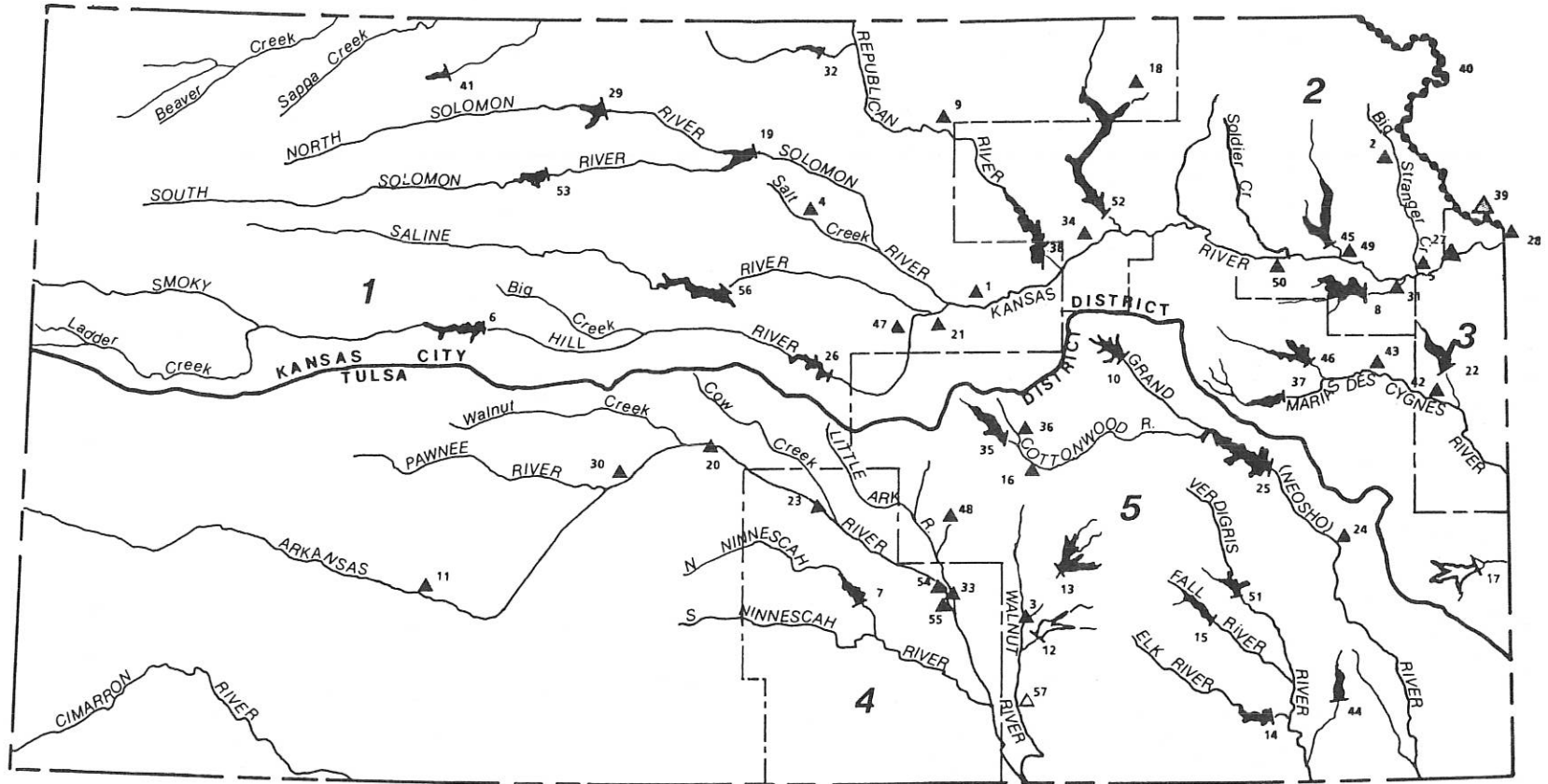
The Corps of Engineers and a non-Federal sponsor can participate in an environmental restoration project by modifying structures or operations of a permanent project constructed by the Corps. The modification must be consistent with the authorized project purposes and national policies. In accordance with the Water Resources Development Act of 1986 (P.L. 99-662), the non-Federal share of the costs of the modification is 25 percent. Project modifications costs that exceed \$5,000,000 require specific Congressional authorization.

Statutory Authority

Section 1135(b) of P.L. 99-662, as amended.

Contact:

Tulsa District
General Planning Branch
Planning Division
913-669-7196



- | | | |
|---|--|--|
| 1 Abilene Local Protection Project | 20 Great Bend Local Protection Project | 39 Missouri River Levee System, Sioux City, IA, to the Mouth |
| 2 Alchison Local Protection Project | 21 Gypsum Local Protection Project | 40 Missouri River Bank Stabilization and Navigation Project |
| 3 Augusta Local Protection Project | 22 Hillsdale Lake | 41 Norton Reservoir |
| 4 Barnard Local Protection Project | 23 Hutchinson Local Protection Project | 42 Osawatimie Local Protection Project |
| 5 Big Stranger Creek Local Protection Project | 24 Iola Local Protection Project | 43 Ottawa Local Protection Project |
| 6 Cedar Bluff Reservoir | 25 John Redmond Dam and Reservoir | 44 Pearson-Skubitz Big Hill Lake |
| 7 Cheney Reservoir | 26 Kanopolis Lake | 45 Perry Lake |
| 8 Clinton Lake | 27 Kansas City Local Protection Project | 46 Pomona Lake |
| 9 Clyde Local Protection Project | 28 Kansas Citys, MO and KS, Local Protection Project | 47 Salina Local Protection Project |
| 10 Council Grove Lake | 29 Kirwin Reservoir | 48 Sand Creek Local Protection Project |
| 11 Dodge City Local Protection Project | 30 Larned Local Protection Project | 49 Stonehouse Creek Local Protection Project |
| 12 Douglass Lake | 31 Lawrence Local Protection Project | 50 Topeka Local Protection Project |
| 13 El Dorado Lake | 32 Lovewell Reservoir | 51 Toronto Lake |
| 14 Elk City Lake | 33 Main Branch Chisholm Creek Local Protection Project | 52 Tuttle Creek Lake |
| 15 Fall River Lake | 34 Manhattan Local Protection Project | 53 Webster Reservoir |
| 16 Florence Local Protection Project | 35 Marion Lake | 54 West Branch Chisholm Creek Local Protection Project |
| 17 Fort Scott Lake | 36 Marion Local Protection Project | 55 Wichita and Valley Center Local Protection Project |
| 18 Frankfort Local Protection Project | 37 Melvern Lake | 56 Wilson Lake |
| 19 Glen Elder Dam and Waconda Lake | 38 Millford Lake | 57 Winfield Local Protection Project |

Water Resources Development in Kansas

EXISTING AUTHORIZED, NOT STARTED

LAKE

LOCAL PROTECTION AND OTHERS

NAVIGATION AND BANK STABILIZATION

CONGRESSIONAL DISTRICTS 1

3-37

**U.S. DEPARTMENT OF AGRICULTURE
FARM SERVICE AGENCY**

3600 Anderson Avenue

Manhattan, KS 66503

913-539-3534

FAX 913-537-9659

Agricultural Conservation Program

This is a cost-share program that stresses solving soil, water and pollution problems on agricultural land. It emphasizes the completion of lasting conservation practices to solve these problems in order to protect and improve the nation's food producing capacity. It also encourages energy conservation.

The Agricultural Conservation Program shares the cost of conservation practices with farmers and ranchers. The program emphasizes practices that solve problems identified under the National Environmental Policy Act. It is available in all agricultural counties.

Eligibility

Farmers and ranchers are eligible for cost-share help of up to 75 percent for conservation water quality and pollution abatement measures on agricultural land. Practices eligible for cost-share are those selected by farmer-elected county committeemen from a list approved by the State Farm Service Agency and the Secretary of Agriculture.

Administration

The Farm Service Agency administers the program. The Natural Resources Conservation Service and other agencies provide technical and educational help. Farmer-elected county committees manage program activity in their counties. State Farm Agency committees supervise state programs. The program offers cost-shares for practices applied for and installed annually as well as long-term agreements for three to ten years. All practices are aimed at solving problems on land with critical soil erosion, water quality or pollution. The practices are based on a conservation plan approved by local soil and water conservation districts and county Farm Service committees.

Statutory Authority

Authorized by the Soil Conservation and Domestic Allotment Act of 1936, as amended; Rural Development Act of 1972; and Title X of the

Agriculture and Consumer Protection Act of 1977; and further modified under the Agriculture, Rural Development and Related Agencies Appropriations Act for Fiscal Year 1979.

Contact:

Program Specialist
913-539-3534

Conservation Reserve Program (CRP)

The CRP is a 10-year conservation program designed to take highly erodible cropland out of production and convert it to trees or other permanent vegetative cover.

Eligibility

After a producer decides what eligible cropland to offer for the reserve, he submits an application for program benefits to his local farm service agency county office during an announced sign up period.

Eligible Land

Highly erodible and environmental priority cropland as defined by the Secretary that meets all other eligibility requirements may be offered by an eligible producer for acceptance by the Secretary into the Conservation Reserve Program.

Rental Payments

Producers will receive annual rental payments after October 1 each year for ten years. There is a \$50,000 maximum payment limitation per person per year. Payments will be made either in cash, commodity or in a negotiable payment-in-kind certificate.

Cost-Shares

Producers will receive up to 50 percent in cost-sharing from the Commodity Credit Corporation toward the establishment of trees or other permanent cover. Cover must be established in accordance with practice specifications in an approved conservation plan. The \$50,000 payment limitation does not apply to cost-share payments. The local conservation district and farm service agency county committee approves the conservation plan. The CRP participants must maintain the practice during the ten

years.

Administration

The Service administers the program with assistance from the Natural Resources Conservation Service, Forest Service, Extension Service, state forestry agencies and local soil and water conservation districts.

Statutory Authority

1985 Food Security Act, 7 CRF Part 704.

Contact:

Program Specialist
913-539-3534

Long Term Agreement (LTA)

Approved participants enter a 3 to 10 year contract with the USDA and agree to perform planned conservation practices. In turn, USDA agrees to provide cost-share funds to the participant over the life of the contract. Contracts can cover a part or an entire farm. This conservation cost-sharing guarantees the participant funds.

Statutory Authority

Not applicable.

Contact:

Program Specialist
913-539-3534

Water Quality Incentive Program

This is a voluntary program with a goal of enrolling 10 million acres of farmland through 1995. The Secretary enters into an agreement with eligible participants to implement water quality plans developed by NRCS. These plans will focus on agricultural and water quality practices that promote safe storage, handling, mixing and efficient use of agricultural chemicals and animal waste as well as other management practices that promote water quality. Applications for incentive payments under the program are taken only in specific designated areas.

Statutory Authority

Not applicable.

Contact:

Program Specialist
913-539-3534

**U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE**

760 South Broadway
Salina, KS 67401-4642
913-823-4500
FAX 913-823-4540

**Resource Conservation and Development
(RC&D)**

Development of agricultural community resources is the purpose of the Resource Conservation and Development Program. Consulting technical assistance is provided by the Natural Resources Conservation Service on project area priorities dealing with soil and water conservation, flood prevention, water-based recreation, multipurpose water supply reservoirs and rural economic development.

Six active RC&D projects exist assisting a total of 34 counties in south central and eastern Kansas. Each RC&D area is sponsored by local units of government including counties, cities and conservation districts. The projects are operated by a council made up from representatives of these sponsors.

Statutory Authority

Public Laws 74-46; 87-703 and 97-98 as amended.

Contact:

Water Resources Program Manager
913-823-4578

Conservation Operations

Conservation operations is the main program by which the Natural Resources Conservation Service provides technical assistance to farmers and ranchers to develop and apply soil and water plans for their land. Assistance is provided through the State's 105 local conservation districts.

Under the Conservation Operations Program, the Natural Resources Conservation Service provides assistance to recipients of the Agricultural Conservation Program.

State water resource cost-share recipients also receive Natural Resources Conservation Service technical assistance. This program is administered by the State Conservation Commission through the local conservation districts.

Statutory Authority

Public Law 74-46, as amended.

Contact:

Assistant State Conservationist
913-823-4569

Great Plains Conservation Program

The purpose of the Great Plains Conservation Program was to assist farmers and ranchers in voluntarily carrying out complete soil and water conservation plans.

Farmers and ranchers entered long-term contracts with the Natural Resources Conservation Service for cost sharing on enduring soil and water conservation practices. All 62 eligible central and western counties in Kansas participated in this program. NOTE: The GPCP was not funded for FY 1996.

Statutory Authority

Public Law 84-1021. Public Law 101-624 extends the program through 2001.

Contact:

Assistant State Conservationist
913-823-4569

**Rural Abandoned Mine Program
(RAMP)**

The Rural Abandoned Mine Program's purpose is to reclaim coal mines abandoned or inadequately reclaimed before 1977 that are detrimental to people or the environment.

Technical and financial assistance is provided through the existing Natural Resources Conservation Service delivery system to land users to develop and apply contracts for reclamation, conservation and development of eligible abandoned coal mine land.

Other agencies assisting with this program include the Federal Office of Surface Mining and the Kansas Mined Land Conservation and Reclamation Board.

Statutory Authority

Section 40b of Title IV of the Surface Mining Control and Reclamation Act of 1977, Public Law 95-87, 91 Stat. 460 (30 U.S.C. 1236).

Contact:

State Conservation Engineer
912-823-4534

Emergency Watershed Protection

The objective of the Emergency Watershed Protection Program is to assist in relieving imminent hazards to life and property from floods, and the products of erosion created by natural disasters that cause a sudden impairment of a watershed.

Technical and financial assistance may be available to eligible sponsors for measures that retard runoff, to prevent flooding or soil erosion and to reduce threats to life or property resulting from a watershed emergency.

Requests for assistance should be directed to the Agency without delay following a natural disaster.

Statutory Authority

Section 216, Public Law 81-516; Section 403, Public Law 95-334.

Contact:

State Conservation Engineer
913-823-4534

P.L. 566 Watershed Planning and Operations

The Watershed Protection and Flood Prevention Act (P.L. 566) authorizes the Secretary of Agriculture to cooperate with state and local agencies in the planning and carrying out works of improvement to solve resource problems. It provides for the Natural Resources Conservation Service to provide technical and financial assistance to local organizations representing people living in small watersheds.

More than one-fifth of the state (11,600,000 acres) is included in 102 applications approved by the Kansas Watershed Review Committee since the program's beginning in 1954.

The Natural Resources Conservation Service has assisted local watershed districts in planning and construction of projects for the purposes of flood prevention; watershed protection; agricultural water management; and nonagricultural water management including public recreation, fish and wildlife and municipal and industrial water supply.

Statutory Authority

Watershed Protection and Flood Prevention Act, Public Law 83-566.

Contact:

Water Resources Program Manager
913-823-4578

Inventory and Monitoring Program

This program provides information on the soil, water and related resources of Kansas. The information is the basis for determining problems, for establishing priorities, for developing objectives and goals and for measuring accomplishments periodically.

The 1992 National Resources Inventory (NRI) is the latest inventory available. The Inventory was specifically designed to obtain data that will provide a basis for detection of trends in resource conditions between 1982, 1987 and 1992. The 1992 NRI used remote sensing, automation and data collection teams to increase data collection efficiency, consistency and accuracy.

The 1992 NRI in Kansas was conducted in cooperation with the U.S. Forest Service's Forest Inventory and Analysis. The Forest Service, which is responsible for conducting a periodic inventory of the nation's forested lands, inventoried the forested sites identified in the Kansas 1992 National Resources Inventory.

The 1992 NRI also georeferenced each inventory site in the state making it possible to use the Geographic Information Systems (GIS) technology. The GIS technology provides the ability to expand our analysis of the NRI data and link the data to maps.

Statutory Authority

Public Law 74-46, as amended.

Contact:

Soil Conservationist
913-823-4549

Plant Materials Program

Landowners and operators need many kinds of plant materials, including grasses, legumes, forbs, shrubs, and trees for applying conservation treatment to their land and water. The Natural Resources Conservation Service recommends plants and cultural and management techniques commonly used in commercial trade and practice. The ever-expanding resource conservation and development programs for agriculture, urban development,

wildlife, recreation and other land uses, along with increasing concern for improving the environment, broaden the requirements for new and specialized plant materials. Often plant materials and techniques needed for solving problems associated with conservation programs have not been developed or are not commercially available.

Also, as part of its coordinated technical assistance to individuals, groups and units of government, the Natural Resources Conservation Service provides specialized assistance in the development of plant materials and techniques for their successful use in conservation and environmental improvement programs. It is the Natural Resources Conservation Service's policy to: (1) assemble, evaluate, select, release and distribute for commercial increase new and improved plant materials; (2) determine techniques for effective use of the materials in these programs. The Natural Resources Conservation Service places special emphasis on finding suitable plants for erosion control on soils and sites where it is difficult to establish protective vegetative cover. In all plants activities, the Service cooperates with federal, state and other agencies and organizations.

The Plant Materials Center in Manhattan, Kansas (serving Kansas, Nebraska and northern Oklahoma), provides seed to conservation district cooperators, seed producers, colleges and universities and research agencies. In addition, woody seedlings and rhizomes are often provided for erosion control research.

Statutory Authority

Public Law 74-46, as amended.

Contact:

Plant Materials Specialist
913-823-4541

Soil Surveys Program

In cooperation with the Kansas Agricultural Experiment Station, the Natural Resources Conservation Service is conducting surveys as a part of the National Cooperative Soil Survey.

This program is to provide soil surveys to assist states, their political subdivisions, soil and water conservation districts, towns, cities, planning boards and commissions, community development districts, and other public agencies in community planning and resource development for the protection and improvement of the quality of the environment, recreational development, the conservation of land

and water resources, the development of multiple uses of such resources, and the control and prevention of pollution from sediment and other pollutants in areas of rapidly changing uses, including farm and nonfarm areas.

Statutory Authority

Public Law 74-46, as amended.

Contact:

State Soil Scientist
913-823-4558

River Basin

This program includes cooperative river basin studies, floodplain management assistance and water resources interagency studies. The primary purpose is to develop coordinated programs for conserving and enhancing water and related resources.

The floodplain management assistant program consists of three parts--flood hazard studies, project data-flood hazard reports and flood insurance studies. These reports provide maps and statistics of flooding to local planners concerned with floodplain management and for implementation of the National Flood Insurance Program. They are also useful to consultants engaged in road and bridge design.

The Natural Resources Conservation Service has provided ongoing assistance to the state on state water planning activities through River Basin Program funding. The feasibility of small watershed flood control projects and land treatment projects has been a study purpose in past River Basin Studies.

Statutory Authority

Section 6 of Public Law 83-566.

Contact:

Water Resources Program Manager
913-823-4578

**U.S. DEPARTMENT OF AGRICULTURE
RURAL ECONOMIC AND COMMUNITY DEVELOPMENT**

(Formerly Farmers Home Administration)

1200 S.W. Executive Drive

Topeka, KS 66604-0653

913-271-2730

FAX 913-271-2767

**Water and Waste Disposal Loans
and Grants**

The Rural Economic and Community Development provides financial assistance for water and waste disposal facilities in rural areas and towns of up to 10,000 people. Public entities such as municipalities, counties, special purpose districts, Indian tribes and corporations not operated for profit may receive assistance.

The borrowers must: 1) be unable to obtain needed funds from other sources at reasonable rates and terms; 2) have legal capacity to borrow and repay loans, to pledge security for loans and to operate and maintain the facilities or services; and 3) be financially sound and able to manage the facility effectively.

Loan grant funds may be used to do the following: 1) construct, repair, improve, expand or otherwise modify rural water supply and distribution facilities; 2) acquire a water supply or a water right; 3) construct, repair, improve, expand or otherwise modify waste collection, pumping, treatment or other disposal facilities; 4) pay necessary fees such as legal and engineering connected with development of facilities; and 5) pay other costs related to the development of the facility including the acquisition of rights-of way and easements.

Grant funds may be made available for facilities serving the most financially needy communities to reduce user costs for eligible recipients to a reasonable level.

Statutory Authority

Consolidated Farm and Rural Development Act
7 U.S.C. 1921 *et seq.*

Contact:

Director, Community and Business Programs
913-271-2730

**Technical Assistance and Training
Grants**

Funds may be made available to private nonprofit organizations which will enable them to identify and evaluate solutions to water and waste problems and train managers and operators of water and waste facilities. Funds may also be used to assist associations that have filed a preapplication with Rural Economic and Community Development in preparation of a water and/or waste disposal loan and/or grant applications.

Statutory Authority

Consolidated Farm and Rural Development Act,
7 U.S.C. 1921 *et seq.*

Contact:

Director, Community and Business Programs
913-271-2730

U.S. ENVIRONMENTAL PROTECTION AGENCY

726 Minnesota Avenue
Kansas City, KS 66101-2704
913-551-7000
FAX 913-551-7765

State Groundwater Strategy Grant

The State Groundwater Strategy Grant Program is designed to support and assist the Kansas Department of Health and Environment groundwater programs. This includes technical assistance to states by Agency staff in regional offices, laboratories and headquarters. More importantly, the agency provides financial assistance from existing grants to support development and implementation of state groundwater protection strategies and programs.

Statutory Authority

Clean Water Act Non-Point Source Program (Section 319(h)(5) and (i)).

Contact:

Drinking Water and Groundwater Branch
Water, Wetlands and Pesticides Division
913-551-7423

Wellhead Protection Program

The Wellhead Protection Program established a national framework for protecting groundwater while allowing states the flexibility to tailor their own program to specific institutional conditions and hydrogeologic settings. It is designed to protect the wellhead areas of public drinking water systems from contaminants which may have adverse effects on human health. It is intended to be a state developed and administered program with individual states determining the extent of the area around the well to be protected.

Statutory Authority

Safe Drinking Water Act Amendments 1986.

Contact:

Drinking Water and Groundwater Branch
Water, Wetlands and Pesticides Division
913-551-7423

State Revolving Fund Program

Beginning in Fiscal Year 1989 and extending to FY 1995 funding is authorized to provide grants to states to capitalize revolving funds. These funds can be used to provide loans and other kinds of

assistance, but not grants, to communities to construct publicly-owned wastewater treatment facilities and to provide funding for implementation of non-point source and groundwater pollution control activities.

The State will operate the program and will establish procedures, within contained restrictions set by law, for determining the recipients and operation of the fund.

Statutory Authority

33 USC 466 *et seq.* (Water Quality Act of 1987, amending the Clean Water Act).

Contact:

NPDES and Facilities Management
Water, Wetlands and Pesticides Division
913-551-7741

Public Water System Supervision

The Environmental Protection Agency's Public Water System Supervision (PWSS) program implements and enforces the Safe Drinking Water Act (SDWA). The Public Water Supply Systems program is totally delegated to the Kansas Department of Health and Environment (see Kansas Department of Health and Environment, Public Water Supply Program). The goal of the program is to protect public health by assisting and regulating public water systems in the state. To maintain primary enforcement responsibility under the Safe Drinking Water Act, the state program must meet the requirements of 40 CFR Part 142.

Statutory Authority

Safe Drinking Water Act.

Contact:

Drinking Water and Groundwater Branch
Water, Wetlands and Pesticides Division
913-551-7440

National Pollutant Discharge Elimination System (NPDES) Permit Program

The Clean Water Act requires that all discharges of pollutants from point sources be authorized by a

permit. This includes discharges from cities sewage treatment plants, industrial wastewater, certain animal feeding operations and other discharges from point sources. The permit program is called the National Pollutant Discharge Elimination System (NPDES). The Kansas Department of Health and Environment is administering the program in Kansas. A permit limits what can be discharged to a stream or lake and can be enforced by either the Kansas Department of Health and Environment or the Environmental Protection Agency.

Statutory Authority

Clean Water Act, as amended.

Contact:

NPDES and Facilities Management
Water, Wetlands and Pesticides Division
913-551-7444

Non-Point Source Pollution Control

Working with the Kansas Department of Health and Environment, the program requires the production of a state Non-Point Source Assessment Report, a State Non-Point Source Management Program and provides grant funds to implement the program, through Sections 319 of the Clean Water Act of 1987 (CWA). Section 319 also requires the state to produce an annual report detailing what the state has accomplished toward the goals of the state's non-point source management program and the goals of Section 319 of the Clean Water Act.

Statutory Authority

Clean Water Act, as amended, Section 319.

Contact:

Water Resources Protection Branch
Water, Wetlands and Pesticides Division
913-551-7475

Water Quality Management Planning

Administers grants to states to carry out a variety of water quality planning activities such as watershed or basin plan development, monitoring and assessment activities, total maximum daily load calculations, continuing planning process updates, and water quality standards. The Kansas Department of Health and Environment carries out these programs in Kansas through grant funds provided under Sections 106 and 604(b) of the Clean Water Act.

Statutory Authority

Clean Water Act, as amended, various sections.

Contact:

Water Resources Protection Branch
Water, Wetlands and Pesticides Division
913-551-7372

Water Quality Standards

This program is designed to define the uses of state surface waters, determine the maximum allowable concentration of specific pollutants in water and define policies to implement controls to protect human health and the environment. The program specific responsibility for setting state standards rests with the Kansas Department of Health and Environment but the Environmental Protection Agency may promulgate standards if it finds that the state is not following the Clean Water Act statutes. At least once every three years, the state must review uses, criteria and policies, and hold a public hearing on the present standards and any proposed revisions.

Statutory Authority

Clean Water Act - Section 303.

Contact:

Water Resources Protection Branch
Water, Wetlands and Pesticides Division
913-551-7441

Clean Lakes Program

Under the Clean Lakes Program, the U.S. Environmental Protection Agency is authorized to provide technical and financial assistance for protection and restoration of lakes which are publicly owned and have extensive public access and recreational use. The Clean Lakes Program is authorized by Section 314 of the Federal Clean Water Act (amended in 1987). Program regulations are found in 40 CFR 35, Subpart H.

The Environmental Protection Agency may only award Clean Lakes Program funding to the state agency designated by the Governor to receive the funding or to eligible Indian Tribes. The state or tribe may then enter substate agreements with other governmental entities to obtain the required matching funds and perform the work. Two types of cooperative agreements are authorized by Section 314:

Phase I diagnostic/feasibility study awards - to identify lake problems, diagnose causes and develop a feasible course of action to correct problems. Regulations limit federal cost-share to 70 percent, up to a maximum of \$100,000 per award.

Phase II implementation awards - to support implementation of recommended procedures for

controlling pollution and improving the quality of the lake. Regulations limit federal cost-share to 50 percent.

Section 314 also authorizes grants for states to conduct lake water quality assessments.

Statutory Authority

Clean Water Act, as amended, Section 314.

Contact:

Water Resources Protection Branch
Water, Wetlands and Pesticides Division
913-551-7500

Underground Injection Control

The Underground Injection Control (UIC) was established through the Safe Drinking Water Act of 1974 to protect underground sources of drinking water (USDW) from improper injection well activity. The act allows states to assume responsibility (primacy) for the program. Kansas has primacy for Underground Injection Control and has developed programs to regulate injection wells which include inspections permitting and compliance activities (see Kansas Corporation Commission and Kansas Department of Health and Environment programs). The program covers all injections which are Class I (industrial injections); Class II (injections related to oil and gas production); Class III (solution mining); Class IV (hazardous injections into or above underground sources of drinking water) and Class V (all other injections or those that do not fit Class I-IV).

The Environmental Protection Agency assumes an oversight role for Underground Injection Control in Kansas. The Kansas Corporation Commission has a responsibility for Class II oil and gas related injections activity under Section 1425 and the Kansas Department of Health and Environment has responsibility for all other classes under Section 1422 of the act.

Statutory Authority

Part C of Safe Drinking Water Act of 1974
Section 1422 and 1425, 40 CFR 144, 145, 146 and portions of 124.

Contact:

Drinking Water and Groundwater Branch
Water, Wetlands and Pesticides Division
913-551-7412

Sludge Program

This program is designed to implement the Part 503 Regulations which define safe practices for the

use of municipal sewage sludge as an agricultural fertilizer.

Statutory Authority

Clean Water Act, as amended.

Contact:

Water, Wetlands and Pesticides Division
913-551-7594

U.S. FEDERAL EMERGENCY MANAGEMENT AGENCY

2323 Grant Boulevard, Suite 900

Kansas City, MO 64108-2670

816-283-7060

FAX 816-283-7018

National Flood Insurance Program

One of the several programs administered by the Federal Emergency Management Agency is the National Flood Insurance Program. The Program was established by Congress in 1968 to make federally subsidized flood insurance available to cover structures and their contents in flood prone communities which participate in the Program. A condition to participate in the program is the adoption of minimum federal standards which regulate development in identified flood hazard areas. That identification is accomplished with the publication of Flood Insurance Studies and/or related maps which the community also adopts in order to enforce the floodplain management regulations.

The purchase of flood insurance is mandatory for property which is secured by any federally insured loan. The Flood Insurance Rate Map or Flood Hazard Boundary Map is used to determine when flood insurance must be required. This includes loans from the Small Business Administration, Veterans Administration, federally-regulated banks, credit unions and savings and loan institutions, as well as funds related to flood disaster assistance.

This office assists participating communities, lending institutions, insurance agents, real estate companies and private individuals with interpreting and understanding the flood insurance program. Flood insurance policies can be purchased through any licensed property and casualty agent.

Statutory Authority

Housing and Urban Development Act of 1968 (P.L. 448, 82 Stat. 476); Flood Disaster Protection Act of 1973 (P.L. 93-234, 87 Stat. 975).

Contact:

Regional Director
816-283-7060

U.S. FISH AND WILDLIFE SERVICE

315 Houston, Suite E
Manhattan, KS 66502-6172
913-539-3474
FAX 913-539-8567

Environmental Contaminants

This program mainly supports research conducted by the Fish and Wildlife Service in its research centers and laboratories and field operations conducted by Fish and Wildlife Service employees.

It includes research, national trend monitoring, field appraisals and recommendations to identify, evaluate, predict and avoid or lessen effects of environmental contaminants on fish, wildlife and their supporting ecosystems. Other responsibilities include advice on service and service-sponsored pesticide uses, recommendations for water quality criteria and activities related to spills of oil and other hazardous substances. Environmental Contaminant Evaluation information is used to develop wildlife management strategies and as a basis for decisions concerning the regulation and restrictions of pollutants.

Statutory Authority

Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)-742j-1); Fish and Wildlife Coordination Act (16 U.S.C. 661-666c); Anadromous Fish Conservation Act (16 U.S.C. 757a-757f); National Environmental Policy Act (42 U.S.C. 4321-4347); River and Harbor Act of 1899 (33 U.S.C. 401 *et seq.*); Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136-136y); Toxic Substances Control Act (15 U.S.C. 2601-2629); Clean Water Act (33 U.S.C. 1251 *et seq.*); Comprehensive Environmental Response, Compensation and Liability Act (Public Law 96-510); Marine Protection, Research and Sanctuaries Act (33 U.S.C. 1401 *et seq.*); Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901-6986); Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201-1328); Migratory Bird Treaty Act (16 U.S.C. 703-718); Endangered Species Act (16 U.S.C. 1531-1543).

Contact:

State Supervisor
913-539-3474

Endangered Species

The purposes of the Endangered Species Act are

to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved. It is the policy of Congress that all federal departments shall seek to conserve endangered species and shall utilize their authorities in furtherance of the purposes of this Act.

Section 7 Consultation Overview. Section 7 of the Endangered Species Act involves a consultation process, whereby federal agencies consult and/or confer with the U.S. Fish and Wildlife Service or National Marine Fisheries Service regarding federally listed endangered and threatened species.

Federal Actions Involving Major Construction Activities. For proposed actions in this category, the federal agency or their agent requests from the service information on any species listed or proposed to be listed that may occur in the area affected by the action.

Other Federal Actions. For actions in this category, it is incumbent upon the federal action agency to assess whether its action may affect endangered and threatened species. If no effect is evident, there is no need for further consultation.

Proposed Species and Proposed Critical Habitat. If the proposed federal action is likely to jeopardize species proposed for listing as endangered or threatened, or adversely modify proposed critical habitat, Section 7 requirements are met by conferring with the Service.

Statutory Authority

The Endangered Species Act of 1973, as amended by Public Law 97-304 (The Endangered Species Act Amendments of 1982) (16 U.S.C. 1531-1543).

Contact:

State Supervisor
913-539-3474

Fish and Wildlife Enhancement

This program mainly supports field operations conducted by Fish and Wildlife Service employees. The program includes surveys and investigations which identify the effects of proposed land and water

resource developments on fish and wildlife habitats; recommends methods to action agencies for conserving, protecting and enhancing the effected habitat; provides assistance, at the earliest possible stage of planning, to action agencies that are directly or indirectly responsible for development and management of natural resources; and oversees Fish and Wildlife Service compliance and commenting on other agencies' statements concerning the National Environmental Policy Act.

Statutory Authority

Fish and Wildlife Act of 1956 (16 U.S.C. 742a - 742j-1); Fish and Wildlife Coordination Act (16 U.S.C. 661-667(e)); National Environmental Policy.

Contact:

State Supervisor
913-539-3474

Private Lands Program

The private lands program in Kansas is designed to provide landowners with opportunities to restore, enhance, or create wetlands at minimal expense. Depending on the site, contracts are made for from 1 to 29 years. Landowners retain all right. Technical advice and partial payment for construction is provided.

Contact:

North-Refuge Manager
U.S.F.W.S.
RR 1, Box 103
Kirwin, KS 67644
913-543-6673

East-Refuge Manager
U.S.F.W.S.
P.O. Box 128
Hartford, KS 66854
316-392-5553

South-Refuge Manager
U.S.F.W.S.
RR 3, Box 48A
Stafford, KS 67578
316-486-2393

U.S. GEOLOGICAL SURVEY

4821 Quail Crest Place

Lawrence, KS 66049-3839

913-842-9909

FAX 913-832-3500

Water Resources Data

Basic water resources field data is collected at selected locations throughout the State. A network of data collection sites is maintained where surface and ground water data are collected. Both quantity and quality data are obtained at these sites. Records of river stage and streamflow, ground water levels and results of laboratory analyses of samples taken from ground and surface waters are compiled. Near real-time streamflow information is available for over 160 sites in Kansas. Most sites are funded through a combination of state and local funds and up to 50 percent Federal matching funds. This information is available to state and federal agencies, local organizations and the public to use in their water resources responsibilities.

Statutory Authority

Organic Act of March 1879 (20 Stat. 394; 43 U.S.C. 3); Act of 1888 (25 Stat. 526); Act of 1896 (29 Stat. 453); Act of 1902 (32 Stat. 741; 44 U.S.C. 1318).

Contact:

District Chief
913-842-9909

Interpretive Studies of Water Quality, Surface and Ground Water Hydrology

Interpretive studies are conducted related to the quantity and quality of ground water and surface water in the State. The purpose of these studies are to describe hydrologic systems, determine the characteristics of hydrologic processes and provide information required to solve water resources problems. All study results are published and available to the public. Over 1,000 reports have been published since initiation of this program in 1895. Study topics vary greatly from year to year. Topics currently being studied include: 1) the effect of artificial recharge on water quality and quantity; 2) the effect of urban stormwater runoff and discharge to stream water quality; 3) the effect of reservoirs on channel morphology; 4) flood frequency and

characteristics; 5) the impacts of alternative bridge designs on streamflows; 6) surface water flow routing modeling; 7) the effects of land use on streamflow and watershed processes; 8) modeling of stream-aquifer interaction; and 9) ground-water flow near landfills. Most studies are funded through a combination of state and local funds and up to 50 percent federal matching funds.

Statutory Authority

Organic Act of March 1879 (20 Stat. 394; 43 U.S.C. 3); Act of 1888 (25 Stat. 526); Act of 1896 (29 Stat. 453); Act of 1902 (32 Stat. 741; 44 U.S.C. 1318).

Contact:

District Chief or
Studies Chief
913-842-9909

Research in Geochemistry

Research is related to the chemical characteristics of surface and ground waters. The purpose of the research is to develop analytical methods and concepts for quantifying the presence and fate of natural and anthropogenic constituents in waters and earth materials. Current research topics include: 1) surveying the extent of herbicides and metabolites in atmospheric-surface and ground water principally in the midwest corn belt; 2) defining the geochemical characteristics of pesticides that determine the chemical and metabolic degradation processes in agricultural environments; and 3) developing laboratory methods and procedures that quantify the presence of pesticides and their metabolites in atmospheric-surface and ground waters and sorbed to particulates.

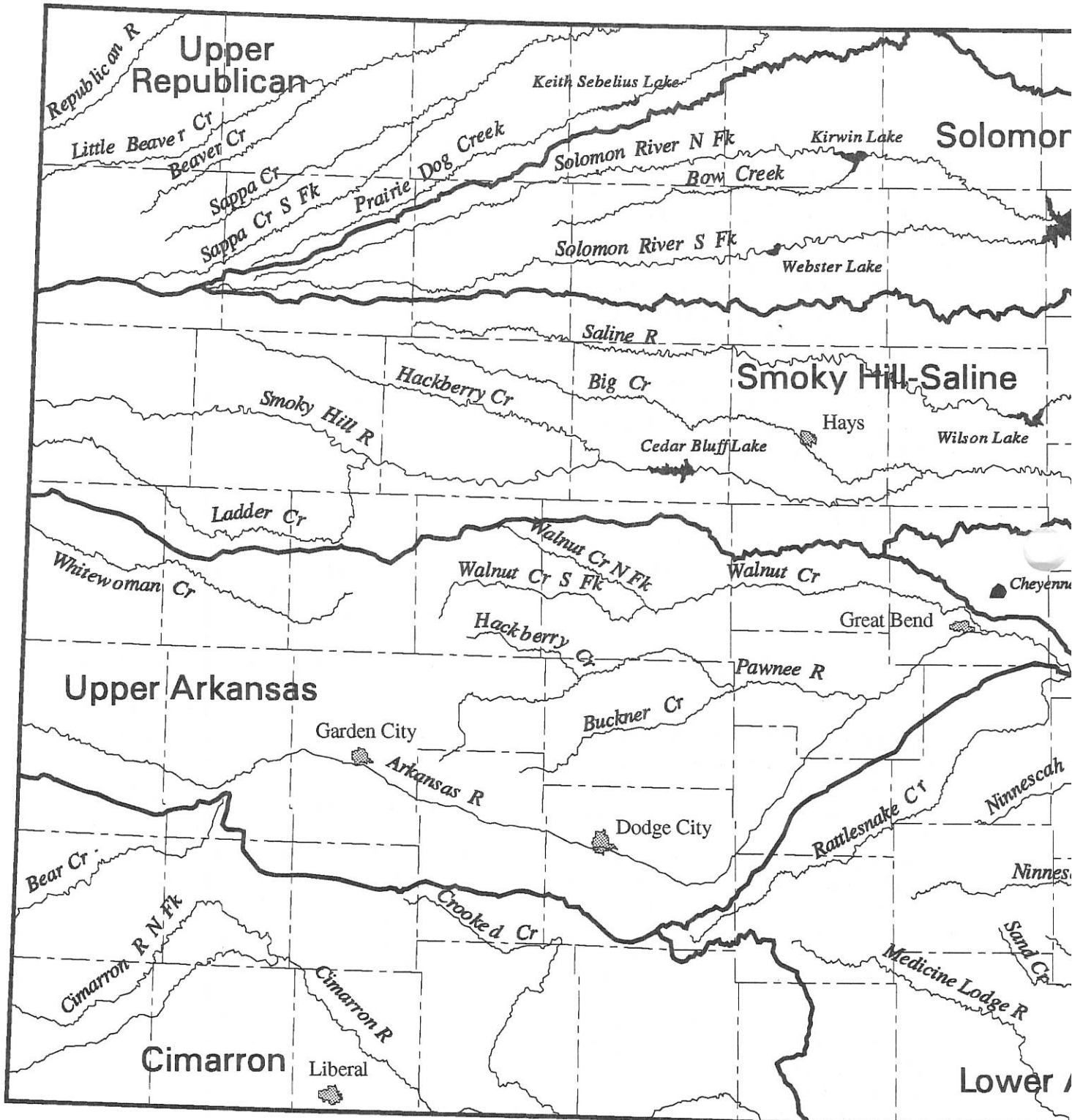
Statutory Authority

Organic Act of March 1879 (20 Stat. 394; 43 U.S.C. 3); Act of 1888 (25 Stat. 526); Act of 1896 (29 Stat. 453); Act of 1902 (32 Stat. 741; 44 U.S.C. 1318).

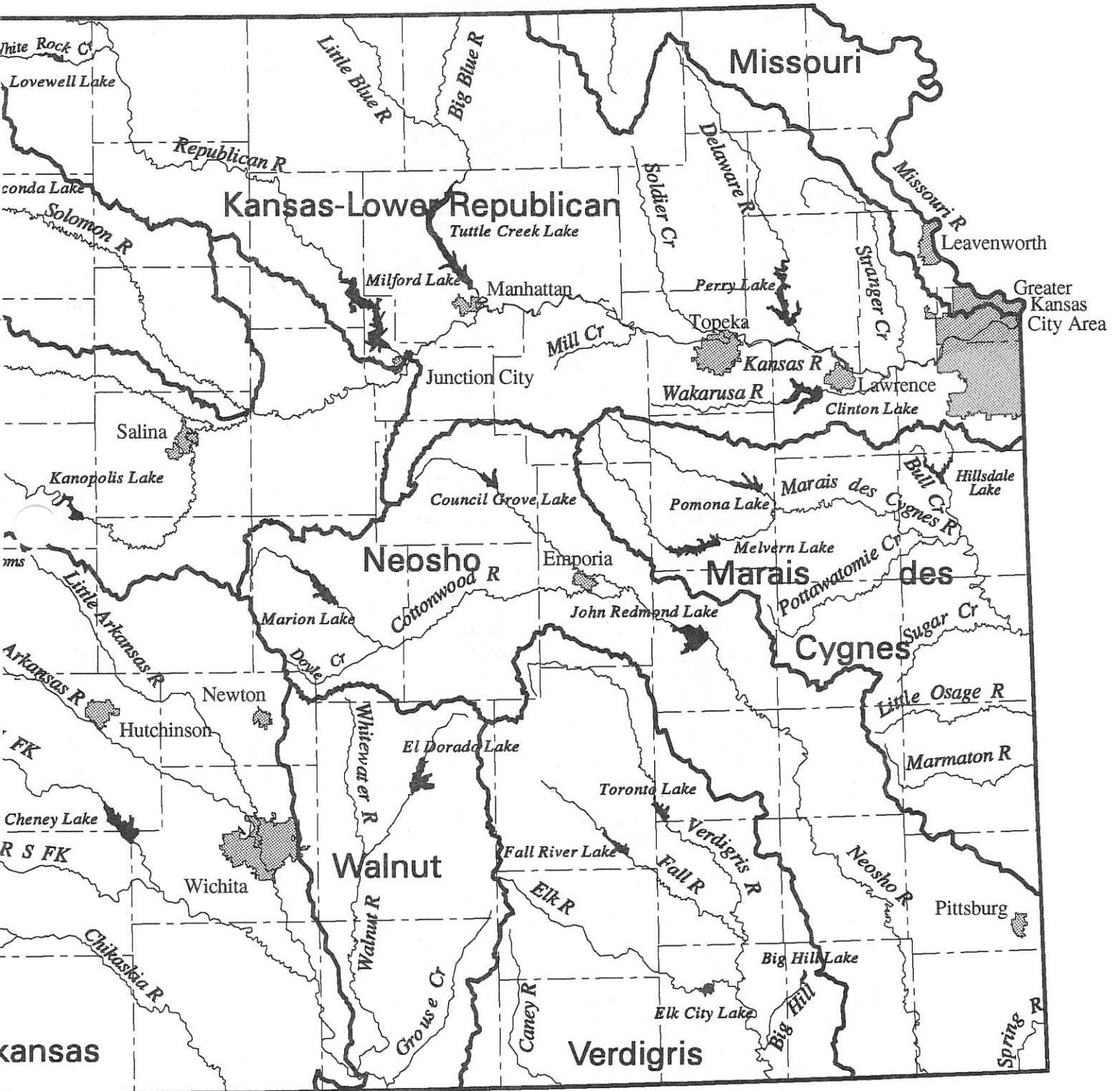
Contact:

Research Hydrologist
913-842-9909

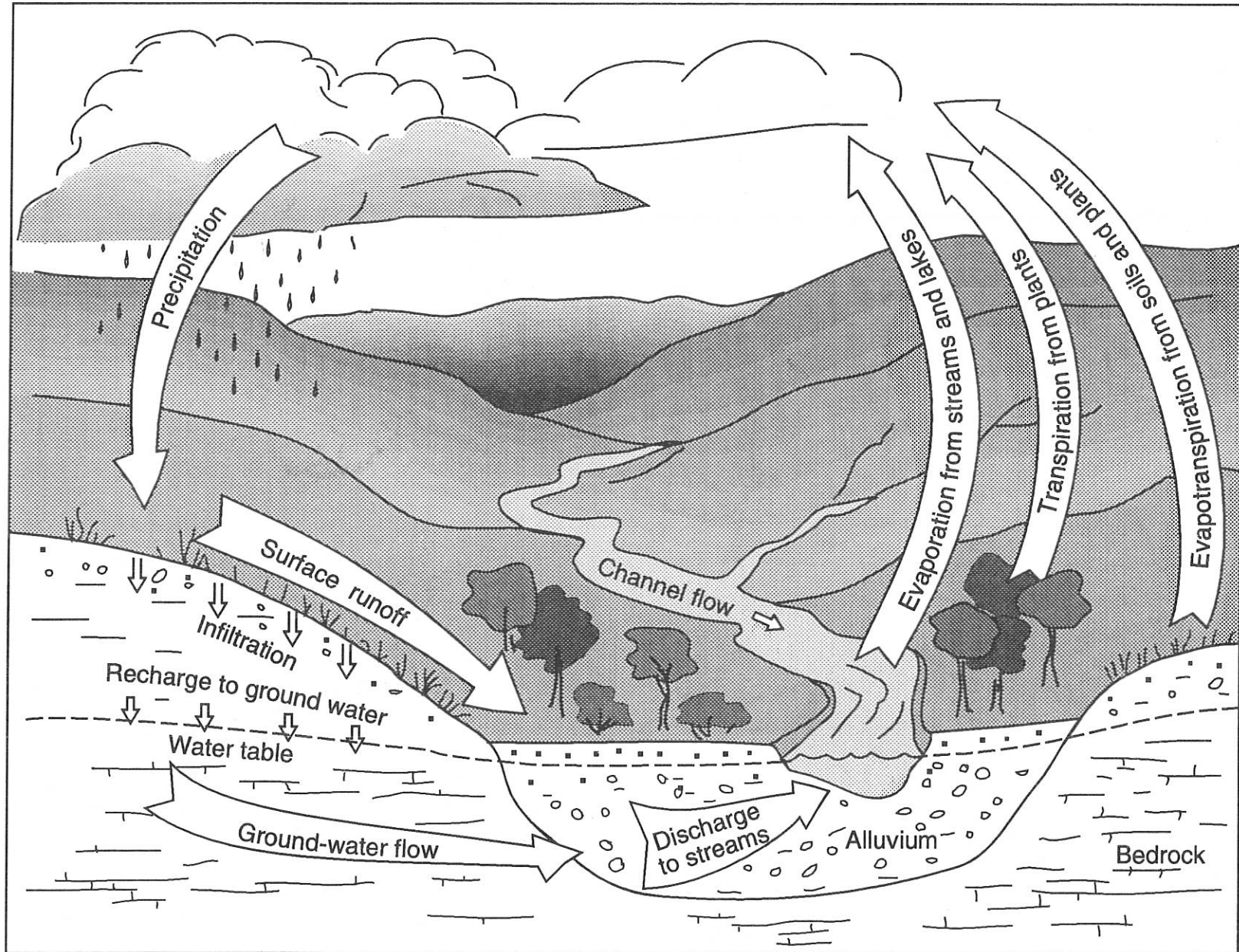
Kansas River Basin



and Federal Lakes



August 1995



Whittemore and Schoneweis

THE HYDROLOGIC CYCLE

3-5-3

The Hydrologic Cycle and Water Budget of Kansas

The sun's heat and the gravity of the earth are the major forces that operate the hydrologic cycle. Heat from the sun evaporates water from the oceans, lakes, the ground, wet vegetation, and falling rain. It transpires water from plants and returns large quantities of water vapor to the air. The larger quantities of water vapor occur over the ocean. The winds move some of this water vapor inland to join smaller quantities of water vapor from lakes and plants. When this moist air mass meets a cooler air mass, or is cooled by lifting to higher elevations, the water vapor may condense to water droplets. Gravity causes the moisture particles fall to the earth as rain, snow, or hail. Rainfall is the largest percent of the precipitation which falls on Kansas. Upon reaching the ground the moisture particles may return to the air or begin their long trip back to the ocean.

Many of the first drops that fall find their way into the soil. But if the rainfall continues the surface soon becomes too wet to absorb all the drops that are falling and the excess collects in depressions and low points.

As these small puddles grow, water under the influence of gravity begins to flow over the land to the nearest gully. The runoff from the gullies and roadside ditches form the small brooks and creeks, which in turn contribute to the flow of the larger streams and to the filling of lakes and reservoirs.

Some of the water which soaks into the ground escapes. It may be evaporated or used by plants or it may move downward to join

the groundwater supply. Months or years later this water, flowing down slope, reaches the surface as a seep or spring.

The outflow from the lakes, small streams, and groundwater formations contribute to the rivers which finally flow into the sea. Energy from the sun will start some of the same ocean water on a similar journey to perpetuate the cycle. One must realize, however, that *not every raindrop that falls from the sky reaches the ocean on the first cycle,*

nor does every drop which reaches the ocean soon return to the land.

The Water Budget of Kansas

Kansas is part of a regional weather system which receives most of its moisture from the Gulf of Mexico. Much of the precipitation which falls on the state is returned to the atmosphere of the region and not just to Kansas skies. Likewise, the moisture which reaches the rivers is returned to the Gulf.

Precipitation over the state averages about 115 million acre-feet annually. An acre-foot of water is the amount required to cover an acre to the depth of one foot. If water were placed one foot deep over the entire state, the volume required would total 52.55 million acre-feet (MAF).

In 1967, the annual flow of Kansas rivers originating within the state was 9.9 MAF. (Since then there has been some reduction.)

The wind goeth toward the south, and turneth about unto the north; it whirleth and continually, and the wind returneth again according to his circuits. All the rivers run into the sea; yet the sea is not full; unto the place from whence the rivers come, thither they return again.

...a description of the hydrologic cycle from Ecclesiastes 1:6-7

This flow leaves the state and eventually reaches the Gulf of Mexico. Groundwater recharge quantities are not known, but they are believed to be fairly small, probably less than 0.9 MAF per year. Most of this is returned to the streams as base flow. Evaporation from wet surfaces and the transpiration from plants are similar processes, and hydrologists often lump them together and call the total "evapotranspiration" or ET. In Kansas ET averages about 105 MAF per year from the state.

Although the precipitation, evaporation, and other factors in the budget vary widely from year to year, the averages remain nearly constant through the years.

Edited from: *A Kansas Water Atlas*, the Kansas Water Resources Board
Topeka, Kansas, December 1967

Some Selected Kansas Water Facts

Kansas is drained by two major stream systems, the Missouri and the Arkansas. The Kansas River and other tributaries of the Missouri drain 40,000 square miles in northern Kansas. The Arkansas River and its tributaries drain 42,000 square miles in the southern part of the state.

The Kansas River Basin has a total area of 60,000 square miles above its confluence with the Missouri River at Kansas City; 34,500 square miles of this total lie in Kansas.

The Arkansas River above the Oklahoma-Kansas state line drains an area of more than 45,000 square miles of which 20,000 square miles lie in Kansas. The areas given for these two main streams do not include those tributaries of the Missouri River in Kansas which join it below the Kansas line.

Most rivers in the state flow in an easterly direction. The most notable exceptions are in the southeastern part of the state where the streams flow in a southeasterly direction out of the Flint Hills.

The slopes of Kansas streams vary widely. Most of the smaller streams vary from ten to 15 feet per mile near their headwaters to four to 5 feet per mile at their mouths. Small streams in the Flint Hills, however, have slopes at their headwaters of thirty to 40 feet per mile. The slope decreases only gradually until it reaches a major stream. These steeper slopes give the Flint Hills considerably different flood characteristics than in any other part of Kansas.

The slopes of larger streams in the state vary from about 10 feet per mile in the west to less than two feet per mile in the east.

The average annual streamflow contributed by the major streams entering Kansas, all of which are gaged, is about 1.7 million acre-feet (MAF). The flow of ungaged streams entering Kansas probably adds very little to this total since most of the ungaged streams are dry except after heavy rainstorms. The maximum annual inflow into Kansas was about 6 MAF in 1951, and the minimum was a little more than 0.6 MAF in 1956.

The average annual runoff generated within the state is 9.9 MAF. Therefore, the average annual outflow leaving Kansas is about 11.6 MAF of which the Kansas River discharges about 4.7 MAF or about 41 percent of the total leaving the state.

In the maximum flood year of 1951, the Kansas River alone discharged more than 21.0 MAF and the total outflow from the state that year was about 43.0 MAF. By contrast, in dry years the total outflow from the state has been as little as 2.2 MAF.

ACRONYMS

Listed below are some commonly used acronyms. When the spelled-out term or phrase is used in a publication it is usually followed in parenthesis with the corresponding acronym. We hope we have included most of the acronyms used by the agencies in this publication.

A

AF - Acre Feet
A/F/Y - Acre Feet per Year
AG - Attorney General
AIP - *Annual Implementation Plan*
ASCII - American Standard Code for Information Interchange
AWRBIAC - Arkansas-White-Red-Basins Inter-agency Committee
AOP - Annual Operating Plan

B

BAC - Basin Advisory Committee
BAT - Best Available Technology
BOD - Biological Oxygen Demand
BOR - Bureau of Reclamation

C

CAD - Computer Aided Drafting
CADD - Computer Aided Drafting and Design
CAM - Computer Aided Mapping
CDBG - Community Development Block Grant
CD-ROM - Compact Disk-Read Only Memory
CES - Cooperative Extension Service
CFS - Cubic Feet per Second
CFSA - Consolidated Farm Services Agency
CIA - Chief Information Architect
CIM - Cimarron (Basin)
COD - Chemical Oxygen Demand
COE - Corps of Engineers

D

DASC - Data Access and Support Center

DGPS - Differential Global Positioning Systems
DISC - Division of Information Systems and Communications
DOA - Department of Administration
DOS - Disk Operating System
DWR - Division of Water Resources

E

EPA - Environmental Protection Agency

F

FEMA - Federal Emergency Management Agency
FY - Fiscal Year

G

GIS - Geographic Information Systems
GMD - Groundwater Management District
GMDA - Groundwater Management District Association
GPCD - Gallons per Capita per Day
GPS - Global Positioning System

H

HENR - House Energy Natural Resources Committee
HUC - Hydrologic Unit Code

I

ICWP - Interstate Council on Water Policy
IGUCA - Intensive Groundwater Use Control Area
ITAB - Information Technology Advisory Board

K

KACD - Kansas Association of Conservation Districts
KACEE - Kansas Advisory Council on Environmental Education
KAR - Kansas Administrative Regulations
KARS - Kansas Applied Remote Sensing
KATS - Kansas Action Targeting System
KBS - Kansas Biological Survey
KCC - Kansas Corporation Commission
KDHE - Kansas Department of Health and Environment
KDOC&H - Kansas Department of Commerce and Housing
KDOT - Kansas Department of Transportation
KDWP - Kansas Department of Wildlife and Parks
KGA - Kansas Geographic Alliance
KGS - Kansas Geological Survey
KIPPS - Kansas Integrated Personnel Payroll System
KIRC - Kansas Information Resource Council
KLA - Kansas Livestock Association
KLR - Kansas-Lower Republican (Basin)
KQM - Kansas Quality Management
KRWA - Kansas Rural Water Association
KSA - Kansas Statutes Annotated
KSU - Kansas State University
KU - Kansas University
KWA - Kansas Water Authority
KWO - Kansas Water Office
KWP - *Kansas Water Plan*
KWRRI - Kansas Water Resources Research Institute

L

LARK - Lower Arkansas (Basin)
LEPP - Local Environmental Protection Program

M

MDC - Marais des Cygnes (Basin)

MGD - Million Gallons per Day
MO - Missouri (Basin)
MRBA - Missouri River Basin Association
MSLP - Multipurpose Small Lake

N

NEO - Neosho (Basin)
NPS - Non-Point Source
NRCS - Natural Resources Conservation Service
NSDI - National Spatial Data Infrastructure

O

O&M - Operation and Maintenance

P

P.E. - Professional Engineer
PWWSD - Public Wholesale Water Supply District

R

RC&D - Resource Conservation and Development
RWD - Rural Water District

S

SAKW - State Association of Kansas Watersheds
SCC - State Conservation Commission
SCS - Soil Conservation Service
SEF - State and Extension Forestry
SENR - Senate Energy Resources Committee
SHS - Smoky Hill-Saline (Basin)
SOL - Solomon (Basin)
SWIMS - Surface Waters Information Management System
SWP - State Water Plan

T

TAC - Technical Advisory Committee

**TIGER - Topologically Integrated
Geographic Encoding and Referencing**

U

UARK - Upper Arkansas (Basin)

**URAMP - Urban Resource Assessment and
Management Project**

UREP - Upper Republican (Basin)

**URISA - Urban and Regional Information
Systems Association**

USGS - U.S. Geological Survey

V

VERD - Verdigris (Basin)

W

WAL - Walnut (Basin)

**WIMAS - Water Information Management
and Analysis System**

WRAP - Wetland Riparian Area Program

VOTERS

Legislature

SENATE	HOUSE
Legislative Coordinating Council	
Legislative Post Audit Committee	

- Legislative Research Department
- Revisor of Statutes
- Division of Administrative Services
- Division of Legislative Post Audit

Attorney General

- Kansas Bureau of Investigation
- Child Death Review Board*
- Crime Victims Compensation Board*

Commissioner of Insurance

- Health Care Stabilization Fund Board of Governors*

GOVERNOR
Lt. Governor

- Civil Service Board*
- Budget Director

- Secretary of Aging
- Secretary of Revenue
- Secretary of Health and Environment
- Secretary of Social and Rehabilitation Services
- Secretary of Administration

- State Fair Board*
- Emergency Medical Services Board*
- Corporation Commission
- Citizen's Utility Rate Board*
- Director Grain Inspection Department
- Animal Health Board*
- Superintendent Highway Patrol
- Banking Board*
Bank Commissioner

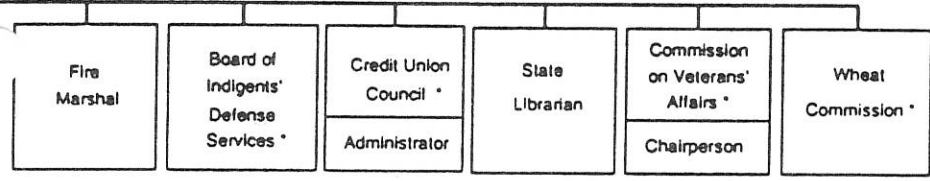
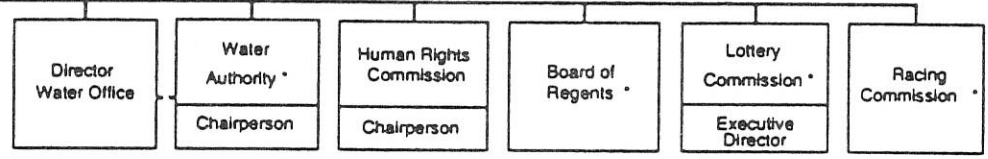
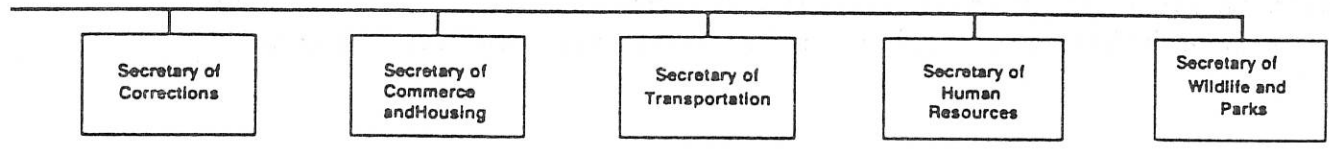
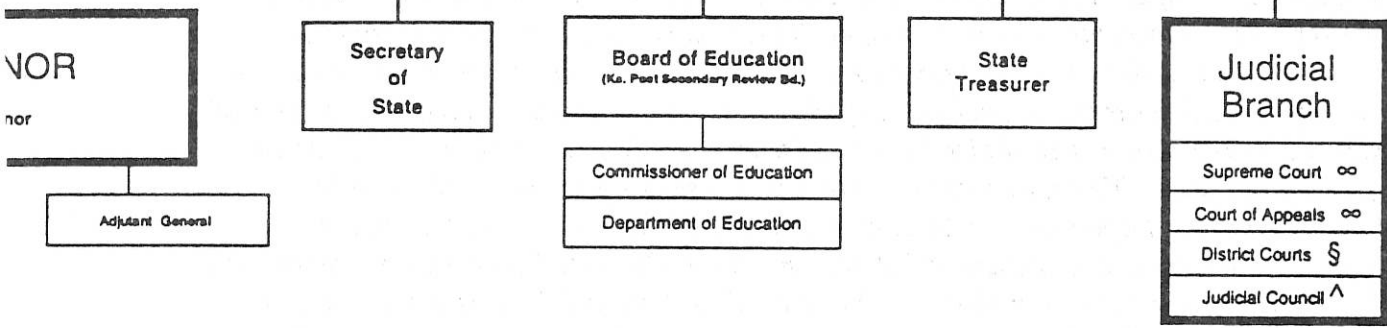
- Corrections Ombudsman
- Commission on Governmental Standards and Conduct*
- Board of Tax Appeals
- Sentencing Commission*
- Arts Commission*
President
V. President
Treasurer
- Consumer Credit Commissioner
- Securities Commissioner
- Parole Board
Chairperson

Mixed Appointments

State Historical Society	Department of Civil Air Patrol	Conservation Commission*
Kansas Inc.		Public Employee Retirement Board*
Kansas Technology Enterprise Corporation	Corporation for Change	Sheep Council*
Kansas Development Finance Authority	Board of Agriculture** Secretary	Turnpike Authority*

Abstracters	Accountancy	Bar
Mortuary Arts	Nursing	Optometry

KANSAS



Occupational Licensing Boards*

Behavioral Sciences	Cosmetology	Dental	Healing Arts	Hearing Aid Dispensers
Pharmacy	Real Estate Brokers and Salespersons	Real Estate Appraisers	Technical Professions	Veterinary

LEGEND

- ^ CHAIRS OF THE HOUSE AND SENATE JUDICIARY COMMITTEES SERVE *ex officio*.
- ∞ JUDGES AND JUSTICES ARE APPOINTED BY THE GOVERNOR FROM NOMINEES OF THE SUPREME COURT NOMINATING COMMISSION. ONCE APPOINTED, THEY ARE RETAINED IN OFFICE WITH VOTER APPROVAL.
- § AT THE OPTION OF THE JUDICIAL DISTRICT, JUDGES MAY BE APPOINTED BY A NON-PARTISAN METHOD OR DIRECTLY ELECTED. APPOINTED JUDGES ARE SUBJECT TO RETENTION ELECTIONS.
- * MEMBERS SERVE PART TIME.
- ** BOARD SELECTION PROCESS DECLARED UNCONSTITUTIONAL IN 1993. AGENCY PLACED UNDER COURT RECEIVERSHIP. GOV. APPOINTS SECRETARY.
- APPOINTING AUTHORITY
- ... ATTACHED

Kansas Legislative Research Department
Revised November, 1994

Acknowledgements

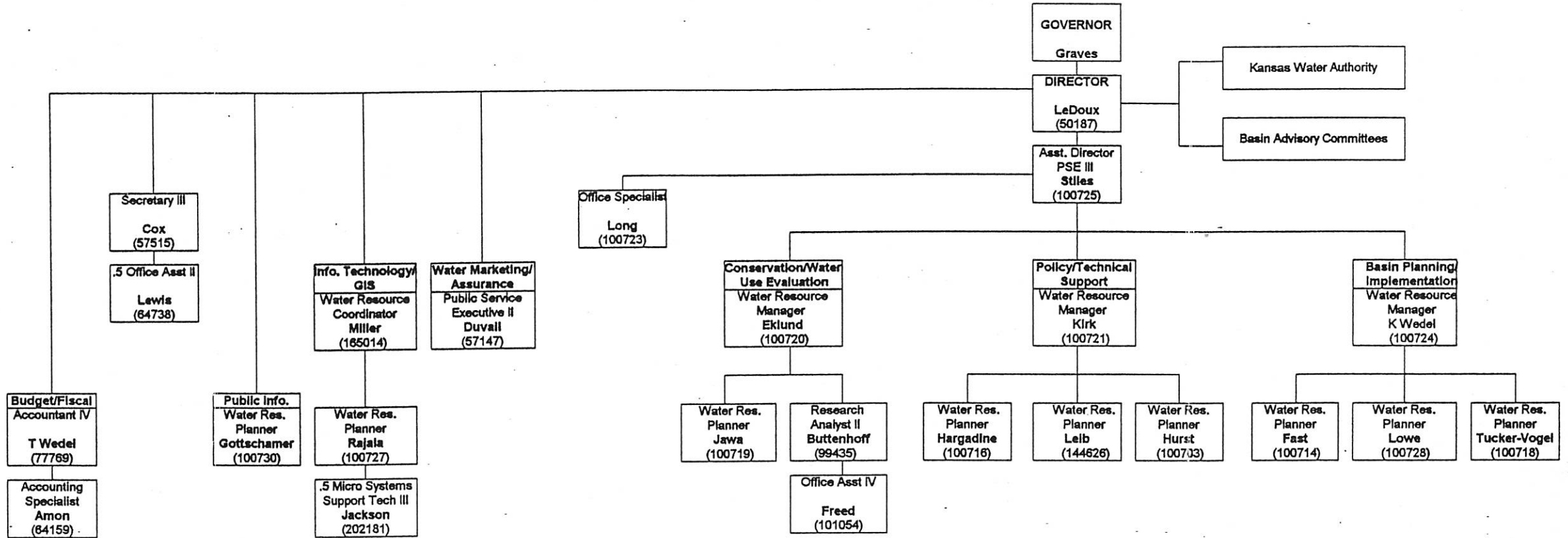
The Kansas Water Office appreciates the assistance provided by many people to produce this publication. We are grateful to each of the agencies for submitting their revised program descriptions. Most of them met our rather tight deadline. Special thanks go to Don Wittemore and his staff at the Kansas Geological Survey for developing the Kansas-related hydrologic cycle diagram, and to the Kansas Legislative Research Department for providing the organization chart of state agencies. We appreciate the cost-share assistance provided by these state agencies: The Kansas Department of Agriculture, the Kansas Department of Health and Environment, the Kansas Department of Wildlife and Parks, the State Conservation Commission, and the Kansas Corporation Commission. Thanks to Al LeDoux and Steve Hurst for securing those agreements. And finally, two really talented people brought it all together, Carol Brownell and Janelle Amon in the Kansas Water Office, did all the word processing and assisted in the layout.

*John Gottschamer
Kansas Water Office
January 1996*

The Kansas Water Office

Organization Chart

EFFECTIVE 11/18/96



House Environment
 1-16-97
 P/Hrehment 4

att

The Kansas Water Authority
September 1996

	Occupation	Representing	Term Expires
Kent Lamb, Chairman RR 1, Box 69 Macksville, Kansas 67557 316/348-2315	Farmer/Irrigator	Governor	Pleasure
Tom Bogner 10055 Eagle Road Dodge City, Kansas 67801 316/225-4085	President, SW KS GMD #3	GMDs #1, #3, and #4	May 1, 1999
Alan Crane RR 2 Larned, Kansas 67550 316/285-2574	Irrigator	GMDs #2 & #5	May 1, 1998
Douglas O. Cruce 6300 Stateline Rd. Shawnee Mission, KS 66208 913/362-9620	City Admin., Mission Hills	Ks League of Municipalities	May 1, 1997
William R. Hamm PO Box 884 Newton, Kansas 67114-0884 316/284-0707	Insurance/Investments	State Assn. of Kansas Watersheds	May 1, 1998
Ray Haner 3801 S. Oliver Wichita, Kansas 67210 316/526-2321	Director of Safety, Medical & Environmental Affairs, Boeing Aircraft	Kansas Assn. of Commerce & Industry	May 1, 1999
Byron Johnson P.O. Box 2921 Mission, Kansas 66201 913/895-5511	General Mgr., Johnson Co. Water District No. 1	President of the Senate	July 1, 1997
Kenneth Maechtlen 100 N. Main, Suite 600 Wichita, Kansas 67201 316/262-1414	Agriculture and Real Estate	Public	May 1, 1997
Richard L. Nellor 322 N. Cherry Gardner, Kansas 66030 913/856-8335	Farmer	Public	August 31, 2000
Don Paxson P.O. Box 487 Penokee, Kansas 67659 913/421-2364	Director	Kansas Assn. of Conservation Districts	May 1, 2000

*House Environment
1-16-97
Attachment 5*

	Occupation	Representing	Term Expires
Dennis Schwartz 3260 S.E. Tecumseh Rd. Tecumseh, Kansas 66542 913/379-5553	Manager, Shawnee RWD #8	Kansas Rural Water Association	May 1, 2000
John Spurling RR 5, Box 139 Fort Scott, Kansas 66701 316/362-4232	Newspaperman/Farmer	Speaker of the House	July 1, 1997
Judy Willingham, R.S. 2030 Tecumseh Manhattan, Kansas 66502 913/776-4779	Environmental Health/ Sanitarian, Riley Co. Health Dept.	Environmental Interests	Oct. 26, 1996

EX-OFFICIO MEMBERS

Alice Devine
Secretary, Kansas Department of Agriculture
901 S.W. Kansas Ave.
Topeka, Kansas 66612
913/296-3558

Tim McKee
Chair, Kansas Corporation Commission
1500 S.W. Arrowhead Rd.
Topeka, Kansas 66604
913/271-3100

Dr. Lee Gerhard
Director, Kansas Geological Survey
1930 Constant Ave, University of Kansas
Lawrence, Kansas 66045
913/864-3965

David L. Pope
Chief Engineer, Division of Water Resources
Kansas Department of Agriculture
901 S.W. Kansas Ave.
Topeka, Kansas 66612
913/296-3717

Dr. Ron Hammerschmidt
Director, Division of Environment
Kansas Department of Health and Environment
Topeka, Kansas 66620
913/296-1535

Gary Sherrer
Lt. Governor
Statehouse -- 2nd Floor
Topeka, Kansas 66612
913/296-2213

Dr. Marc Johnson
Director, Agricultural Experiment Station
113 Waters Hall, Kansas State University
Manhattan, Kansas 66506
913/532-7137

Tracy Streeter
Executive Director, State Conservation
Commission
109 S.W. 9th St., Suite 500
Topeka, Kansas 66612
913/296-3600

Al LeDoux
Director, Kansas Water Office
109 S.W. 9th St., Suite 300
Topeka, Kansas 66612
913/296-3185

Steve Williams
Secretary, Kansas Department of Wildlife and
Parks
900 S.W. Jackson, Suite 502
Topeka, Kansas 66612
913/296-2281

The Kansas Water Authority

The Kansas Water Authority is within and a part of the Kansas Water Office. It is responsible for advising the Governor, the Legislature, and the Director of the Kansas Water Office on water policy issues, for approving the *Kansas Water Plan* and revisions thereto, for approving water storage sales, federal contracts, administrative regulations, and legislation proposed by the Kansas Water Office.

Basin Advisory Committee Chairpersons .

Name	Address	Telephone
Arthur T. Woodman Lower Arkansas Basin Advisory Committee	200 N. Broadway Ste 110 Wichita, KS 67202-2304	316/262-1481 316/267-3191 316/267-0118 fax
Clark D. Rusco Upper Arkansas Basin Advisory Committee	Evans, Bierly, Hutchison & Associates 1105 Williams Great Bend, KS 67530-4468	316/793-8411 316/793-8413 fax
Larry R. Kepley Cimarron Basin Advisory Committee	8474 South Road E Ulysses, KS 67880-9801	316/356-1559 316/356-6849 mobil
R.E. Pelton Kansas Lower Republican Basin Advisory Committee	212 SW 7th Street Topeka, KS 66603-3717	913-232-8081 (h) 913/232-9947 (w) 913/232-1922 fax
T.J. Dickerson Marais des Cygnes Basin Advisory Committee	RR 3, Box 53 Ft. Scott, KS 66701-9203	316/223-0145
Charles S. Allen Missouri Basin Advisory Committee	1128 Halderman St. Leavenworth, KS 66048	913/651-6867 913/682-5221 fax
James R. Triplett Neosho Basin Advisory Committee	Dept. of Biology Pittsburg State University 1701 S. Broadway St. Pittsburg, KS 66762-5889	316/235-4730 (w) 316/232-3573 (h) 316/235-4194 fax
Norman Nelson Upper Republican Basin Advisory Committee	505 Sunset Dr. Norton, KS 67654-1541	913/877-5365 (h) 913/877-3341 (w) 913-877-5808 fax
Ben Dickman Smoky Hill-Saline Basin Advisory Committee	PO Box 275 Grinnell, KS 67738-0275	913/824-3392
Francis Sweat Solomon Basin Advisory Committee	RR 1, Box 25 Cedar, KS 67628-9717	913/476-2275
Paul Sasse Verdigris Basin Advisory Committee	120 North 6th Street Independence, KS 67301-3759	316-332-2506 316/332-2511 fax
Harold E. Taylor Walnut Basin Advisory Committee	12488 NE Bluestem Rd. Burns, KS 66840-8859	316-321-3793 316/251-5024

January 13, 1997

c:\bac\chairs.tbl



The State of Kansas

**Kansas Water
Authority
Recommendations
for Implementation
of the
Kansas Water Plan
in Fiscal Year 1998**

*A Report to the
Governor and
1997 Legislature*

**Kansas Water Office
(The State's Water Planning Agency)
December 1996**

*House Environment
1-16-97
ATTACHMENT 6 att 5*

KANSAS WATER AUTHORITY MEMBERS

<u>Name</u>	<u>Representing</u>
Kent Lamb, Chairman	Governor of Kansas
Tom Bogner	Groundwater Management District Nos. 1, 3, and 4
Alan Crane	Groundwater Management District Nos. 2 and 5
Douglas O. Cruce	League of Kansas Municipalities
Alice Devine	Ex-officio, Kansas Department of Agriculture
Dr. Lee Gerhard	Ex-officio, Kansas Geological Survey
William R. Hamm	State Association of Kansas Watershed Districts
Ron Hammerschmidt, Ph. D.	Ex-officio, Kansas Department of Health and Environment
Ray Haner	Kansas Association of Commerce and Industry
Dr. Marc Johnson	Ex-officio, Kansas Water Office
Byron Johnson	President of the Senate
Al LeDoux	Ex-officio, Kansas Water Office
Ken Maechtlen	Public
Richard L. Nellor	Public
Don Paxson	Kansas Association of Conservation Districts
David Pope	Ex-officio, Div. of Water Resources, Kansas Department of Agriculture
Dennis Schwartz	Kansas Rural Water Association
Susan Seltsam	Ex-officio, Kansas Corporation Commission
Gary Sherrer	Ex-officio, Kansas Department of Commerce and Housing
John Spurling	Speaker of the House of Representatives
Tracy Streeter	Ex-officio, State Conservation Commission
Steve Williams	Ex-officio, Kansas Department of Wildlife and Parks
Judy Willingham, R.S.	Environmental Interests

STATE OF KANSAS



Bill Graves, Governor

KANSAS WATER OFFICE
Al LeDoux
Director

Suite 300
109 SW Ninth
Topeka, Kansas 66612-1249

December 20, 1996

913-296-3185
FAX 913-296-0878
TTY 913-296-6604

The Honorable Bill Graves
Governor of Kansas
Statehouse -- Room 212-S
Topeka, Kansas 66612

Dear Governor Graves:

On behalf of the 23 members of the Kansas Water Authority, I am pleased to submit our Annual Report, "Recommendations For Implementation of the *Kansas Water Plan*."

This year's report recommends continuity in Fiscal Year 1998 on the direction and areas of emphasis guiding the various water programs of the state agencies in Fiscal Year 1997. The report focuses on State Water Plan Fund recommendations. The Authority is not proposing any recommendations for new or amendatory legislation relative to the *Kansas Water Plan*.

The Authority continues to wholly endorse and support the current efforts to direct water programs toward improving water quality conditions in the Kansas-Lower Republican Basin as part of your Water Quality Initiative. We anticipate continued emphasis on this basin's water quality issues for several years.

The Authority anticipates that \$16,845,860 will be available in Fiscal Year 1998 and recommends expenditures of \$16,819,569 in this report. We recommend that the balance of funds be used by the Kansas Water Office to develop appropriate delivery systems to educate and inform the citizens of Kansas on the successful impact the *Kansas Water Plan* has had on our water resources. As part of that recommendation, we expect the Office to work with the Division of Budget, the Legislature, and the state agencies to develop a set of specific goals which should result from implementation of the *Kansas Water Plan*, particularly through the State Water Plan Fund.

The Authority commends the state agencies in working together to assist us in making these recommendations and meeting expected revenue through reductions in their budget requests. As always, highest priority is funding programs and projects linked to the *Kansas Water Plan*.

Thank you for your interest in the stewardship of the state's water resources and your leadership in guiding the state agencies to work together toward priority issues. We support your efforts to improve the water resources of the state and stand ready to assist you in those endeavors at any time.

Respectfully,

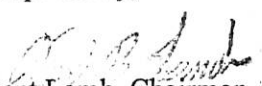

Kent Lamb, Chairman
Kansas Water Authority

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INTRODUCTION

The Kansas Water Authority is pleased to submit the following recommendations regarding implementation of the *Kansas Water Plan* utilizing the State Water Plan Fund in Fiscal Year 1998.

Review of Agencies' Budgets

In establishing these recommendations the Authority reviewed the budgets of eight state agencies. Those budget requests were examined as to their application to the policies and guidelines of the *Kansas Water Plan* and the specific guidance the Authority provided the agencies in its FY 1998 Annual Implementation Plan. As is the case each year, requests exceeded the anticipated revenues and program funding recommendations were reduced to achieve balance.

The Authority anticipates that \$16,845,860 will be available in Fiscal Year 1998 in the State Water Plan Fund. The expenditures recommended in this report total \$16,819,569 (Table 1).

Carryover Funds

Once again, there are significant amounts of carryover funds anticipated to be available within the agencies' budgets after FY 1997 for use in the following fiscal year. *The Authority recommends the appropriation bills regarding agency funding and expenditures allow for use of these carryover funds (\$705,472).*

The Authority understands that the Division of

Budget is considering lapsing all unencumbered funds remaining at the end of Fiscal Year 1998 back to the State Water Plan "Mother" Fund so that all agency programs will enter Fiscal Year 1999 with zero balances. The Authority supports this action. It will better define the actual amount of funding available for subsequent years, establish a more accurate picture of actual expenditures within the agencies and allow the Authority to reexamine its priorities for funding from the State Water Plan Fund.

Desired Outcomes

The issue of desired outcomes from the expenditures of the State Water Plan Fund is continually raised within the Legislature, as well as among the agencies and the basin advisory committees.

The Authority believes the issue stems from a need for the Authority to declare specific goals and expected outcomes of *Kansas Water Plan* program implementation. The Authority has identified within the FY 1998 Annual Implementation Plan, and repeated in this report, implementation goals for each program which define at least a general expectation of accomplishment

by the years 2001-2002.

The Authority recommends that more specific goals be defined by the Kansas Water Office relative to the Kansas Water Plan so that agency programs can aim at a clear outcome and measure their performance over time.

Continued support of the Kansas Water Plan and its funding can only be achieved by measuring its performance of success and distributing that information to interested parties at the state and local level.

Water Plan Successes

The Authority believes that implementation of the *Kansas Water Plan* has resulted in numerous successes:

- acquisition of reservoir storage to secure future water supplies for the state,
- expansion of weather modification to reduce economic loss,
- installation of best management practices to reduce the amount of non-point pollutants impairing state water resources,
- management of water under the appropriation act through cooperative efforts at the subbasin level,
- monitoring the physical, chemical, and biological conditions of Kansas water resources on a real-time basis.

Public Information

The principal area where full success has *not* been realized is informing and educating the public of these successes. Continued support of the *Kansas Water Plan* and its funding can only be achieved by measuring its performance of success and distributing that information to interested parties at the state and local level.

The Authority notes that its recommended expenditures leave an anticipated balance of \$26,291 at the end of FY 1998 (Tables 1 and 2). *The Authority recommends that, in addition to the recommendations for funding among the 39 programs identified within this report (Tables 3-11), the Kansas Water Office be authorized to utilize the remaining balance to acquire the necessary personnel and resources to develop a water education infrastructure.* This program will gather the success stories of these programs, distribute that information to the public and establish a set of Goals and Objectives for the

Kansas Water Plan to guide the Authority, the Governor and the Legislature on the state programs which will effectively address priority issues. If future funding decisions are to be based on performance, this action is essential to determine that performance.

Staying the Course

The recommendations contained in this report represent a continuation of the direction and priorities established by our Fiscal Year 1997 Annual Report. The Authority believes the priorities expressed at that time will continue to be of pressing importance in the upcoming fiscal year.

The Kansas Water Authority looks forward to working with the Governor and the 1997 Legislature in working on these recommendations and issues for the improvement of Kansas water resources.

RECOMMENDATIONS FOR IMPLEMENTATION OF THE KANSAS WATER PLAN
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FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 1 – FY 1998 REVENUE AND EXPENDITURE SUMMARY

Anticipated Beginning Balance in "Mother" fund		(\$95,855) *
REVENUE:		
Recommended Carryover from Previous Fiscal Years (in agency accounts):		
Kansas Department of Health and Environment	344,836	
Kansas Department of Wildlife and Parks	130,833	
Kansas Department of Agriculture	155,278	
Kansas Water Office	74,525	
State Conservation Commission	- 0	
	<i>Subtotal</i>	\$705,472
New Receipts:		
Municipal Water Use Fees	3,390,558	
Industrial Water Use Fees	1,135,000	
Stockwater Use Fees	232,965	
Fertilizer Fees	2,345,070	
Pesticide Fees	830,000	
Pollution Fines and Penalties	12,000	
Sand Royalty Fund	290,650	
Economic Development Initiatives Fund	2,000,000	
State General Fund	6,000,000	
	<i>Subtotal</i>	16,236,243
Total Revenue		16,941,715
Total Available		\$16,845,860
EXPENDITURES:		
Kansas Department of Health and Environment	(4,200,000)	
Kansas Department of Wildlife and Parks	(180,833)	
Kansas State Department of Agriculture	(970,000)	
Kansas Water Office	(2,318,736)	
State Conservation Commission	(8,750,000)	
Kansas State University	0	
Kansas Corporation Commission	(400,000)	
Kansas Department of Education	0	
Total Recommended Expenditures		(16,819,569)
ANTICIPATED BALANCE		\$26,291 **

*FY 98 beginning balance assumes SCC will return to the "mother fund" during FY 97 \$161,474 from prior, prior year encumbrance cancellations.

**KWA recommends the available balance be appropriated for public information and education.

RECOMMENDATIONS FOR IMPLEMENTATION OF THE KANSAS WATER PLAN
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RECEIPTS AND TRANSFERS OUT SUMMARY

TABLE 2 -- STATE WATER PLAN "MOTHER" FUND (2623-2700)

	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	
	Actual	Actual	Actual	Actual	Projected	Agency Cash Request	KWA RECOM.
BEGINNING BALANCE	\$784,336	\$857,433	\$629,172	\$652,358	\$338,623	(\$95,855)	(\$95,855)
RECEIPTS:							
Dept. of Revenue:							
Municipal (5906)	3,128,802	3,010,492	3,339,531	3,292,606	3,426,804	3,390,558	3,390,558
Industrial (5907)	883,640	868,229	981,224	1,128,911	1,129,006	1,135,000	1,135,000
Stockwater (5908)	267,852	120,012	145,485	241,777	286,880	232,965	232,965
Dept. of Agriculture:							
Fertilizer Fee (2010)	2,268,457	2,535,750	2,592,587	2,504,117	2,345,070	2,345,070	2,345,070
Pesticide (2111)	788,200	817,015	824,900	860,000	845,000	830,000	830,000
Health & Environment:							
Fines (5409)	57,416	26,699	25,594	9,470	12,000	12,000	12,000
Sand Royalty Fund							
				96,160	288,307	290,650	290,650
Economic Development Initiatives Fund							
	2,000,000	1,980,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
State General Fund							
	5,820,000	5,760,000	5,932,800	6,000,000	6,000,000	6,000,000	6,000,000
Recovery of Prior Year Transfers/Expenditures							
Returned from State Agency			215,569 (1)	23,498 (2)			
Returned from State Agency			663,756 (3)	15,779 (4)	161,474 (5)		
TOTAL FISCAL YEAR RECEIPTS	\$15,214,367	\$15,118,197	\$16,721,446	\$16,172,318	\$16,494,541	\$16,236,243	\$16,236,243
TOTAL AVAILABLE	\$15,998,703	\$15,975,630	\$17,350,618	\$16,824,676	\$16,833,164	\$16,140,388	\$16,140,388
TRANSFERS OUT							
(to the State Water Plan Special Revenue Funds of each of the following):							
State General Fund							
Kansas Department of Health & Environment							
Water Plan Special Revenue Fund (2686)	2,238,333	2,743,933	3,616,661	3,520,943	4,120,000	4,308,941	3,855,164
Kansas Department of Wildlife & Parks							
Water Plan Special Revenue Fund (2303)	1,365,000	995,000	1,074,200	1,050,000	499,203	550,000	50,000
Kansas State Dept. of Agriculture - DWR							
Water Plan Special Revenue Fund (2698)	311,919	600,000	1,217,718	923,182	803,383	862,871	814,722
Kansas State University							
Water Program Fund (2579)					27,507	28,057	
Kansas Water Office							
State Water Plan Fund - KWO Activity (2623)	1,068,000	1,152,981	1,893,035	1,935,471 (2)	1,703,926	3,581,041	2,244,211
State Conservation Commission							
Water Plan Special Revenue Fund (2603)	9,958,018	9,654,544	8,696,646 (1)	8,856,457	9,350,000	11,193,988	8,750,000
Kansas Corporation Commission							
State Water Plan Fund (2143)					400,000	400,000	400,000
University of Kansas							
State Water Plan Dakota Aquifer Study Fund (25)	200,000	200,000	200,000	200,000			
Department of Education							
State Water Plan Fund (2125)					25,000	25,000	
TOTAL TRANSFERS OUT	\$15,141,270	\$15,346,458	\$16,698,260	\$16,488,053	\$16,929,019	\$20,949,898	\$16,114,097
BALANCE FORWARD	\$857,433	\$629,172	\$652,358	\$338,623	(\$95,855)	(\$4,809,510)	\$26,291

(1) SCC returned \$215,569 per H. Sub. for SB 385

(2) KWO returned \$23,498 of this amount to the "mother fund" from prior, prior year encumbrances/balances.

(3) KWO returned \$663,736 received for Sabetha Multipurpose Small Lake

(4) KWO returned \$15,779 from operation and maintenance of reservoirs

(5) SCC return \$161,474 from prior, prior year encumbrances/balances.

FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 3 -- DIVISION OF WATER RESOURCES

	FY 95 ACTUAL	FY 96 ACTUAL	FY 97 ANTIC.	FY 98 REQUEST	FY 98 REC.
Subbasin Management	\$721,045	\$460,789	\$642,228	\$559,054	\$540,000
Interstate Water Issues	\$150,611	\$245,960	\$391,680	\$405,340	\$380,000
Floodplain Management	\$0	\$0	\$59,229	\$53,755	\$50,000

The Authority recommends the agency carryover an anticipated \$155,278 from FY 97 to FY 98 and distribute it to these three programs.

Subbasin Management

Implementation Goal: Complete development of subbasin management plans in priority subbasins by 2002.

The Authority expects the agency will complete plan development in the Rattlesnake Creek Subbasin in FY 1997 and begin implementation in FY 1998. A revised management plan should be completed in the Wet Walnut IGUCA by the start of FY 1998. A management plan for the Pawnee subbasin may be completed at that time as well, however, progress in the Northwest Kansas subbasins will be delayed as the agency fills staff vacancies. Delays may move the endpoint of the implementation goal back another year. At recommended funding levels, the agency should consider deferring installation of additional gages if funds become limiting.

Interstate Water Issues

Implementation Goal: Protect Kansas water interests by resolving interstate water issues with Colorado, Nebraska and the Missouri River Basin, including Indian Tribes and the federal government over 1997-2001.

The Authority expects the agency will emphasize its mediation efforts to resolve the issues of the Republican River Compact. Activities in Northwest Kansas associated with the Republican River Compact should

be coordinated with the Subbasin Management Team working in the Beaver, Sappa, and Prairie Dog subbasins. Efforts in the Missouri River Basin should be nearing completion, although these tasks have only minimal effect on this program and staff. As funds become available in the Interstate Water Litigation Fund, the agency should explore funding this program from that source after FY 1998.

Floodplain Management

Implementation Goal: Assist communities in developing and implementing comprehensive management strategies to address priority areas with high flood damage potential by 2001.

The Authority understands that a preliminary listing of priority flood damage areas has been developed by the state agencies. The Division should complete filling this position in FY 1997 and begin to determine the technical assistance needs within the priority areas, including mapping studies of their floodplains. Requests for mapping assistance should be made in FY 1998 during preparation of the FY 1999 Budget.

FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 4-- STATE CONSERVATION COMMISSION

	FY 95 ACTUAL	FY 96 ACTUAL	FY 97 ANTIC.	FY 98 REQUEST	FY 98 REC.
Aid to Conservation Districts	\$981,646	\$1,006,456	\$1,008,892	\$1,016,500	\$ 0
Watershed Dam Construction Assistance	\$1,384,298	\$891,858	\$1,071,181	\$1,050,000	\$850,000
Riparian and Wetland Protection	\$48,265	\$97,032	\$225,758	\$100,000	\$100,000
Little Sugar Creek MPSL	\$64,788	\$645,604	\$800,000	\$800,000	\$517,900
Water Resources Cost Share	\$5,427,151	\$4,997,200	\$5,527,535	\$5,200,000	\$4,800,000
NPS Pollution Control	\$1,412,844	\$2,177,623	\$2,686,418	\$3,027,488	\$2,482,100

The Authority recommends returning \$161,474 in unspent encumbrances from fiscal years prior to Fiscal Year 1996 to the State Water Plan "Mother" Fund in FY 1997 to relieve potential negative balances anticipated by the end of that year. In addition, the Authority recommends that the **Aid to Conservation Districts** be funded from State General Funds, if possible, or to utilize any returned encumbered funds from the Non-Point Source Pollution or Water Resources Cost-Share programs available by FY 1998 before reducing Authority FY 1998 recommendations for other programs.

Watershed Dam Construction Assistance
Implementation Goal: Develop and implement a balance of structural and nonstructural measures within watershed district general plans for priority watersheds over FY 1997-2001.

The Authority notes that a preliminary list of priority flood damage areas has been developed and recommends the agency give priority in funding any projects which lie within those identified areas. The agency should utilize a portion (\$50,000) of the recommended funding for watershed planning, including further study on the Neosho Madtom and incorporation of non-structural components into watershed general

plans. Funding of such components might begin in 1998 on a limited basis and the agency should request additional funding in FY 1999.

Riparian and Wetland Protection
Implementation Goal: Develop watershed oriented protection plans in priority areas and implement projects to protect and restore riparian and wetland areas under those plans by 2001.

The Authority recommends the agency should focus projects within watersheds to realize cumulative benefits. Priority watersheds should include those associated with the Governor's Water Quality Initiative, other priority water quality protection areas,

and priority flood damage watershed areas.

Little Sugar Creek Multipurpose Small Lake

Implementation Goal: Incorporate small lakes into basin-specific strategies for public water supply, flood protection, and recreation.

The Authority recommends the agency complete funding construction of the Little Sugar project in FY 1998 at a size adequate to provide the recommended 1.7 MGD supply anticipated to be needed in the Linn County vicinity in the future. The reduction in funding recommendation reflects the anticipated downsizing of the original project (2.5 MGD) to the recommended size. No other projects should be initiated until a review of the direction, policies and procedures of the program is completed.

Water Resources Cost Share Program

Implementation Goal: Implement practices to address priority water resource concerns of water quality and irrigation water use over 1997-2001.

The Authority recommends the program continue to support its irrigation initiative of financially assisting efficient irrigation systems in areas of high water use, particularly within subbasin management areas identified by the Division of Water Resources. The agency is encouraged to continue to target best management practice implementation in the priority areas of the Governor's Water Quality Initiative (Tuttle Creek and Perry drainages) as well as above Hillsdale and Cheney Lakes.

Non-Point Source Pollution Control

Implementation Goal: Emphasize local management projects which address nonpoint source pollution concerns in priority areas.

The Authority recommends the agency give priority consideration to project work plans within the identified water quality areas above Tuttle Creek, Perry, Hillsdale, and Cheney Lakes. Reallocated funds from previous projects should be redirected to unfunded project work plans within those areas. Enhancement of \$282,100 over current service funding is recommended to initiate implementation of work plans in up to 40 additional counties throughout the state in FY 1998.

FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 5 -- KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

	FY 95 ACTUAL	FY 96 ACTUAL	FY 97 ANTIC.	FY 98 REQUEST	FY 98 REC.
PWS Outreach	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000
Environ. Remed.	\$1,487,162	\$1,119,245	\$1,800,000	\$1,818,277	\$1,500,000
Local Environ. Protection	\$1,727,667	\$1,795,268	\$2,000,000	\$2,000,000	\$2,000,000
NPS Tech. Assist.	\$379,724	\$380,640	\$620,000	\$635,500	\$500,000

The Authority recommends the agency carryover an anticipated \$344,836 from FY 1997 to FY 1998 and distribute it to these three programs for funding in addition to the new transfers necessary to meet the FY 1998 recommendations.

Public Water Supply Outreach

Implementation Goal: By the year 2001, improve system management and efficiency of small public water suppliers over 1995 conditions.

The Authority expects the agency will continue to contract with the Kansas Rural Water Association to carry out water supply and distribution system improvements through on-site assistance. The Agency is encouraged to use its Public Water Supply Advisory Committee, re-established by the 1996 Legislature, to examine the scope of this program and performance review in 1997 and 1998.

Environmental Remediation

Implementation Goal: Complete all comprehensive investigations underway for State Water Plan sites in 1996 by 2001.

The Authority encourages the agency to continue to develop a remediation revolving loan fund for small communities to use to clean up activities. Priority should be given to remediating any sites located with state identified priority water quality protection areas. The Authority is interested in standards developed by the agency for long-term monitoring of sites and to process removal of sites from the contaminated sites list.

Local Environmental Protection

Implementation Goal: Develop comprehensive local protection plans to protect local valuable and vulnerable water resources by 2001.

The Authority anticipates that over 100 counties will be participating in the program by 1998. The agency is encouraged to work with counties to complete adoption of environmental codes, if need be, withholding funding in FY 1998 from counties refusing to adopt any codes. The Authority wishes local protection plans begin to be developed through this program, utilizing local coordinating committees. The agency should investigate using an incentive of increased base funds to those programs which initiate such plans, in lieu of target funds. The Authority recommends that \$1.9 million of this funding be used for base support and the remaining \$100,000 dedicated to continuation of wellhead protection efforts in FY1998.

**Non-Point Source Pollution
Technical Assistance**

Implementation Goal: Increase the base of information and awareness to implement best management practices in priority water quality areas over 1997-2001.

The Authority recommends that projects associated with the Governor's Water Quality Initiative retain high priority for funding in FY 1998 through this program and the Section 319 Grants. Funding should

RECOMMENDATIONS FOR IMPLEMENTATION OF THE KANSAS WATER PLAN
THE KANSAS WATER AUTHORITY

be directed toward identification and monitoring of critical watersheds and protection practices within those areas. Local administrative and logistic functions should be funded through other means. The agency District Offices should form the primary liaison with local efforts to combat pollution, increase awareness, and coordinate activities with conservation and watershed districts.

RECOMMENDATIONS FOR IMPLEMENTATION OF THE KANSAS WATER PLAN
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KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 6 – KANSAS WATER OFFICE

	FY 95 ACTUAL	FY 96 ACTUAL	FY 97 ANTIC.	FY 98 REQUEST	FY 98 REC.
Weather Modification	\$0	\$190,000	\$92,000	\$390,000	\$390,000
Technical Assistance to Users	\$170,180	\$205,652	\$226,015	\$425,000	\$225,000
PMIB Loan	\$0	\$0	\$0	\$105,168	\$105,168
MOU Storage O&M	\$59,790	\$166,766	\$276,796	\$290,032	\$290,032
Milford and Perry	\$0	\$0	\$0	\$1,096,500	\$0
Data Access and Support Center	\$120,000	\$120,000	\$132,000	\$140,000	\$135,000
GIS Database and Manager	\$361,274	\$314,821	\$365,317	\$312,536	\$312,536
Basin Assessment	\$0	\$0	\$20,000	\$55,330	\$40,000
P.W.S. Viability	\$0	\$20,017	\$10,157	\$10,000	\$10,000
Stream Gaging	\$295,925	\$302,175	\$331,275	\$350,000	\$346,000
Watershed Dam Hydrology	\$0	\$18,000	\$45,000	\$55,000	\$55,000
Neosho Study	\$154,000	\$50,000	\$0	\$56,000	\$50,000
Republican Study	\$140,300	\$125,000	\$70,000	\$20,000	\$20,000
Equus Beds Mineral Intrusion	\$0	\$25,000	\$50,000	\$50,000	\$40,000
Upper Ark Water Quality	\$0	\$35,000	\$75,000	\$75,000	\$75,000
Gov. Water Quality Initiative	\$0	\$248,144	\$244,400	\$25,000	\$25,000
WQ Planning Assistance	\$0	\$0	\$20,000	\$20,000	\$20,000
Feedlot Water Quality	\$0	\$0	\$0	\$100,000	\$100,000
Project WET (Environmental Education)	\$0	\$0	\$50,000	\$50,000	\$50,000
Public Information	\$0	\$14,238	\$20,000	\$30,000	\$30,000

The Authority recommends the agency carryover an anticipated \$74,525 from FY 1997 to FY 1998 to assist funding of basin assessment, water quality planning assistance, and the Governor's Water Quality Initiative during that year.

Weather Modification

Implementation Goal: Expand weather modification operations to cover Northwest Kansas in calendar year 1997 and reduce annual crop hail damage in Western Kansas by 25 percent.

The Authority recommends a major expansion of the program into Northwest Kansas with a match of \$230,000 in county funds (23 counties at \$10,000/county) and \$160,000 matching funds provided by Groundwater Management District Nos. 1 and 4. The agency should continue to establish agreements with Colorado for cloud seeding west of the stateline as well as document the drift of benefits from the seeding area eastward across the participating counties.

Technical Assistance to Water Users

Implementation Goal: Reduce the number of public water suppliers with over 30 percent unaccounted water to 25 or less and the number of irrigation diversions that exceed their regional AF/AC use of water by over 100 percent and their regional AF/AC standard to 250 or less by 2001.

The Authority recommends the agency continue to work with users and groundwater management districts in providing technical assistance to high water users, particularly those in areas of decline in the High Plains Aquifer and subbasin management areas, such as the Rattlesnake Creek Subbasin, as well as users participating in state administered water supply programs

Storage Acquisition

Implementation Goal: Manage the acquired storage in federal reservoirs to meet future water supply needs after 2001.

The Authority recommends the first installment of repayment to the Pooled Money Investment Board for its loan to acquire the final increments of storage be made in FY 1998 (\$105,168). Additionally, the agency should make its payment for operation and maintenance costs associated with the storage acquired under the 1985 Memorandum of Understanding for FY

1998 (\$290,032). The Authority does not recommend committing to the first of 50 annual payments necessary to secure control of the remaining uncommitted storage in Milford and Perry Lakes, deferring the issue until the Corps of Engineers considers using that storage for navigation flow support along the Missouri River. The agency should embark on reevaluation of existing reservoir management policies, complete all analysis of yield from state controlled storage by 1998 and incorporate regional public water supply information into reservoir policy development in FY 1998.

Geographic Information System (GIS)

Implementation Goal: Coordinate the development, update, and maintenance of core GIS databases while transitioning GIS applications to agency programs before 2001.

The Authority recommends level funding of high priority database development and administration (\$260,000) and continued support of the GIS Manager position within the agency (\$52,536). Additionally, funding for the Data Access and Support Center at Kansas Geological Survey should be increased over 1997 funding levels in anticipation of increased demand on database usage. The agency should initiate a revised process to fund GIS applications through agency programs in FY 1999.

Basin Assessment

Implementation Goal: Compile available water resource information for the twelve river basins, disseminate information to other agencies and the public, and use that information to begin revisions to basin plans in 2001.

The Authority expects that two basin assessments should be complete in 1997 and at least four additional basins will be done in 1998. The agency should develop regional atlases for Northeast and Southwest Kansas in 1998, using the information compiled through basin assessments.

Public Water Supply Strategies

Implementation Goal: Develop regional water supply strategies by 2001 to ensure adequate water supplies and identify priority areas for state financial and technical assistance programs.

The Authority recommends that supply and demand analyses be completed in 1997 and regional strategies for Northeast Kansas, the Marais des Cygnes and the Walnut basins should be developed in 1998. Additional demand analyses for four additional basins should be conducted in 1998. All analyses and regional strategies should be complete in the year 2000.

Stream Gaging

Implementation Goal: Maintain the existing stream gaging network and incorporate coverage of subbasins of Western Kansas by 2001.

The Authority recommends funding the existing network with an anticipated 4 percent increase in costs seen in FY 1998. The Authority also recommends deferring the addition of any new gages until after FY 1998.

Research

Implementation Goal: Initiate necessary statewide water research for agency planning and program management prior to 2001.

The Authority recommends funding of five ongoing research projects tied to implementation of basin plans in FY 1998: (1) assessment of hydrologic impact of watershed dams on the surface and ground water supplies of the Wet Walnut IGUCA (\$55,000; probable conclusion in 1999); (2) impacts of high flows and flood releases on channel stability along the lower reaches of the Neosho River (\$50,000; conclusion in 1999); (3) assessment of the water budget for flows in the Republican River above Concordia (\$20,000; conclusion in 1998); (4) investigation of mineral intrusion into the Equus Beds Aquifer along the Arkansas River between Hutchinson and Nickerson (\$40,000, probable conclusion in 1999); and (5) assessment of the impact of poor quality water along the Arkansas River from Colorado on the ground water supplies of the river alluvium and High Plains Aquifer (\$75,000; probable conclusion in 2000). Additionally, the Authority recommends initial funding from the State Water Plan Fund for statewide research

addressing water quality impacts of confined animal feeding operations (\$100,000; probable conclusion in 2001).

Water Quality Planning Assistance

Implementation Goal: Implement comprehensive water quality protection strategies in state water quality priority areas by 2001.

The Authority recommends continued planning assistance to local users in the areas associated with the Governor's Water Quality Initiative, including information development and continued monitoring (\$25,000). Additionally, the agency is encouraged to begin working with local users in priority areas in the Lower Arkansas or Marais des Cygnes basins to develop plans for water quality protection in FY 1998 (\$20,000).

Public Information and Education

Implementation Goal: Deliver accurate, timely information to the public on Kansas water resources, the Kansas Water Plan and the planning process through agency outreach activities and coordination and assistance of educational information groups and individuals over 1997-2001.

The Authority recommends funding the second year of introducing Project WET into Kansas school curriculum through the Kansas Association of Conservation and Environmental Education in FY 1998 (\$50,000). The Authority also encourages the agency expand efforts to expose the Kansas Water Plan and its benefits to more audiences through publications, forums, and displays at the State Fair (\$30,000).

FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 7 -- KANSAS STATE UNIVERSITY

	FY 95 ACTUAL	FY 96 ACTUAL	FY 97 ANTIC.	FY 98 REQUEST	FY 98 REC.
Irrigation Research	\$0	\$0	\$27,507	\$28,057	\$0

Irrigation Research

Implementation Goal: None

The Authority recommends that funding for the research technician at the Garden City Experiment Station to evaluate irrigation efficiency on sandy soils overlying the Ogallala Aquifer come from the State General Fund. While this endeavor may be beneficial to addressing the issue of ground water declines in Southwest Kansas, the Authority needs more information on how this request relates to guidelines in the *Kansas Water Plan*. The University needs to become involved in the Annual Implementation Process to assist the Authority in directing appropriate expenditures in this matter.

FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 8 -- KANSAS CORPORATION COMMISSION

	FY 95 ACTUAL	FY 96 ACTUAL	FY 97 ANTIC.	FY 98 REQUEST	FY 98 REC.
Oil and Gas Remediation	\$0	\$0	\$400,000	\$400,000	\$400,000

Oil and Gas Remediation

Implementation Goal: Remediate the highest priority contaminated sites of the 109 sites referenced by S.B. 755 which pose the greatest threats to fresh and usable waters, both surface and ground water, before the year 2002.

The Authority recognizes that the funding is pursuant to law passed by the 1996 Legislature and requests the agency report on its process of setting priorities among the 109 sites. The agency is encouraged to use the Annual Implementation Plan to schedule clean up

activities and define priority sites relative to municipal water supply, priority water quality protection areas, domestic supplies, and irrigation supplies.

FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 9 -- KANSAS DEPARTMENT OF EDUCATION

	FY 95 ACTUAL	FY 96 ACTUAL	FY 97 ANTIC.	FY 98 REQUEST	FY 98 REC.
Environmental Education	\$0	\$0	\$25,000	\$25,000	\$0

Environmental Education

Implementation Goal: None

The Authority recommends using State General Funds for the ongoing expenditure of operations of the Kansas Association of Conservation and Environmental Education. The Authority notes that it has recommended using State Water Plan Funds for Project WET, which is administered by the Kansas Association for Conservation and Environmental Education (KACEE), and believes that other funds should be used for ongoing support of the organization itself.

FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 10 – KANSAS DEPARTMENT OF WILDLIFE AND PARKS

	FY 95 ACTUAL	FY 96 ACTUAL	FY 97 ANTIC.	FY 98 REQUEST	FY 98 REC.
Stream Monitoring	\$40,991	\$108,988	\$84,938	\$50,000	\$50,000
Miami SFL Repair	\$0	\$0	\$0	\$500,000	\$0
Kansas River Rec.	\$0	\$0	\$0	\$0	\$130,833

The Authority recommends the agency carryover an anticipated \$130,833 from FY 1997 to FY 1998 from the Conservation Easement program to initiate activities of installing access ramps to the Kansas River as recommended by the agency recreation plan.

Stream Monitoring

Implementation Goal: *Acquire information identifying protection or restoration needs of priority water resources by the year 2001.*

The Authority recommends the agency continue biological assessment in the Kansas-Lower Republican Basin associated with the Governor's Water Quality Initiative. At the requested and recommended funding level, monitoring efforts in the Marais des Cygnes and Lower Arkansas should be deferred to after FY 1998.

lack of historic expenditures relative to acquiring conservation easements since 1993. The Authority recommends the agency reprogram, at this time, any and all uncommitted funds for easements to initiate installation of river access ramps along the Kansas River at St. George, Lecompton, or Manhattan during Fiscal Years 1997 and 1998.

Miami State Fishing Lake Repair

Implementation Goal: *None*

The Authority recommends funding of this item be deferred until a potential policy subsection has been developed for the *Kansas Water Plan*.

Kansas River Recreation

Implementation Goal: *Implement developed recreation access plans for priority reaches of the Kansas, Missouri, and Arkansas rivers by 2001.*

The Authority notes the agency did not request funding for this program. However, there is a

RECOMMENDATIONS FOR IMPLEMENTATION OF THE KANSAS WATER PLAN
THE KANSAS WATER AUTHORITY

FY 1998 KANSAS WATER AUTHORITY FUNDING RECOMMENDATIONS

TABLE 11

	Agency Requests 9/15/96 FY 1997	KWA Rec. 10/24/96 FY 1997	Agency Requests 9/15/96 FY 1998		KWA Rec. 10/24/96 FY 1998		Total KWA Recommendation
	Total Projected Expenditures	Total Projected Expenditures	New \$ Transfers	Carryover	Total Agency Requests	New \$ Transfers	
Department of Agriculture							
Floodplain Management	59,229	59,229	53,755		53,755		50,000
Interstate Water Issues	391,680	391,680	405,340		405,340	50,000	380,000
Sub-basin Reservoir Management Plan	642,228	642,228	403,776	155,278	559,054	384,722	155,278
Non Point Source Pollution-Statistics Division	20,000	20,000					50,000
Water Rights Conversion	37,048	37,048					
Total-Department of Agriculture	\$1,150,185	\$1,150,185	\$862,871	\$155,278	\$1,018,149	\$814,722	\$155,278
State Conservation Commission							
Water Resources Cost-Share	5,327,535	5,327,535	5,200,000		5,200,000	4,800,000	4,800,000
Multi-Purpose Small Lakes	800,000	800,000	800,000		800,000	517,900	517,900
Non-Point Source Program	2,688,418	2,688,418	3,027,488		3,027,488	2,482,100	2,482,100
Watershed Dam Construction	1,071,181	1,071,181	1,050,000		1,050,000	800,000	800,000
Watershed Planning Assistance						50,000	50,000
State Aid to Conservation Districts	1,008,892	1,008,892	1,016,500		1,016,500		
Riparian and Wetlands Program	228,758	228,758	100,000		100,000	100,000	100,000
Total-Conservation Commission	\$11,122,784	\$11,122,784	\$11,193,988		\$11,193,988	\$8,760,000	\$8,760,000
Health and Environment							
Contamination Remediation	1,800,000	1,800,000	1,790,051	28,228	1,818,277	1,471,774	28,228
Local Environmental Aid	2,000,000	2,000,000	1,985,288	4,732	2,000,000	1,995,288	4,732
Public Water Supply Outreach	200,000	200,000	200,000		200,000	200,000	200,000
Non-Point Source Program	820,000	820,000	323,822	311,878	635,500	188,122	311,878
Total-Health and Environment	\$4,820,000	\$4,820,000	\$4,308,941	\$344,836	\$4,653,777	\$3,855,164	\$344,836
University of Kansas							
Dakota Aquifer Study	8,030	8,030					
Total-University of Kansas	\$8,030	\$8,030					
Kansas Water Office							
Neosho Sub-basin Plan			56,000		56,000	50,000	50,000
Republican Sub-basin Evaluation	70,000	70,000	20,000		20,000	20,000	20,000
Technical Assistance to Water Users	226,015	226,015	425,000		425,000	225,000	225,000
Basin Assessment	20,000	20,000	55,330		55,330	10,000	30,000
Environmental Education	50,000	50,000	50,000		50,000	50,000	50,000
Water Quality Planning Assistance				20,000	20,000		20,000
Stream Gauging Program	331,275	331,275	350,000		350,000	348,000	348,000
GIS Data Access and Support Center	132,000	132,000	140,000		140,000	135,000	135,000
Public Water Supply Viability	10,157	10,157	10,000		10,000	10,000	10,000
GIS Data Base Dev./GIS Manager	365,317	365,317	312,536		312,536	312,536	312,536
Public Information	20,000	20,000	30,000		30,000	30,000	30,000
Storage Acquisition/O&M-Milford and Perry			1,096,500		1,096,500		
Salt Water Intrusion in Equus Beds	50,000	50,000	50,000		50,000	40,000	40,000
MOU Storage Acquisition O&M	276,796	276,796	290,032		290,032	290,032	290,032
PMIB Loan Payment for MOU Storage			105,168		105,168	105,168	105,168
Weather Modification	92,000	92,000	390,000		390,000	390,000	390,000
Water Quality in the Upper Arkansas	75,000	75,000	75,000		75,000	75,000	75,000
Water Quality Planning Assistance	20,000	20,000					
Watershed Dam Hydrology Impact Study	45,000	45,000	475	54,525	55,000	55,000	55,000
Governor's Water Quality Initiative	244,400	244,400	25,000		25,000	475	24,525
Feedlot Water Quality			100,000		100,000	100,000	100,000
Total-Kansas Water Office	\$2,027,960	\$2,027,960	\$3,581,041	\$74,525	\$3,655,566	\$2,244,211	\$74,525
Kansas State University							
Ogallala Aquifer Study	27,507	27,507	28,057		28,057		
Total-Kansas State University	\$27,507	\$27,507	\$28,057		\$28,057		
Kansas Corporation Commission							
Abandoned Oil and Gas Wells	400,000	400,000	400,000		400,000	400,000	400,000
Total-Kansas Corporation Commission	\$400,000	\$400,000	\$400,000		\$400,000	\$400,000	\$400,000
Department of Education							
Environmental Education	25,000	25,000	25,000		25,000		
Total-State Department of Education	\$25,000	\$25,000	\$25,000		\$25,000		
Department of Wildlife and Parks							
Cheyenne Bottoms	507,366	507,366					
Rip Rap/Cheney Reservoir	31,239	31,239					
Dam Maintenance and Repair at State Fishing Lakes			500,000		500,000		
Neosho Madtom/Stream Monitoring	53,699	53,699	50,000		50,000	50,000	50,000
Wetland Protection	130,833						
Governor's Water Quality Initiative							130,833
Kansas River Recreation							130,833
Total-Wildlife and Parks	\$723,137	\$592,304	\$550,000		\$550,000	\$50,000	\$130,833
Total Transfers/Expenditures	\$20,104,603	\$19,973,770	\$20,949,898	\$574,639	\$21,524,537	\$16,114,097	\$705,472
Total KWA Recommendation							\$16,819,569

STATE OF KANSAS



Bill Graves, Governor

KANSAS WATER OFFICE
Al LeDoux
Director

Suite 300
109 SW Ninth
Topeka, Kansas 66612-1249

913-296-3185
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TTY 913-296-6604

KANSAS GEOGRAPHIC INFORMATION SYSTEMS POLICY BOARD

The Kansas Geographic Information System (GIS) Policy Board is established by Executive Order # 95-180 as a standing committee of the Kansas Information Resources Council. The Board is administratively housed in the Kansas Water Office and is charged with the following:

- a) Establish, and biennially update, a strategic management plan to guide the development and implementation of GIS technology for the best value and benefit of the citizens of Kansas.
- b) Develop and maintain policies, standards, guidelines, and strategies which emphasize cooperation and coordination among agencies, organizations, and government entities to maximize GIS cost effectiveness and value to the state.
- c) Establish public and private partnerships throughout Kansas to maximize value, minimize cost, and avoid redundant activities in the development and implementation of GIS technology.
- d) Coordinate, review, and provide recommendations on GIS programs and investments and provide dispute resolution among geographic information systems partners.

Board membership is composed of representatives from the following agencies, governmental entities, and private sector organizations:

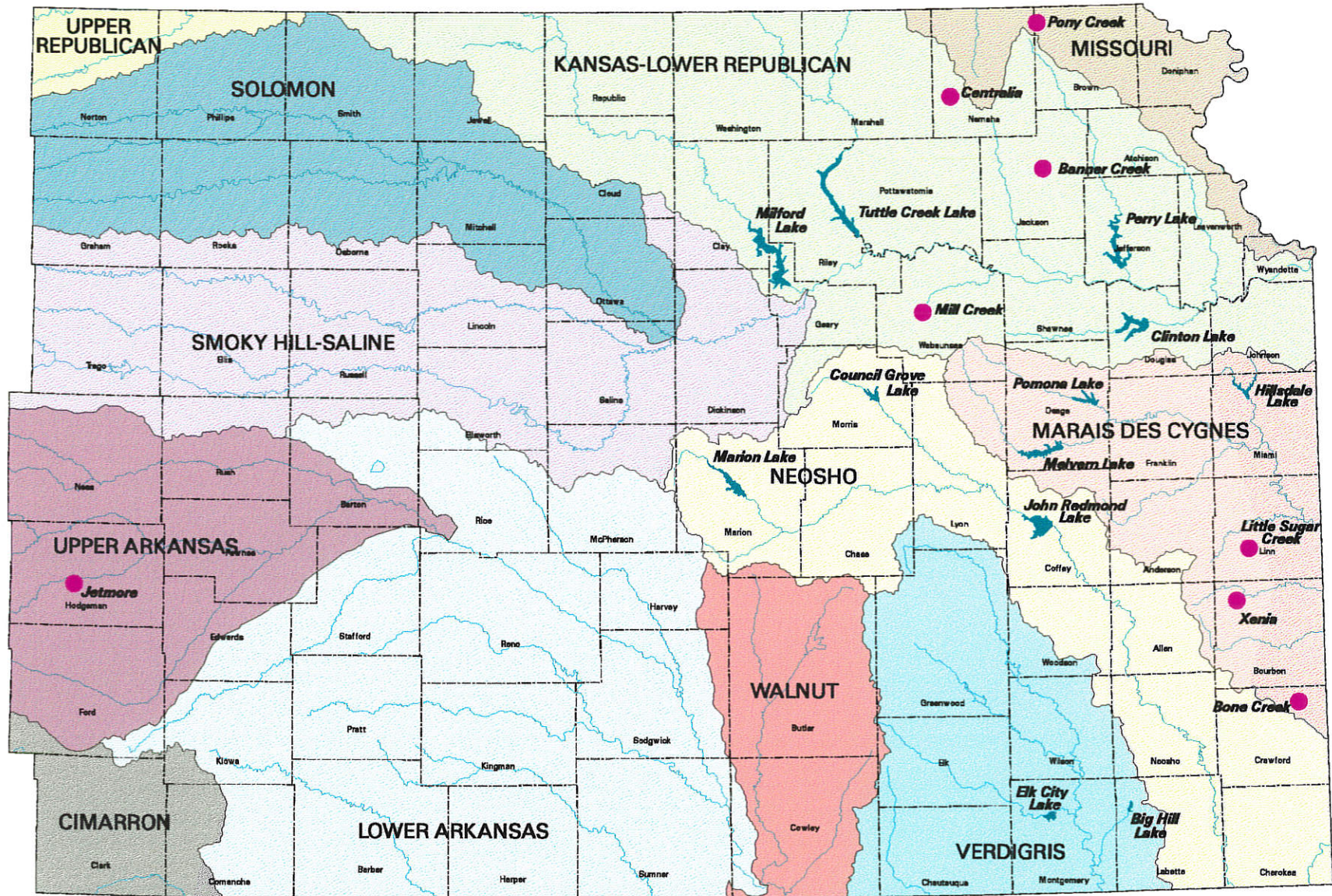
Kansas Water Office
Department of Agriculture
Department of Health and Environment
Department of Transportation
State Conservation Commission
Kansas Biological Survey
City of Hays
Butler County
Johnson County
Southwestern Bell Telephone
USDA/Natural Resources Conservation Service

Office of the Chief Information Architect
Kansas Corporation Commission
Department of Revenue
Department of Wildlife and Parks
Kansas Geological Survey
Kansas State University
Dodge City
Miami County
Western Resources, Inc.
KS. Groundwater Management District Assoc.
United States Geological Survey/WRD

*House Environment
1-16-97
Attachment 7*

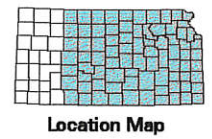
etc.

Kansas Water Marketing, Water Assurance District and Multipurpose Small Lakes Program Lakes



January 1997

- Water Marketing and Water Assurance District Lakes
- Multipurpose Small Lakes Program Projects

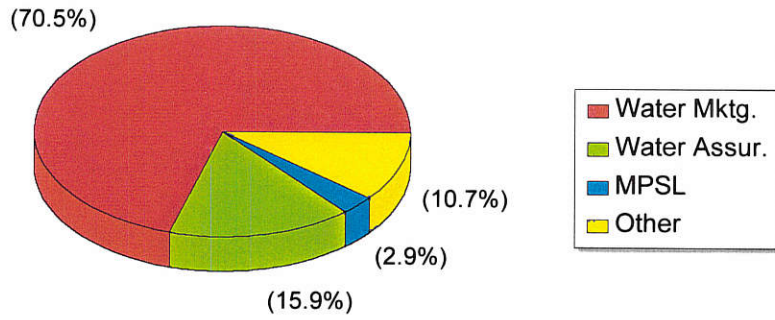


Kansas Water Office
 Information Technology and
 Geographic Information Systems
 109 SW 9th St, Suite 300
 Topeka, Kansas 66612
 Phone: (913)298-3185

House Environment
 1-16-97
 Attachment 8

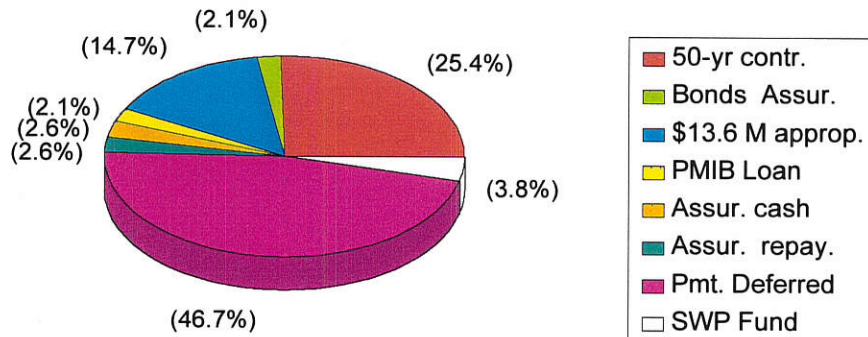
State Controlled Storage Space

922,076 Acre-Feet



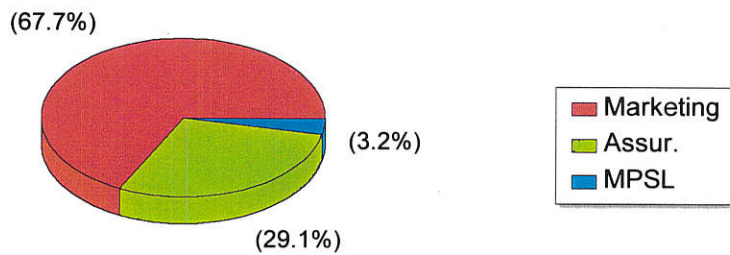
Funding Sources

Total Cost \$91,895,647



Revenue Collected to Date

\$20,454,774 Total



*House Environment
1-16-97
Attachment 9 etc.*

House Concurrent Resolution No. 5010

A Concurrent Resolution commending the Kansas water authority and Kansas water office in the preparation of the state water plan.

WHEREAS, The individual members of the Kansas water authority have devoted much time studying and evaluating water issues in order to prepare a state water plan; and

WHEREAS, The Kansas water authority, with the assistance of the Kansas water office, has prepared over the past two years, a document known as the state water plan; and

WHEREAS, The state water plan, as presented to the legislature by the Kansas water authority proposes a comprehensive, continuous, and coordinated water planning process; and

WHEREAS, The state water plan contains detailed proposals concerning the management, conservation, quality and development of the state's water resources; and

WHEREAS, The Kansas water office on behalf of the Kansas water authority provided the legislature with a thorough and excellent briefing of the state water plan; Now, therefore,

Be it resolved by the House of Representatives of the State of Kansas, the Senate concurring therein: That the legislature expresses its appreciation to the members of the Kansas water authority and the staff of the Kansas water office for their role in the development of the state water plan; and

Be it further resolved: That the legislature endorses the comprehensive, continuous and coordinated water planning process initiated by the Kansas water authority with the assistance of the Kansas water office; and

Be it further resolved: That the legislature believes that the submission of the state water plan represents an important step in the planning process; and

Be it further resolved: That the legislature requests that the state agencies which are authorized to manage the waters of the state to submit to the legislature any bills, resolutions or requests for appropriations designed to implement the various segments of the state water plan as submitted by the Kansas water authority; and

Be it further resolved: That the legislature requests the assistance of the Kansas water authority and the Kansas water office in reviewing the long range goals and objective of the state water planning process.

Be it further resolved: That the secretary of state be directed to send an enrolled copy of this resolution to the director of the Kansas water authority, each member of the Kansas water authority and to the director of the Kansas water office and the staff of the Kansas water office.

I hereby certify that the above CONCURRENT RESOLUTION originated in the House, and was adopted by that body.

February 18, 1985

Mike Nardor
Speaker of the House.

Genevieve Secord
Chief Clerk of the House.

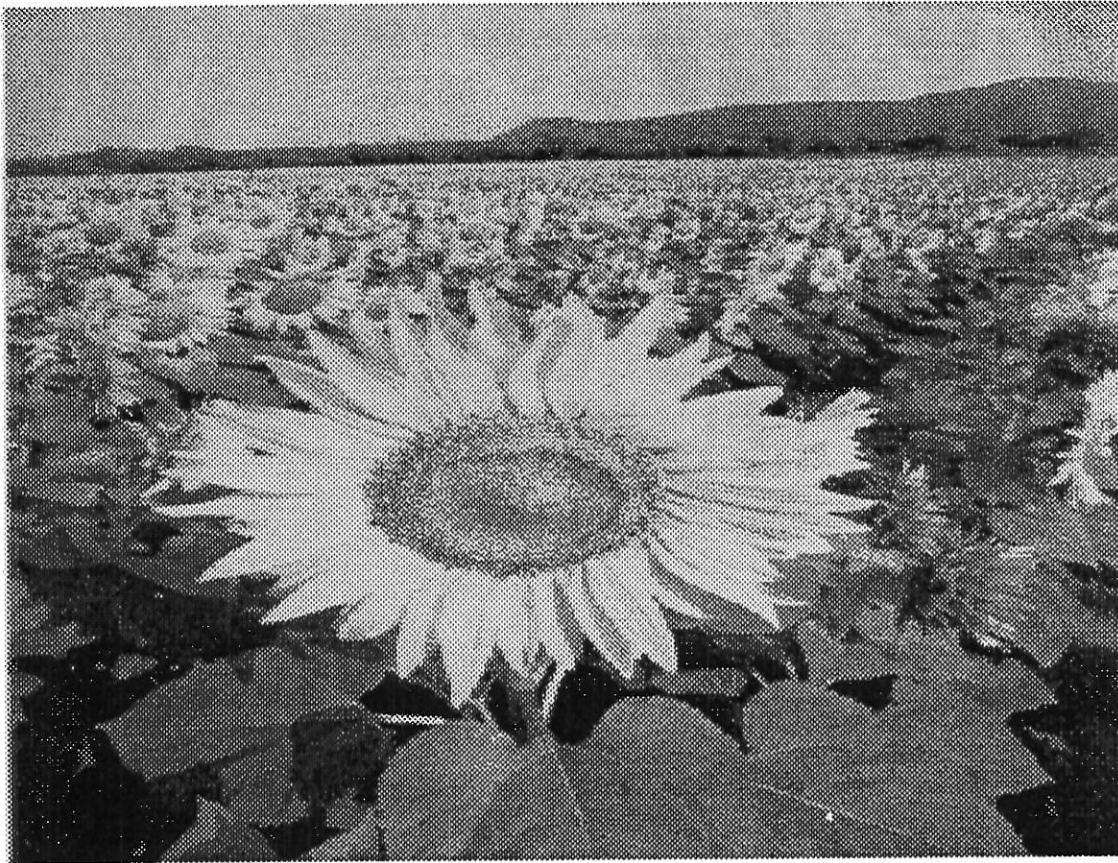
Adopted by the SENATE

March 6, 1985
Robert W. Jelliffe
President of the Senate.

Lee Kenney
Secretary of the Senate.

*House Environment
1-16-97
Attachment 10*

1995 KANSAS MUNICIPAL WATER USE



**“THE RIGHT TO USE WATER BEARS THE
RESPONSIBILITY TO USE IT WISELY”**

Kansas Water Office
109 S.W. 9th St., Suite 300
Topeka, Kansas 66612
(913) 296-3187

Division of Water Resources
109 S. Kansas Ave., Second Floor
Topeka, Kansas 66612
(913) 296-3717

Equal Opportunity Employers

*House Environment
1-16-97
Attachment II*

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INTRODUCTION

The tables and charts shown in this publication were prepared using data from annual Municipal Water Use Reports submitted to the Division of Water Resources, Kansas Department of Agriculture, by public water suppliers with water rights. All permitted water users are required as a condition of the Water Appropriations Act to maintain accurate records of the quantity of water diverted each calendar year. Similar water use reports are submitted to the Kansas Water Office by participants in the Water Marketing Program. In addition to reporting the amount of water diverted, public water suppliers also provide information on water purchased from and sold to other suppliers, sales to retail customers, metered free and unaccounted for water, population served, and current water rates. The Kansas Water Office and the Division of Water Resources would like to express their appreciation to all of the municipal water suppliers for the data that they provide each year.

This publication provides information on 637 public water suppliers that served more than 15 customers on a year-round basis and completed a 1995 Municipal Water Use Report. Included are cities and towns, self-supplied housing subdivisions, rural water districts, and mobile home parks. Each report received an extensive review to ensure that the data provided was as complete and accurate as possible. This review process involved using follow-up letters, phone calls, and site visits to correct incomplete or inaccurate data on the Municipal Water Use Reports. If the information provided was correct but atypical of similar public water suppliers, the reasons for the dissimilarities were determined.

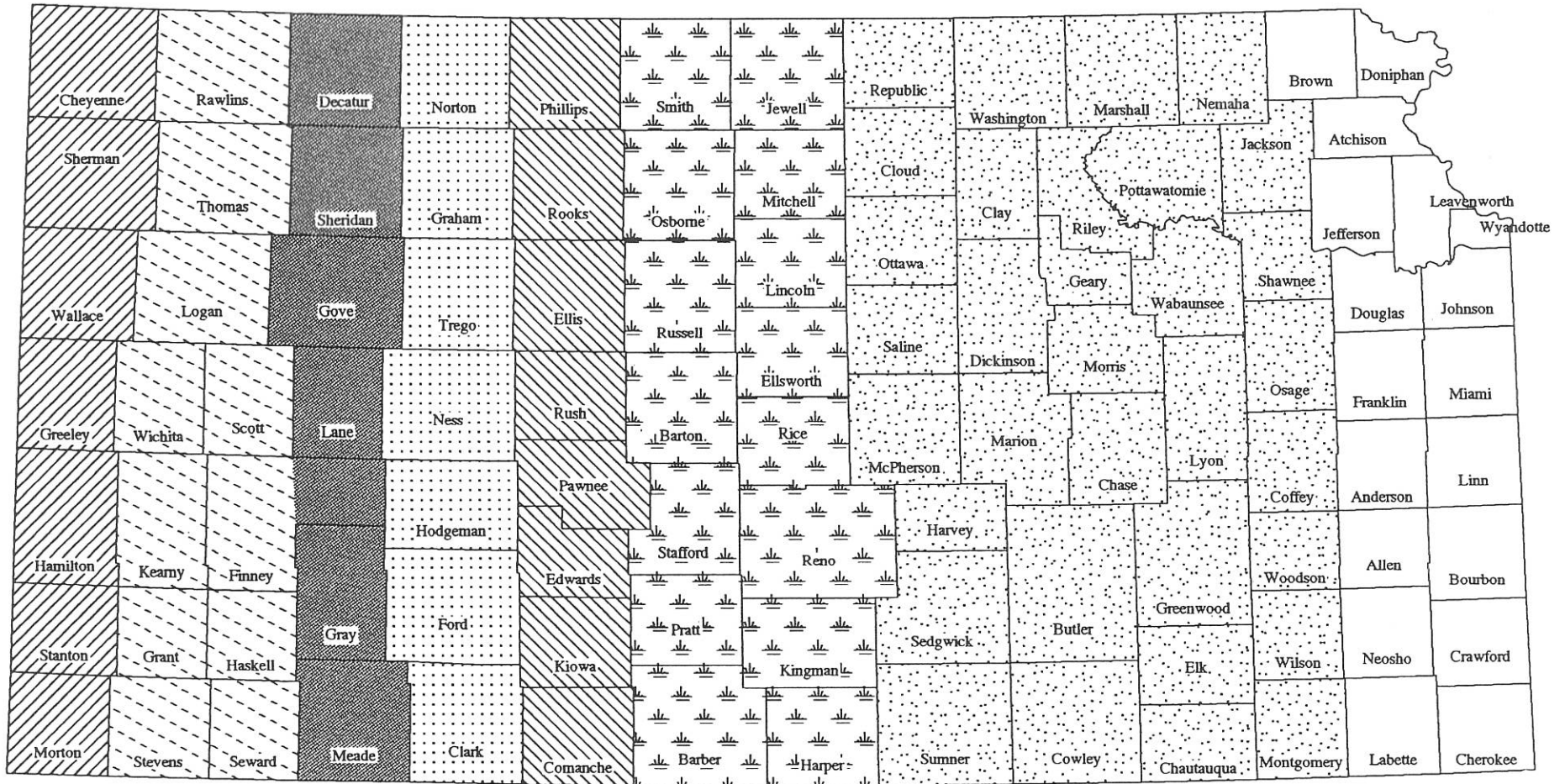
This report shows comparative water use by the various public water suppliers in Kansas in terms of per capita consumption. Gallons per capita per day (gpcd) usage increases from east to west across the state primarily due to outside water use, and is heavily influenced by the amount of summer rainfall and by water rates. The state has been separated into eight geographical regions, shown in Figure 1, for this analysis of gpcd usage by Kansas public water suppliers. The regions are very narrow in width in western Kansas, because gpcd usage increases rapidly from central Kansas to the western Kansas border. Regions are wider in eastern Kansas, which has much less variation in gpcd usage.

The gpcd figures do not include sales to other public water suppliers, municipally-supplied water for industries, or sales to livestock operations that used in excess of 200,000 gallons per year. It does include water sold to residential and commercial customers, water used for treatment purposes, water used for public services such as parks, swimming pools, etc. and system losses. This method of analysis yields higher gpcd values than would be obtained using only metered sales to residential and commercial customers, but more accurately represents the total water usage of Kansas public water suppliers with different management practices.

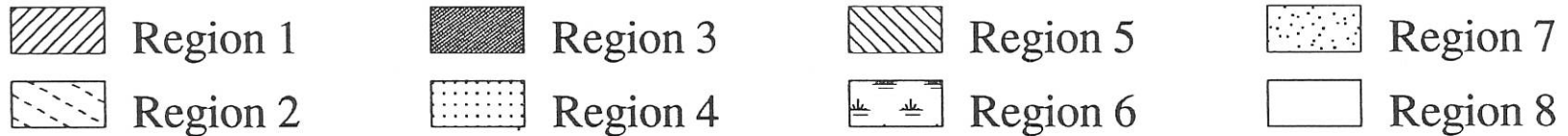
The Kansas Municipalities Water Use publication has been prepared for each year of reported water use since 1987. The information provided in these annual publications can be useful to water utilities, consulting firms, and government agencies in evaluating water supply and distribution system needs, management practices, and water rates. The comparative use information can also lead to improved system efficiency through implementation of cost-effective, long-term water conservation measures.

FIGURE 1

REGIONS USED FOR GALLONS PER CAPITA PER DAY (GPCD) ANALYSES



Kansas Water Office



11-5

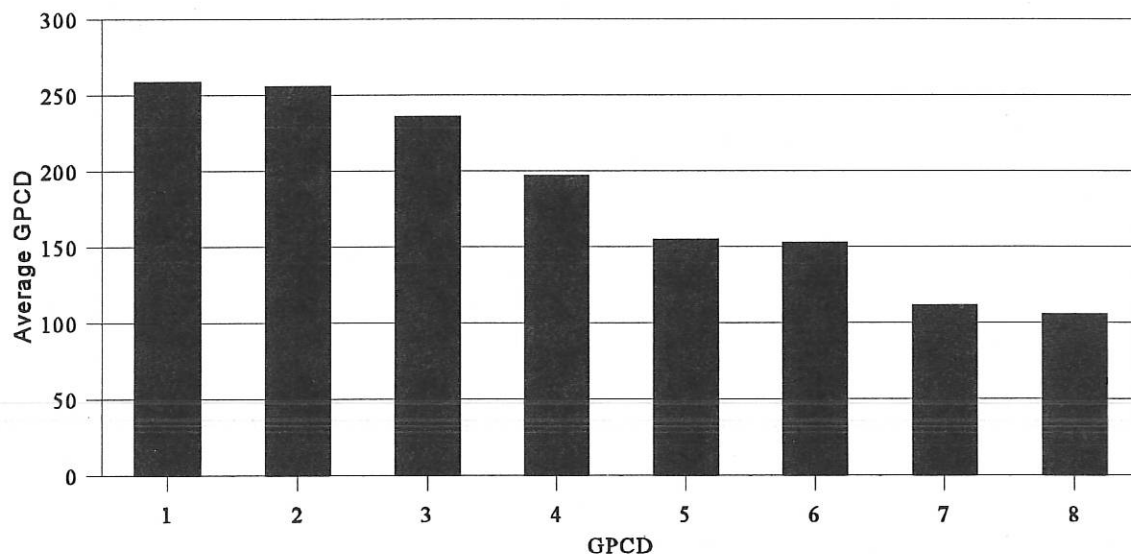
PER CAPITA WATER USE BY REGION

Regional average gallons per capita per day (gpcd) use by Kansas public water suppliers, shown in Figure 2, ranged from 259 in extreme western Kansas to 106 in extreme eastern Kansas during 1995. A major reason for this variation is that the amount of summer rainfall increases from west to east across the state of Kansas. This difference largely determines the amount of outside water use, especially for lawn watering. Another important factor is that water rates are generally much lower in western Kansas. Most public water suppliers there rely on groundwater, which is less expensive to treat than the surface water used predominately in eastern Kansas.

The averages shown in figure 2 do not indicate that utilities in eastern Kansas use less water than ones in western Kansas, but rather that per capita water usage is strongly influenced by geographic conditions. Comparisons of different systems, their management practices, and their conservation efforts should be made among utilities in similar regions.

Table 1 (p. 25) shows the average gpcd use for Kansas public water suppliers by region and size for 1991-1995. Average gpcd use varies from year to year but usually progresses from highest in Region 1 (western Kansas) to lowest in Region 8 (eastern Kansas). Variations in statewide average gpcd use are due primarily to differences in precipitation. In the 5-year period shown in Table 1, usage was highest in 1991 (156 gpcd) and lowest in 1993 (128 gpcd). The amount of rainfall received at statewide precipitation stations from June through September most strongly relates to how much water is used for outside watering. Average statewide June-September precipitation was lowest during 1991 (9.05 inches) and highest during 1993 (22.62 inches); during 1995 it was 13.45 inches. Normal June-September precipitation for Kansas is 13.62 inches. Average statewide per capita use in 1995 was 137 gpcd; average statewide use for the years 1991-1995 was 139 gpcd.

Figure 2
AVERAGE GPCD USE BY REGION
KANSAS, 1995



PER CAPITA WATER USE AND RELATED STATISTICS FOR PUBLIC WATER SUPPLIERS BY REGIONAL CATEGORY

The information provided in this section of the publication is intended as an aid to public water suppliers and to state agencies in evaluating water use and water conservation efforts by Kansas water systems during 1995. Comparison of public water supply use among entities in similar areas of the state can also indicate opportunities for additional cost-effective conservation measures. Information is summarized for each region by charts of gpcd use and tables of related water use statistics.

Charts of gpcd use and discussion of water use within each region are presented on pp. 6-18. Gpcd is calculated as the sum of amounts of water pumped and/or purchased minus amounts of water sold to other public water suppliers, industries, bulk customers, and stockwatering operations, divided by retail population served and the number of days in a year. Municipally-supplied water for industry, bulk sales, and livestock operations that used more than 200,000 gallons per year were omitted from the gpcd calculations in order to fairly compare usage by all public water suppliers, including those who do not supply any such water and those who supply very large quantities. The gpcd figures provided in this publication, then, are based on three components:

- a. Water sold to retail residential and commercial customers,
- b. metered water provided free of charge for public services (such as parks, swimming pools, treatment processes, etc.) and for any customers who receive free water, and
- c. unaccounted for water, which is unmetered water provided free for public services or unmetered connections, and lost via system leaks, underregistering customer meters, etc.

Gpcd use by a particular public water supplier is indicative of water use and conservation practices in these three areas. For example, a high gpcd could be the result of a very dry year, excessive use by customers who pay low rates for water, extensive watering of city parks and ballfields, a relatively large amount of water needed for firefighting or line flushing, or problems with system leaks. A low gpcd may indicate a rainy year in which little outside watering was needed, very efficient use by customers on fixed incomes, a utility with no significant free uses, or a system with few leaks. Each of the charts presented in this section portrays the three public water suppliers with the highest gpcd, the three public water suppliers with the lowest gpcd, the average gpcd for the region, and the average gpcd for the state.

Information on cost of water to customers and on percentages of metered free and unaccounted for water is useful in evaluating the gpcd use figures to determine possible need for improvement. Water use statistics for the public water suppliers in each region are provided in Tables 2-14 on pp. 26-51. The tables rank public water suppliers in order of their gpcd value, and show each gpcd's deviation from the average gpcd for that region of the state. Regions 6, 7, and 8 in central

and eastern Kansas include many more public water suppliers than do the western Kansas regions, and therefore were subdivided into groups by population size for presentation of gpcd values and water use statistics. Small public water suppliers serve fewer than 500 people, medium public water suppliers serve 500 to 9,999 people, and large public water suppliers serve 10,000 people or more. Water cost is shown for each public water supplier as the monthly charge to customers for water service if 10,000 gallons were used; cost was assigned to one of eight rate categories. The tables also provide information on unsold water, expressed as the percentages of total water pumped and/or purchased that were metered free use and the percentages that were unmetered free use, or unaccounted for water.

Publications of municipal water use statistics prior to 1992 showed only the percentage of water not sold. Unsold water includes both metered and unmetered free water, such as that provided for public services, lost due to leaks or underregistering customer meters, and used in the treatment process. Beginning with the 1992 Municipal Water Use Reports, public water suppliers were given the opportunity to distinguish between unsold water that was metered and unsold water that was not metered, or unaccounted for. Metered unsold water is commonly used for swimming pools, irrigation of city parks and golf courses, water treatment processes such as backflushing filters, or service to city buildings. Reduction in some of these metered uses, such as for irrigation, is beneficial to a utility concerned about water conservation. Reduction in the amounts of unaccounted for water lost through leaks and old customer meters is particularly useful as a management tool, as it can result in improved efficiency and cost savings to a utility.

The combined presentation of statistics on gpcd usage, water rate category, and percentages of metered free use and unaccounted for water will allow operators of public water distribution systems to compare their water use to other public water suppliers of similar size and location. Differences in water usage, unsold water, or rate category may indicate opportunities for more cost-effective and efficient use of water. For example, if a public water supplier charges a high rate for water relative to other public water suppliers in its region, has a gpcd that is well above the regional average, and shows large percentages of either metered free or unaccounted for water, then the supplier may have significant system leaks, provide a lot of water for free public distribution, have a large number of underregistering customer meters, or have over-reported amounts of raw water diverted. Conversely, if a public water supplier charges a low rate for water relative to other public water suppliers in its region, has a gpcd that is significantly below the regional average, and shows low percentages of unsold water, then the supplier may have under-reported amounts of raw water diverted due to faulty meters or pump rates that are actually higher than reported.

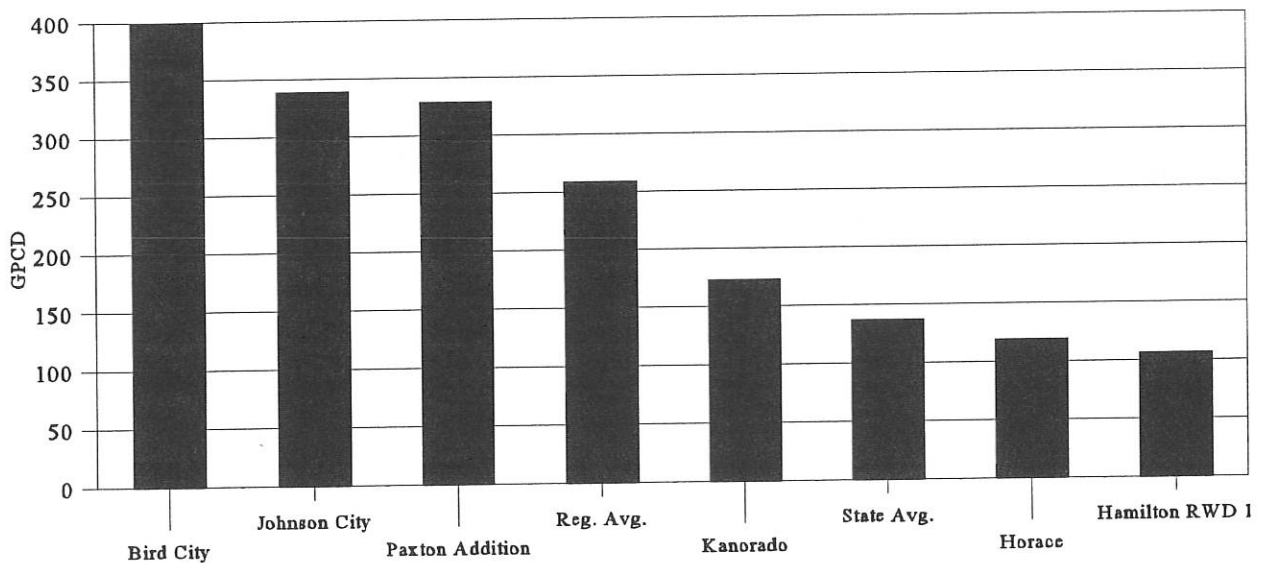
Region 1

Figure 3 shows the three highest and three lowest gpcd uses by public water suppliers in Region 1 during 1995, along with the regional and state average gpcd values. Table 2 (p. 26) ranks each of the 17 public water suppliers in Region 1 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

Bird City, in Cheyenne County, had the highest gpcd in Region 1 in 1995. Bird City's gpcd of 399 was 54 percent higher than the regional average of 259 gpcd. Johnson City, in Stanton County, had the second highest gpcd in Region 1. Low water rates in each of these cities encourage higher water use. Paxton Addition, a small community near Goodland, used 329 gpcd in 1995. Although total usage decreased from 1994 levels, the number of residents at Paxton Addition decreased even more.

The three lowest gpcd values during 1995 for Region 1 are for Hamilton County Rural Water District No. 1 (106 gpcd), Horace (119 gpcd), and Kanorado (173 gpcd). These water suppliers are typically very conservative with water use. Water rates in Hamilton County Rural Water District No. 1 are among the highest in the state, which encourages efficient use.

Figure 3
GPCD USE FOR PUBLIC WATER SUPPLIERS
REGION 1, 1995



Region 2

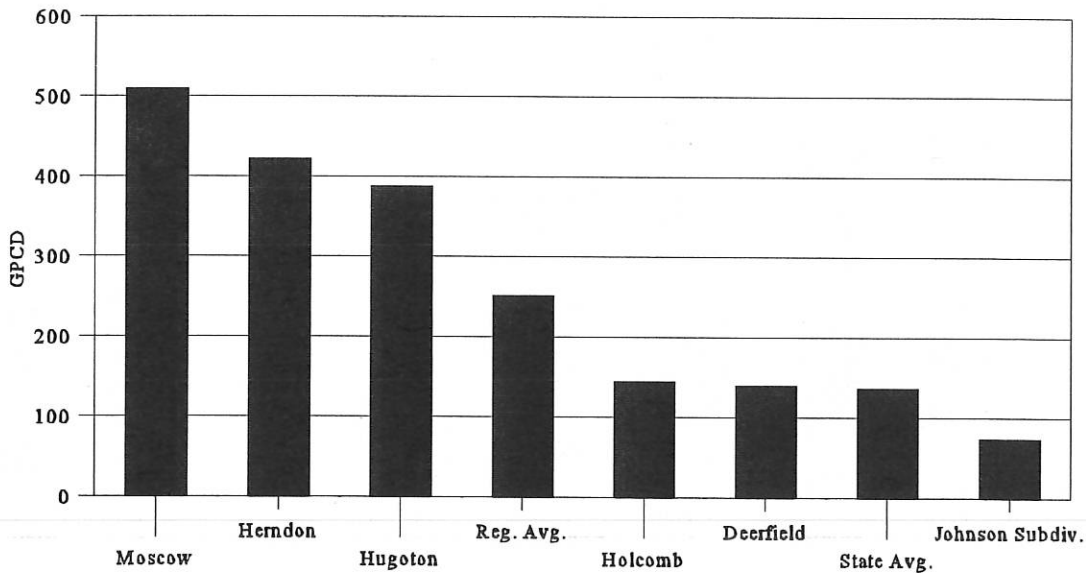
Figure 4 shows the three highest and three lowest gpcd uses by public water suppliers in Region 2 during 1995, along with the regional and state average gpcd values. Table 3 (p. 27) ranks each of the 22 public water suppliers in Region 2 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

For the fourth consecutive year, Moscow has had the highest gpcd in Region 2. In 1995, this city's gpcd of 510 was 102 percent above the regional average of 252 gpcd. The flat rate of \$15.00 per month charged each customer regardless of amount of water used is a primary reason for Moscow's high gpcd use. The City of Herndon, a small community with low water rates, had the second highest gpcd (422) in Region 2, and the City of Hugoton was third highest with 388 gpcd. Both of these cities charge less than \$10.00 per month for 10,000 gallons of water.

The three lowest gpcd uses in Region 2 are for the same communities in 1995 as in 1994. Johnson Subdivision, a small housing development near Garden City, used 74 gpcd. Deerfield and Holcomb, just west of Garden City, used 140 and 145 gpcd, respectively.

Average cost per month for 10,000 gallons of water was \$13.51 in Region 2, which was once again the lowest cost of all regions in Kansas.

Figure 4
GPCD USE FOR PUBLIC WATER SUPPLIERS
REGION 2, 1995



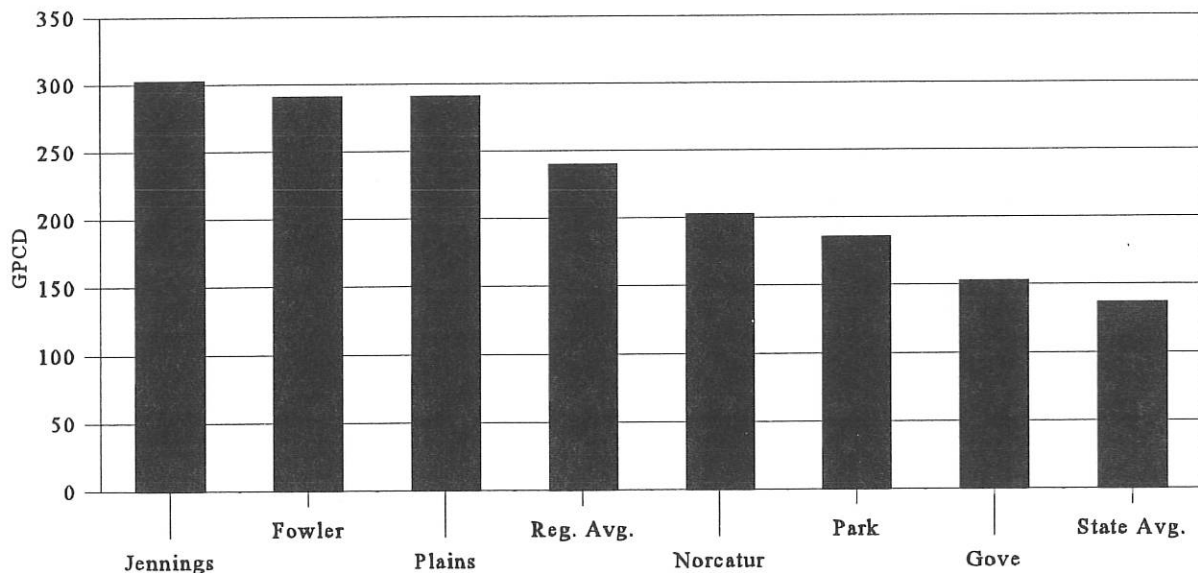
Region 3

Figure 5 shows the three highest and three lowest gpcd uses by public water suppliers in Region 3 during 1995, along with the regional and state average gpcd values. Table 4 (p. 28) ranks each of the 20 public water suppliers in Region 3 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water not sold.

The City of Jennings had the highest gpcd use in Region 3 during 1995. This city's gpcd of 303 was partially due to the large percentage of unaccounted for water. The City of Fowler's gpcd of 291 was second highest. Fowler has often been among the highest gpcd users in this area because of the large amounts of water used for unmetered services such as city parks, golf course, and a well lube line. The City of Plains, also a traditionally high gpcd user, was third highest also with 291 gpcd.

The cities of Gove, Park, and Norcatur had the lowest uses in Region 3 during 1995, with gpcd's of 153, 186 and 203, respectively. Per capita use in each of these cities was higher than the State average gpcd. Average cost for 10,000 gallons of water per month was only \$14.11 in this region, the second lowest of all regions in 1995.

Figure 5
GPCD USE FOR PUBLIC WATER SUPPLIERS
REGION 3, 1995



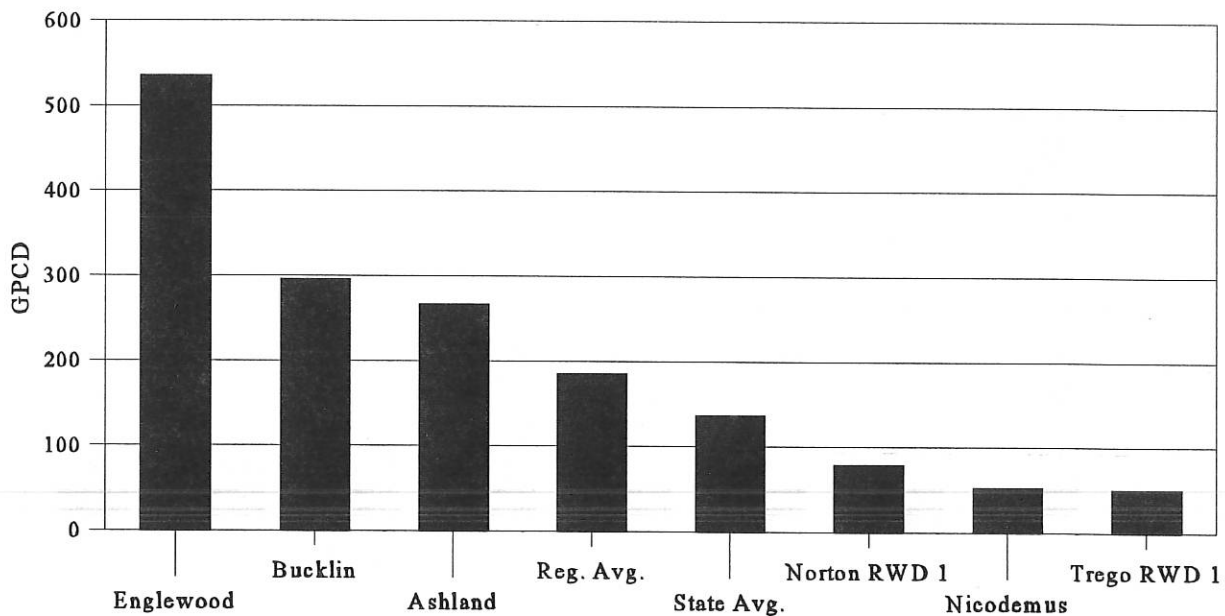
Region 4

Figure 6 shows the three highest and three lowest gpcd use by public water suppliers in Region 4 during 1995, along with the regional and state average gpcd values. Table 5 (p. 29) ranks each of the 27 public water suppliers in Region 4 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water not sold.

For the second consecutive year, the City of Englewood ranked highest in gpcd use among public water suppliers in Region 4. Englewood's gpcd of 536 was 190 percent higher than the regional average of 185 gpcd. The City of Bucklin had the second highest use in Region 4 with 296 gpcd. Both Englewood and Bucklin charge their customers a flat rate for monthly water service, which does not encourage efficient use and does not allow determination of water loss. The City of Ashland had the third highest use, 267 gpcd, primarily because of the large percentage of unaccounted for water.

The three lowest gpcd uses in Region 4 during 1995 all belong to very small water suppliers. Trego County Rural Water District No. 1, serving 45 people, used only 57 gpcd. Nicodemus, with only 28 year-round residents, used 53 gpcd. Norton County Rural Water District No. 1, serving 44 people, used 79 gpcd. These gpcd values are all far below the state average of 137 gpcd.

Figure 6
GPCD USE FOR PUBLIC WATER SUPPLIERS
REGION 4, 1995



Region 5

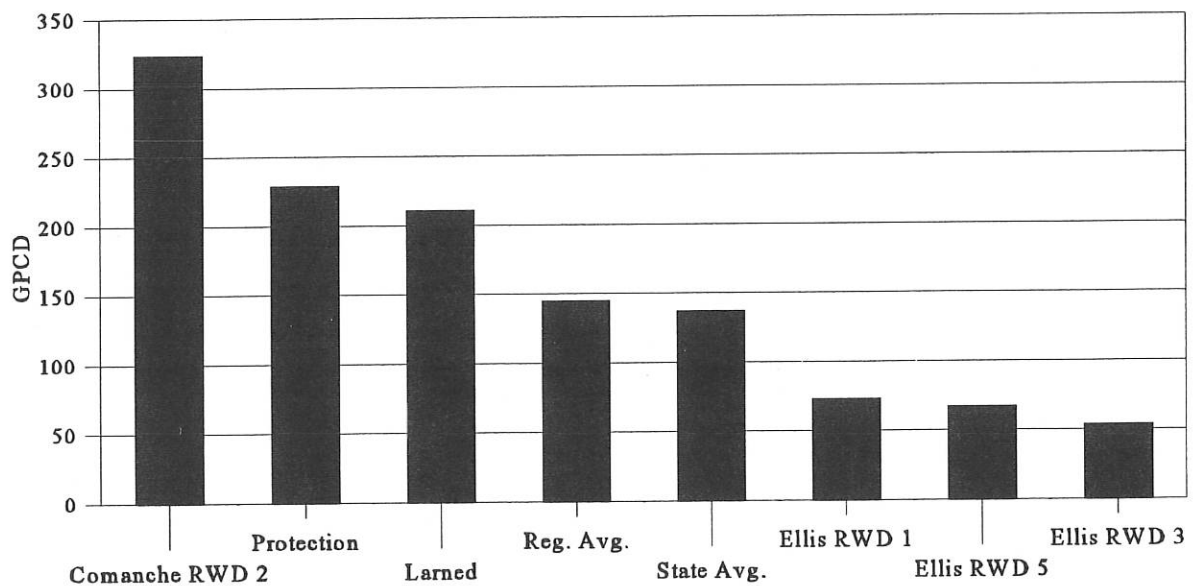
Figure 7 shows the three highest and three lowest gpcd uses by public water suppliers in Region 5 during 1995, along with the regional and state average gpcd values. Table 6 (p. 30) ranks each of the 46 water suppliers in Region 5 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

Two public water suppliers in Region 5, the cities of Rozel and Glade, failed to file a water use report for 1995 and so are not included in Table 6.

Comanche County Rural Water District No. 2 has had the highest gpcd in Region 5 for the past four years. This district used 324 gpcd in 1995, which was 145 percent above the Region 5 average of 145 gpcd. Comanche County Rural Water District No. 2 is located in rough terrain where leaks are difficult to find; 39 percent of the water pumped in 1995 was lost. The City of Protection had the second highest gpcd in 1995, 229, followed by the City of Larned with 211 gpcd. These two cities have relatively low water rates.

The three Region 5 public water suppliers with the lowest gpcd usage in 1995 are all located in Ellis County. Ellis County Rural Water District No. 3 used 54 gpcd, Ellis County Rural Water District No. 5 used 67 gpcd, and Ellis County Rural Water District No. 1 used 73 gpcd.

Figure 7
GPCD USE FOR PUBLIC WATER SUPPLIERS
REGION 5, 1995



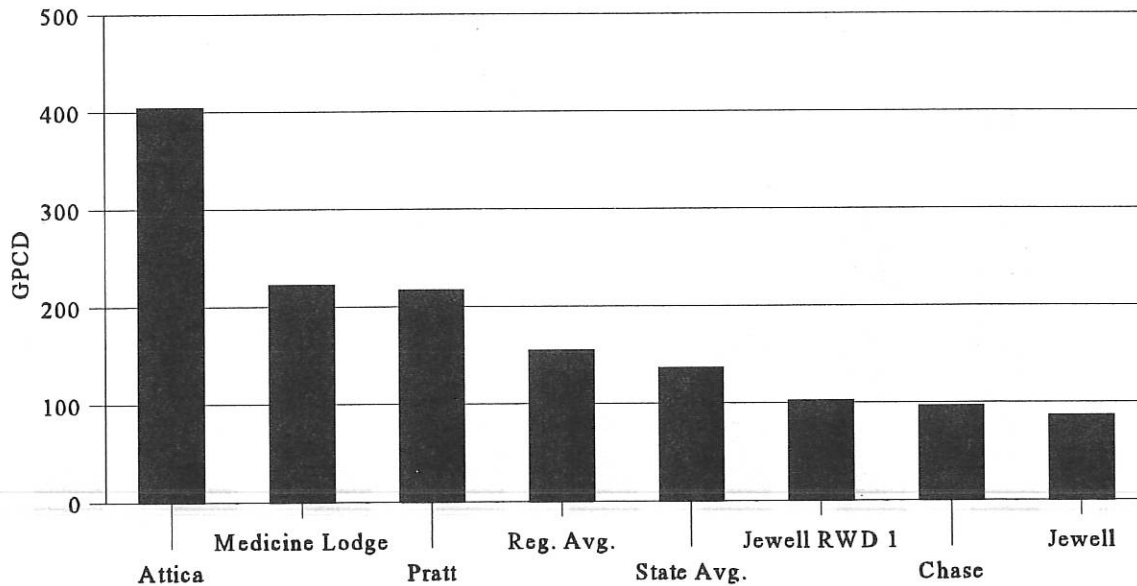
Region 6, Medium and Large Public Water Suppliers

Figure 8 shows the three highest and three lowest gpcd uses by public water suppliers serving 500 people or more in Region 6 during 1995, along with the regional and state average gpcd values. Table 7 (p. 32) ranks each of the 41 public water suppliers in this population size group by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were unsold.

The City of Attica had the highest gpcd in this regional group during 1995. The water use report for Attica showed that the city used 405 gpcd, which is 161 percent higher than the regional average of 155 gpcd. It is possible that the massive 66 percent water loss of Attica was caused by leaks in lines carrying water from the well fields to town; additional metering and leak detection are recommended actions to resolve this problem. The cities of Medicine Lodge and Pratt had the second and third highest per capita water usages in this regional group, using 223 and 218 gpcd respectively.

The three lowest gpcd's among medium sized water suppliers in Region 6 were for the City of Jewell (87 gpcd), the City of Chase (97 gpcd), and Jewell County Rural Water District No. 1 (103 gpcd).

Figure 8
GPCD USE FOR MEDIUM AND LARGE PUBLIC WATER SUPPLIERS
REGION 6, 1995



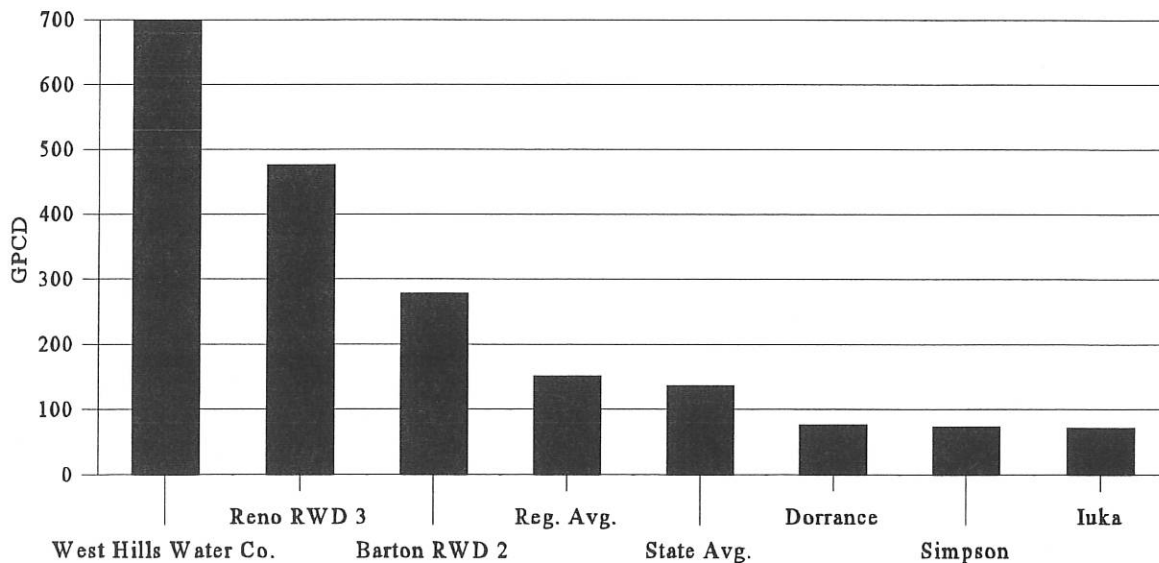
Region 6, Small Public Water Suppliers

Figure 9 shows the three highest and three lowest gpcd uses by public water suppliers serving fewer than 500 people in Region 6 during 1995, along with the regional and state average gpcd values. Table 8 (p. 34) ranks each of the 58 small public water suppliers in Region 6 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

The three highest gpcd uses among small public water suppliers in Region 6 were by rural systems that charge a flat rate per month for water service. West Hills Water Company had the highest gpcd in the region and in the state. This small water district used 700 gallons per person per day in 1995, which was 364 percent greater than the regional average of 151 gpcd. West Hills Water Company's water usage has decreased following detection and repair of a large leak found in a creek crossing in December 1995. Reno County Rural Water District No. 3 serves both industrial and residential customers, but cannot distinguish amounts used by each type of customer due to incomplete metering of service connections. This district used 476 gpcd in 1995, followed by Barton County Rural Water District No. 2, which used 279 gpcd.

The cities of Iuka, Simpson and Dorrance, had the lowest gpcd usages among small water suppliers in Region 6 during 1995. Their gpcd values of 72, 74, and 77 were all well below the regional and state average gpcd's, and their amounts of unaccounted for water were all below 15 percent of the total pumped.

Figure 9
GPCD USE FOR SMALL PUBLIC WATER SUPPLIERS
REGION 6, 1995



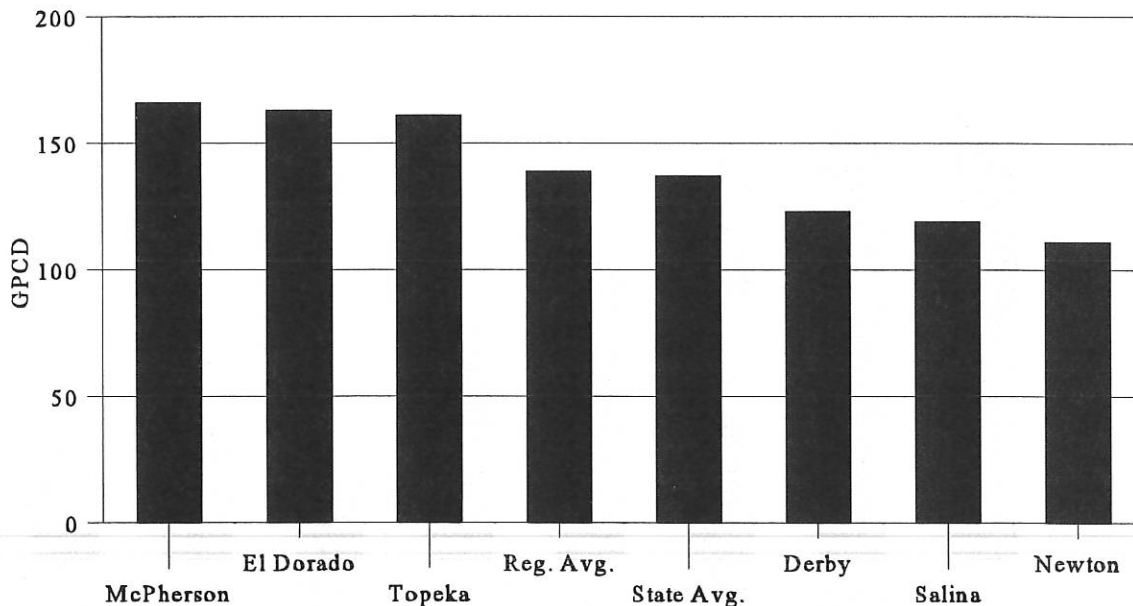
Region 7, Large Public Water Suppliers

Figure 10 shows the three highest and three lowest gpcd uses by public water suppliers serving 10,000 people or more in Region 7 during 1995, along with the regional and state average gpcd values. Table 9 (p. 37) ranks each of the 14 large public water suppliers in Region 7 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

Per capita water use for large cities in Region 7 showed the least deviation from the regional average gpcd of any regional group during 1995. The City of McPherson had the highest gpcd, 166, which was only 19 percent higher than the regional average of 139 gpcd. The City of El Dorado used 163 gpcd and was the second highest. The City of Topeka ranked third highest with 161 gpcd. Large quantities of water are used by this city during the process of treating Kansas River water.

The City of Newton had the lowest gpcd among large cities in Region 7 for the fifth consecutive year. Newton's 1995 gpcd of 111 was followed by Salina with 119 gpcd and Derby with 123 gpcd. These per capita values are all within 20 percent of the regional average gpcd.

Figure 10
GPCD USE FOR LARGE PUBLIC WATER SUPPLIERS
REGION 7, 1995



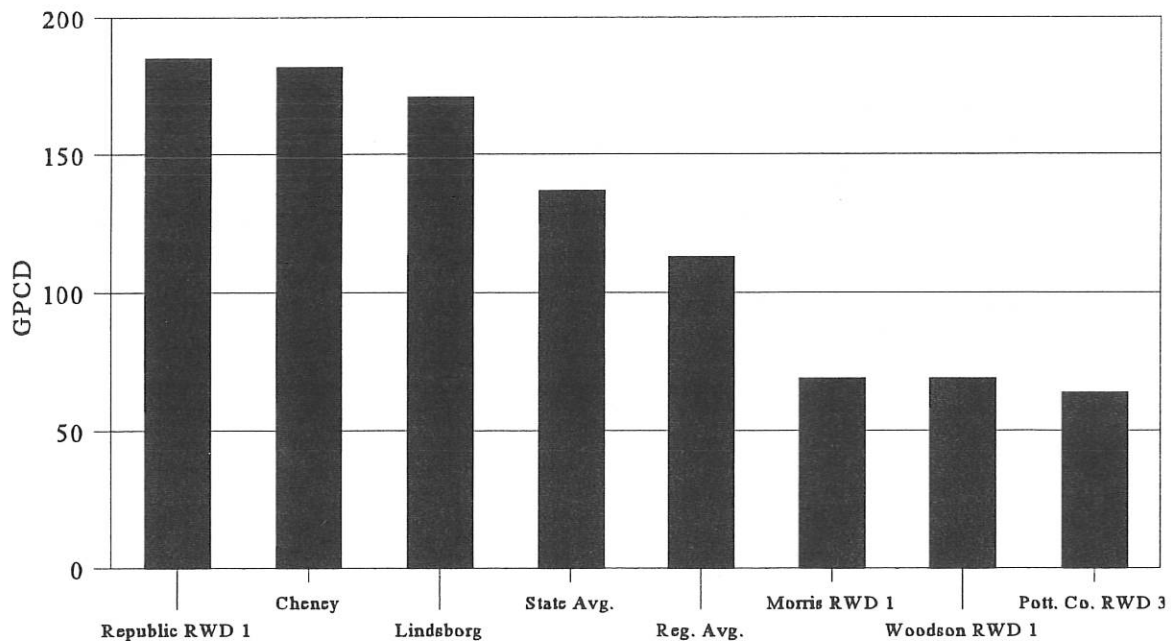
Region 7. Medium Public Water Suppliers

Figure 11 shows the three highest and three lowest gpcd uses by public water suppliers serving between 500 and 9,999 people in Region 7 during 1995, along with the regional and state average gpcd values. Table 10 (p. 38) ranks each of the 127 medium-sized public water suppliers in Region 7 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

The highest per capita usage for 1995 in this regional category was reported by Republic County Rural Water District No. 1. This district's gpcd of 185 was 64 percent higher than the regional average, largely due to the 35 percent unaccounted for water. The City of Cheney was second highest with 182 gpcd. This supplier uses a large percentage of its water for the municipal golf course, which is a metered free use. The City of Lindsborg was third highest with 171 gpcd. Lindsborg has had a problem with well meter accuracy, and so the regional average percent unaccounted for water was used to adjust pumpage figures on the annual water use report.

The three lowest gpcd uses by medium-sized water suppliers in Region 7 were all for rural water districts with relatively high water rates. Pottawatomie County Rural Water District No. 3 used 64 gpcd, the lowest usage in this regional category. Woodson County Rural Water District No. 1 and Morris County Rural Water District No. 1 each used 69 gpcd.

Figure 11
GPCD USE FOR MEDIUM PUBLIC WATER SUPPLIERS
REGION 7, 1995



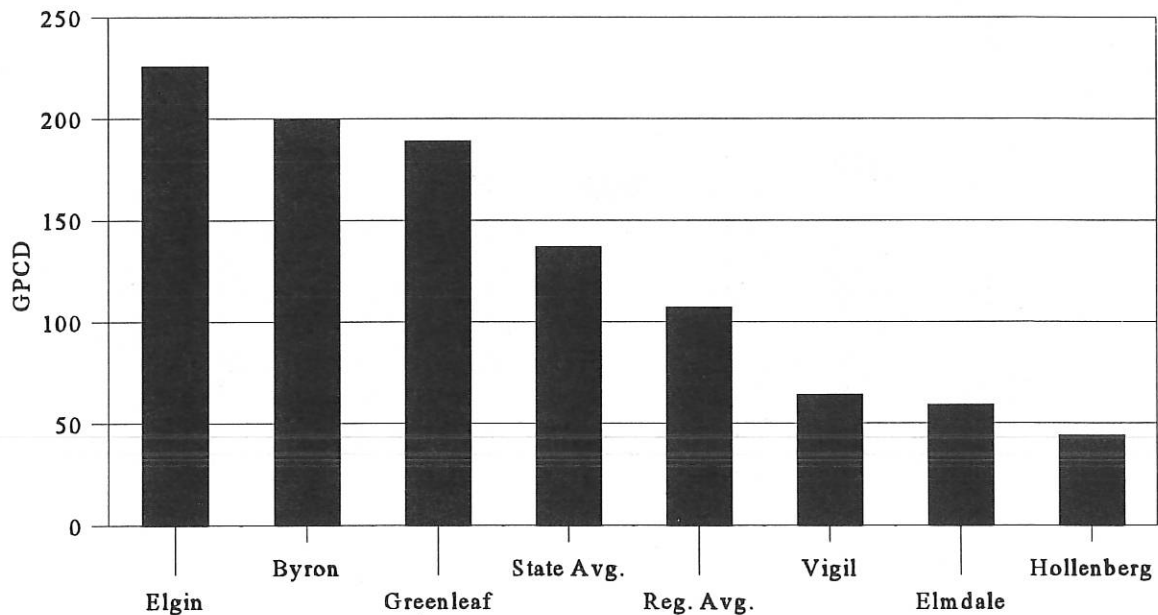
Region 7, Small Public Water Suppliers

Figure 12 shows the three highest and three lowest gpcd uses by public water suppliers serving fewer than 500 people in Region 7 during 1995, along with the regional and state average gpcd values. Table 11 (p. 43) ranks each of the 99 small public water suppliers in Region 7 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentage of water that were not sold.

The highest gpcd in this regional category was reported by the City of Elgin, a small town that used 226 gpcd, or 111 percent more than the regional average of 107 gpcd. Conservation planning efforts are underway in Elgin to reduce the water loss. The second highest gpcd (200) was reported by the Village of Byron, a small town in Nebraska that charges a flat rate for monthly water use. The third highest gpcd (189) was reported by the City of Greenleaf, a town that has reduced its unaccounted for water from 35 to 22 percent during the past 3 years.

The three lowest gpcd uses among small public water suppliers in Region 7 were reported by the City of Hollenberg (44 gpcd), the City of Elmdale (59 gpcd), and the City of Virgil (64 gpcd). These suppliers each serve very small populations, and have water rates higher than the regional average rate.

Figure 12
GPCD USE FOR SMALL PUBLIC WATER SUPPLIERS
REGION 7, 1995



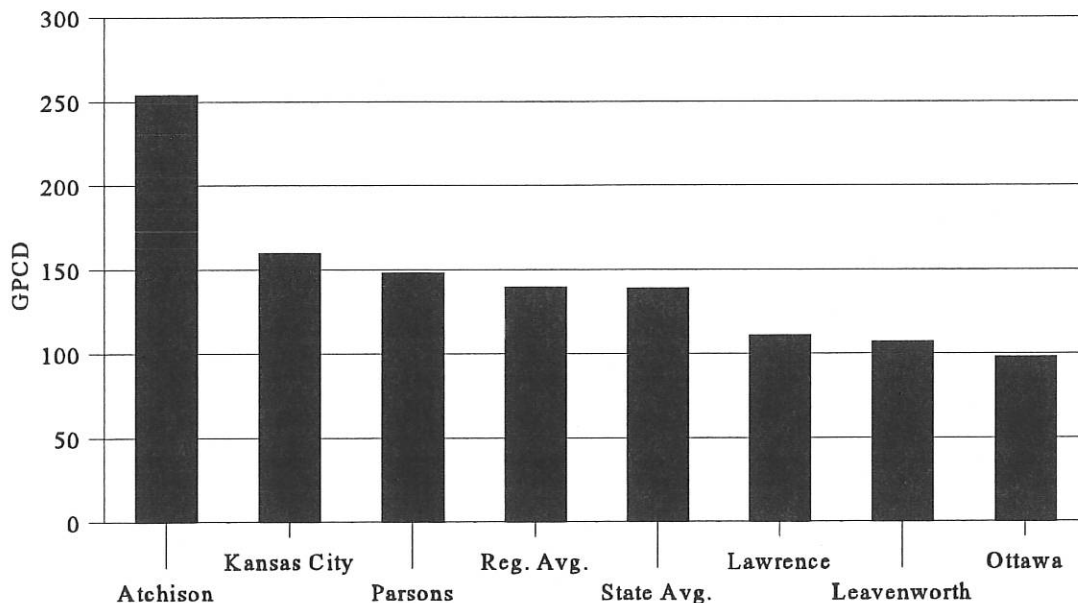
Region 8. Large Public Water Suppliers

Figure 13 shows the three highest and three lowest gpcd uses by public water suppliers serving 10,000 people or more in Region 8 during 1995, along with the regional and state average gpcd values. Table 12 (p.47) ranks each of the 9 large public water suppliers in Region 7 by gpcd value, and shows the percent difference from the regional average gpcd. Also included for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

The City of Atchison has had the highest gpcd in this regional category for the past six years. Atchison's 1995 gpcd of 254 was 81 percent larger than the regional average of 140. Atchison's percentage unaccounted for water has risen steadily from 14 percent in 1990 to 31 percent in 1995. Kansas City ranked second highest with 160 gpcd, and the City of Parsons ranked third highest with 148 gpcd. Both of these cities had large percentages of metered free water, which is common in systems that treat river water.

The City of Ottawa has maintained the lowest gpcd use among large suppliers in Region 8 since 1989. Ottawa's 1995 gpcd of 98 is 30 percent lower than the regional average gpcd. The cities of Leavenworth and Lawrence, which typically have gpcd uses lower than the regional average, ranked second and third lowest in 1995 with 107 and 111 gpcd, respectively.

Figure 13
GPCD USE FOR LARGE PUBLIC WATER SUPPLIERS
REGION 8, 1995



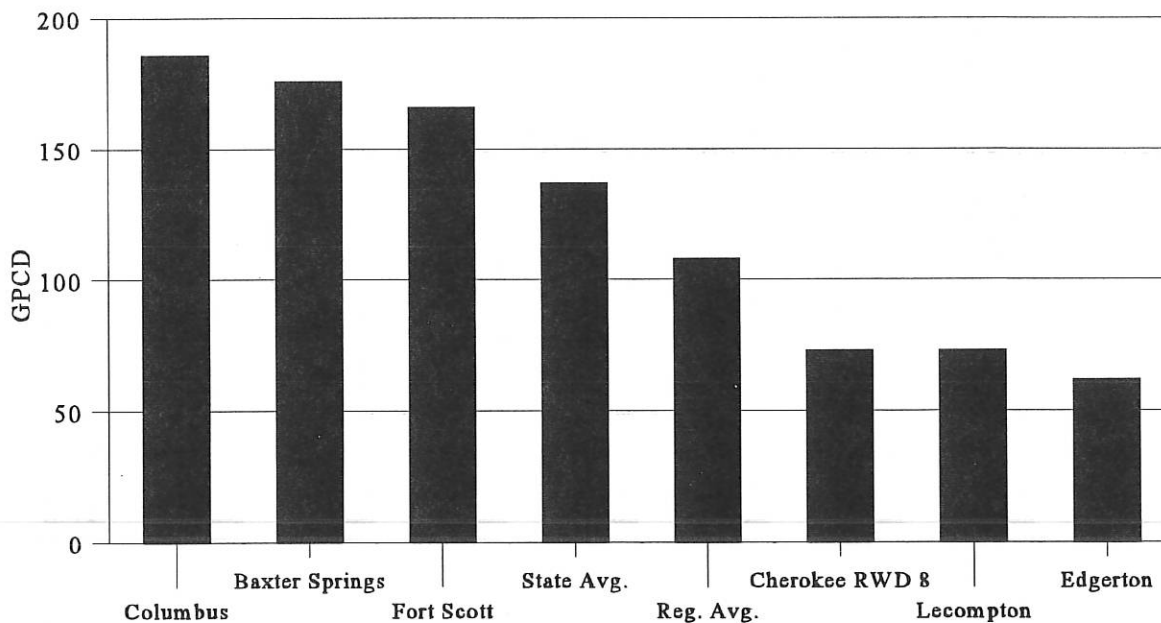
Region 8, Medium Public Water Suppliers

Figure 14 shows the three highest and three lowest gpcd uses by public water suppliers serving between 500 and 9,999 people in Region 8 during 1995, along with the regional and state average gpcd values. Table 13 (p. 48) ranks each of the 81 medium-sized public water suppliers in Region 8 by gpcd value, and shows the percent difference from the regional average gpcd. Also shown for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

The City of Columbus used 186 gpcd in 1995, which was the highest in this regional group and 72 percent larger than the regional average of 108 gpcd. Columbus' unaccounted for water increased from 12 percent in 1994 to 36 percent in 1995. The City of Baxter Springs ranked second highest with 176 gpcd. Totalizers at Baxter Springs' treatment plant may be overregistering amounts of river water pumped. The City of Fort Scott ranked third highest with 166 gpcd. This city is continuing its leak detection and control efforts to reduce the percentage of unaccounted for water.

The lowest gpcd use among medium-sized public water suppliers in Region 8 was for the City of Edgerton (62 gpcd). The City of Lecompton and Cherokee County Rural Water District No. 8 each used 73 gpcd. The three suppliers with the lowest per capita usage each charge their customers higher than average water rates.

Figure 14
GPCD USE FOR MEDIUM PUBLIC WATER SUPPLIERS
REGION 8, 1995



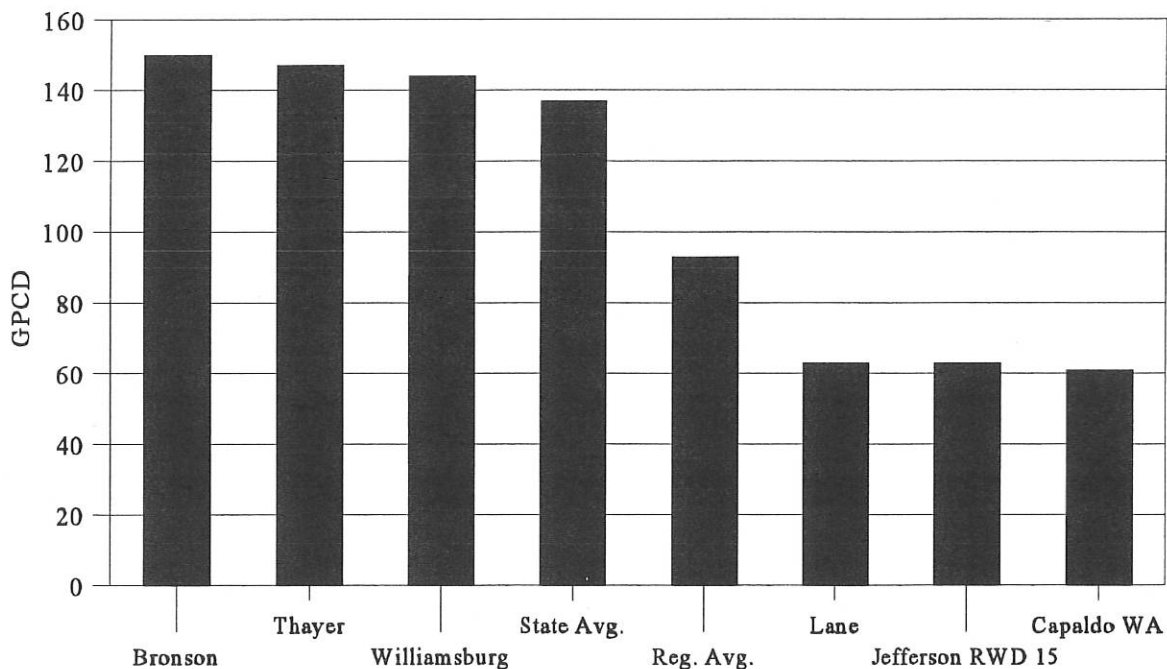
Region 8, Small Public Water Suppliers

Figure 15 shows the three highest and three lowest gpcd uses by public water suppliers serving fewer than 500 people in Region 8 during 1995, along with the regional and state average gpcd values. Table 14 (p. 51) ranks each of the 36 small public water suppliers in Region 8 by gpcd value, and shows the percent difference from the regional average gpcd. Also shown for each supplier are the water rate category (excluding sewer charges) and the percentages of water that were not sold.

The three public water suppliers reporting the highest per capita usage in this regional category all had large percentages of unaccounted for water in 1995. The City of Bronson, which has many leaks due to an aging distribution system, ranked highest with 150 gpcd and 38 percent unaccounted for water. The City of Thayer ranked second highest with 147 gpcd and 27 percent unaccounted for water, and the City of Williamsburg ranked third highest with 144 gpcd and 32 percent unaccounted for water.

The three public water suppliers reporting the lowest per capita usage in 1995 each had very low percentages of unaccounted for water. The lowest gpcd use was for Capaldo Water Association with 61 gpcd. Jefferson County Rural Water District No. 15 and the City of Lane each used 63 gpcd.

Figure 15
GPCD USE FOR SMALL PUBLIC WATER SUPPLIERS
REGION 8, 1995



Statewide Summary

The figures and tables presented in this section of the report show that 1995 gpcd values ranged from a high of 700 for West Hills Water Company to a low of 44 for the City of Hollenberg. However, to evaluate the water conservation efforts of all 597 public water suppliers, each gpcd value must be compared to that of other utilities of similar size in the same geographic area. The highest and lowest gpcd usages by Kansas public water suppliers in 1995, relative to the corresponding regional averages, are ranked in Tables 15 and 16 to allow an equitable comparison of extremes in gpcd usage.

Table 15 (p. 53) ranks the 20 public water suppliers with the highest gpcd usage relative to their respective regional averages. This table shows that West Hills Water Company's gpcd of 700 was not only the highest in Kansas in 1995 but also was the highest relative to the respective regional average gpcd. West Hills' reported water use was 364 percent higher than the regional average of 151 gpcd for small public water suppliers in Region 6. The second highest water usage relative to regional averages belonged to Reno County Rural Water District No. 3, whose gpcd of 476 was 215 percent higher than the Region 6 average for small public water suppliers. Water usage in Reno County Rural Water District No. 3 during 1995 could not be differentiated by type of user due to the lack of metering at some industrial facilities. The City of Englewood ranked third highest in this analysis, with a gpcd of 536, or 190 percent higher than the Region 4 average of 185 gpcd.

Further analysis of Table 15 indicates that the two major factors related to excessively high usage by public water suppliers are rate structure and percentage unaccounted for water. Of the 20 public water suppliers shown in Table 15, seven used a flat rate structure, and nine had 20 percent or greater unaccounted for water.

Many public water suppliers in Kansas are using their water resources in a very efficient manner. Table 16 (p. 54) lists the 20 public water suppliers with the lowest gpcd usage in 1995 relative to their respective regional averages. Most of these public water suppliers are very small towns or rural water districts, which tend to have less public use and often charge relatively high rates for water service. The most conservative use was by Trego County Rural Water District No. 1, where the gpcd of 51 was 72 percent below the Region 4 average of 185 gpcd. Residents in this small district pay a high price for their water service. The second most conservative use among public water suppliers in 1995 was by the small community of Nicodemus, with a gpcd of 53 that was 71 percent below the Region 4 average. This town charges a flat rate but has few year-round residents. Johnson Subdivision had the third lowest gpcd compared to its regional average. This housing subdivision used only 74 gpcd, which was 71 percent lower than the Region 2 average of 252 gpcd.

Table 17 (p. 55) lists the 20 public water suppliers that charged a flat rate to their customers in 1995, and shows the percent difference between each one's gpcd and the respective regional average gpcd. This table indicates that public water suppliers with flat rate structures used an average of 61 percent more water per person than their peer communities in 1995.

WATER RATES BY REGION

Table 18 (p. 56) shows, by region, the average monthly charge in 1995 for residential customer water usage of 5,000, 10,000, 25,000, 50,000, and 100,000 gallons. In general, water rates increase from west to east across the state. Average monthly water rates were the lowest in Region 2, where they ranged from \$9.59 for 5,000 gallons to \$87.20 for 100,000 gallons. The highest water rates were in Region 8 in eastern Kansas, where the cost of water ranged from averages of \$20.65 for 5,000 gallons to \$256.70 for 100,000 gallons. Average water rates tend to be higher in eastern Kansas due to treatment costs associated with surface water and shallow ground water sources.

Water rate structures in Kansas can be classified into four basic types: flat rate, decreasing block rate, uniform block rate, and increasing block rate. Utilities with a flat rate charge each customer a fixed amount per month, regardless of how much water the customer uses. Utilities with a decreasing block rate charge a higher rate per block of water (usually a unit of 1,000 gallons or 100 cubic feet) when usage is low than when usage is high. Utilities with a uniform block rate charge the same price for each block of water, regardless of how much water is used. Utilities with an increasing block rate charge less per block of water at the low end and more per block of water as usage increases.

The type of water rate structure employed by a utility has some effect on gpcd use, as shown in Table 19 (p. 57). In this table, the eight regional categories were combined into three groups corresponding to western Kansas (Regions 1-4), central Kansas (Regions 5-6), and eastern Kansas (Regions 7-8). For each regional group, the number of public water suppliers having each of the four main types of water rate structures is listed, along with the average gpcd for that combination of geographic area and water rate structure. Average gpcd use was consistently the highest in each regional group for communities whose customers are charged a flat rate. The other three types of rate structures, in which cost depends on amount of water used, have a less dramatic effect on gpcd. There is more variation due to geographic area than to type of rate structure. The largest number of public water suppliers have chosen a uniform block rate, which was shown to yield the lowest average gpcd on a statewide basis.

Contrary to the popular belief that decreasing block rates encourage water waste while increasing block rates encourage water conservation, the implementation of either decreasing, uniform, or increasing block rate structures does not appear to affect usage by individual customers as much as does their monthly water cost. Customers are more likely to adopt water-conserving practices if their total bill is high, regardless of the rate structure.

MANAGEMENT CONSIDERATIONS INVOLVING UNSOLD WATER

Metered Free and Unaccounted For Water

All public water suppliers that meter their customer use are able to determine the amount of unsold water, provided that the records of raw water pumped and water sold are accurate. Unsold water can include water loss prior to treatment, water used for treatment purposes, distribution system losses such as leaks and line flushing, water loss due to underregistering customer meters, water taken from unmetered services such as bulk outlets, water theft, and water provided free of charge to special customers or for public services such as parks, swimming pools, city buildings, etc. Many public water suppliers meter some of their free services, and thus can separate their unsold water into metered free and unaccounted for water. It is advantageous for a utility to meter as much of their unsold water as possible. Water leaks or waste at connections receiving free water are much more likely to be noticed and corrected if a meter is installed and read regularly. Also, by accounting for some of their unsold water, a utility can more easily identify distribution system losses. For utilities that do not meter any free water, all unsold water is unaccounted for.

The number of public water suppliers metering some of their free water has increased since 1992, when amounts of metered free water were first included on annual Municipal Water Use reports. That year, 228 utilities reported some metered free use. In 1995, a total of 338 utilities reported metered free use. This water is commonly used for well lube lines, water treatment processes (such as backflushing filters), wastewater treatment, city services, and irrigation of city parks, golf courses, and ballfields. Some utilities meter water provided to nonpaying customers such as churches. Several public water suppliers have arrangements to provide free water to certain connections in exchange for the use of private property for wells, towers, or water lines.

Metered free and unaccounted for water are expressed as percentages of the total water pumped and/or purchased. In 1995, metered free water ranged from less than one percent to 36 percent of the total water pumped by utilities that recorded this information. The average was six percent. Unaccounted for water was reported by 566 utilities in 1995, and ranged from three percent to 66 percent of the total pumped. The average was 16 percent. If a public water supplier has a percent unaccounted for water of less than three, then chances are the amount of water pumped is underrecorded. This can result from faulty flow meters at the intake source, or significant errors in either the reported number of hours pumped or the estimated pump rate at one or more intake sources. If unaccounted for water is greater than 20 percent of total pumpage, then the public water supplier may have lost water through unmetered services, major system leaks, or numerous underregistering customer meters. Large percentages of water unaccounted for also can occur when the amount of raw water pumped has been overreported due to faulty meters or check valves. Erratic monthly percentages of water unaccounted for may occur when the time periods for reading raw meters and service meters do not correspond.

Maintaining accurate records of amounts of water pumped and used is the first step in managing unsold water. Reductions in the amount of unaccounted for water are possible once that amount can be identified. It is anticipated that the percentage of free water that is metered will increase as more public water suppliers realize the value of accounting for their unsold water, and that the percentage of water unaccounted for will decrease as a result of reduction in unmetered losses.

Unaccounted For Water and Its Market Value

Public water suppliers with large percentages of unsold water may be losing revenue, since they receive no compensation for pumping, treating, and delivering that water. The best way for a utility to identify possible losses is to meter all usage, including treatment use and free services. Then, analysis of percentages of metered free and unaccounted for water can indicate where the water and revenue losses are occurring. If the utility meters free services, but still has a large percent unaccounted for water, then the water may have been lost through leaks, unmetered uses such as line flushing and firefighting, or underregistering customer meters. In this case, the utility could promote conservation by reducing unaccounted for water through leak detection, additional metering, and regular meter replacement programs. If metered free uses are a large percentage of total pumpage, the utility can look for opportunities to reduce usage at these connections. For example, excessive amounts of water are often sent back down wells with water lubrication lines; the flow rate on the lube lines can be adjusted to lower amounts of water lost. Public service connections are another common cause of high metered free use (some Kansas communities pay for water used by public services; most do not). If the reason for high metered free use is irrigation of areas such as parks, public golf courses, and ballfields, the utility could reduce its water use by implementing appropriate irrigation management practices.

Public water suppliers with 30 percent or more unaccounted for water have the most to gain financially by reducing this percentage. Due to efforts by individual water suppliers, the Kansas Rural Water Association, and state agencies, the number of utilities with excessive water loss has decreased during the past six years. In 1990, there were 99 public water suppliers with 30 percent or more of their water unaccounted for. In 1995 a total of 53 public water suppliers reported that 30 percent or more of the water they pumped was unaccounted for. These suppliers are listed in Table 20 (p. 58), which shows the number of gallons that would have been saved if only 15 percent of the water had been unaccounted for, and the potential market value had that amount of water been sold at the 1995 rate for 10,000 gallons per month.

The City of Attica had the highest percentage of unaccounted for water in 1995; 66 percent of the water pumped by this city was not sold. This large water loss may have been caused by undetected leaks. The second highest percent unaccounted for water was reported by the City of Elgin, where 58 percent of the water pumped in 1995 was not sold. This small town in southeast Kansas has made progress in locating and repairing some small leaks, but may also be losing water through underregistering old customer meters. Jefferson County Rural Water District No. 6 ranked third highest in Table 20. This excessive water loss was caused by a faulty tower valve.

The purpose of this annual analysis of unsold water is to document the progress that has been made in reducing amounts of unaccounted for water, and to show that some public water suppliers in Kansas still have room for improved efficiency. Conservation through reduction of unaccounted for water may result in revenue enhancement or cost savings to the utility, depending on its unique situation. Additionally, reductions in percent unaccounted for water can extend the resource, thus postponing a utility's need to find additional water supplies.

Management Practices to Consider

All public water suppliers that have 15 percent or more unaccounted for water should consider the following actions:

1. Install water meters at all service connections, including bulk outlets and those that receive free water (such as city parks, ballfields, swimming pools, city offices, churches, etc.). Otherwise it is impossible to determine how much water is actually being lost.
2. Review the billing system carefully to be sure that the records are accurate.
3. Replace customer water meters on a regular schedule. Customer water meters tend to begin underregistering with age and can result in apparent water loss and much lost revenue.
4. Read raw water intake meter(s) at least on a monthly basis and read customer meters on a monthly basis. If possible, read raw water meters at the same time of the month that customer water meters are read.
5. Test meters at raw water intakes for accuracy (or test pump rates, if meters are not installed) at least once every three years.
6. If reliable records of water pumped, water sold, and water distributed free indicate that loss is occurring, perform leak detection.

Opportunities for Assistance

The Kansas Rural Water Association provides assistance with water loss reduction and energy conservation to cities, rural water districts and privately owned water utilities across Kansas at no cost or obligation. Kansas Rural Water Association technical assistance to water utilities is partially funded by State Water Plan fee funds. The Kansas Rural Water Association may be contacted at (913) 336-3760. During the time period from January 1, 1995 through December 31, 1995, the Kansas Rural Water Association completed 38 water loss surveys, and detected leaks at 29 of these. Water loss detected by Kansas Rural Water Association totaled 141,965,920 gallons, with an estimated savings of \$164,772.

The Kansas Water Office has copies of the revised *1990 Municipal Water Conservation Plan Guidelines* and a companion document entitled *Water Conservation Measures for Kansas Communities*. These two documents emphasize cost effective approaches to water conservation and can be obtained by contacting the Kansas Water Office at (913) 296-3187 or the Division of Water Resources at (913) 296-3717.

PER CAPITA WATER USE BY MOBILE HOME PARKS

Most mobile home parks supply water as part of their lot rent and do not meter water use to individual mobile homes. Hence, the two tables in this section do not include statistics on water rates or unsold water. Also, there are not enough mobile home parks to provide meaningful gpcd averages for eight regional summaries. Consequently, the state has been divided into two regional groups for analysis of mobile home park water use. Western Kansas includes Regions 1, 2, 3, and 4; Central and Eastern Kansas includes Regions 5, 6, 7, and 8 (see Figure 1). A regional average gpcd was determined for each of these two regional groups.

Table 21 (p. 60) ranks gpcd usage for 14 mobile home parks in Western Kansas in 1995. These mobile home parks are all located in Finney and Seward Counties, near Garden City and Liberal. Rolling Hills, Inc. used 464 gpcd, or 257 percent above the regional average of 130 gpcd, and once again had the highest gpcd usage among mobile home parks in Kansas. However, Rolling Hills is unlike most mobile home parks in that it serves customers with lots of approximately one acre in size, who do extensive lawn, garden, and livestock watering. Liberal Feeders and Meadow Lark Park had the second and third highest usage with 211 and 135 gpcd, respectively. Countryside Rentals, Hilltop Trailer Park, and Towns Riverview had the lowest usage among mobile home parks in western Kansas with figures of 74, 65, and 47 gpcd, respectively.

Table 22 (p. 61) ranks gpcd usage for 26 mobile home parks in Central and Eastern Kansas. Nationwide Village, in Ellis County, had the highest gpcd usage among suppliers in this group. Although this mobile home park used 123 gpcd, or 66 percent more than the regional average of 74 gpcd, its usage was still less than the regional average usage for mobile home parks in Western Kansas. Prairie Schooner Mobile Home Park ranked second highest with 113 gpcd, and Buffalo Hills Mobile Village ranked third highest with 106 gpcd. The three lowest gpcd users among Central and Eastern Kansas mobile home parks were Western Acres Mobile Home Park (35 gpcd), Tuttle Terrace Trailer Court (35 gpcd), and Kanopolanes Trailer Court (32 gpcd).

Water use by mobile home parks was omitted from the previous discussions of statewide gpcd trends, water rates, and unsold water. However, all public water suppliers for which 1995 water use data were collected, including cities, subdivisions, rural water districts, and mobile home parks, are listed alphabetically in Table 23 (p. 62). This table provides information on regional location, annual gpcd values for the years 1991-1995, and average gpcd for the five-year period for each public water supplier.

TABLE 1
AVERAGE GPCD USE FOR PUBLIC WATER SUPPLIERS BY REGION AND SIZE
KANSAS, 1991-1995

Region ^{a/}	Year					Average
	1991	1992	1993	1994	1995	
1	290	265	244	275	259	267
2	287	247	233	262	252	256
3	267	216	210	247	240	236
4	244	191	163	202	185	197
5	187	143	138	160	145	155
6-ML	175	136	135	162	155	153
6-S	173	137	145	166	151	154
7-L	152	131	133	150	139	141
7-M	127	112	110	119	113	116
7-S	124	104	102	110	107	109
8-L	143	129	126	140	140	136
8-M	112	100	101	108	108	106
8-S	92	85	88	92	93	90
Kansas	156	131	128	144	137	139

^{a/} Refer to Figure 1 for map of regions. For this analysis, Regions 6, 7, and 8 were subdivided into size categories. Large (L) utilities are those serving 10,000 people or more. Medium (M) utilities are those serving 500 to 9,999 people. Small (S) utilities are those serving fewer than 500 people.

TABLE 2
WATER USE STATISTICS FOR PUBLIC WATER SUPPLIERS
Region 1
1995

City/Public Water Supplier	CO ^{a/}	GPCD ^{b/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{c/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{d/}
Bird City	CN	399	259	+54	\$10.00-\$19.99	12	19
Johnson City	ST	339	259	+31	Less Than \$10	6	11
Paxton Addition	SH	329	259	+27	Flat Rate	NA	NA
St. Francis	CN	311	259	+20	Less Than \$10	3	9
Syracuse	HM	288	259	+11	\$10.00-\$19.99	1	12
Manter	ST	284	259	+10	\$10.00-\$19.99	0	29
Goodland	SH	281	259	+8	\$10.00-\$19.99	0	13
Wallace RWD 1	WA	280	259	+8	Less Than \$10	1	7
Wallace	WA	280	259	+8	\$10.00-\$19.99	0	14 ^{e/}
Coolidge	HM	257	259	-1	Less Than \$10	0	29
Elkhart	MT	256	259	-1	\$10.00-\$19.99	1	11
Sharon Springs	WA	242	259	-7	\$10.00-\$19.99	2	13
Rolla	MT	235	259	-9	\$10.00-\$19.99	10	5
Tribune	GL	230	259	-11	\$20.00-\$29.99	<1	14
Kanorado	SH	173	259	-33	\$10.00-\$19.99	0	14 ^{e/}
Horace	GL	119	259	-54	\$20.00-\$29.99	0	14
Hamilton RWD 1	mu	106	259	-59	\$50.00-\$59.99	3	10
Average	--	259	259	--	\$16.61	2	14

^{a/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{b/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{c/} Sewer charges were not included as part of the water rate charges.

^{d/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

^{e/} Percent of water unaccounted for was estimated using the regional average.

TABLE 3
WATER USE STATISTICS FOR PUBLIC WATER SUPPLIERS
Region 2
1995

City/Public Water Supplier	CO ^{a/}	GPCD ^{b/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{c/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{d/}
Moscow	SV	510	252	+102	Flat Rate	NA	NA
Herndon	RA	422	252	+67	Less Than \$10	6	23
Hugoton	SV	388	252	+54	Less Than \$10	<1	15 ^{e/}
McDonald	RA	291	252	+15	\$10.00-\$19.99	0	21
Rexford	TH	282	252	+12	\$10.00-\$19.99	17	5
Lakin	KE	279	252	+11	\$10.00-\$19.99	10	19
Sublette	HS	256	252	+2	\$10.00-\$19.99	4	10
Scott City	SC	252	252	0	\$10.00-\$19.99	1	16
Satanta	HS	250	252	-1	\$10.00-\$19.99	1	12
Colby	TH	249	252	-1	\$10.00-\$19.99	5	15
Liberal	SW	248	252	-2	\$10.00-\$19.99	<1	29
Brewster	TH	244	252	-3	\$10.00-\$19.99	4	11
Kismet	SW	238	252	-6	\$10.00-\$19.99	21	20
Winona	LG	238	252	-6	\$10.00-\$19.99	<1	18
Atwood	RA	228	252	-10	\$10.00-\$19.99	2	12
Ulysses	GT	218	252	-13	\$10.00-\$19.99	1	9
Leoti	WH	213	252	-15	\$10.00-\$19.99	0	13
Oakley	LG	206	252	-18	Less Than \$10	2	19
Garden City	FI	168	252	-33	\$10.00-\$19.99	8	NA
Holcomb	FI	145	252	-42	\$10.00-\$19.99	1	16
Deerfield	KE	140	252	-44	\$10.00-\$19.99	3	8
Johnson Subdivision	FI	74	252	-71	No Water Sales	0	NA
Average	--	252	252	--	\$13.51	4	15

^{a/} See Table 24 for key to county codes.

^{b/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{c/} Sewer charges were not included as part of the water rate charges.

^{d/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

^{e/} Percent of water unaccounted for was estimated using the regional average.

TABLE 4
WATER USE STATISTICS FOR PUBLIC WATER SUPPLIERS
Region 3
1995

City/Public Water Supplier	CO ^{a/}	GPCD ^{b/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{c/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{d/}
Jennings	DC	303	240	+26	\$10.00-\$19.99	6	31
Fowler	ME	291	240	+21	\$10.00-\$19.99	2	36
Plains	ME	291	240	+21	\$10.00-\$19.99	15	14
Ensign	GY	284	240	+18	Flat Rate	NA	NA
Copeland	GY	283	240	+18	Flat Rate	NA	NA
Selden	SD	262	240	+9	\$10.00-\$19.99	12	31
Cimarron	GY	251	240	+5	\$10.00-\$19.99	4	9
Oberlin	DC	246	240	+3	\$10.00-\$19.99	0	18
Montezuma	GY	244	240	+2	\$10.00-\$19.99	1	13
Hoxie	SD	239	240	0	\$10.00-\$19.99	0	13
Lane RWD 1	LE	230	240	-4	\$10.00-\$19.99	0	20
Grinnell	GO	230	240	-4	Less Than \$10	2	12
Quinter	GO	227	240	-5	\$10.00-\$19.99	2	9
Ingalls	GY	224	240	-7	\$10.00-\$19.99	<1	9
Grainfield	GO	223	240	-7	Less Than \$10	0	6
Dighton	LE	213	240	-11	\$10.00-\$19.99	2	11
Meade	ME	213	240	-11	\$10.00-\$19.99	6	11
Norcatour	DC	203	240	-15	\$10.00-\$19.99	0	25
Park	GO	186	240	-23	Less Than \$10	0	8
Gove	GO	153	240	-36	\$10.00-\$19.99	<1	4
Average	--	240	240	--	\$14.11	3	16

^{a/} See Table 24 for key to county codes.

^{b/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{c/} Sewer charges were not included as part of the water rate charges.

^{d/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

TABLE 5
WATER USE STATISTICS FOR PUBLIC WATER SUPPLIERS
Region 4
1995

City/Public Water Supplier	CO ^{a/}	GPCD ^{b/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{c/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{d/}
Englewood	CA	536	185	+190	Flat Rate	NA	NA
Bucklin	FO	296	185	+60	Flat Rate	NA	NA
Ashland	CA	267	185	+44	\$10.00-\$19.99	2	32
Morland	GH	248	185	+34	\$20.00-\$29.99	2	36
Norton	NT	246	185	+33	\$10.00-\$19.99	8	17
Ford	FO	238	185	+29	Flat Rate	NA	NA
Jetmore	HG	228	185	+23	\$10.00-\$19.99	16	9
Utica	NS	225	185	+22	\$10.00-\$19.99	13	9
Dodge City	FO	201	185	+9	\$10.00-\$19.99	1	19
Wakeeney	TR	188	185	+2	\$10.00-\$19.99	1	20
Almena	NT	187	185	+1	\$10.00-\$19.99	0	13
Lenora	NT	187	185	+1	\$20.00-\$29.99	5	21
Minneola	CA	180	185	-3	\$10.00-\$19.99	0	7
Spearville	FO	175	185	-5	\$20.00-\$29.99	7	7
Hanston	HG	174	185	-6	Less Than \$10	0	7
Hill City	GH	169	185	-9	\$10.00-\$19.99	3	17
Bogue	GH	166	185	-10	\$10.00-\$19.99	0	11
Clayton	NT	147	185	-21	\$20.00-\$29.99	4	26
Ransom	NS	146	185	-21	\$10.00-\$19.99	<1	11
Collyer	TR	133	185	-28	\$20.00-\$29.99	0	24
Arnold	NS	133	185	-28	Flat Rate	NA	NA
Ness City	NS	123	185	-34	\$30.00-\$39.99	1	12
Bazine	NS	121	185	-35	\$10.00-\$19.99	4	12
Brownell	NS	84	185	-55	\$10.00-\$19.99	0	11
Norton RWD 1	NT	79	185	-57	\$30.00-\$39.99	2	11
Nicodemus	GH	53	185	-71	Flat Rate	NA	NA
Trego RWD 1	mu	51	185	-72	\$40.00-\$49.99	0	9
Average	--	185	185	--	\$18.13	3	15

^{a/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{b/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{c/} Sewer charges were not included as part of the water rate charges.

^{d/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

TABLE 6
WATER USE STATISTICS FOR PUBLIC WATER SUPPLIERS
Region 5
1995

City/Public Water Supplier	CO ^{a/}	GPCD ^{b/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{c/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{d/}
Comanche RWD 2	CM	324	145	+123	\$40.00-\$49.99	0	39
Protection	CM	229	145	+58	\$10.00-\$19.99	1	22
Larned	PN	211	145	+46	\$10.00-\$19.99	12	13
Long Island	PL	210	145	+45	\$10.00-\$19.99	0	30
Coldwater	CM	206	145	+42	\$20.00-\$29.99	0	12
Offerle	ED	204	145	+41	\$10.00-\$19.99	0	8
Lewis	ED	204	145	+41	\$10.00-\$19.99	0	25
Stockton	RO	198	145	+37	\$10.00-\$19.99	12	17
Haviland	KW	196	145	+35	Less Than \$10	0	24
Rush RWD 1	mu	187	145	+29	\$30.00-\$39.99	0	31
Mullinville	KW	185	145	+28	\$10.00-\$19.99	0	42
Otis	RH	184	145	+27	\$10.00-\$19.99	<1	9
Logan	PL	179	145	+23	\$10.00-\$19.99	1	8
Rush Center	RH	178	145	+23	\$10.00-\$19.99	<1	14
Rooks RWD 1	mu	177	145	+22	\$20.00-\$29.99	0	26
Kirwin	PL	164	145	+13	\$10.00-\$19.99	<1	42
Burdett	PN	161	145	+11	\$10.00-\$19.99	0	13
Greensburg	KW	160	145	+10	\$10.00-\$19.99	2	5
Prairie View	PL	159	145	+10	\$20.00-\$29.99	1	9
Belpre	ED	156	145	+8	\$30.00-\$39.99	2	28
Phillipsburg	PL	154	145	+6	\$30.00-\$39.99	9	9
Woodston	RO	147	145	+1	\$20.00-\$29.99	0	4
Plainville	RO	143	145	-1	\$10.00-\$19.99	3	19
Timken	RH	134	145	-8	\$10.00-\$19.99	0	21
Kinsley	ED	130	145	-10	\$20.00-\$29.99	3	12
Belvidere	KW	128	145	-12	Flat Rate	NA	NA
Ellis	EL	127	145	-12	\$10.00-\$19.99	6	17
Palco	RO	123	145	-15	\$20.00-\$29.99	0	20
Hays City Suburban	EL	120	145	-17	No Water Sales	NA	NA
LaCrosse	RH	116	145	-20	\$30.00-\$39.99	1	11

TABLE 6 (Continued)
WATER USE STATISTICS FOR PUBLIC WATER SUPPLIERS
Region 5
1995

City/Public Water Supplier	CO ^{a/}	GPCD ^{b/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{c/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{d/}
Victoria	EL	115	145	-21	\$10.00-\$19.99	0	5
McCracken	RH	114	145	-21	\$30.00-\$39.99	0	11
Agra	PL	113	145	-22	\$10.00-\$19.99	0	11
Alexander	RH	107	145	-26	\$10.00-\$19.99	0	11
Ellis RWD 7	EL	102	145	-30	\$60 or More	0	30
Bison	RH	100	145	-31	\$10.00-\$19.99	0	13
Rooks RWD 2	RO	95	145	-34	\$20.00-\$29.99	0	18 ^{e/}
Ellis RWD 2	EL	94	145	-35	\$60 or More	0	33
Hays	EL	92	145	-37	\$30.00-\$39.99	1	9
Rooks RWD 3	mu	90	145	-38	\$40.00-\$49.99	1	4
Liebenthal	RH	89	145	-39	\$30.00-\$39.99	0	10
Speed	PL	88	145	-39	\$20.00-\$29.99	6	16
Ellis RWD 6	EL	76	145	-48	\$40.00-\$49.99	0	12
Ellis RWD 1	EL	73	145	-50	\$10.00-\$19.99	0	6
Ellis RWD 5	EL	67	145	-54	\$40.00-\$49.99	0	40
Ellis RWD 3	EL	54	145	-63	\$20.00-\$29.99	0	NA
Average	--	145	145	--	\$24.05	1	18

^{a/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{b/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{c/} Sewer charges were not included as part of the water rate charges.

^{d/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

^{e/} Percent of water unaccounted for was estimated using the regional average.

TABLE 7
WATER USE STATISTICS FOR MEDIUM AND LARGE
PUBLIC WATER SUPPLIERS^{a/}
Region 6
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Attica	HP	405	155	+161	\$10.00-\$19.99	0	66
Medicine Lodge	BA	223	155	+44	\$10.00-\$19.99	5	21
Pratt	PR	218	155	+41	\$10.00-\$19.99	4	16
Mitchell RWD 2	mu	213	155	+37	\$40.00-\$49.99	4	17
Anthony	HP	209	155	+35	\$10.00-\$19.99	14	19
Lyons	RC	208	155	+34	\$10.00-\$19.99	1	10
Macksville	SF	192	155	+24	\$20.00-\$29.99	21	4
Downs	OB	181	155	+17	\$20.00-\$29.99	1	11
Kingman	KM	174	155	+12	\$20.00-\$29.99	0	28
Smith Center	SM	172	155	+11	\$10.00-\$19.99	2	29
Osborne	OB	171	155	+10	\$20.00-\$29.99	16	11
Mankato	JW	165	155	+6	\$20.00-\$29.99	3	23
Buhler	RN	159	155	+3	\$10.00-\$19.99	<1	11
St. John	SF	156	155	+1	\$20.00-\$29.99	6	18
Little River	RC	154	155	-1	\$20.00-\$29.99	<1	19
Cunningham	KM	153	155	-1	\$10.00-\$19.99	4	21
Haven	RN	151	155	-3	Less Than \$10	0	24
Harper	HP	142	155	-8	\$10.00-\$19.99	0	14
Pretty Prairie	RN	142	155	-8	\$20.00-\$29.99	2	14
Ellsworth	EW	142	155	-8	\$20.00-\$29.99	5	12
Kiowa	BA	141	155	-9	\$20.00-\$29.99	1	15
Stafford	SF	141	155	-9	\$10.00-\$19.99	6	6
Clafin	BT	140	155	-10	\$10.00-\$19.99	0	24
Sterling	RC	138	155	-11	\$10.00-\$19.99	7	4
South Hutchinson	RN	138	155	-11	\$10.00-\$19.99	2	6
Hutchinson	RN	137	155	-12	\$10.00-\$19.99	5	11
Cawker City	MC	136	155	-12	\$10.00-\$19.99	1	17
Kensington	SM	135	155	-13	\$20.00-\$29.99	14	11
Lincoln Center	LC	130	155	-16	\$20.00-\$29.99	4	9
Russell	RS	130	155	-16	\$40.00-\$49.99	7	18

TABLE 7 (Continued)
WATER USE STATISTICS FOR MEDIUM AND LARGE
PUBLIC WATER SUPPLIERS^{a/}
Region 6
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Great Bend	BT	130	155	-16	\$20.00-\$29.99	0	10
Kanopolis	EW	129	155	-17	\$30.00-\$39.99	17	11
Post Rock RWD	mu	129	155	-17	\$60 or More	0	30
Wilson	EW	128	155	-17	\$10.00-\$19.99	1	9
Beloit	MC	125	155	-19	\$20.00-\$29.99	<1	12
Nickerson	RN	114	155	-26	\$10.00-\$19.99	2	22
Ellinwood	BT	112	155	-28	\$20.00-\$29.99	3	5
Hoisington	BT	110	155	-29	\$20.00-\$29.99	0	12
Jewell RWD 1	mu	103	155	-34	\$40.00-\$49.99	4	24
Chase	RC	97	155	-37	\$20.00-\$29.99	<1	10
Jewell	JW	87	155	-44	\$30.00-\$39.99	<1	10
Average	--	155	155	--	\$23.49	4	16

^{a/} Includes all public water suppliers in Region 6 that serve 500 people or more.

^{b/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{c/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{d/} Sewer charges were not included as part of the water rate charges.

^{e/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

TABLE 8
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 6
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
West Hills Water Co.	RN	700	151	+364	Flat Rate	NA	NA
Reno RWD 3	RN	476	151	+215	Flat Rate	NA	NA
Barton RWD 2	BT	279	151	+85	Flat Rate	NA	NA
Preston	PR	270	151	+79	Flat Rate	NA	NA
Osborne RWD 1A	mu	258	151	+71	\$40.00-\$49.99	0	44
Reno RWD 8	RN	224	151	+48	\$10.00-\$19.99	5	12
Hardtner	BA	184	151	+22	\$20.00-\$29.99	28	14
Coats	PR	180	151	+19	Less Than \$10	0	12
Arlington	RN	177	151	+17	\$10.00-\$19.99	<1	41
Glen Elder	MC	177	151	+17	\$10.00-\$19.99	2	12
Beverly	LC	175	151	+16	\$20.00-\$29.99	0	41
Isabel	BA	172	151	+14	\$10.00-\$19.99	0	4
Russell RWD 2	RS	162	151	+7	\$20.00-\$29.99	0	NA
Cullison	PR	161	151	+7	\$10.00-\$19.99	0	15
Smith RWD 1	mu	158	151	+5	\$40.00-\$49.99	0	22
Raymond	RC	157	151	+4	\$10.00-\$19.99	5	10
Holyrood	EW	154	151	+2	\$10.00-\$19.99	3	13
Burr Oak	JW	152	151	+1	\$20.00-\$29.99	1	27
Reno RWD 1	RN	150	151	-1	\$30.00-\$39.99	0	7
Bushton	RC	148	151	-2	\$10.00-\$19.99	1	16
Sawyer	PR	148	151	-2	\$10.00-\$19.99	1	26
Zenda	KM	147	151	-3	\$20.00-\$29.99	4	16
Lorraine	EW	144	151	-5	\$10.00-\$19.99	0	6
Barber RWD 2	mu	143	151	-5	\$20.00-\$29.99	0	14
Spivey	KM	142	151	-6	\$10.00-\$19.99	6	16
Gaylord	SM	140	151	-7	\$20.00-\$29.99	3	14
Randall	JW	140	151	-7	\$40.00-\$49.99	0	38
Sylvan Grove	LC	138	151	-9	\$20.00-\$29.99	0	12
Alton	OB	135	151	-11	\$10.00-\$19.99	8	15
Sylvia	RN	133	151	-12	\$10.00-\$19.99	1	24

TABLE 8 (Continued)
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 6
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Russell RWD 1	RS	129	151	-15	\$40.00-\$49.99	0	17 ^{f/}
Turon	RN	129	151	-15	\$10.00-\$19.99	3	14
Hazelton	BA	122	151	-19	\$20.00-\$29.99	0	17
Bunker Hill	RS	121	151	-20	\$40.00-\$49.99	7	26
Abbyville	RN	118	151	-22	Less Than \$10	16	6
Lucas	RS	116	151	-23	\$20.00-\$29.99	1	16
Olmitz	BT	114	151	-25	\$10.00-\$19.99	0	15
Sharon	BA	114	151	-25	Less Than \$10	<1	9
Tipton	MC	112	151	-26	\$20.00-\$29.99	1	24
Esbon	JW	112	151	-26	\$30.00-\$39.99	6	17
Norwich	KM	108	151	-28	\$20.00-\$29.99	0	10
Albert	BT	106	151	-30	\$10.00-\$19.99	0	14
Gorham	RS	104	151	-31	\$50.00-\$59.99	<1	6
Russell RWD 4	RS	103	151	-32	\$40.00-\$49.99	0	26
Reno Co. WD 101	RN	101	151	-33	\$10.00-\$19.99	0	6
Geneseo	EW	99	151	-34	\$20.00-\$29.99	<1	11
Pawnee Rock	BT	98	151	-35	\$20.00-\$29.99	2	12
Lebanon	SM	92	151	-39	\$30.00-\$39.99	0	14
Harper RWD 3	HP	91	151	-40	\$10.00-\$19.99	0	5
Formoso	JW	91	151	-40	\$30.00-\$39.99	<1	21
Luray	RS	91	151	-40	\$40.00-\$49.99	0	22
Barber RWD 3	BA	89	151	-41	\$40.00-\$49.99	0	25
Portis	OB	85	151	-44	\$20.00-\$29.99	0	33
Natoma	OB	84	151	-44	\$20.00-\$29.99	<1	15
Bluff City	HP	84	151	-44	\$10.00-\$19.99	3	15

TABLE 8 (Continued)
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 6
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Dorrance	RS	77	151	-49	\$30.00-\$39.99	2	10
Simpson	MC	74	151	-51	\$20.00-\$29.99	0	14
Iuka	PR	72	151	-52	\$30.00-\$39.99	<1	5
Average	--	151	151	--	\$25.15	2	17

^{a/} Includes all public water suppliers in Region 6 that serve fewer than 500 people.

^{b/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{c/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{d/} Sewer charges were not included as part of the water rate charges.

^{e/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

^{f/} Percent of water unaccounted for was estimated using the regional average.

TABLE 9
WATER USE STATISTICS FOR LARGE PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
McPherson	MP	166	139	+19	\$10.00-\$19.99	1	10
El Dorado	BU	163	139	+17	\$10.00-\$19.99	3	6
Topeka	SN	161	139	+16	\$20.00-\$29.99	16	8
Coffeyville	MG	148	139	+6	\$20.00-\$29.99	1	25
Manhattan	RL	146	139	+5	\$20.00-\$29.99	2	7
Arkansas City	CL	146	139	+5	\$20.00-\$29.99	3	23
Wichita	SG	144	139	+4	\$10.00-\$19.99	0	12
Emporia	LY	142	139	+2	\$20.00-\$29.99	6	9
Independence	MG	131	139	-6	\$20.00-\$29.99	12	9
Junction City	GE	128	139	-8	\$20.00-\$29.99	12	13
Winfield	CL	123	139	-12	\$20.00-\$29.99	0	NA
Derby	SG	123	139	-12	\$10.00-\$19.99	1	3
Salina	SA	119	139	-14	\$20.00-\$29.99	1	6
Newton	HV	111	139	-20	\$10.00-\$19.99	0	12
Average	--	139	139	--	\$20.30	4	11

- ^{a/} Includes all public water suppliers in Region 7 that serve 10,000 people or more.
- ^{b/} See Table 24 for key to county codes.
- ^{c/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.
- ^{d/} Sewer charges were not included as part of the water rate charges.
- ^{e/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

TABLE 10
WATER USE STATISTICS FOR MEDIUM PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Republic RWD 1	mu	185	113	+64	\$20.00-\$29.99	0	35
Cheney	SG	182	113	+61	\$20.00-\$29.99	36	5
Lindsborg	MP	171	113	+51	\$20.00-\$29.99	3	15 ^{f/}
Argonia	SU	166	113	+47	\$10.00-\$19.99	<1	33
Belleville	RP	162	113	+43	\$20.00-\$29.99	4	17
Canton	MP	161	113	+42	\$10.00-\$19.99	0	14
Republic RWD 2	mu	161	113	+42	\$20.00-\$29.99	0	25
Strong City	CS	157	113	+39	\$40.00-\$49.99	6	15
St. Marys	PT	157	113	+39	\$10.00-\$19.99	7	15
Cowley RWD 3	CL	150	113	+33	\$20.00-\$29.99	<1	31
Blue Rapids	MS	149	113	+32	\$10.00-\$19.99	0	15
Chapman	DK	148	113	+31	\$20.00-\$29.99	32	8
Concordia	CD	147	113	+30	\$20.00-\$29.99	4	10
Clyde	CD	145	113	+28	\$20.00-\$29.99	3	30
Waterville	MS	144	113	+27	\$10.00-\$19.99	4	17
Mount Hope	SG	143	113	+27	\$10.00-\$19.99	13	16
Inman	MP	142	113	+26	\$20.00-\$29.99	11	9
Wellington	SU	142	113	+26	\$30.00-\$39.99	<1	29
Burden	CL	140	113	+24	\$20.00-\$29.99	2	19
Minneapolis	OT	140	113	+24	\$20.00-\$29.99	2	11
Clay Center	CY	139	113	+23	\$10.00-\$19.99	5	5
Washington	WS	138	113	+22	\$10.00-\$19.99	0	14
Moundridge	MP	138	113	+22	Less Than \$10	1	11
Clifton	CY	136	113	+20	\$10.99-\$19.99	12	15
Holton	JA	132	113	+17	\$30.00-\$39.99	15	11
Oxford	SU	132	113	+17	\$30.00-\$39.99	1	18
Marysville	MS	130	113	+15	\$20.00-\$29.99	3	14
Miltonvale	CD	130	113	+15	\$10.00-\$19.99	5	24
Caney	MG	130	113	+15	\$30.00-\$39.99	16	19
Goddard	SG	128	113	+13	\$10.00-\$19.99	2	6

TABLE 10 (Continued)
WATER USE STATISTICS FOR MEDIUM PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Delphos	OT	128	113	+13	\$10.00-\$19.99	0	31
Solomon	DK	128	113	+13	\$20.00-\$29.99	3	13
Hesston	HV	127	113	+12	\$10.00-\$19.99	1	6
Ogden	RL	127	113	+12	\$10.00-\$19.99	1	NA
Marquette	MP	126	113	+12	\$30.00-\$39.99	8	24
Burlington	CF	126	113	+12	\$30.00-\$39.99	1	16
Valley Center	SG	125	113	+11	\$20.00-\$29.99	1	19
Frankfort	MS	125	113	+11	\$10.00-\$19.99	2	22
Augusta	BU	125	113	+11	\$10.00-\$19.99	0	8
Halstead	HV	124	113	+10	\$20.00-\$29.99	1	6
Seneca	NM	124	113	+10	\$10.00-\$19.99	1	6
Neodesha	WL	124	113	+10	\$40.00-\$49.99	15	7
Florence	MN	123	113	+9	\$30.00-\$39.99	7	19
Riley	RL	122	113	+8	\$10.00-\$19.99	0	21
Haysville	SG	122	113	+8	\$10.00-\$19.99	6	25
Westmoreland	PT	121	113	+7	\$30.00-\$39.99	4	15 ^{f/}
Fredonia	WL	121	113	+7	\$40.00-\$49.99	1	12
Wamego	PT	120	113	+6	\$10.00-\$19.99	2	14
Dickinson RWD 1	mu	120	113	+6	\$50.00-\$59.99	0	25
Eureka	GW	120	113	+6	\$30.00-\$39.99	1	11
Rossville	SN	120	113	+6	\$10.00-\$19.99	0	15 ^{f/}
Abilene	DK	119	113	+5	\$10.00-\$19.99	0	13
Marion	MN	119	113	+5	\$30.00-\$39.99	5	13
Cedar Vale	CQ	118	113	+4	\$30.00-\$39.99	1	22
Cherryvale	MG	118	113	+4	\$20.00-\$29.99	2	30
Sedan	CQ	117	113	+4	\$30.00-\$39.99	13	11
Marion RWD 1	mu	116	113	+3	\$20.00-\$29.99	0	19
Howard	EK	115	113	+2	\$30.00-\$39.99	0	11
Wakefield	CY	115	113	+2	\$10.00-\$19.99	1	13
Alma	WB	115	113	+2	\$30.00-\$39.99	12	14

TABLE 10 (Continued)
WATER USE STATISTICS FOR MEDIUM PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Hillsboro	MN	113	113	0	\$30.00-\$39.99	<1	14
Bennington	OT	112	113	-1	\$10.00-\$19.99	1	20
Bel Aire	SG	112	113	-1	\$20.00-\$29.99	<1	5
Peabody	MN	112	113	-1	\$30.00-\$39.99	2	23
Osage RWD 3	OS	110	113	-3	\$30.00-\$39.99	13	15
Eskridge	WB	110	113	-3	\$40.00-\$49.99	0	12
Herington	DK	109	113	-4	\$20.00-\$29.99	5	12
Galva	MP	109	113	-4	\$20.00-\$29.99	1	8
New Strawn	CF	109	113	-4	\$30.00-\$39.99	7	21
Park City	SG	108	113	-4	\$10.00-\$19.99	<1	3
Burrton	HV	108	113	-4	\$20.00-\$29.99	2	9
Washington RWD 2	mu	108	113	-4	\$40.00-\$49.99	0	23
Belle Plaine	SU	108	113	-4	\$20.00-\$29.99	<1	10
Nemaha RWD 3	mu	107	113	-5	\$40.00-\$49.99	0	8
Lyndon	OS	105	113	-7	\$40.00-\$49.99	10	14
North Newton	HV	104	113	-8	\$20.00-\$29.99	0	10
Madison	GW	103	113	-9	\$30.00-\$39.99	6	16
Waverly	CF	102	113	-10	\$30.00-\$39.99	8	26
Leroy	CF	102	113	-10	\$50.00-\$59.99	13	10
Sabetha	NM	101	113	-11	\$40.00-\$49.99	0	14
Leon	BU	101	113	-11	\$20.00-\$29.99	6	23
Caldwell	SU	101	113	-11	\$30.00-\$39.99	<1	9
Council Grove	MR	100	113	-12	\$20.00-\$29.99	9	7
Jackson RWD 3	mu	100	113	-12	\$30.00-\$39.99	0	23
Osage RWD 5	mu	99	113	-12	\$40.00-\$49.99	0	18
Marshall RWD 3	MS	99	113	-12	\$40.00-\$49.99	<1	18
Lebo	CF	99	113	-12	\$60 Or More	9	17
Shawnee RWD 4	SN	98	113	-13	\$30.00-\$39.99	<1	17
Onaga	PT	98	113	-13	\$30.00-\$39.99	3	6
Clearwater	SG	98	113	-13	\$20.00-\$29.99	1	15

TABLE 10 (Continued)
WATER USE STATISTICS FOR MEDIUM PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Carbondale	OS	98	113	-13	\$20.00-\$29.99	<1	20
Osage City	OS	97	113	-14	\$20.00-\$29.99	0	4
Enterprise	DK	97	113	-14	\$30.00-\$39.99	2	17
Cowley RWD 1	CL	97	113	-14	\$20.00-\$29.99	1	13
Udall	SU	97	113	-14	\$30.00-\$39.99	0	12
Silver Lake	SN	96	113	-15	\$20.00-\$29.99	2	15 ^{f/}
Mulvane	SU	96	113	-15	\$30.00-\$39.99	3	11
Sedgwick	HV	96	113	-15	\$20.00-\$29.99	4	5
Hanover	WS	92	113	-19	\$30.00-\$39.99	3	14
Pottawatomie RWD 1	PT	92	113	-19	\$30.00-\$39.99	<1	14
White City	MR	91	113	-19	\$10.00-\$19.99	0	20
Conway Springs	SU	91	113	-19	\$20.00-\$29.99	<1	12
Yates Center	WO	90	113	-20	\$40.00-\$49.99	3	12
Glasco	CD	90	113	-20	\$30.00-\$39.99	0	9
Shawnee RWD 8	SN	90	113	-20	\$20.00-\$29.99	0	12
Geary RWD 4	mu	88	113	-22	\$40.00-\$49.99	0	15
Overbrook	OS	88	113	-22	\$40.00-\$49.99	3	12
Cowley RWD 6	CL	87	113	-23	\$10.00-\$19.99	<1	23
Cottonwood Falls	CS	87	113	-23	\$30.00-\$39.99	0	20
Shawnee Cons. RWD 2	SN	87	113	-23	\$40.00-\$49.99	0	24
Burlingame	OS	86	113	-24	\$50.00-\$59.99	6	14
Dickinson RWD 2	mu	86	113	-24	\$40.00-\$49.99	0	31
Potwin	BU	85	113	-25	\$40.00-\$49.99	0	9
Assaria	SA	83	113	-27	\$20.00-\$29.99	0	15 ^{f/}
Douglass	BU	83	113	-27	\$50.00-\$59.99	1	6
Washington RWD 1	mu	82	113	-27	\$30.00-\$39.99	0	11
Clay RWD 2	CY	82	113	-27	\$60 or More	0	9
Shawnee RWD 3	mu	82	113	-27	\$30.00-\$39.99	0	20
Saline RWD 4	mu	82	113	-27	\$20.00-\$29.99	0	9
Whitewater	BU	81	113	-28	\$40.00-\$49.99	<1	6

TABLE 10 (Continued)
WATER USE STATISTICS FOR MEDIUM PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Ottawa RWD 2	mu	79	113	-30	\$40.00-\$49.99	0	13
Hartford	LY	75	113	-34	\$40.00-\$49.99	0	6
Sedgwick RWD 4	SG	73	113	-35	\$60 or More	0	12
Wabaunsee RWD 2	mu	71	113	-37	\$50.00-\$59.99	0	8
Morris RWD 1	mu	69	113	-39	\$50.00-\$59.99	0	7
Woodson RWD 1	mu	69	113	-39	\$50.00-\$59.99	7	17
Pottawatomie RWD 3	mu	64	113	-43	\$30.00-\$39.99	<1	14
Average	--	113	113	--	\$30.56	3	15

- ^{a/} Includes all public water suppliers in Region 7 that serve between 500 and 9,999 people.
- ^{b/} See Table 24 for key to county codes. "mu" indicates multiple counties.
- ^{c/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.
- ^{d/} Sewer charges were not included as part of the water rate charges.
- ^{e/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.
- ^{f/} Percent of water unaccounted for was estimated using the regional average.

TABLE 11
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Elgin	CQ	226	107	+111	\$10.00-\$19.99	0	58
Byron	-- ^{f/}	200	107	+87	Flat Rate	NA	NA
Greenleaf	WS	189	107	+77	\$20.00-\$29.99	4	22
Mahaska	WS	188	107	+76	\$10.00-\$19.99	1	7
Marshall RWD 2	MS	182	107	+70	\$10.00-\$19.99	0	14
Emmett	PT	167	107	+56	\$20.00-\$29.99	<1	31
Clay RWD 1	mu	164	107	+53	\$10.00-\$19.99	0	20
Barnes	WS	161	107	+50	\$10.00-\$19.99	0	30
Altoona	WL	148	107	+38	\$30.00-\$39.99	5	17
Delia	JA	142	107	+33	\$20.00-\$29.99	4	37
Vermillion	MS	140	107	+31	\$20.00-\$29.99	0	29
Scandia	RP	138	107	+29	Less Than \$10	5	11
Goff	NM	138	107	+29	Flat Rate	NA	NA
Rocky Ford Water Co.	RL	138	107	+29	Flat Rate	NA	NA
Geary RWD 2	GE	134	107	+25	Flat Rate	NA	NA
McPherson RWD 1	mu	133	107	+24	\$10.00-\$19.99	0	16
Milford	GE	131	107	+22	\$40.00-\$49.99	9	15 ^{g/}
University Park WD	RL	129	107	+21	Flat Rate	NA	NA
Dexter	CL	129	107	+21	\$10.00-\$19.99	0	29
Havensville	PT	129	107	+21	\$30.00-\$39.99	4	32
Buffalo	WL	126	107	+18	\$40.00-\$49.99	<1	41
Morganville	CY	125	107	+17	Flat Rate	NA	NA
Moline	EK	124	107	+16	\$40.00-\$49.99	0	9
Linn	WS	123	107	+15	\$10.00-\$19.99	0	17
Republic	RP	122	107	+14	\$10.00-\$19.99	3	18
Cloud RWD 1	mu	121	107	+13	\$30.00-\$39.99	1	10
Durham	MN	120	107	+12	\$10.00-\$19.99	7	21
Goessel	MN	120	107	+12	\$10.00-\$19.99	0	14
South Haven	SU	119	107	+11	\$20.00-\$29.99	0	36
Timber Creek Water	RL	119	107	+11	\$20.00-\$29.99	0	26
Courtland	RP	119	107	+11	\$20.00-\$29.99	4	21

TABLE 11 (Continued)
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Severy	GW	118	107	+10	\$30.00-\$39.99	30	8
Garden Plain	SG	118	107	+10	\$30.00-\$39.99	14	9
Tatarrax Hills	RL	115	107	+7	\$30.00-\$39.99	0	16
Blue River Hills Imp.	RL	113	107	+6	Flat Rate	NA	NA
Elk City	MG	112	107	+5	\$30.00-\$39.99	5	9
Longton	EK	111	107	+4	\$20.00-\$29.99	0	38
Gypsum	SA	110	107	+3	\$10.00-\$19.99	2	8
Jamestown	CD	109	107	+2	\$20.00-\$29.99	0	8
Summerfield	MS	109	107	+2	\$20.00-\$29.99	0	13
Belvue	PT	106	107	-1	\$20.00-\$29.99	0	14
Melvorn	OS	106	107	-1	\$50.00-\$59.99	12	22
Lehigh	MN	105	107	-2	\$10.00-\$19.99	0	12
Wetmore	NM	105	107	-2	\$10.00-\$19.99	0	19
Munden	RP	104	107	-3	\$10.00-\$19.99	0	14
Leonardville	RL	103	107	-4	\$20.00-\$29.99	0	8
Tescott	OT	103	107	-4	\$10.00-\$19.99	<1	7
Nemaha RWD 1	NM	102	107	-5	\$30.00-\$39.99	0	13
Toronto	WO	101	107	-6	\$40.00-\$49.99	0	21
Burns	MN	100	107	-7	\$20.00-\$29.99	<1	5
Osage RWD 4	mu	100	107	-7	\$50.00-\$59.99	0	17
Haddam	WS	98	107	-8	\$20.00-\$29.99	1	34
Narka	RP	98	107	-8	\$20.00-\$29.99	0	26
Morrowville	WS	97	107	-9	\$30.00-\$39.99	0	25
Red Bud Lake Assoc.	DK	97	107	-9	\$20.00-\$29.99	0	10
Saline RWD 5	mu	97	107	-9	\$50.00-\$59.99	0	12
St. George	PT	96	107	-10	\$10.00-\$19.99	2	12
Saline RWD 2	SA	96	107	-10	\$20.00-\$29.99	0	16
Dwight	MR	96	107	-10	\$10.00-\$19.99	0	16 ^{g/}
Oneida	NM	95	107	-11	\$20.00-\$29.99	0	17
Palmer	WS	93	107	-13	\$20.00-\$29.99	8	6

TABLE 11 (Continued)
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Randolph	RL	93	107	-13	\$40.00-\$49.99	0	16
Cambridge	CL	93	107	-13	\$50.00-\$59.99	0	13
Marshall RWD 1	MS	92	107	-14	\$20.00-\$29.99	0	6
Ottawa RWD 1	mu	92	107	-14	\$30.00-\$39.99	0	12
Green	CY	91	107	-15	\$20.00-\$29.99	1	26
Paxico	WB	91	107	-15	\$30.00-\$39.99	2	10
Cedar Point	CS	90	107	-16	\$20.00-\$29.99	0	22
Cuba	RP	90	107	-16	\$20.00-\$29.99	0	10
Axtell	MS	90	107	-16	\$40.00-\$49.99	0	10
Agenda	RP	90	107	-16	\$20.00-\$29.99	0	6
Geuda Springs	CL	89	107	-17	\$20.00-\$29.99	0	22
Saline RWD 6	SA	89	107	-17	\$40.00-\$49.99	0	NA
Maple Hill	WB	88	107	-18	\$10.00-\$19.99	1	11
McFarland	WB	86	107	-20	\$30.00-\$39.99	2	7
Fairmont Hts. Water Co.	RL	85	107	-21	\$40.00-\$49.99	0	20
Saline RWD 1	SA	85	107	-21	\$40.00-\$49.99	0	15
Osage RWD 2	mu	84	107	-21	\$30.00-\$39.99	0	5
Aurora	CD	84	107	-21	\$20.00-\$29.99	0	10
Wabaunsee RWD 1	WB	82	107	-23	\$60 or More	0	20
Atlanta	CL	82	107	-23	\$50.00-\$59.99	4	4
Beattie	MS	81	107	-24	\$20.00-\$29.99	<1	11
Longford	CY	81	107	-24	\$20.00-\$29.99	<1	15
Hope	DK	81	107	-24	\$40.00-\$49.99	0	5
Howison Heights WD	SA	81	107	-24	\$40.00-\$49.99	0	4
Cassoday	BU	79	107	-26	\$40.00-\$49.99	0	14
Alta Vista	WB	78	107	-27	\$30.00-\$39.99	2	7
Bern	NM	77	107	-28	\$20.00-\$29.99	<1	NA
Olsburg	PT	75	107	-30	\$20.00-\$29.99	0	12
Culver	OT	75	107	-30	\$10.00-\$19.99	1	8
Oketo	MS	75	107	-30	\$20.00-\$29.99	0	20

TABLE 11 (Continued)
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 7
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Harveyville	WB	75	107	-30	\$50.00-\$59.99	6	16 ^{g/}
Matfield Green	CS	74	107	-31	\$20.00-\$29.99	0	18
Whiting	JA	72	107	-33	\$30.00-\$39.99	1	5
Grenola	EK	67	107	-37	\$40.00-\$49.99	<1	6
Quenemo	OS	65	107	-39	\$50.00-\$59.99	0	7
Virgil	GW	64	107	-40	\$30.00-\$39.99	0	15
Elmdale	CS	59	107	-45	\$20.00-\$29.99	0	7
Hollenberg	WS	44	107	-59	\$50.00-\$59.99	0	19
Average	--	107	107	--	\$29.70	1	16

^{a/} Includes all public water suppliers in Region 7 that serve fewer than 500 people.

^{b/} See Table 24 for key to county codes. "mu" indicates multiple counties

^{c/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{d/} Sewer charges were not included as part of the water rate charges.

^{e/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

^{f/} The Village of Byron is located in Nebraska and also serves the City of Harbine, located in Republic County, Kansas.

^{g/} Percent of water unaccounted for was estimated using the regional average.

TABLE 12
WATER USE STATISTICS FOR LARGE PUBLIC WATER SUPPLIERS^{a/}
Region 8
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Atchison	AT	254	140	+81	\$20.00-\$29.99	1	31
Kansas City	WY	160	140	+14	\$20.00-\$29.99	28	6
Parsons	LB	148	140	+6	\$20.00-\$29.99	26	7
Johnson Co. WD 1	JO	145	140	+4	\$20.00-\$29.99	8	7
Pittsburg	CR	127	140	-9	\$20.00-\$29.99	5	12
Olathe	JO	113	140	-19	\$20.00-\$29.99	1	19
Lawrence	DG	111	140	-21	\$20.00-\$29.99	1	6
Leavenworth	LV	107	140	-24	\$30.00-\$39.99	<1	4
Ottawa	FR	98	140	-30	\$20.00-\$29.99	1	10
Average	--	140	140	--	\$27.11	8	11

^{a/} Includes all public water suppliers in Region 8 that serve 10,000 people or more.

^{b/} See Table 24 for key to county codes.

^{c/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{d/} Sewer charges were not included as part of the water rate charges.

^{e/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

TABLE 13
WATER USE STATISTICS FOR MEDIUM PUBLIC WATER SUPPLIERS^{a/}
Region 8
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Columbus	CK	186	108	+72	\$20.00-\$29.99	1	36
Baxter Springs	CK	176	108	+63	\$20.00-\$29.99	10	12
Fort Scott	BB	166	108	+54	\$30.00-\$39.99	2	30
Crawford RWD 6	mu	142	108	+31	\$60 or More	10	33
Osawatomie	MI	142	108	+31	\$20.00-\$29.99	15	13
Bonner Springs	WY	140	108	+30	\$30.00-\$39.99	1	35
Cherokee RWD 1	CK	140	108	+30	\$20.00-\$29.99	0	35
Crawford RWD 5	mu	133	108	+23	\$10.00-\$19.99	0	23
Chanute	NO	132	108	+22	\$30.00-\$39.99	15	4
Hiawatha	BR	131	108	+21	\$20.00-\$29.99	1	23
Mound City	LN	129	108	+19	\$40.00-\$49.99	11	18
Franklin RWD 4	mu	129	108	+19	\$40.00-\$49.99	<1	23
Paola	MI	128	108	+19	\$30.00-\$39.99	6	6
Galena	CK	127	108	+18	\$10.00-\$19.99	7	26
Richmond	FR	127	108	+18	\$40.00-\$49.99	14	18
De Soto	JO	125	108	+16	\$30.00-\$39.99	11	12
Girard	CR	124	108	+15	\$10.00-\$19.99	5	20
Highland	DP	122	108	+13	\$20.00-\$29.99	16	18
Chetopa	LB	121	108	+12	\$20.00-\$29.99	3	15
Wathena	DP	120	108	+11	\$20.00-\$29.99	<1	11
Oswego	LB	119	108	+10	\$40.00-\$49.99	15	6
Elwood	DP	118	108	+9	\$20.00-\$29.99	0	16
Valley Falls	JF	118	108	+9	\$20.00-\$29.99	2	30
Effingham	AT	117	108	+8	\$20.00-\$29.99	3	8
Frontenac	CR	117	108	+8	\$20.00-\$29.99	0	27
Troy	DP	117	108	+8	\$40.00-\$49.99	<1	37
Mulberry	CR	116	108	+7	\$30.00-\$39.99	0	21
Jefferson RWD 3	JF	116	108	+7	\$20.00-\$29.99	0	27
Scammon	CK	115	108	+6	\$10.00-\$19.99	15	12
Cherokee	CR	114	108	+6	\$30.00-\$39.99	1	22

TABLE 13 (Continued)
WATER USE STATISTICS FOR MEDIUM PUBLIC WATER SUPPLIERS^{a/}
Region 8
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Jefferson RWD 12	mu	114	108	+6	\$40.00-\$49.99	<1	25
Douglas RWD 3	mu	114	108	+6	\$40.00-\$49.99	0	33
Tonganoxie	LV	112	108	+4	\$20.00-\$29.99	22	10
Anderson RWD 4	mu	112	108	+4	\$40.00-\$49.99	0	34
Spring Hill	JO	111	108	+3	\$60 or More	5	19
Cherokee RWD 4	CK	111	108	+3	\$30.00-\$39.99	0	11
Franklin RWD 5	mu	109	108	+1	\$10.00-\$19.99	0	22
Weir	CK	107	108	-1	\$30.00-\$39.99	0	14
Perry	JF	107	108	-1	\$30.00-\$39.99	<1	18
St. Paul	NO	105	108	-3	\$30.00-\$39.99	0	20
Garnett	AN	104	108	-4	\$40.00-\$49.99	7	8
Baldwin City	DG	102	108	-6	\$40.00-\$49.99	0	8
Cherokee RWD 3	CK	101	108	-6	\$20.00-\$29.99	0	19
Jefferson RWD 2	JF	101	108	-6	\$40.00-\$49.99	0	25
Gardner	JO	100	108	-7	\$30.00-\$39.99	8	7
Ozawkie	JF	100	108	-7	\$10.00-\$19.99	0	11
Jefferson RWD 7	JF	99	108	-8	\$30.00-\$39.99	0	19
Horton	BR	99	108	-8	\$30.00-\$39.99	3	14
Humboldt	AL	98	108	-9	\$30.00-\$39.99	9	10
Franklin RWD 6	mu	98	108	-9	\$50.00-\$59.99	7	29
Arma	CR	98	108	-9	\$20.00-\$29.99	0	16
Cherokee RWD 2	CK	97	108	-10	\$10.00-\$19.99	0	11
Iola	AL	95	108	-12	\$20.00-\$29.99	1	7
Neosho-Allen RWD 2	mu	94	108	-13	\$30.00-\$39.99	0	15
Pleasanton	LN	94	108	-13	\$20.00-\$29.99	<1	3
Douglas RWD 2	DG	93	108	-14	\$40.00-\$49.99	0	17
Eudora	DG	93	108	-14	\$30.00-\$39.99	2	4
LaCygne	LN	92	108	-15	\$30.00-\$39.99	1	10
Winchester	JF	92	108	-15	\$30.00-\$39.99	2	5
Erie	NO	92	108	-15	\$40.00-\$49.99	3	7

TABLE 13 (Continued)
WATER USE STATISTICS FOR MEDIUM PUBLIC WATER SUPPLIERS^{a/}
Region 8
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Louisburg	MI	91	108	-16	\$60 or More	5	7
Crawford Cons. RWD 1	mu	91	108	-16	\$30.00-\$39.99	6	4
Brown RWD 1	BR	91	108	-16	\$30.00-\$39.99	0	15
Johnson RWD 7	mu	91	108	-16	\$50.00-\$59.99	0	8
Miami RWD 2	mu	91	108	-16	\$50.00-\$59.99	0	21
Oskaloosa	JF	90	108	-17	\$30.00-\$39.99	2	15
Pomona	FR	90	108	-17	\$20.00-\$29.99	0	13
Nortonville	JF	90	108	-17	\$10.00-\$19.99	0	5
Suburban Water Co.	LV	88	108	-19	\$50.00-\$59.99	0	14
McLouth	JF	88	108	-19	\$40.00-\$49.99	0	20
Jefferson RWD 13	mu	87	108	-19	\$40.00-\$49.99	7	20
Jefferson RWD 1	mu	87	108	-19	\$20.00-\$29.99	0	11
Crawford RWD 4	CR	84	108	-22	\$20.00-\$29.99	0	23
Leavenworth RWD 9	mu	84	108	-22	\$40.00-\$49.99	0	10
Douglas RWD 1	DG	83	108	-23	\$30.00-\$39.99	0	10
Leav. Cons. RWD 1	mu	82	108	-24	\$30.00-\$39.99	0	11
Douglas RWD 4	mu	81	108	-25	\$40.00-\$49.99	0	15
Douglas RWD 5	mu	77	108	-29	\$50.00-\$59.99	0	15
Cherokee RWD 8	CK	73	108	-32	\$40.00-\$49.99	5	18
Lecompton	DG	73	108	-32	\$30.00-\$39.99	3	15
Edgerton	JO	62	108	-43	\$40.00-\$49.99	2	6
Average	--	108	108	--	\$34.68	3	17

^{a/} Includes all public water suppliers in Region 8 that serve between 500 and 9,999 people.

^{b/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{c/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{d/} Sewer charges were not included as part of the water rate charges.

^{e/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

TABLE 14
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 8
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Bronson	BB	150	93	+61	\$30.00-\$39.99	<1	38
Thayer	NO	147	93	+58	\$40.00-\$49.99	0	27
Williamsburg	FR	144	93	+55	\$40.00-\$49.99	3	32
Everest	BR	126	93	+35	\$20.00-\$29.99	0	20 ^{f/}
Jefferson RWD 6	JF	123	93	+32	\$20.00-\$29.99	0	51
Arcadia	CR	111	93	+19	\$30.00-\$39.99	23	15
Fontana	MI	109	93	+17	\$50.00-\$59.99	1	31
Jefferson RWD 8	JF	109	93	+17	\$40.00-\$49.99	0	12
Robinson	BR	102	93	+10	\$20.00-\$29.99	4	19
Uniontown	BB	101	93	+9	\$40.00-\$49.99	11	8
Jefferson RWD 10	JF	96	93	+3	\$60 or More	20	33
Anderson RWD 2	AN	96	93	+3	\$30.00-\$39.99	0	NA
Greeley	AN	95	93	+2	\$20.00-\$29.99	0	20
White Cloud	DP	95	93	+2	\$20.00-\$29.99	0	19
Reserve	BR	94	93	+1	\$30.00-\$39.99	0	30
Jefferson RWD 11	JF	94	93	+1	\$20.00-\$29.99	6	7
Crawford RWD 1	CR	92	93	-1	\$20.00-\$29.99	0	25
Douglas RWD 6	DG	92	93	-1	\$20.00-\$29.99	0	11
Lakeside Village Imp.	JF	91	93	-2	\$30.00-\$39.99	0	NA
West Mineral	CK	90	93	-3	\$30.00-\$39.99	0	25
Easton	LV	90	93	-3	\$20.00-\$29.99	0	9
Muscotah	AT	85	93	-9	\$10.00-\$19.99	0	20 ^{f/}
Prescott	LN	85	93	-9	\$30.00-\$39.99	0	20
Rantoul	FR	84	93	-10	\$30.00-\$39.99	1	7
Blue Mound	LN	81	93	-13	\$40.00-\$49.99	<1	7
Doniphan RWD 2	DP	81	93	-13	\$20.00-\$29.99	0	17
Doniphan RWD 3	DP	81	93	-13	\$10.00-\$19.99	0	14
Doniphan RWD 1	DP	72	93	-23	\$30.00-\$39.99	0	35
Parker	LN	72	93	-23	\$30.00-\$39.99	0	20
Linwood	LV	68	93	-27	\$40.00-\$49.99	10	12

TABLE 14 (Continued)
WATER USE STATISTICS FOR SMALL PUBLIC WATER SUPPLIERS^{a/}
Region 8
1995

City/Public Water Supplier	CO ^{b/}	GPCD ^{c/}	Reg. Avg. GPCD	Pct. Diff.	Monthly Water Rate Category Per 10,000 Gallons ^{d/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{e/}
Fulton	BB	66	93	-29	\$30.00-\$39.99	0	22
Crawford RWD 3	CR	66	93	-29	\$20.00-\$29.99	0	9
Jefferson RWD 9	JF	63	93	-32	\$30.00-\$39.99	<1	20
Lane	FR	63	93	-32	\$50.00-\$59.99	<1	5
Jefferson RWD 15	JF	63	93	-32	\$30.00-\$39.99	0	7
Capaldo Water Assoc.	CR	61	93	-34	\$20.00-\$29.99	0	NA
Average	--	93	93	--	\$33.44	2	20

^{a/} Includes all public water suppliers in Region 8 that serve fewer than 500 people.

^{b/} See Table 24 for key to county codes.

^{c/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{d/} Sewer charges were not included as part of the water rate charges.

^{e/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

^{f/} Percent of water unaccounted for was estimated using the regional average.

TABLE 15

PUBLIC WATER SUPPLIERS WITH HIGHEST GPCD'S RELATIVE TO THEIR REGION, RANKED BY PERCENT ABOVE REGIONAL GPCD AVERAGE KANSAS, 1995

City/Public Water Supplier	CO ^{a/}	GPCD ^{b/}	Reg. Avg. GPCD	Pct. Above Reg. Avg. GPCD	Monthly Water Rate Category Per 10,000 Gallons ^{c/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{d/}
1. West Hills Water Co.	RN	700	151	+364	Flat Rate	NA	NA
2. Reno RWD 3	RN	476	151	+215	Flat Rate	NA	NA
3. Englewood	CA	536	185	+190	Flat Rate	NA	NA
4. Attica	HP	405	155	+161	\$10.00-\$19.99	0	66
5. Comanche RWD 2	CM	324	145	+123	\$40.00-\$49.99	0	39
6. Elgin	CQ	226	107	+111	\$10.00-\$19.99	0	58
7. Moscow	SV	510	252	+102	Flat Rate	NA	NA
8. Byron	-- ^{e/}	200	107	+87	Flat Rate	NA	NA
9. Barton RWD 2	BT	279	151	+85	Flat Rate	NA	NA
10. Atchison	AT	254	140	+81	\$20.00-\$29.99	1	31
11. Preston	PR	270	151	+79	Flat Rate	NA	NA
12. Greenleaf	WS	189	107	+77	\$20.00-\$29.99	4	22
13. Mahaska	WS	188	107	+76	\$10.00-\$19.99	1	7
14. Columbus	CK	186	108	+72	\$20.00-\$29.99	1	36
15. Osborne RWD 1A	mu	258	151	+71	\$40.00-\$49.99	0	44
16. Marshall RWD 2	MS	182	107	+70	\$10.00-\$19.99	0	14
17. Herndon	RA	422	252	+67	Less than \$10	6	23
18. Republic RWD 1	mu	185	113	+64	\$20.00-\$29.99	0	35
19. Baxter Springs	CK	176	108	+63	\$20.00-\$29.99	10	12
20. Bronson	BB	150	93	+61	\$30.00-\$39.99	<1	38

^{a/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{b/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{c/} Sewer charges were not included as part of the water rate charges.

^{d/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

^{e/} The Village of Byron is located in Nebraska and also serves the City of Harbine, located in Republic County, Kansas.

TABLE 16

PUBLIC WATER SUPPLIERS WITH LOWEST GPCD'S RELATIVE TO THEIR REGION, RANKED BY PERCENT BELOW REGIONAL GPCD AVERAGE KANSAS, 1995

City/Public Water Supplier	CO ^{a/}	GPCD ^{b/}	Reg. Avg. GPCD	Pct. Below Reg. Avg. GPCD	Monthly Water Rate Category Per 10,000 Gallons ^{c/}	Percent of Water Not Sold	
						Metered Free	Unacc. For ^{d/}
1. Trego RWD 1	mu	51	185	-72	\$40.00-\$49.99	0	9
2. Nicodemus	GH	53	185	-71	Flat Rate	NA	NA
3. Johnson Subdivision	FI	74	252	-71	No Water Sales	0	NA
4. Ellis RWD 3	EL	54	145	-63	\$20.00-\$29.99	0	NA
5. Hollenberg	WS	44	107	-59	\$50.00-\$59.99	0	19
6. Hamilton RWD 1	mu	106	259	-59	\$50.00-\$59.99	3	10
7. Norton RWD 1	NT	79	185	-57	\$30.00-\$39.99	2	11
8. Brownell	NS	84	185	-55	\$10.00-\$19.99	0	11
9. Horace	GL	119	259	-54	\$20.00-\$29.99	0	14
10. Ellis RWD 5	EL	67	145	-54	\$40.00-\$49.99	0	40
11. Iuka	PR	72	151	-52	\$30.00-\$39.99	<1	5
12. Simpson	MC	74	151	-51	\$20.00-\$29.99	0	14
13. Ellis RWD 1	EL	73	145	-50	\$10.00-\$19.99	0	6
14. Dorrance	RS	77	151	-49	\$30.00-\$39.99	2	10
15. Ellis RWD 6	EL	76	145	-48	\$40.00-\$49.99	0	12
16. Elmdale	CS	59	107	-45	\$20.00-\$29.99	0	7
17. Deerfield	KE	140	252	-44	\$10.00-\$19.99	3	8
18. Bluff City	HP	84	151	-44	\$10.00-\$19.99	3	15
19. Natoma	OB	84	151	-44	\$20.00-\$29.99	<1	15
20. Jewell	JW	87	155	-44	\$30.00-\$39.99	<1	10

^{a/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{b/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year.

^{c/} Sewer charges were not included as part of the water rate charges.

^{d/} Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment purposes, etc. "NA" is shown for each public water supplier that was unable to provide information on the amount of water used by customers or reported a percent unaccounted for water of less than 3.0.

TABLE 17

WATER USE BY PUBLIC WATER SUPPLIERS WITH FLAT RATES^{a/}
KANSAS, 1995

City/Public Water Supplier	County ^{b/}	Region	GPCD	Regional Average GPCD	Pct. Diff.
1. Arnold	NS	4	133	185	-28
2. Barton RWD 2	BT	6	279	151	+85
3. Belvidere	KW	5	128	145	-12
4. Blue River Hills Imp.	RL	7	113	107	+6
5. Bucklin	FO	4	296	185	+60
6. Byron	-- ^{c/}	7	200	107	+87
7. Copeland	GY	3	283	240	+18
8. Englewood	CA	4	536	185	+190
9. Ensign	GY	3	284	240	+18
10. Ford	FO	4	238	185	+29
11. Geary RWD 2	GE	7	134	107	+25
12. Goff	NM	7	138	107	+29
13. Morganville	CY	7	125	107	+17
14. Moscow	SV	2	510	252	+102
15. Nicodemus	GH	4	53	185	-71
16. Paxton Addition	SH	1	329	259	+27
17. Preston	PR	6	270	151	+79
18. Reno RWD 3	RN	6	476	151	+215
19. Rocky Ford Water Co.	RL	7	138	107	+29
20. University Park WD	RL	7	129	107	+21
21. West Hills Water Co.	RN	6	700	151	+364
Average	--	--	--	--	+61

^{a/} Each customer is charges the same amount each month, regardless of how much water is used.

^{b/} See Table 24 for key to county codes.

^{c/} The Village of Byron is located in Nebraska and also serves the City of Harbine, located in Republic County, Kansas.

TABLE 18
AVERAGE MONTHLY CHARGE FOR CUSTOMER WATER USE BY REGION
KANSAS, 1995

Region	Number of Public Water Suppliers	Gallons of Water Used Per Month				
		5,000	10,000	25,000	50,000	100,000
1	17	\$11.55	\$16.61	\$32.09	\$57.87	\$109.29
2	21	9.59	13.51	25.29	45.44	87.20
3	20	9.82	14.11	27.19	48.92	93.87
4	27	13.35	18.13	32.64	58.17	111.21
5	45	16.87	24.05	48.61	93.57	183.55
6	98	16.45	24.45	49.11	89.47	171.66
7	240	18.44	29.61	61.59	114.46	219.24
8	126	20.65	33.78	71.59	133.85	256.70
Kansas	594	\$17.43	\$27.24	\$56.07	\$104.04	\$199.69

TABLE 19
NUMBER OF PUBLIC WATER SUPPLIERS AND GPCD USE BY REGIONAL GROUP AND
WATER RATE STRUCTURE
KANSAS, 1995

Regional Group	Flat Rate		Decreasing Block Rate		Uniform Block Rate		Increasing Block Rate	
	Number	Avg. GPCD	Number	Avg. GPCD	Number	Avg. GPCD	Number	Avg. GPCD
1-4	10	274	8	243	51	231	17	191
5-6	5	254	21	165	103	140	16	166
7-8	7	140	72	126	266	105	21	112
Total	22	227	101	143	420	129	54	153

TABLE 20
PUBLIC WATER SUPPLIERS WITH AT LEAST 30 PERCENT UNACCOUNTED
FOR WATER, RANKED BY PERCENT, AND POTENTIAL MARKET VALUE
OF UNACCOUNTED FOR WATER IN EXCESS OF 15 PERCENT
KANSAS, 1995

City/Public Water Supplier	CO ^{a/}	Pct. of Water Unacc. For	Potential Water Gain ^{b/} (Gallons)	Monthly Water Rate Per 10,000 Gallons ^{c/}	Potential Market Value ^{d/}
Attica	HP	66	54,100,800	\$13.38	\$72,387
Elgin	CQ	58	3,687,700	19.00	7,007
Jefferson RWD 6	JF	51	2,120,400	26.50	5,619
Osborne RWD 1A	mu	44	4,560,900	48.50	22,120
Kirwin	PL	42	4,032,250	11.75	4,738
Mullinville	KW	42	5,844,500	17.50	10,228
Arlington	RN	41	7,818,350	13.50	10,555
Beverly	LC	41	2,347,250	23.50	5,516
Buffalo	WL	41	4,453,300	44.50	19,817
Ellis RWD 5	EL	40	330,850	40.00	1,323
Comanche RWD 2	CM	39	5,137,100	45.00	23,117
Bronson	BB	38	7,171,250	35.65	25,566
Longton	EK	38	3,641,800	28.10	10,233
Randall	JW	38	1,250,600	48.75	6,097
Delia	JA	37	2,782,500	27.00	7,513
Troy	DP	37	10,618,200	45.50	48,313
South Haven	SU	36	3,994,550	21.00	8,389
Columbus	CK	36	51,413,250	21.55	110,796
Fowler	ME	36	12,179,550	15.00	18,269
Morland	GH	36	4,814,650	20.50	9,870
Doniphan RWD 1	DP	35	340,400	31.00	1,055
Republic RWD 1	mu	35	17,116,350	24.00	41,079
Bonner Springs	WY	35	89,526,300	34.25	306,628
Cherokee RWD 1	CK	35	4,982,250	20.80	10,363
Anderson RWD 4	mu	34	5,468,100	47.30	25,864
Haddam	WS	34	1,521,050	22.00	3,346
Ellis RWD 2	EL	33	253,150	65.00	1,645
Portis	OB	33	903,000	25.00	2,258
Jefferson RWD 10	JF	33	1,268,500	62.50	7,928
Argonia	SU	33	8,468,800	\$18.05	\$15,286

TABLE 20 (continued)
PUBLIC WATER SUPPLIERS WITH AT LEAST 30 PERCENT UNACCOUNTED
FOR WATER, RANKED BY PERCENT, AND POTENTIAL MARKET VALUE
OF UNACCOUNTED FOR WATER IN EXCESS OF 15 PERCENT
KANSAS, 1995

City/Public Water Supplier	CO ^{a/}	Pct. of Water Unacc. For	Potential Water Gain ^{b/} (Gallons)	Monthly Water Rate Per 10,000 Gallons ^{c/}	Potential Market Value ^{d/}
Douglas RWD 3	mu	33	29,058,550	\$47.00	\$136,575
Crawford RWD 6	mu	33	7,931,650	61.50	48,780
Williamsburg	FR	32	2,408,650	40.50	9,755
Havensville	PT	32	1,125,900	33.00	3,715
Ashland	CA	32	16,560,450	14.00	23,185
Cowley RWD 3	CL	31	22,028,650	21.80	48,022
Jennings	DC	31	3,175,550	14.00	4,446
Fontana	MI	31	959,750	55.00	5,279
Dickinson RWD 2	mu	31	9,708,200	46.26	44,910
Delphos	OT	31	4,237,750	13.00	5,509
Emmett	PT	31	1,594,500	21.00	3,348
Selden	SD	31	4,146,450	15.00	6,220
Atchison	AT	31	281,747,650	21.15	595,896
Rush RWD 1	mu	31	2,418,050	36.00	8,705
Cherryvale	MG	30	16,511,150	26.00	42,929
Reserve	BR	30	563,800	33.00	1,861
Clyde	CD	30	5,856,600	22.30	13,060
Barnes	WS	30	1,488,900	15.00	2,233
Long Island	PL	30	2,222,900	12.00	2,667
Post Rock RWD	mu	30	23,610,100	72.50	171,173
Fort Scott	BB	30	113,850,850	30.23	344,171
Valley Falls	JF	30	9,692,500	23.44	22,719
Ellis RWD 7	EL	30	1,363,500	\$62.00	\$8,454

^{a/} See Table 24 for key to county codes. "mu" indicates multiple counties.

^{b/} Potential water gain = (amount of water that was unaccounted for in 1994) - (15 percent of the total amount of water that was pumped or purchased). Unaccounted for water includes distribution system losses and unmetered water provided free for public services, treatment processes, etc.

^{c/} Sewer charges were not included as part of the water rate charges.

^{d/} Potential market value = (Potential water gain/10,000) x (Water rate per 10,000 gallons).

TABLE 21
GPCD USAGE FOR MOBILE HOME PARKS,
WESTERN KANSAS^{a/}, 1995

Name of Mobile Home Park	CO ^{b/}	GPCD ^{c/}	Regional Average GPCD	Pct. Diff.
Rolling Hills Inc.	SW	464	130	+257
Liberal Feeders	SW	211	130	+62
Meadow Lark Park	FI	135	130	+4
H-Park	FI	127	130	-2
Liberal Mobile Homes Inc.	SW	122	130	-6
Whatley's Trailer Park	FI	115	130	-12
Sunshine Mobile Home Park	FI	106	130	-18
Westside Trailer Park	FI	93	130	-28
Wagon Wheel Mobile Home Park II	FI	90	130	-31
Wagon Wheel Mobile Home Park I	FI	89	130	-32
Eastside Trailer Park	FI	79	130	-39
Countryside Rentals	FI	74	130	-43
Hilltop Trailer Park	FI	65	130	-50
Towns Riverview ^{d/}	FI	47	130	-64

^{a/} Western Kansas includes Regions 1, 2, 3, and 4 (See Figure 1).

^{b/} See Table 24 for key to county codes.

^{c/} The gallons per capita per day figures are based on usage by residents plus any system losses and water used for public service.

^{d/} Serves both mobile and residential homes.

TABLE 22
GPCD USAGE FOR MOBILE HOME PARKS,
CENTRAL AND EASTERN KANSAS^{a/}, 1995

Name of Mobile Home Park	CO ^{b/}	GPCD ^{c/}	Regional Average GPCD	Pct. Diff.
Nationwide Village	EL	123	74	+66
Prairie Schooner Mobile Home Park	SU	113	74	+53
Buffalo Hills Mobile Village	EL	106	74	+43
Rolling Meadow Mobile Court	SG	102	74	+38
Rocky Ford Trailer Park	RL	98	74	+32
Janssen Mobile Home Park	PT	91	74	+23
Mulvane Mobile Home Park	SG	89	74	+20
Country View Mobile Home Park	EL	84	74	+14
Sunflower Village	SG	82	74	+11
Countryview Mobile Home Park	RN	81	74	+9
Tuttle Creek Water Company ^{d/}	RL	81	74	+9
Flinthills Mobile Estates	LY	79	74	+7
Sunny Acres Mobile Home Park	SG	71	74	-4
Colonial Gardens	RL	70	74	-5
Tuttle Creek Mobile Home Park	RL	69	74	-7
J & R Mobile Home Park	DK	68	74	-8
Meadow Acres Mobile Home Park	EL	68	74	-8
Paradise Trailer Court	LV	65	74	-12
Countryside Estates	EL	62	74	-16
Walnut Grove Mobile Home Park	PT	62	74	-16
Miller Mobile Home Park	GE	56	74	-24
John's Mobile Home Court	GE	54	74	-27
Ponderosa Mobile Home Park	RL	54	74	-27
Western Acres Mobile Home Park	RN	35	74	-53
Tuttle Terrace Trailer Court	RL	35	74	-53
Kanopolanes Trailer Court	EW	32	74	-57

^{a/} Central and Eastern Kansas includes Regions 5, 6, 7, and 8 (See Figure 1).

^{b/} See Table 24 for key to county codes.

^{c/} The gallons per capita per day figures are based on usage by residents plus any system losses and water used for public service.

^{d/} Serves both mobile and residential homes.

TABLE 23
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Abbyville	6	174	130	117	160	118	140
Abilene	7	150	125	113	137	119	129
Agenda	7	135	130	106	97	90	112
Agra	5	139	115	99	117	113	117
Albert	6	151	102	93	119	106	114
Alexander	5	181	121	131	114	107	131
Alma	7	96	105	101	120	115	107
Almena	4	281	192	146	177	187	197
Alta Vista	7	77	79	76	78	78	78
Alton	6	132	123	102	141	135	127
Altoona	7	120	122	129	146	148	133
Anderson Co. RWD No. 2	8	91	73	76	92	96	86
Anderson Co. RWD No. 4	8	123	125	87	112	112	112
Anthony	6	230	184	191	220	209	207
Arcadia	8	92	100	91	101	111	99
Argonia	7	230	200	180	195	166	194
Arkansas City	7	150	116	120	136	146	134
Arlington	6	147	111	109	138	177	136
Arma	8	107	97	99	106	98	101
Arnold	4	204	199	217	119	133	174
Ashland	4	312	231	221	316	267	269
Assaria	7	116	92	82	94	83	93
Atchison	8	173	163	193	225	254	202
Atlanta	7	81	72	74	80	82	78
Attica	6	181	157	154	219	405	223
Atwood	2	254	230	195	262	228	234
Augusta	7	156	126	118	129	125	131
Aurora	7	87	97	83	104	84	91
Axtell	7	88	81	80	92	90	86
Baldwin	8	NA	86	101	110	102	100
Barber Co. RWD No. 2	6	196	168	150	145	143	160
Barber Co. RWD No. 3	6	79	84	95	98	89	89
Barnes	7	176	161	152	150	161	160
Barton Co. RWD No. 2	6	222	210	159	412	279	256
Baxter Springs	8	152	125	140	175	176	154
Bazine	4	191	123	114	148	121	139

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Beattie	7	95	96	81	88	81	88
Bel Aire	7	134	99	100	130	112	115
Belle Plaine	7	135	114	118	126	108	120
Belleville	7	207	158	155	170	162	170
Beloit	6	133	94	93	129	125	115
Belpre	5	210	178	194	230	156	194
Belvidere	5	130	193	164	148	128	153
Belvue	7	106	116	74	109	106	102
Bennington	7	118	106	89	108	112	107
Bern	7	115	84	99	85	77	92
Beverly	6	123	108	103	120	175	126
Bird City	1	321	334	334	448	399	367
Bison	5	119	104	133	126	100	116
Blue Mound	8	92	91	124	87	81	95
Blue Rapids	7	173	148	155	166	149	158
Blue River Hills Improvement	7	96	80	124	112	113	105
Bluff City	6	162	120	126	116	84	122
Bogue	4	219	186	159	175	166	181
Bonner Springs	8	116	118	143	155	140	134
Brewster	2	315	268	292	284	244	281
Bronson	8	83	81	74	114	150	100
Brown Co. RWD No. 1	8	181	100	89	92	91	111
Brownell	4	104	111	95	89	84	97
Bucklin	4	498	357	295	390	296	367
Buffalo	7	122	108	115	104	126	115
Buffalo Hills Mobile Village	5	103	89	78	87	106	93
Buhler	6	172	136	128	183	159	156
Bunker Hill	6	167	148	188	118	121	148
Burden	7	161	158	116	133	140	142
Burdett	5	210	135	136	194	161	167
Burlingame	7	109	95	99	94	86	97
Burlington	7	114	102	118	127	126	117
Burns	7	105	108	100	112	100	105
Burr Oak	6	133	147	127	153	152	142
Burrton	7	109	114	99	117	108	109

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Bushton	6	183	130	120	174	148	151
Byron	7	281	253	239	265	200	248
Caldwell	7	138	106	100	110	101	111
Cambridge	7	109	86	95	104	93	97
Caney	7	148	140	142	143	130	141
Canton	7	189	150	138	174	161	162
Capaldo Water Association	8	69	64	62	56	61	62
Carbondale	7	83	73	78	80	98	82
Cassoday	7	69	85	91	90	79	83
Cawker City	6	194	117	112	135	136	139
Cedar Point	7	NA	NA	NA	NA	90	90
Cedar Vale	7	122	131	133	161	118	133
Chanute	8	103	96	104	139	132	115
Chapman	7	166	135	124	178	148	150
Chase	6	133	113	107	130	97	116
Cheney	7	149	113	122	234	182	160
Cherokee	8	107	119	121	112	114	115
Cherokee Co. RWD No. 1	8	117	98	106	115	140	115
Cherokee Co. RWD No. 2	8	103	91	107	94	97	98
Cherokee Co. RWD No. 3	8	103	106	121	107	101	108
Cherokee Co. RWD No. 4	8	123	104	120	127	111	117
Cherokee Co. RWD No. 8	8	NA	NA	NA	67	73	70
Cherryvale	7	119	129	95	104	118	113
Chetopa	8	129	135	106	110	121	120
Cimarron	3	285	231	233	261	251	252
Clafin	6	183	128	117	163	140	146
Clay Center	7	158	118	136	144	139	139
Clay Co. RWD No. 1	7	214	178	158	179	164	179
Clay Co. RWD No. 2	7	88	80	74	76	82	80
Clayton	4	173	182	217	115	147	167
Clearwater	7	118	100	106	100	98	104
Clifton	7	194	149	122	123	136	145
Cloud Co. RWD No. 1	7	124	83	99	113	121	108
Clyde	7	154	135	122	141	145	139
Coats	6	148	155	141	167	180	158

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Coffeyville	7	132	137	166	189	148	154
Colby	2	298	236	241	278	249	260
Coldwater	5	213	182	200	230	206	206
Collyer	4	145	113	107	130	133	126
Colonial Gardens	7	83	75	57	54	70	68
Columbus	8	129	124	131	136	186	141
Comanche Co. RWD No. 2	5	341	337	319	363	324	337
Concordia	7	147	132	145	147	147	144
Conway Springs	7	117	108	92	96	91	101
Coolidge	1	340	329	207	258	257	278
Copeland	3	323	243	233	264	283	269
Cottonwood Falls	7	87	87	87	103	87	90
Council Grove	7	172	141	120	111	100	129
Countryside Estates	7	83	63	54	84	62	69
Countryside Rentals	2	152	106	105	107	74	109
Countryview Mobile Home Park	6	42	32	29	31	81	43
Country View Mobile Home Park	5	75	84	78	83	84	81
Courtland	7	123	103	100	111	119	111
Cowley Co. RWD No. 1	7	104	98	99	104	97	100
Cowley Co. RWD No. 3	7	166	147	162	151	150	155
Cowley Co. RWD No. 6	7	132	121	113	86	87	108
Crawford Cons. RWD No. 1	8	85	88	93	95	91	90
Crawford Co. RWD No. 1	8	98	98	94	101	92	97
Crawford Co. RWD No. 3	8	84	73	65	66	66	71
Crawford Co. RWD No. 4	8	147	93	83	94	84	100
Crawford Co. RWD No. 5	8	116	93	131	133	133	121
Crawford Co. RWD No. 6	8	191	114	112	125	142	137
Cuba	7	100	82	99	105	90	95
Cullison	6	471	317	335	340	161	325
Culver	7	82	72	70	78	75	75
Cunningham	6	177	135	118	170	153	151
Deerfield	2	220	185	137	165	140	169
Delia	7	90	79	160	142	142	123
Delphos	7	199	146	120	131	128	145
Derby	7	138	120	119	130	123	126

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
De Soto	8	115	114	109	103	125	113
Dexter	7	134	106	109	113	129	118
Dickinson Co. RWD No. 1	7	95	98	98	109	120	104
Dickinson Co. RWD No. 2	7	108	109	94	94	86	98
Dighton	3	263	194	182	226	213	216
Dodge City	4	232	173	186	211	201	201
Doniphan Co. RWD No. 1	8	75	50	74	54	72	65
Doniphan Co. RWD No. 2	8	95	72	71	110	81	86
Doniphan Co. RWD No. 3	8	86	66	81	83	81	79
Dorrance	6	79	92	78	84	77	82
Douglas Co. RWD No. 1	8	NA	85	90	87	83	86
Douglas Co. RWD No. 2	8	88	83	76	90	93	86
Douglas Co. RWD No. 3	8	88	79	95	110	114	97
Douglas Co. RWD No. 4	8	98	82	85	89	81	87
Douglas Co. RWD No. 5	8	125	86	65	66	77	84
Douglas Co. RWD No. 6	8	NA	58	83	106	92	85
Douglass	7	86	81	82	88	83	84
Downs	6	179	175	156	187	181	176
Durham	7	166	150	110	119	120	133
Dwight	7	114	96	94	99	96	100
Easton	8	88	102	84	147	90	102
Eastside Trailer Park	2	NA	39	40	71	79	57
Edgerton	8	76	76	74	71	62	72
Effingham	8	117	114	100	110	117	112
El Dorado	7	164	142	146	161	163	155
Elgin	7	121	137	178	209	226	174
Elk City	7	110	101	117	114	112	111
Elkhart	1	271	260	238	257	256	256
Ellinwood	6	155	108	104	127	112	121
Ellis	5	141	106	109	130	127	123
Ellis Co. RWD No. 1	5	195	63	60	73	73	93
Ellis Co. RWD No. 2	5	59	50	129	106	94	88
Ellis Co. RWD No. 3	5	100	86	67	66	54	75
Ellis Co. RWD No. 5	5	100	61	64	61	67	71
Ellis Co. RWD No. 6	5	106	77	67	111	76	87

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Ellis Co. RWD No. 7	5	111	108	76	94	102	98
Ellsworth	6	153	111	114	148	142	134
Elmdale	7	83	71	72	63	59	70
Elwood	8	140	153	130	141	118	136
Emmett	7	132	142	140	146	167	145
Emporia	7	142	126	131	169	142	142
Englewood	4	342	463	262	655	536	452
Ensign	3	454	333	190	295	284	311
Enterprise	7	110	93	146	112	97	112
Erie	8	101	82	88	92	92	91
Esbon	6	113	94	88	100	112	101
Eskridge	7	98	94	91	107	110	100
Eudora	8	97	89	98	97	93	95
Eureka	7	126	109	117	111	120	117
Everest	8	142	144	153	123	126	138
Fairmont Heights Water Co.	7	73	75	69	86	85	78
Flinthills Mobile Estates	7	76	82	74	78	79	78
Florence	7	180	167	195	133	123	160
Fontana	8	96	102	96	107	109	102
Ford	4	504	419	214	296	238	334
Formoso	6	103	73	70	103	91	88
Fort Scott	8	176	158	151	152	166	161
Fowler	3	306	274	265	342	291	296
Frankfort	7	124	110	110	133	125	120
Franklin Co. RWD No. 4	8	129	116	130	125	129	126
Franklin Co. RWD No. 5	8	120	112	104	113	109	112
Franklin Co. RWD No. 6	8	121	99	104	99	98	104
Fredonia	7	115	143	110	113	121	120
Frontenac	8	93	105	107	115	117	107
Fulton	8	70	67	78	68	66	70
Galena	8	148	135	127	129	127	133
Galva	7	150	102	103	118	109	116
Garden City	2	210	174	169	183	168	181
Garden Plain	7	97	103	101	105	118	105
Gardner	8	103	105	97	100	100	101

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Garnett	8	120	110	109	100	104	109
Gaylord	6	137	116	114	131	140	128
Geary Co. RWD No. 2	7	NA	NA	NA	140	134	137
Geary Co. RWD No. 4	7	82	82	75	84	88	82
Geneseo	6	127	96	93	111	99	105
Geuda Springs	7	83	74	79	81	89	81
Girard	8	113	106	104	108	124	111
Glade	5	NA	NA	NA	94	NA	94
Glasco	7	102	89	81	89	90	90
Glen Elder	6	195	158	149	177	177	171
Goddard	7	175	124	134	137	128	140
Goessel	7	99	103	82	138	120	108
Goff	7	141	119	99	120	138	123
Goodland	1	312	289	287	326	281	299
Gorham	6	104	96	97	101	104	100
Gove	3	204	186	191	235	153	194
Grainfield	3	237	194	212	246	223	222
Great Bend	6	148	132	128	146	130	137
Greeley	8	74	61	74	81	95	77
Green	7	89	82	86	82	91	86
Greenleaf	7	210	181	184	176	189	188
Greensburg	5	258	201	161	199	160	196
Grenola	7	75	68	70	71	67	70
Grinnell	3	248	172	212	270	230	226
Gypsum	7	100	84	93	121	110	102
H-Park	2	135	128	165	114	127	134
Haddam	7	136	91	102	115	98	108
Halstead	7	152	136	132	143	124	137
Hamilton Co. RWD No. 1	1	121	88	93	113	106	104
Hanover	7	96	86	81	89	92	89
Hanston	4	266	155	129	169	174	179
Hardtner	6	397	295	245	220	184	268
Harper Co. RWD No. 3	6	120	117	97	101	91	105
Harper	6	170	139	163	165	142	156
Hartford	7	87	79	76	77	75	79

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Harveyville	7	128	83	82	96	75	93
Haven	6	174	140	139	171	151	155
Havensville	7	95	116	85	107	129	106
Haviland	5	242	165	182	243	196	206
Hays	5	130	90	89	97	92	100
Hays City Suburban Estates	5	192	78	83	133	120	121
Haysville	7	106	103	103	123	122	111
Hazelton	6	152	147	132	150	122	141
Herington	7	137	129	133	108	109	123
Herndon	2	340	280	377	378	422	359
Hesston	7	149	118	104	133	127	126
Hiawatha	8	153	136	133	129	131	136
Highland	8	123	96	90	117	122	110
Hill City	4	219	180	147	173	169	178
Hillsboro	7	116	106	111	120	113	113
Hilltop Trailer Park	5	NA	125	24	70	65	71
Hoisington	6	128	98	96	114	110	109
Holcomb	2	171	119	124	152	145	142
Hollenberg	7	79	57	69	44	44	59
Holton	7	144	117	106	117	132	123
Holyrood	6	229	132	127	188	154	166
Hope	7	81	75	71	81	81	78
Horace	1	202	105	139	116	119	136
Horton	8	117	97	97	101	99	102
Howard	7	120	100	97	108	115	108
Howison Heights Water District	7	118	73	99	135	81	101
Hoxie	3	260	216	174	249	239	228
Hugoton	2	309	316	284	317	388	323
Humboldt	8	98	88	89	97	98	94
Hutchinson	6	146	128	123	145	137	136
Independence	7	165	128	129	142	131	139
Ingalls	3	268	229	194	247	224	232
Inman	7	146	119	118	161	142	137
Iola	8	87	87	93	88	95	90
Isabel	6	161	125	141	162	172	152

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Iuka	6	NA	69	69	73	72	71
J & R Mobile Home Park	7	33	68	63	64	68	59
Jackson Co. RWD No. 3	7	116	109	87	96	100	102
Jamestown	7	113	112	118	120	109	114
Janssen Mobile Home Park	7	112	99	72	86	91	92
Jefferson Co. RWD No. 1	8	95	94	111	105	87	98
Jefferson Co. RWD No. 2	8	128	107	132	113	101	116
Jefferson Co. RWD No. 3	8	107	100	94	130	116	109
Jefferson Co. RWD No. 6	8	72	63	69	90	123	83
Jefferson Co. RWD No. 7	8	90	92	91	110	99	96
Jefferson Co. RWD No. 8	8	99	90	103	95	109	99
Jefferson Co. RWD No. 9	8	52	60	54	64	63	59
Jefferson Co. RWD No. 10	8	82	77	73	65	96	79
Jefferson Co. RWD No. 11	8	NA	132	169	114	94	127
Jefferson Co. RWD No. 12	8	129	120	120	121	114	121
Jefferson Co. RWD No. 13	8	86	92	74	92	87	86
Jefferson Co. RWD No. 15	8	62	59	55	60	63	60
Jennings	3	384	257	328	244	303	303
Jetmore	4	252	197	179	195	228	210
Jewell Co. RWD No. 1	6	113	88	98	92	103	99
Jewell	6	89	78	76	83	87	83
John's Mobile Home Court	7	53	NA	34	209	54	88
Johnson City	1	378	329	328	353	339	345
Johnson Co. Water Dist. No. 1	8	167	145	134	141	145	146
Johnson Co. RWD No. 7	8	NA	77	84	83	91	84
Johnson Subdivision	2	166	176	77	84	74	115
Junction City	7	137	148	133	137	128	137
Kanopolanes Trailer Court	6	NA	NA	NA	58	32	45
Kanopolis	6	157	100	121	147	129	131
Kanorado	1	205	224	231	222	173	211
Kansas City BPU	8	158	158	129	178	160	157
Kensington	6	137	154	118	136	135	136
Kingman	6	190	170	174	177	174	177
Kinsley	5	209	142	140	152	130	155
Kiowa	6	143	140	130	162	141	143

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Kirwin	5	144	131	100	126	164	133
Kismet	2	320	173	172	220	238	225
La Crosse	5	135	112	111	123	116	119
La Cygne	8	116	93	100	101	92	100
Lakeside Village Improvement	8	120	93	86	105	91	99
Lakin	2	382	365	359	387	279	354
Lane	8	55	58	63	60	63	60
Lane Co. RWD No. 1	3	282	211	211	257	230	238
Larned	5	190	181	163	225	211	194
Lawrence	8	130	113	113	121	111	118
Leavenworth	8	128	123	117	112	107	117
Leavenworth Cons. RWD No. 1	8	74	72	67	88	82	77
Leavenworth Co. RWD No. 9	8	80	71	68	87	84	78
Lebanon	6	135	92	105	102	92	105
Lebo	7	121	102	97	113	99	106
Lecompton	8	99	87	75	73	73	81
Lehigh	7	121	102	91	128	105	109
Lenora	4	259	205	139	160	187	190
Leon	7	100	114	94	101	101	102
Leonardville	7	104	94	98	113	103	102
Leoti	2	271	212	175	228	213	220
Leroy	7	106	102	110	110	102	106
Lewis	5	303	225	218	272	204	244
Liberal	2	243	226	206	221	248	229
Liberal Feeders	2	NA	NA	NA	182	211	197
Liberal Mobile Home Inc.	2	79	92	110	122	122	105
Liebenthal	5	87	93	68	67	89	81
Lincoln Center	6	132	106	126	139	130	127
Lindsborg	7	148	144	147	178	171	158
Linn	7	142	119	113	113	123	122
Linwood	8	86	87	95	76	68	82
Little River	6	166	143	139	165	154	153
Logan	5	234	153	134	178	179	176
Long Island	5	209	162	209	175	210	193
Longford	7	162	85	91	98	81	103

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Longton	7	120	117	147	114	111	122
Lorraine	6	144	105	107	149	144	130
Louisburg	8	101	88	98	115	91	99
Lucas	6	148	116	110	94	116	117
Luray	6	103	82	75	83	91	87
Lyndon	7	113	120	119	121	105	116
Lyons	6	229	186	171	233	208	205
Macksville	6	285	179	165	220	192	208
Madison	7	162	120	141	136	103	132
Mahaska	7	184	97	221	123	188	163
Manhattan	7	161	138	134	150	146	146
Mankato	6	164	126	119	187	165	152
Manter	1	280	182	209	256	284	242
Maple Hill	7	110	104	84	90	88	95
Marion Co. RWD No. 1	7	128	126	135	134	92	123
Marion	7	155	115	113	122	119	125
Marquette	7	132	105	99	137	126	120
Marshall Co. RWD No. 1	7	85	76	80	84	116	88
Marshall Co. RWD No. 2	7	267	167	170	157	182	189
Marshall Co. RWD No. 3	7	120	87	111	100	99	103
Marysville	7	139	124	136	136	130	133
Matfield Green	7	NA	NA	NA	NA	74	45
McCracken	5	136	115	111	126	114	120
McDonald	2	300	250	217	324	291	276
McFarland	7	120	110	94	77	86	97
McLouth	8	84	78	88	106	88	89
McPherson	7	188	143	141	195	166	167
McPherson Co. RWD No. 1	7	147	140	104	125	133	130
Meade	3	264	221	217	251	213	233
Meadow Acres Mobile Home Pk.	5	64	51	65	69	68	63
Meadow Lark Park	2	175	154	127	152	135	149
Medicine Lodge	6	214	204	194	246	223	216
Melvern	7	154	109	96	120	106	117
Miami Co. RWD No. 2	8	84	75	75	88	91	83
Milford	7	137	94	88	99	131	110

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Miller Mobile Home Park	7	NA	NA	51	48	56	52
Miltonvale	7	142	104	110	120	130	121
Minneapolis	7	205	132	121	144	140	148
Minneola	4	232	181	171	189	180	191
Mitchell Co. RWD No. 2	6	320	253	217	246	213	250
Moline	7	154	126	127	147	124	136
Montezuma	3	254	193	212	231	244	227
Morganville	7	230	130	136	147	125	154
Morland	4	316	252	199	270	248	257
Morris Co. RWD No. 1	7	NA	NA	NA	56	69	63
Morrowville	7	113	87	80	92	97	94
Moscow	2	385	508	552	506	510	492
Mound City	8	116	114	116	114	129	118
Moundridge	7	221	206	127	156	138	170
Mount Hope	7	175	171	145	171	143	161
Mulberry	8	108	110	106	108	116	110
Mullinville	5	172	114	108	168	185	149
Mulvane	7	116	93	95	101	96	100
Mulvane Mobile Home Park	7	93	91	89	88	89	90
Munden	7	137	87	78	92	104	100
Muscotah	8	75	65	63	70	85	72
Narka	7	108	79	78	91	98	91
Nationwide Village	5	113	84	81	93	123	99
Natoma	6	122	95	101	92	84	99
Nemaha Co. RWD No. 1	7	121	102	105	114	102	109
Nemaha Co. RWD No. 3	7	106	114	102	114	107	109
Neodesha	7	123	122	136	115	124	124
Neosho Co.-Allen Co. RWD No. 2	8	99	81	84	98	94	91
Ness City	4	153	157	116	134	123	137
New Strawn	7	90	83	91	102	109	95
Newton	7	122	105	103	123	111	113
Nickerson	6	154	120	111	129	114	126
Nicodemus	4	NA	NA	NA	NA	53	53
Norcatour	3	167	158	129	144	203	160
North Newton	7	116	90	105	109	104	105

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Norton	4	244	193	185	220	246	218
Norton Co. RWD No. 1	4	100	70	68	74	79	78
Nortonville	8	97	88	89	94	90	92
Norwich	6	147	139	155	152	108	140
Oakley	2	326	233	234	233	206	246
Oberlin	3	244	210	197	230	246	225
Offerle	5	253	194	166	236	204	211
Ogden	7	174	122	151	127	127	140
Oketo	7	117	86	126	71	75	95
Olathe	8	128	111	106	113	113	114
Olmitz	6	133	102	100	133	114	116
Olsburg	7	NA	NA	90	72	75	79
Onaga	7	116	111	118	121	98	113
Oneida	7	92	79	79	94	95	88
Osage City	7	101	93	91	97	97	96
Osage Co. RWD No. 2	7	114	97	82	95	84	94
Osage Co. RWD No. 3	7	100	116	113	134	110	115
Osage Co. RWD No. 4	7	83	85	88	99	100	91
Osage Co. RWD No. 5	7	97	103	100	112	99	102
Osawatomie	8	147	139	135	126	142	138
Osborne	6	215	149	137	171	171	169
Osborne RWD No. 1A	6	437	301	380	411	258	357
Oskaloosa	8	87	83	94	97	90	90
Oswego	8	107	106	107	130	119	114
Otis	5	251	231	118	164	184	190
Ottawa Co. RWD No. 1	7	89	72	56	110	92	84
Ottawa Co. RWD No. 2	7	80	69	67	74	79	74
Ottawa	8	108	97	100	93	98	99
Overbrook	7	99	83	98	85	88	91
Oxford	7	127	138	131	139	132	133
Ozawkie	8	126	115	100	114	100	111
Palco	5	142	107	119	134	123	125
Palmer	7	174	127	102	105	93	120
Paola	8	121	128	122	144	128	129
Paradise Trailer Court	8	49	56	77	100	65	69

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Park	3	173	152	161	194	186	173
Park City	7	131	110	113	117	108	116
Parker	8	NA	NA	NA	NA	72	72
Parsons	8	152	123	119	144	148	137
Pawnee Rock	6	95	80	82	93	98	90
Paxico	7	89	93	98	100	91	94
Paxton Addition	1	265	240	278	294	329	281
Peabody	7	111	107	103	119	112	110
Perry	8	122	105	98	106	107	108
Phillipsburg	5	186	141	127	137	154	149
Pittsburg	8	144	127	126	129	127	131
Plains	3	301	251	253	300	291	279
Plainville	5	163	143	130	141	143	144
Pleasanton	8	124	89	96	111	94	103
Pomona	8	86	83	89	97	90	89
Ponderosa Mobile Home Park	7	275	68	62	50	54	102
Portis	6	138	81	104	86	85	99
Post Rock RWD	6	155	98	121	139	129	128
Pottawatomie Co. RWD No. 1	7	102	95	92	103	92	97
Pottawatomie Co. RWD No. 3	7	NA	65	79	77	64	71
Potwin	7	81	80	78	84	85	82
Prairie Schooner Mobile Home Park	7	112	109	111	115	113	112
Prairie View	5	165	169	196	174	159	173
Pratt	6	218	172	197	236	218	208
Prescott	8	69	71	76	86	85	77
Preston	6	385	267	264	254	270	288
Pretty Prairie	6	166	133	154	175	142	154
Protection	5	328	194	201	261	229	243
Quenemo	7	83	65	76	75	65	73
Quinter	3	259	206	181	248	227	224
Randall	6	143	144	113	113	140	131
Randolph	7	119	99	131	150	93	118
Ransom	4	163	127	124	145	146	141
Rantoul	8	70	76	78	81	84	78
Raymond	6	201	168	133	189	157	170

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Red Bud Lake Association	7	261	175	82	110	97	145
Reno Co. RWD No. 1	6	246	145	104	188	150	167
Reno Co. RWD No. 3	6	176	174	326	305	476	291
Reno Co. RWD No. 8	6	396	433	138	298	224	298
Reno Co. Water District 101	6	82	84	116	110	101	99
Republic	7	220	156	154	113	122	153
Republic Co. RWD No. 1	7	230	154	186	187	185	188
Republic Co. RWD No. 2	7	192	159	163	160	161	167
Reserve	8	85	96	63	102	94	88
Rexford	2	408	259	228	277	282	291
Richmond	8	108	93	110	112	127	110
Riley	7	149	130	120	130	122	130
Robinson	8	99	93	88	110	102	98
Rocky Ford Trailer Park	7	78	90	87	108	98	92
Rocky Ford Water Company	7	120	131	89	126	138	121
Rolla	1	562	572	377	262	235	402
Rolling Hills Inc.	2	265	194	237	215	464	275
Rolling Meadow Mobile Court	7	92	89	87	129	102	100
Rooks Co. RWD No. 1	5	103	68	191	164	177	141
Rooks Co. RWD No. 2	5	130	93	112	103	96	107
Rooks Co. RWD No. 3	5	323	214	170	170	90	193
Rossville	7	93	109	105	99	120	105
Rozel	5	343	178	NA	262	NA	261
Rush Center	5	191	140	134	208	178	170
Rush Co. RWD No. 1	5	320	225	217	213	187	232
Russell	6	124	105	105	113	130	115
Russell Co. RWD No. 1	6	99	NA	105	88	129	105
Russell Co. RWD No. 2	6	171	201	133	139	162	161
Russell Co. RWD No. 4	6	151	133	75	93	103	111
Sabetha	7	104	91	86	95	101	95
Salina	7	143	122	115	125	119	125
Saline Co. RWD No. 1	7	85	70	70	70	85	76
Saline Co. RWD No. 2	7	139	115	121	112	96	117
Saline Co. RWD No. 4	7	90	77	69	82	82	80
Saline Co. RWD No. 5	7	128	107	98	107	97	107

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Saline Co. RWD No. 6	7	117	103	86	121	89	103
Satanta	2	297	257	238	244	250	257
Sawyer	6	215	188	144	170	148	173
Scammon	8	153	133	138	140	115	136
Scandia	7	174	122	117	149	138	140
Scott City	2	285	251	219	274	252	256
Sedan	7	160	130	117	119	117	129
Sedgwick Co. RWD No. 4	7	55	65	69	73	73	67
Sedgwick	7	108	104	101	101	96	102
Selden	3	172	194	227	208	262	213
Seneca	7	157	122	125	153	124	136
Severy	7	NA	NA	NA	129	118	124
Sharon	6	123	129	124	121	242	148
Sharon Springs	1	258	230	215	288	114	221
Shawnee Cons. RWD No. 2	7	96	76	84	84	87	85
Shawnee Co. RWD No. 3	7	81	75	82	79	82	80
Shawnee Co. RWD No. 4	7	108	99	87	102	98	99
Shawnee Co. RWD No. 8	7	91	90	80	92	90	89
Silver Lake	7	88	84	79	109	96	91
Simpson	6	83	72	67	67	74	73
Smith Center	6	170	157	141	168	172	162
Smith Co. RWD No. 1	6	180	183	192	212	158	185
Solomon	7	157	132	133	148	128	140
South Haven	7	138	125	106	113	119	120
South Hutchinson	6	170	130	156	149	138	149
Spearville	4	229	148	137	209	175	180
Speed	5	231	85	82	86	88	114
Spivey	6	145	125	166	188	142	153
Spring Hill	8	96	98	109	105	111	104
St. Francis	1	324	336	280	357	311	322
St. George	7	135	87	81	94	96	99
St. John	6	256	159	160	186	156	183
St. Marys	7	126	128	124	136	157	134
St. Paul	8	122	106	85	92	105	102
Stafford	6	253	131	138	173	141	167

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Sterling	6	166	152	123	157	138	147
Stockton	5	237	237	213	236	198	224
Strong City	7	125	133	138	136	157	138
Sublette	2	295	246	201	251	256	250
Suburban Water Company	8	75	74	79	87	88	81
Summerfield	7	119	107	108	119	109	112
Sunflower Village	7	139	78	104	132	82	107
Sunny Acres Mobile Homes	7	NA	NA	27	78	71	59
Sunshine Mobile Home Park	2	148	150	138	96	106	128
Sylvan Grove	6	163	113	97	113	138	125
Sylvia	6	214	143	210	190	133	178
Syracuse	1	298	256	245	281	288	274
Tatarrax Hills	7	181	152	93	129	115	134
Tescott	7	157	122	115	118	103	123
Thayer	8	107	119	114	127	147	123
Timber Creek Water & Sewer	7	NA	NA	NA	129	119	124
Timken	5	198	127	116	181	134	151
Tipton	6	117	84	81	101	112	99
Tonganoxie	8	125	124	117	110	112	118
Topeka	7	191	156	151	173	161	166
Toronto	7	117	90	89	89	101	97
Towns Riverview Subdivision	2	122	62	47	53	47	66
Trego Co. RWD No. 1	4	NA	82	117	82	51	83
Tribune	1	246	254	206	239	230	235
Troy	8	137	118	123	115	117	122
Turon	6	192	120	119	150	129	142
Tuttle Creek Mobile Home Park	7	79	75	74	74	69	74
Tuttle Creek Water Co.	7	NA	NA	36	57	81	58
Tuttle Terrace Trailer Court	7	35	48	42	25	35	37
Udall	7	104	95	97	98	97	98
Ulysses	2	219	222	208	231	218	220
Uniontown	8	115	111	104	107	101	108
University Park Water District	7	125	114	109	120	129	119
Utica	4	236	164	146	214	225	197
Valley Center	7	125	117	126	137	125	126

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Valley Falls	8	94	96	107	112	118	105
Vermillion	7	111	119	127	119	140	123
Victoria	5	141	105	111	118	115	118
Virgil	7	92	85	65	95	64	80
Wabaunsee Co. RWD No. 1	7	103	76	91	87	82	88
Wabaunsee Co. RWD No. 2	7	NA	68	75	80	71	74
Wagon Wheel Mobile Home Park I	2	57	37	29	61	89	55
Wagon Wheel Mobile Home Park II	2	50	72	72	88	90	74
Wakeeney	4	224	168	160	206	188	189
Wakefield	7	108	99	105	112	115	108
Wallace	1	246	228	248	306	280	262
Wallace Co. RWD No. 1	1	304	242	219	295	280	268
Walnut Grove Mobile Home Park	7	72	63	84	66	62	69
Wamego	7	156	120	113	128	120	127
Washington	7	195	148	123	140	138	149
Washington Co. RWD No. 1	7	98	100	89	80	82	90
Washington Co. RWD No. 2	7	151	129	100	122	108	122
Waterville	7	198	167	136	140	144	157
Wathena	8	97	125	116	139	120	119
Waverly	7	96	93	92	105	102	98
Weir	8	98	97	87	105	107	99
Wellington	7	127	131	113	129	142	128
West Hills Water Company	6	149	168	747	923	700	537
West Mineral	8	102	90	88	92	90	92
Western Acres Mobile Home Park	6	41	27	31	42	35	35
Westmoreland	7	119	110	107	114	121	114
Westside Trailer Park	2	NA	56	60	81	93	73
Wetmore	7	116	99	108	115	105	109
Whatley's Trailer Park	2	102	114	106	114	115	110
White City	7	97	88	90	93	91	92
White Cloud	8	97	84	83	87	95	89
Whitewater	7	80	82	77	83	81	81
Whiting	7	65	63	63	75	72	68
Wichita	7	161	141	149	147	144	148
Williamsburg	8	85	85	99	113	144	105

TABLE 23 (Continued)
ANNUAL AND AVERAGE GPCD USAGE^{a/} FOR PUBLIC WATER SUPPLIERS
KANSAS, 1991 - 1995

City/Public Water Supplier	Region	1991 GPCD	1992 GPCD	1993 GPCD	1994 GPCD	1995 GPCD	Avg. GPCD
Wilson	6	180	108	104	136	128	131
Winchester	8	89	85	88	92	92	89
Winfield	7	130	110	123	124	123	122
Winona	2	297	253	225	270	238	257
Woodson Co. RWD No. 1	7	82	70	68	64	69	71
Woodston	5	231	220	118	157	147	175
Yates Center	7	90	83	82	94	90	88
Zenda	6	196	173	166	171	147	171

^{a/} The gallons per capita per day figures do not include municipally-supplied water for industries, bulk sales, or for livestock operations that use over 200,000 gallons per year. They do include water sold to residential/commercial customers, water used for public services such as parks, swimming pools, etc. and system losses.

TABLE 24
KEY TO 2-LETTER COUNTY CODES

Abbr. County	Abbr. County	Abbr. County	Abbr. County
AL Allen	FI Finney	LG Logan	RO Rooks
AN Anderson	FO Ford	LY Lyon	RH Rush
AT Atchison	FR Franklin	MN Marion	RS Russell
BA Barber	GE Geary	MS Marshall	SA Saline
BT Barton	GO Gove	MP McPherson	SC Scott
BB Bourbon	GH Graham	ME Meade	SG Sedgwick
BR Brown	GT Grant	MI Miami	SW Seward
BU Butler	GY Gray	MC Mitchell	SN Shawnee
CS Chase	GL Greeley	MG Montgomery	SD Sheridan
CQ Chautauqua	GW Greenwood	MR Morris	SH Sherman
CK Cherokee	HM Hamilton	MT Morton	SM Smith
CN Cheyenne	HP Harper	NM Nemaha	SF Stafford
CA Clark	HV Harvey	NO Neosho	ST Stanton
CY Clay	HS Haskell	NS Ness	SV Stevens
CD Cloud	HG Hodgeman	NT Norton	SU Sumner
CF Coffey	JA Jackson	OS Osage	TH Thomas
CM Comanche	JF Jefferson	OB Osborne	TR Trego
CL Cowley	JW Jewell	OT Ottawa	WB Wabaunsee
CR Crawford	JO Johnson	PN Pawnee	WA Wallace
DC Decatur	KE Kearny	PL Phillips	WS Washington
DK Dickinson	KM Kingman	PT Pottawatomie	WH Wichita
DP Doniphan	KW Kiowa	PR Pratt	WL Wilson
DG Douglas	LB Labette	RA Rawlins	WO Woodson
ED Edwards	LE Lane	RN Reno	WY Wyandotte
EK Elk	LV Leavenworth	RP Republic	mu Multiple Counties
EL Ellis	LC Lincoln	RC Rice	
EW Ellsworth	LN Linn	RL Riley	

1995 KANSAS IRRIGATION WATER USE



**“THE RIGHT TO USE WATER BEARS THE
RESPONSIBILITY TO USE IT WISELY”**

Kansas Water Office
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*House Environment
1-16-97
Attachment 12*

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INTRODUCTION

The data and charts shown in this publication were prepared from the Irrigation Water Use Reports submitted to the Division of Water Resources, Kansas Department of Agriculture for the 1991 through 1995 calendar years. All permitted water users, including irrigation, are required as a condition of their permits to maintain accurate records from which the quantity of water diverted each calendar year may readily be determined. Water Use Reports are required annually as a condition of K.S.A. 82a-732 of the Water Appropriation Act. The Division of Water Resources and the Kansas Water Office would like to express their appreciation to all irrigation water users for the data that they provided.

Each Irrigation Water Use Report received a very extensive review to ensure that the data provided was as complete and accurate as possible. Approximately 1,000 follow-up letters and telephone calls were made to clarify information reported on the Irrigation Water Use Reports. The purpose of the follow-up letters was to correct incomplete or inaccurate data or to verify that the information was correct and to determine the reason that the information provided was not typical of other irrigators in the same county.

Irrigation water use increases significantly from east to west across the state, primarily due to the presence of significant groundwater aquifers and to the lack of adequate summer rainfall in Western Kansas. For the purposes of this analysis of irrigation water use, the state was divided into three regions, as shown in Figure 1. The regional boundaries in Figure 1 were drawn so that counties would not be subdivided, and to the extent possible, the regions were based on areas designated by the Division of Water Resources in Administrative Policy No. 86-8. This policy lists the following three guidelines that are to be considered when reviewing an Application For Permit To Appropriate Water For Beneficial Use for irrigation purposes:

1. In that area of Kansas located between the Kansas/Missouri border and the Range 5 East/Range 6 East line, the maximum allowable quantity shall not exceed an average of 1.00 acre-foot per acre irrigated.
2. In that area of Kansas located between the Range 5 East/Range 6 East Line and the Range 20 West/Range 21 West line, the maximum allowable quantity shall not exceed an average of 1.50 acre-feet per acre irrigated.
3. In that area of Kansas located between the Range 20 West/Range 21 West line and the Kansas/Colorado border, the maximum allowable quantity shall not exceed an average of 2.00 acre-feet per acre irrigated.

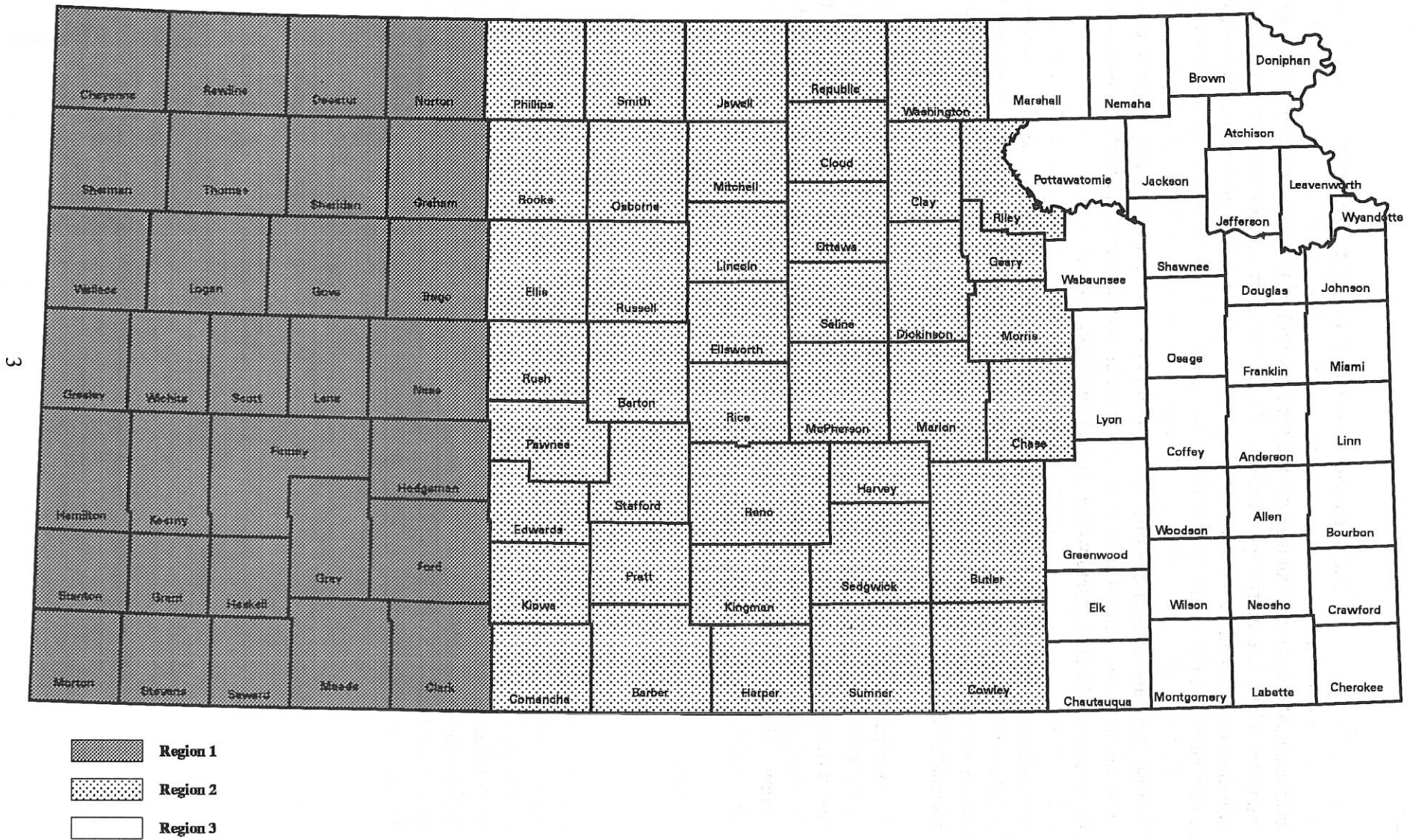
Several factors should be kept in mind when interpreting the irrigation water use statistics presented in this report or when comparing these results with other sources of irrigation water use statistics. First, most of the water use statistics presented in this report were based on water use reported by irrigators. Though very comprehensive follow-up efforts were made, many irrigators had some difficulty in providing accurate data on the number of hours pumped, and they generally had even more difficulty in providing current data on pumping rates. Also, many of those who had water meters had difficulty in reading their meters accurately. Secondly, irrigation water use in this report includes the use of water for the growing of crops and water used for golf courses and public

grounds, such as parks. The latter uses of irrigation water can represent a significant amount of irrigation water use for a primarily urban county, such as Johnson County. Also, the number of acres irrigated and the amount of water used are not limited to harvested acres. Water use statistics in this report include substantial numbers of acres for crops that are not harvested due to weather, crop disease, etc., and for land in the Conservation Reserve Program that required some irrigation to establish a stand.

Finally, the geographical units used in this analysis were assigned based on the location of each point of diversion. In the vast majority of cases, the county or township where the water was diverted would be the same as where the water was used; this usually does not represent a significant problem. However, the geographical unit of the point of diversion and the place of use may differ significantly for irrigators who use canal water. Consequently, this seventh annual report on irrigation water use does not include water use by major irrigation districts or ditches, such as the Great Eastern Irrigation Association or the Kansas Bostwick Irrigation District. These districts and ditches reported using approximately 196,000 acre-feet of water in 1995.

It is anticipated that the information provided in this report will be informative and useful to Kansas irrigators and researchers, as well as to federal, state and local agencies in managing the limited supply of water resources in Kansas and in evaluating the efficiency of irrigation water use.

FIGURE 1
REGIONS USED FOR KANSAS IRRIGATION WATER USE ANALYSES



3

17-8

IRRIGATION WATER USE BY REGION

Four geographical units are used in this report for the purpose of presenting irrigation water use statistics. These four units are: (a) regions, (b) groundwater management districts, (c) counties and (d) legal townships. The rationale for using the first three types of geographical units listed is quite clear. However, since each point of diversion has its legal township denoted on the irrigation water use database, it is also quite easy to summarize water use by legal township. Use of this geographical unit makes it possible to easily examine irrigation water use statistics at a sub-county level and helps to pinpoint areas that may be experiencing groundwater declines or areas that may be in need of special attention because of high irrigation use.

It should be noted that counties and legal townships with less than 640 acres of irrigated land were excluded from this analysis. This action was taken to ensure that sufficient irrigation had occurred within each geographical unit utilized in the analysis to allow for meaningful comparison of water use statistics.

The average amount of acre-feet of water used per acre of land irrigated (AF/A) is utilized in this report as a method of comparing irrigation water use intensity among groundwater management districts, counties and legal townships. Some primary factors that may account for differences in AF/A averages between groundwater management districts, counties or legal townships are: (a) saturated thickness, (b) type of crop grown, (c) type of irrigation system used, (d) amount of rainfall received during the growing season and (e) irrigation management practices..

Region 1

County Summary

Figure 2 presents a comparison of acreage irrigated in 1995 by county for Region 1, Western Kansas. This map shows that the number of irrigated acres was the highest in the southwest portion of Region 1 and was the lowest in the northeast portion of the region. Finney County had 242,918 acres irrigated, the highest total in the state of Kansas. Haskell and Gray counties were next highest in the state with 212,982 and 191,248 acres respectively. Grant, Stanton and Stevens counties also had more than 125,000 acres irrigated in 1995. In contrast, Clark County had only 3,835 acres irrigated in 1995, followed by Trego and Ness counties with 5,000 and 5,746 acres respectively.

FIGURE 2

ACRES IRRIGATED BY COUNTY REGION 1, KANSAS, 1995

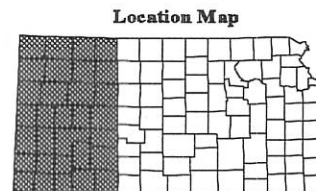
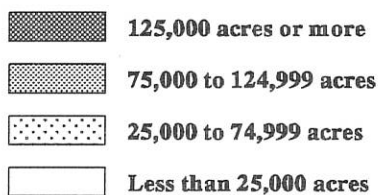
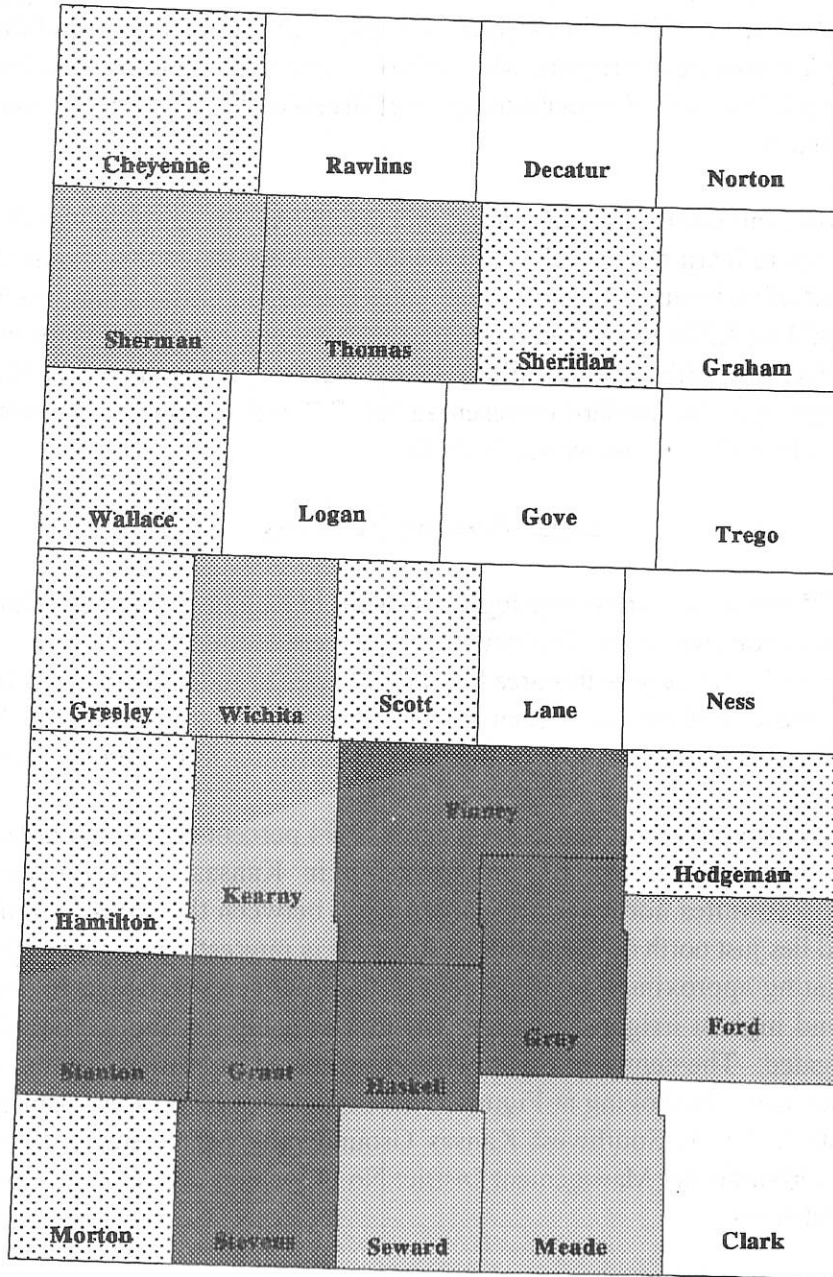


Table 1, page 63, has all counties in Region 1 ranked, based on their AF/A average in 1995. Additional information, such as the amount of irrigation water used, the number of acres irrigated, the use above the standard of 2.00 AF/A, the percent above the standard and the AF/A average for metered points of diversion are also presented for each county. Seward County had the highest AF/A average in 1995 with 1.55 AF/A. Haskell and Stevens counties ranked second and third with AF/A averages of 1.50 and 1.49 respectively. Trego County had an AF/A average of 0.76, which was the lowest in Region 1 in 1995. In examining Table 1, the AF/A values and the rank ordering of counties by AF/A should be interpreted with caution, since these rankings are based on reported water use, and about 53 percent of irrigation points of diversion in Western Kansas reported water use using water meters.

As stated previously, the standard for Region 1 is 2.00 AF/A. An analysis was done on the 1995 information reported to learn how much of the water used was above this standard. As shown in Table 1, the amount of water used by individual water right file numbers that was in excess of the regional standard of 2.00 AF/A accounted for more than five percent of the water used in only five counties. Those five counties were Hamilton, Clark, Seward, Hodgeman and Norton where the amount of water use above the standard represented 8.3, 7.7, 6.5, 6.1 and 5.7 percent, respectively, of their counties' total irrigation water use in 1995.

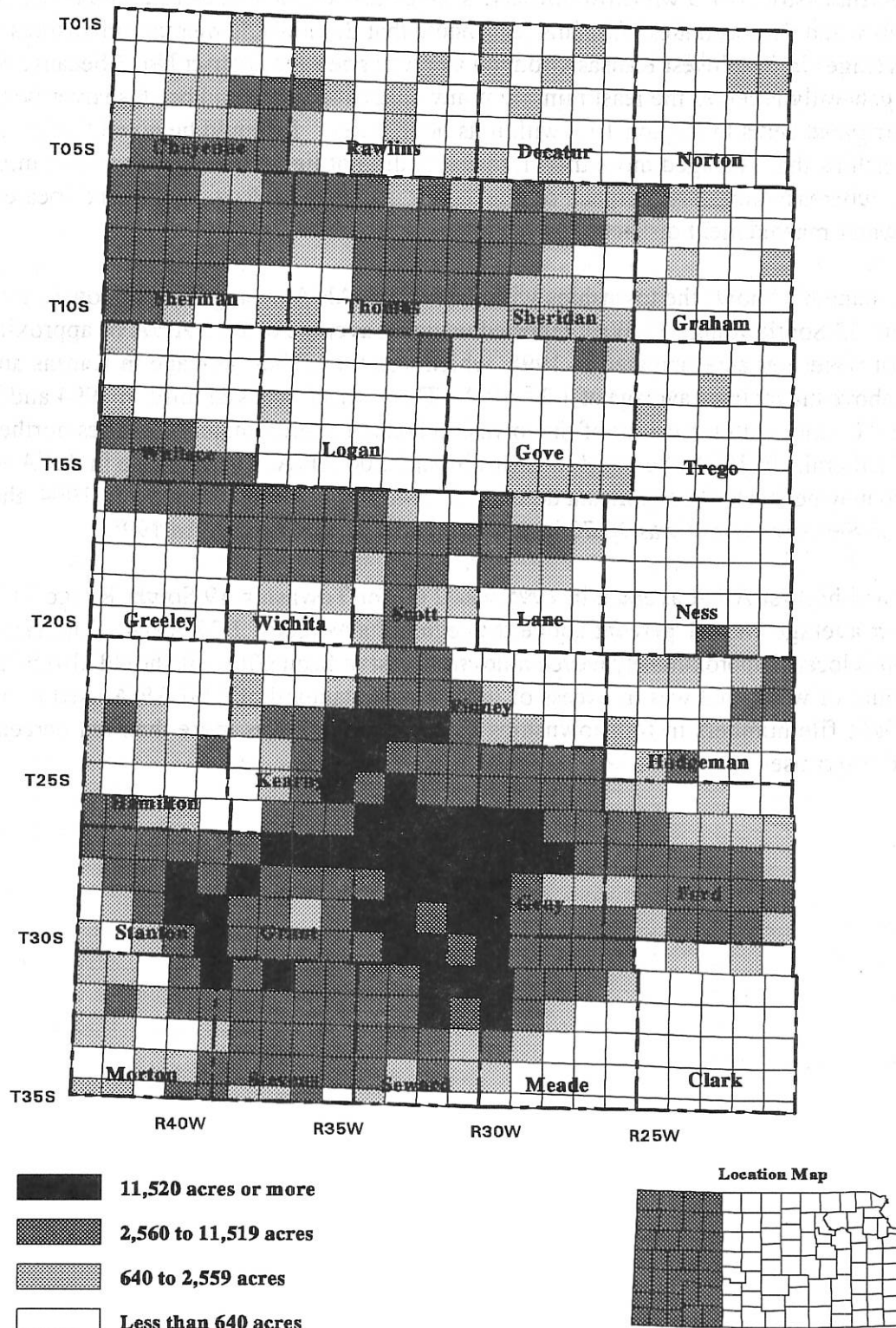
Legal Township Summary

Figure 3 shows 1995 irrigation acreage by legal township in Region 1, Western Kansas. This map shows that the highest concentrations of irrigated acreage were clustered in the south-central portion of Region 1 and that 47 townships in this area had 11,520 acres or more of irrigated land; this means that 50 percent or more of the acres in each of these townships were irrigated in 1995. These 47 townships are all located within Southwest Kansas Groundwater Management District No. 3.

Township 23 South, Range 34 West had 21,644 acres or 94 percent of its total area irrigated. This was the highest irrigated acreage of any township in Kansas. This township is located approximately thirteen miles northwest of Garden City, between the cities of Wolf and Lowe in Finney County and lies just north of the Arkansas River. It is interesting to note that one landowner has reported irrigating approximately 58 percent of the total acres irrigated in this township and range. The second highest irrigated acreage was in Township 23 South, Range 33 West, with 18,931 acres irrigated. The center of this township is located in Finney County, about six miles northwest of Garden City. In looking at Figure 3, the boundaries of Western Kansas Groundwater Management District No. 1, Southwest Kansas Groundwater Management District No. 3 and Northwest Kansas Groundwater Management District No. 4 located in Western Kansas are outlined by the three shaded areas.

FIGURE 3

ACRES IRRIGATED BY LEGAL TOWNSHIP REGION 1, KANSAS, 1995



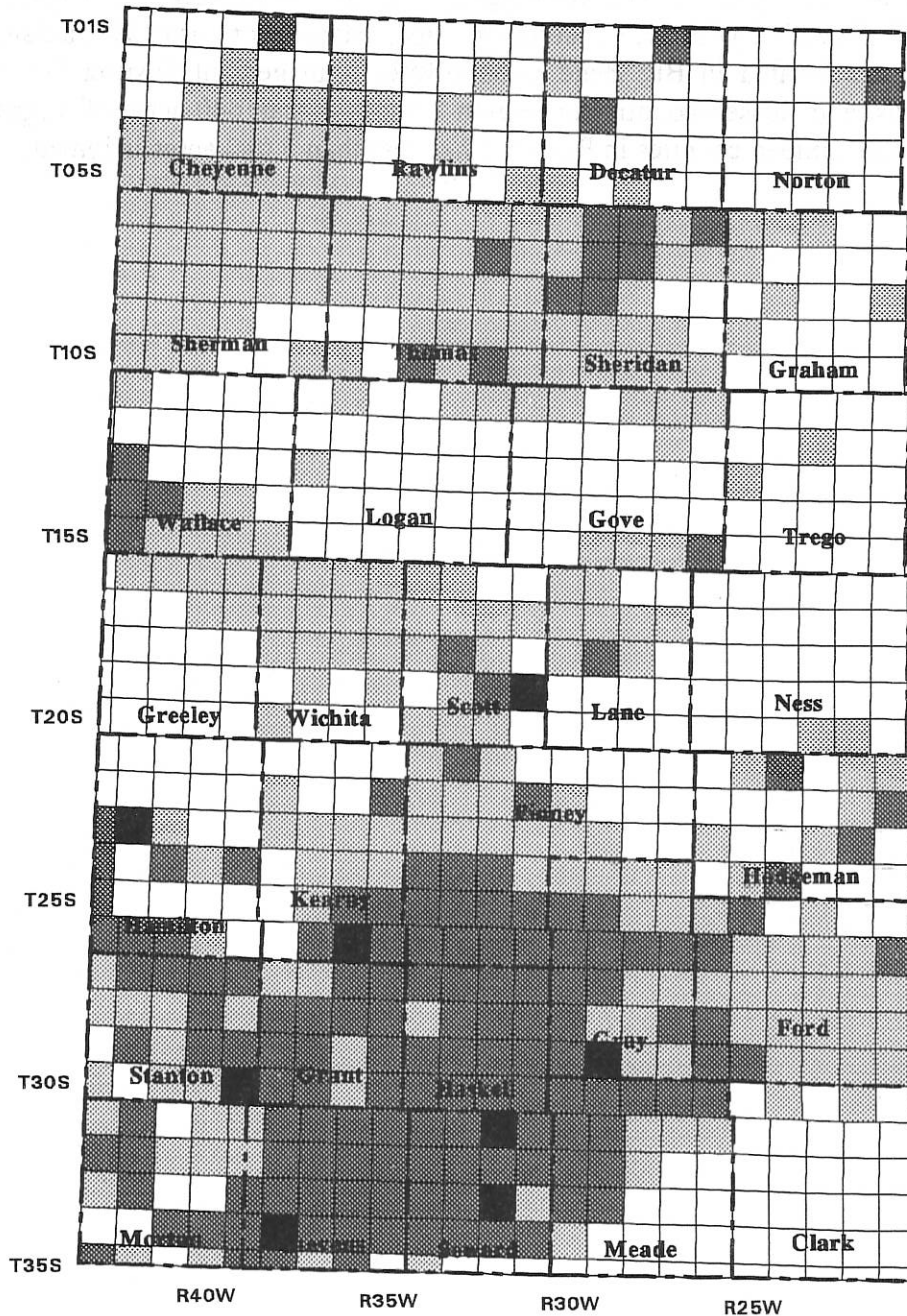
The intensity of irrigation water use in Region 1, as measured by AF/A averages, is shown by legal township in Figure 4. In contrast to the number of acres irrigated, where it was found that townships with high irrigation acres were clustered in Figure 3, townships with the highest AF/A averages are scattered throughout the southern and western portions of the region. Eight townships in Region 1 had an AF/A average of 1.75 or more. Six were located within Southwest Kansas Groundwater Management District No. 3 while two townships were outside of a groundwater management district in Hamilton and Scott counties. It seems reasonable that there would be more townships with high AF/A averages in Southwest Kansas Groundwater Management District No. 3 because Southwest Kansas generally receives the least rainfall of any area of the state and because over two-thirds of all the irrigated acres in Region 1 lie within its boundaries. It should be noted that 25 percent of the townships that averaged more than 1.75 AF/A did not lie within a groundwater management district, whereas only five percent of the acres irrigated in Region 1 were located outside groundwater management districts.

Table 2, page 65, shows the townships with the highest AF/A averages in Region 1. Irrigators in Township 33 South, Range 32 West reported using an average of 2.33 AF/A or approximately 28 inches of water per acre irrigated in 1995, which was the highest average in Kansas and was 83 percent above the regional average of 1.27 AF/A. This township ranked third in 1994 and is located in Seward County with the center of the township located approximately 12 miles northeast of the City of Liberal. In 1994, the highest township had 2.06 AF/A. The increase in AF/A use in this township may be due to the significant decrease in rainfall in Seward County. In 1994, the average rainfall in Seward County was 20.70 inches compared to 15.47 inches in 1995.

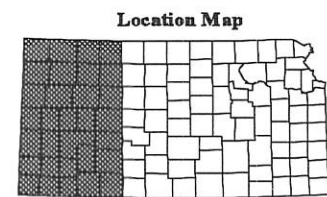
The second highest AF/A average in 1995 was 2.04 for Township 19 South, Range 31 West; the township average was 61 percent above the regional average of 1.27 AF/A. The center of this township is located approximately eleven miles southeast of Scott City. It should also be noted that the amount of water that was in excess of the regional standard of 2.00 AF/A used by individual water right file numbers in four townships listed in Table 2 was more than ten percent of their reported water use.

FIGURE 4

**AF/A WATER USE BY LEGAL TOWNSHIP
REGION 1, KANSAS, 1995**



- More than 1.75 AF/A
- 1.26 AF/A to 1.75 AF/A
- 1.25 AF/A or less
- N/A, less than 640 acres irrigated



12-14

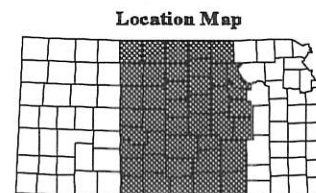
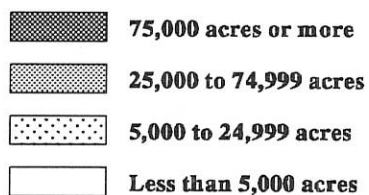
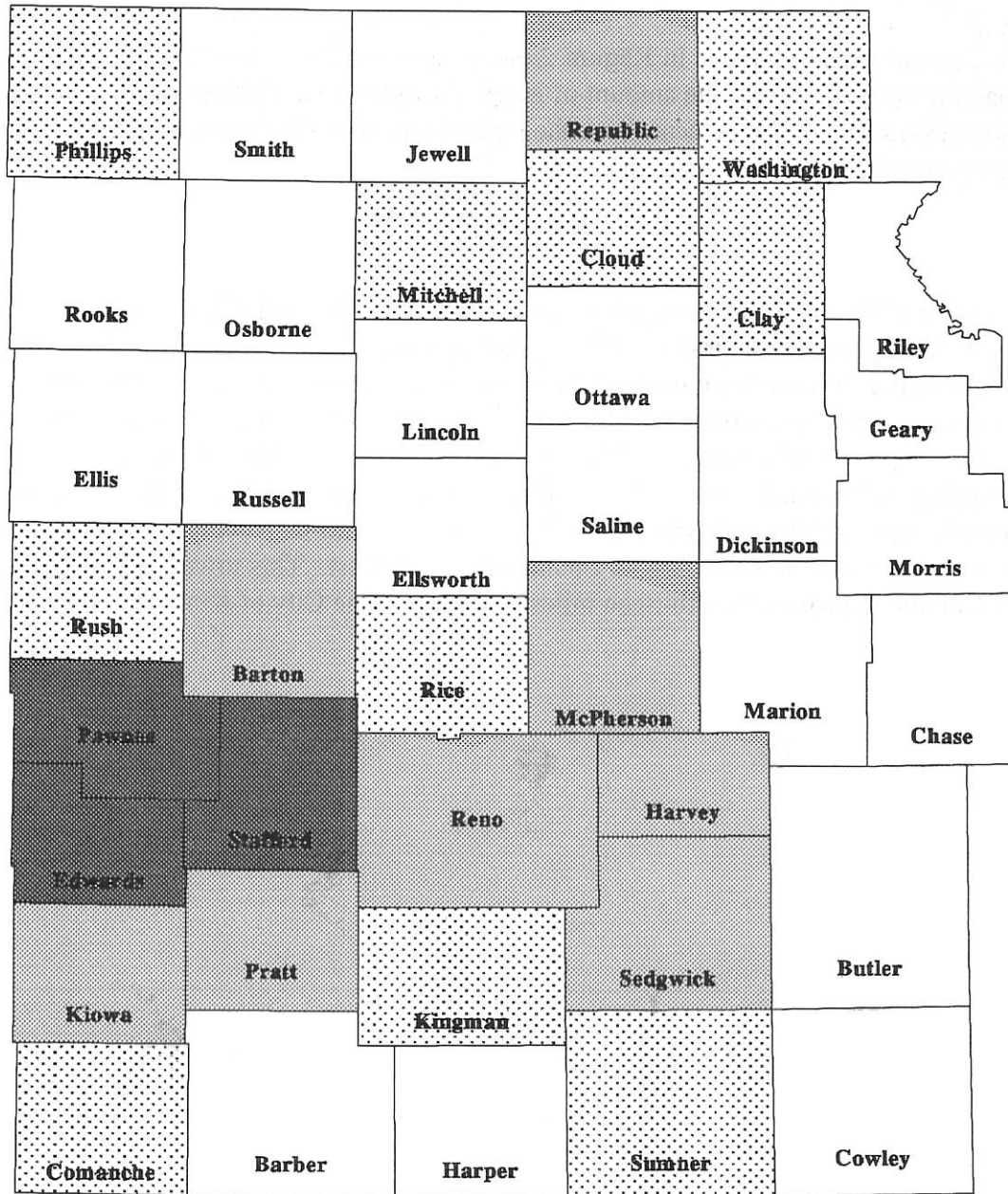
Region 2

County Summary

Figure 5 presents a comparison of acreage irrigated in 1995 by county for Region 2, Central Kansas. This map shows that the number of irrigated acres was the highest in the southwest portion of Region 2. Edwards County had 93,131 acres irrigated, the most in Region 2. Pawnee County was the next highest in Region 2 with 77,576 acres irrigated. Major portions of Edwards County and Pawnee County are located in Big Bend Groundwater Management District No. 5. Chase, Ellsworth, Morris, and Russell counties in Region 2 had less than 640 acres of irrigated land in 1995. An additional sixteen counties in Region 2 had less than 5,000 acres irrigated.

FIGURE 5

ACRES IRRIGATED BY COUNTY REGION 2, KANSAS, 1995



Pratt County and Kiowa County irrigators used 1.15 AF/A or approximately fourteen inches of water per acre irrigated in 1995, which was higher than any other county in Region 2 and was nineteen percent higher than the region's average of 0.97 AF/A. Edwards county was third with 1.13 AF/A, which was sixteen percent above the regional average. In contrast, Lincoln County irrigators used only 0.34 AF/A, followed by Ottawa and Riley counties with AF/A averages of 0.44 and 0.47 respectively.

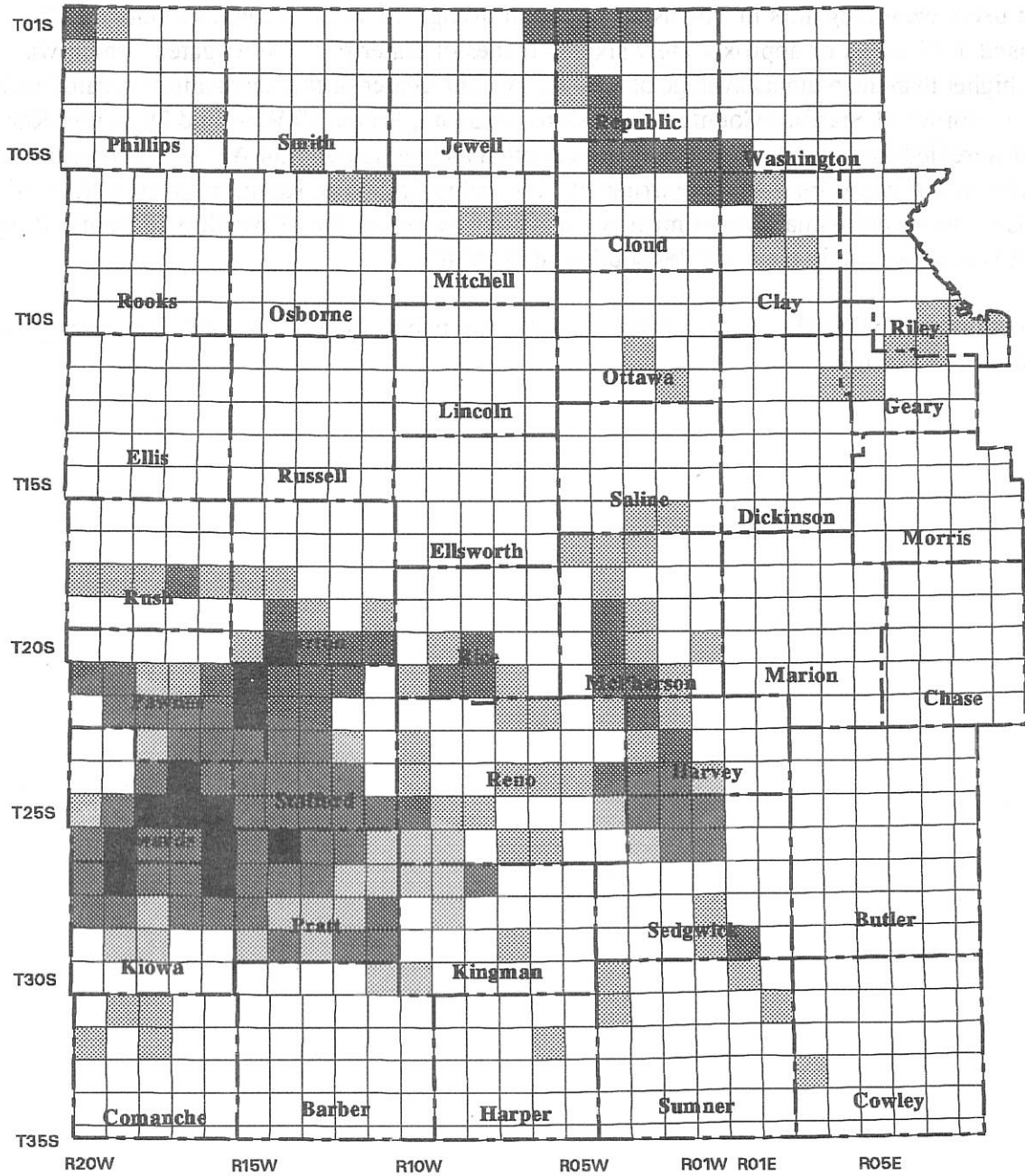
In Table 3, page 66 all counties in Region 2 are ranked based on their AF/A average in 1995. Additional information, such as the amount of irrigation water used, the number of acres irrigated, the use above the standard, the percent above the standard and the AF/A average for metered points of diversion are also presented for each county.





Legal Township Summary

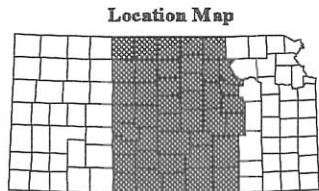
Figure 6 shows 1995 irrigation acreage by legal township in Region 2, Central Kansas. This map shows that the highest concentrations of irrigated acreage were all located in the southwestern portion of Region 2. The twelve townships shown in Figure 6 that had at least 7,680 acres irrigated or the equivalent of twelve sections are all located in Big Bend Groundwater Management District No. 5. Township 25 South, Range 18 West had 10,087 irrigated acres, which was more than any other township in Region 2. The center of this township is located in central Edwards County, approximately eight miles southeast of the City of Kinsley. The second highest irrigated acreage, 9,263 acres, was found in Township 25 South, Range 17 West. This township is also located in Edwards County, approximately thirteen miles southeast of the City of Kinsley.

FIGURE 6

ACRES IRRIGATED BY LEGAL TOWNSHIP
REGION 2, KANSAS, 1995



-  7,680 acres or more
-  2,560 to 7,679 acres
-  640 to 2,559 acres
-  Less than 640 acres



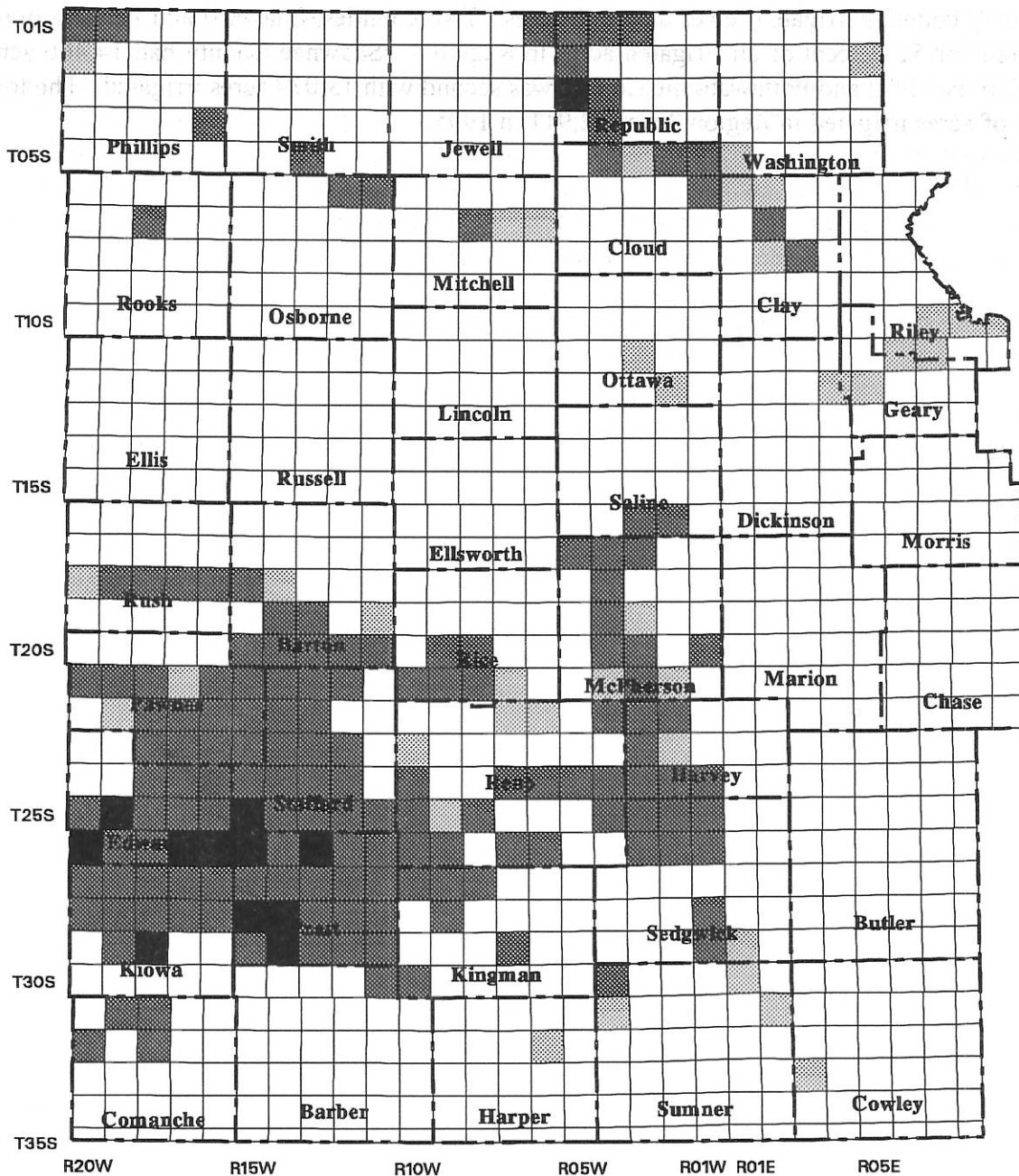
The intensity of irrigation water use in Region 2, as measured by AF/A averages, is shown by legal township in Figure 7. Twelve townships shown in Figure 7 had irrigation water use of more than 1.25 AF/A. Notably two of these twelve townships are located outside the boundaries of a groundwater management district.



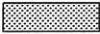
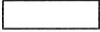
Table 4, page 68, shows the townships with the highest AF/A averages in Region 2 in 1995. The highest users were irrigators in Township 25 South, Range 15 West, located in Stafford County. They used 1.35 AF/A or approximately sixteen inches of water per acre irrigated, which was 39 percent higher than the regional average of 0.97 AF/A. The center of this township is located in the southwest corner of Stafford County. Townships 25 South, Range 19 West and 29 South, Range 14 West were tied for second. Those irrigators applied an average of 1.34 AF/A or approximately sixteen inches of water for each acre irrigated. Township 25 South, Range 19 West is located in Edwards County, approximately four miles south of the City of Kinsley. Township 29 South, Range 14 West is approximately eleven miles southwest of Pratt.

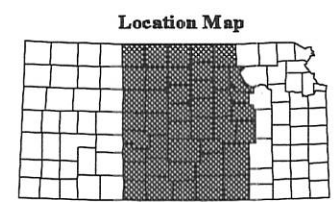
A close examination of Table 4 shows that six of the top twenty-one AF/A water use averages are located in Pratt County.

FIGURE 7

**AF/A WATER USE BY LEGAL TOWNSHIP
REGION 2, KANSAS, 1995**



-  **More than 1.25 AF/A**
-  **0.76 AF/A to 1.25 AF/A**
-  **0.75 AF/A or less**
-  **N/A, less than 640 acres irrigated**



Region 3

County Summary

Figure 8 presents a comparison of acreage irrigated in 1995 by county for Region 3, Eastern Kansas. More acres are irrigated along the Kansas River than any other area in Region 3, and Figure 8 shows that twenty counties irrigated fewer than 640 acres. Two counties, Shawnee and Pottawatomie, accounted for 52 percent of all irrigated acres in Region 3. Shawnee County had 14,466 acres irrigated to rank first, and Pottawatomie County was second with 13,079 acres irrigated. The total number of acres irrigated in Region 3 was 52,911 in 1995.

FIGURE 8

**ACRES IRRIGATED BY COUNTY
REGION 3, KANSAS, 1995**

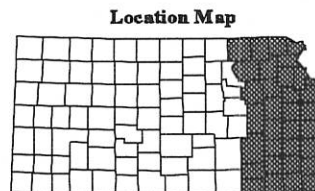
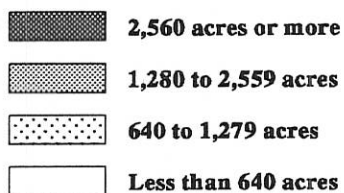
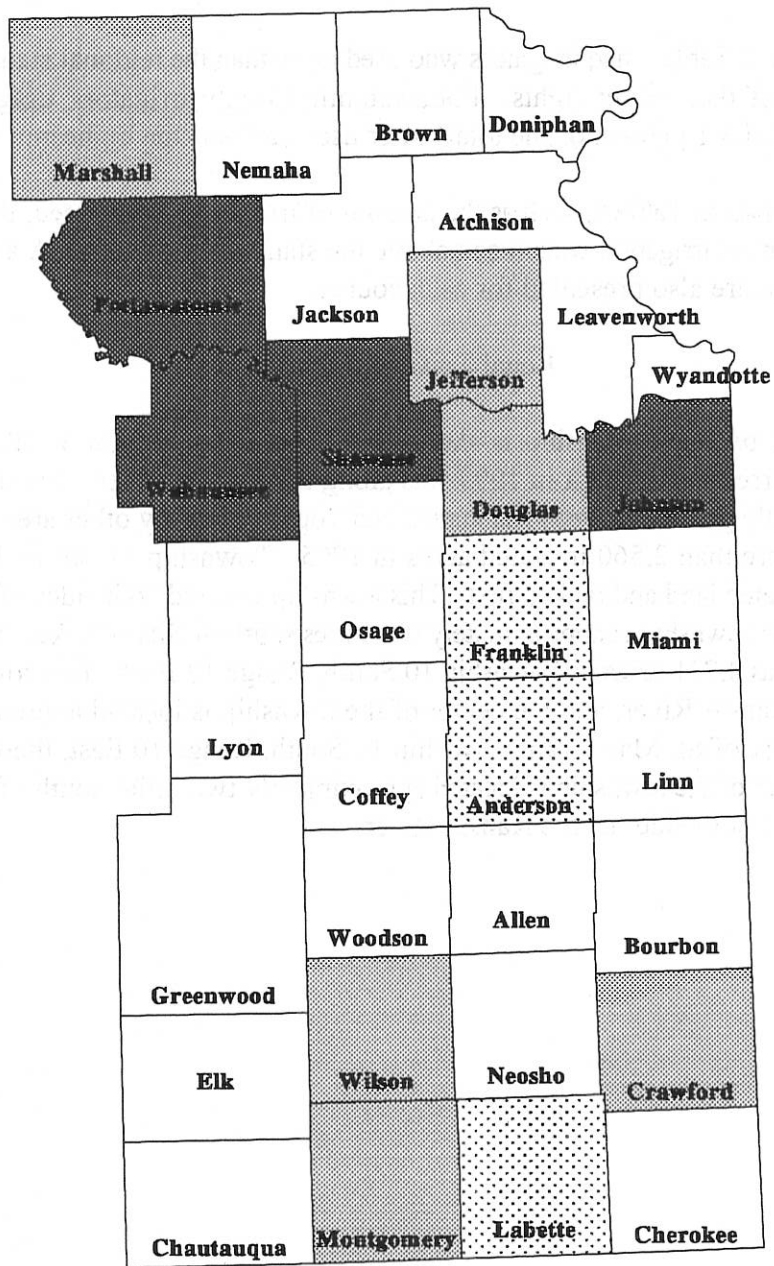


Table 5, page 69, has all counties in Region 3 ranked, based on their AF/A average in 1995, except for the twenty counties that irrigated less than 640 acres. Johnson County is first on the list with an average of 0.59 AF/A or approximately seven inches of water per acre irrigated. This is about three times the amount of water used by irrigators in Labette County. Shawnee County ranked second averaging 0.56 AF/A. The lowest reported usage was 0.19 AF/A or approximately two inches of water use per acre of land irrigated by Labette County irrigators.

Five counties listed in Table 5 had irrigators who used more than the regional standard of 1.00 AF/A for one or more of their water rights. Pottawatomie County irrigators' usage in excess of the standard represented 3.1 percent of the total water used and was the highest in Region 3.

Additional information in Table 5, such as the amount of irrigation water used, the number of acres irrigated, the amount of irrigation water used above the standard and the AF/A average for metered points of diversion, are also presented for each county.

Legal Township Summary

Irrigation acreage by legal township is shown in Figure 9 for Region 3. The only significant irrigation that occurred in Region 3 in 1995 was along the Kansas River. The number of irrigated acres are significantly greater between Manhattan and Topeka than any other area in Region 3. Five townships had more than 2,560 irrigated acres in 1995. Township 11 South, Range 14 East had 4,972 acres of irrigated land and ranked first. This township covered both sides of the Kansas River, and the center of the township is approximately two miles south of Silver Lake. The second highest irrigated acreage was 4,731 acres in Township 10 South, Range 12 East. This township also covers both sides of the Kansas River, and the center of the township is located approximately two miles southwest of the City of St. Marys. In Township 10 South, Range 10 East, there were 3,929 acres irrigated. The center of the township is located approximately two miles south of Wamego. Again, these acres covered both sides of the Kansas River.

FIGURE 9

ACRES IRRIGATED BY LEGAL TOWNSHIP REGION 3, KANSAS, 1995

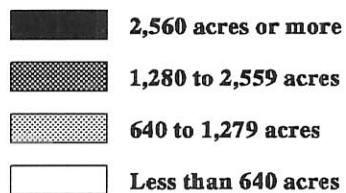
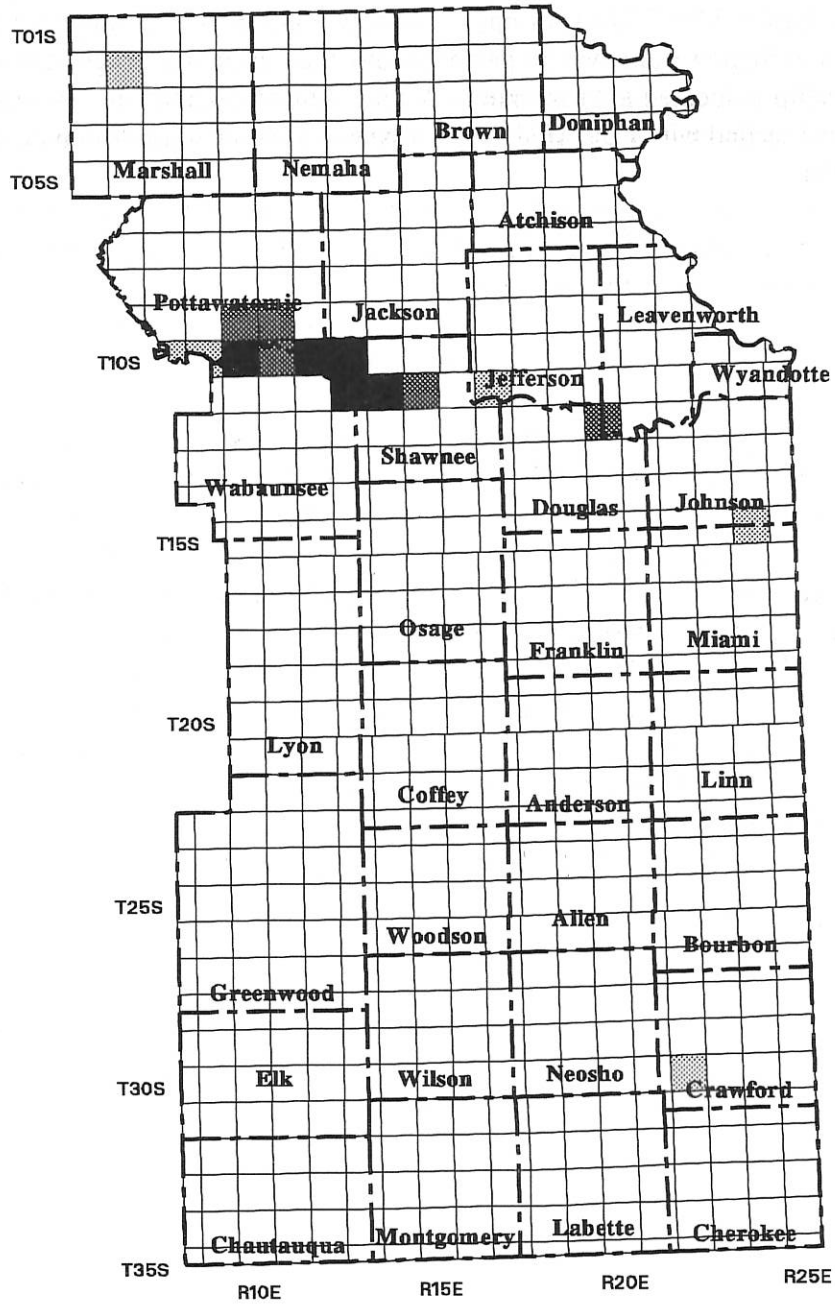
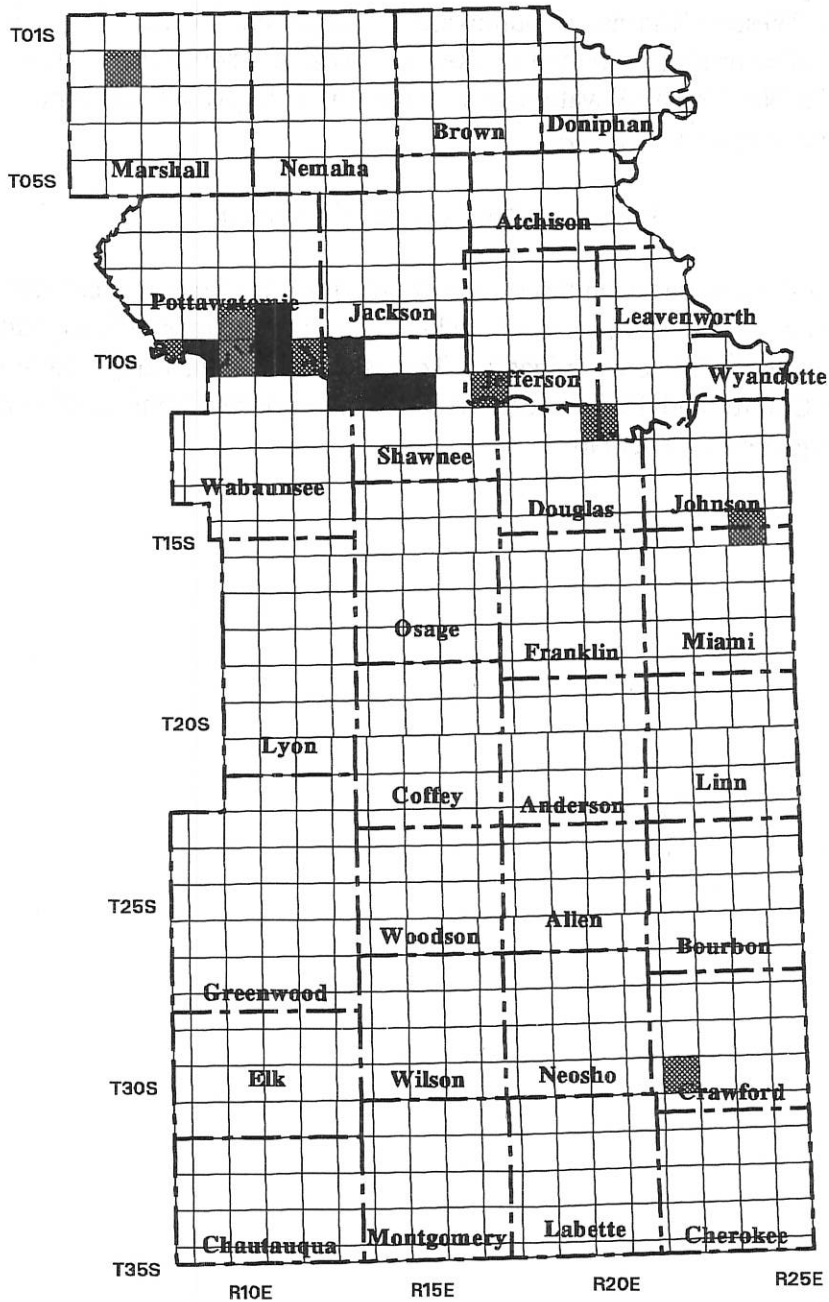






Figure 10 illustrates by legal township the intensity of irrigation water use in Region 3, as measured by AF/A averages. This map is very similar in appearance to Figure 9, since the majority of irrigation water use in Region 3 occurs along the Kansas River.

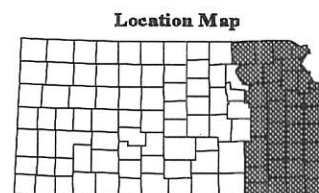
Table 6, page 70, includes all fifteen of the legal townships in Region 3 that had 640 acres or more of irrigated land in 1995. These townships are ranked according to their AF/A averages. Township 10 South, Range 08 East had 0.67 AF/A, or approximately eight inches of water per acre irrigated. This was the highest in Region 3 and was 56 percent above the regional average of 0.47 AF/A. The center of this township is located approximately 2 miles east of Manhattan. Township 11 South, Range 14 East ranked second with 0.59 AF/A. This township's center is approximately eleven miles northwest of Topeka.

FIGURE 10

**AF/A WATER USE BY LEGAL TOWNSHIP
REGION 3, KANSAS, 1995**



-  **More than 0.50 AF/A**
-  **0.26 AF/A to 0.50 AF/A**
-  **0.25 or less**
-  **N/A, less than 640 acres irrigated**



IRRIGATION WATER USE BY GROUNDWATER MANAGEMENT DISTRICT

Western Kansas Groundwater Management District No. 1

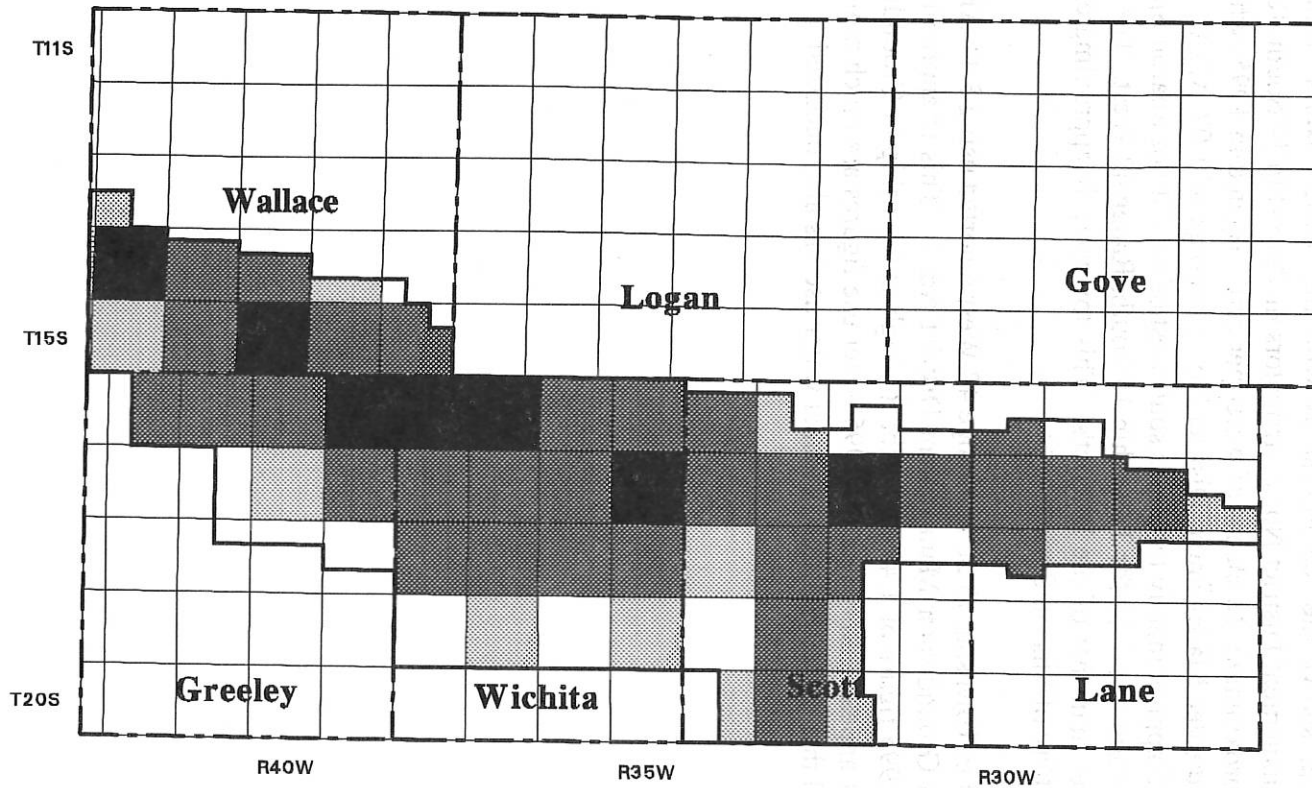
Western Kansas Groundwater Management District No. 1 had 243,628 acres irrigated in 1995, as shown in Table 7, page 71, which represented approximately eleven percent of the 2,238,337 acres irrigated in Region 1, Western Kansas. Groundwater Management District No. 1's irrigation water use was 260,173 acre-feet or nine percent of the Region 1 total of 2,849,701 acre-feet. Groundwater Management District No. 1's AF/A water use average was 1.07, which was nineteen percent less than the Region 1 average of 1.27 AF/A.

Acres Irrigated by Legal Township

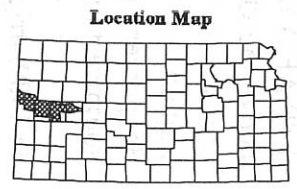
Figure 11 shows that there were seven townships in Groundwater Management District No. 1 that had 7,680 acres or more irrigated which is equivalent to twelve sections of land, and 31 townships had between 2,560 and 7,679 acres irrigated. Township 16 South, Range 38 West, located in northwest Wichita County had 10,518 acres irrigated, the greatest number of acres irrigated in Groundwater Management District No. 1.

FIGURE 11

ACRES IRRIGATED BY LEGAL TOWNSHIP GMD 1, KANSAS, 1995



- 7,680 acres or more
- 2,560 to 7,679 acres
- 640 to 2,559 acres
- Less than 640 acres



AF/A Water Use by Legal Township

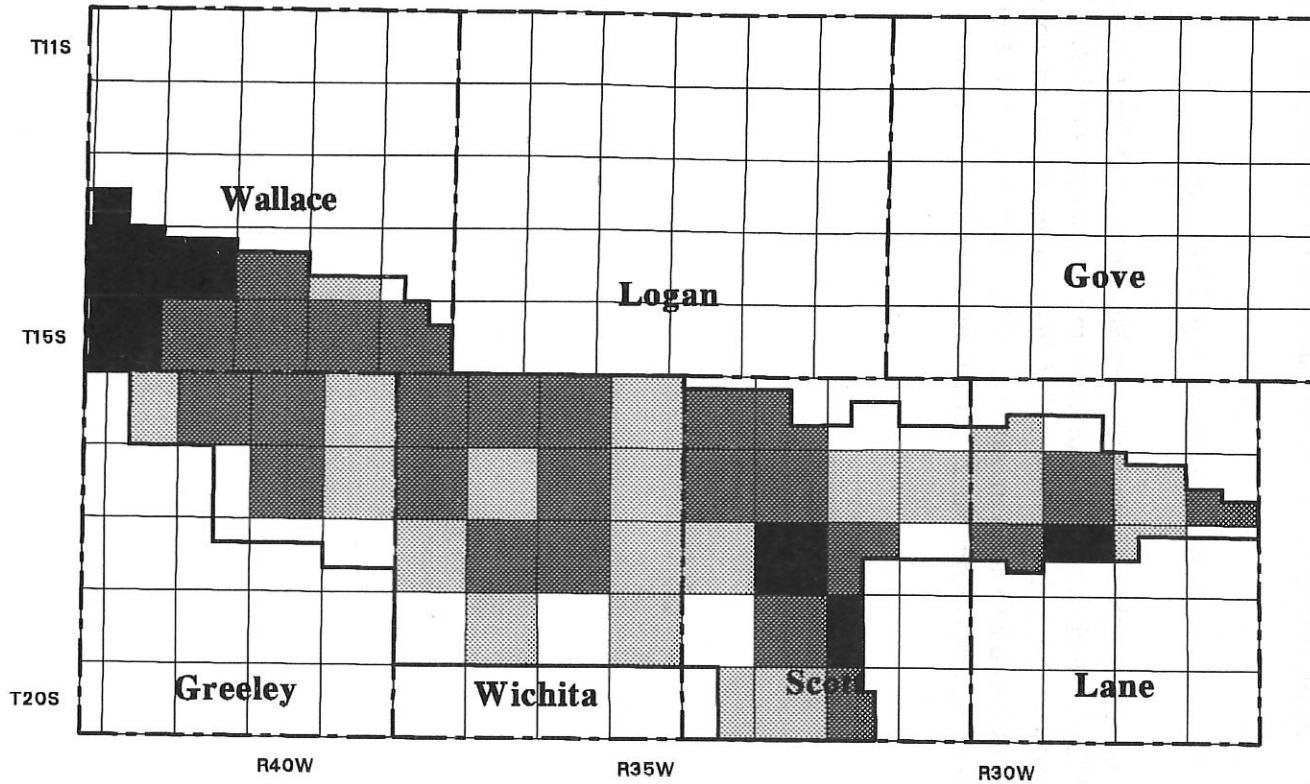
The intensity of irrigation water use in Western Kansas Groundwater Management District No. 1, as measured by AF/A water use averages, is shown by legal township in Figure 12. Eight townships had an AF/A average greater than 1.25 AF/A.

Table 8, page 72, shows the ten townships with the highest AF/A water use averages in Groundwater Management District No. 1. Irrigators in Township 14 South, Range 41 West used 1.49 AF/A or approximately 18 inches of water per acre irrigated in 1995, which was 39 percent above the Groundwater Management District No. 1 average of 1.07 AF/A. The center of this township is located approximately ten miles southwest of the City of Sharon Springs. The second highest AF/A average was 1.44 for Township 15 South, Range 42 West. The AF/A average was 35 percent greater than that of the District's. This township is approximately seventeen miles southwest of the City of Sharon Springs.

In 1989, irrigators in Township 13 South, Range 42 West reported using 3.11 AF/A, which was the highest figure in Groundwater Management District No. 1. This is approximately 109 percent higher than the 1995 figure of 1.49 AF/A for the highest township in Groundwater Management District No. 1. It appears likely that the 1995 water use figures are much more accurate than the 1989 figures, and that some reduction in actual water use has also occurred.

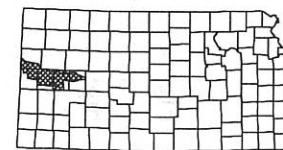
FIGURE 12

AF/A WATER USE BY LEGAL TOWNSHIP
GMD 1, KANSAS, 1995



- More than 1.25 AF/A
- 1.01 AF/A to 1.25 AF/A
- 1.00 AF/A or less
- N/A, less than 640 acres irrigated

Location Map



Equus Beds Groundwater Management District No. 2

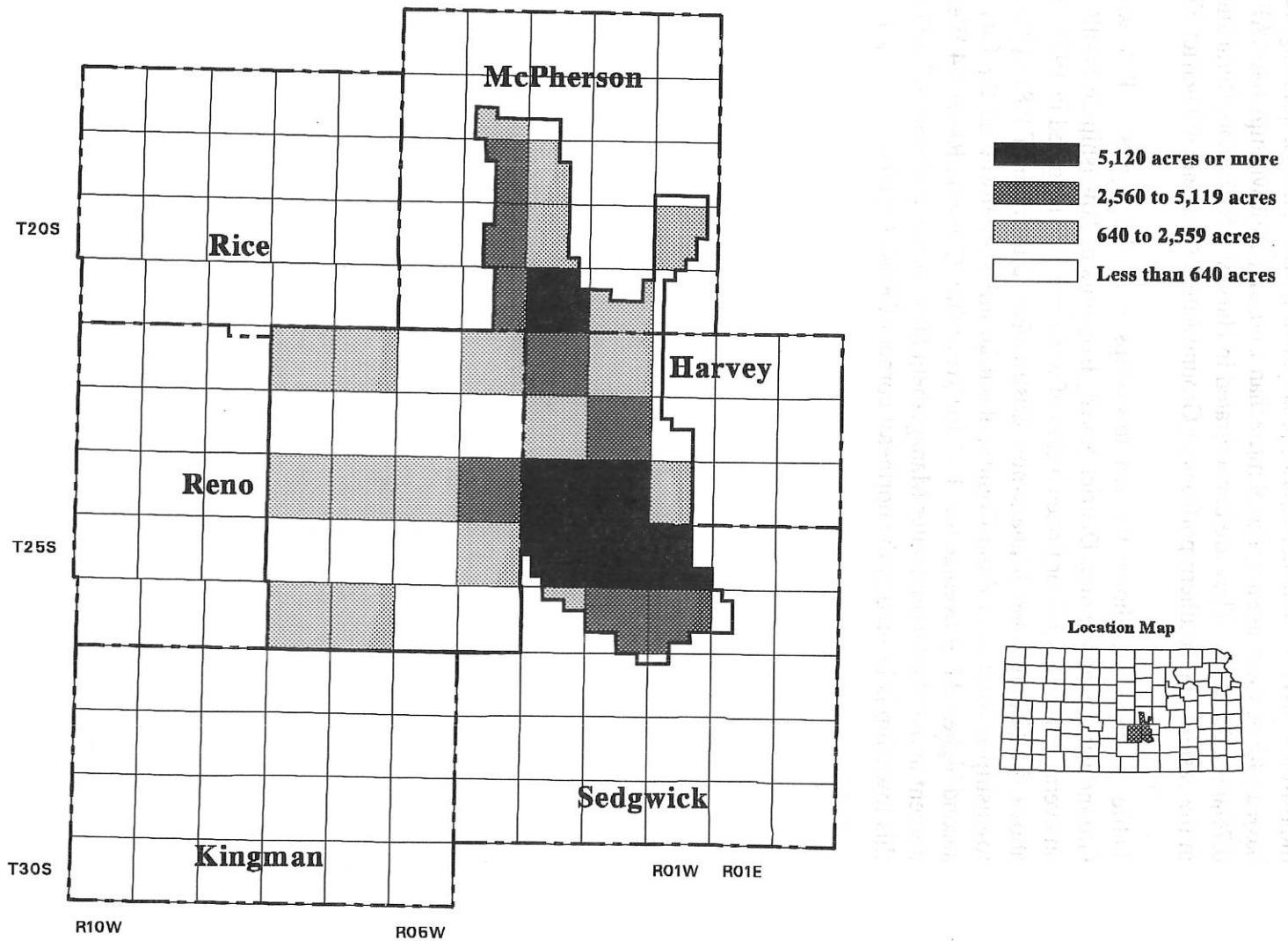
Equus Beds Groundwater Management District No. 2 had 97,628 acres irrigated in 1995, as shown in Table 7, page 71, which represented approximately fourteen percent of the 715,194 acres that were irrigated in Region 2, Central Kansas. Groundwater Management District No. 2's irrigation water use was 85,132 acre-feet or twelve percent of the Region 2 total of 696,763 acre-feet. Groundwater Management District No. 2's AF/A water use average decreased from 1.04 in 1994 to 0.87 in 1995.

Acres Irrigated by Legal Township

Figure 13 shows that six townships in Groundwater Management District No. 2 had 5,120 acres or more of irrigated land, which would be equivalent to eight sections of land. Townships with the highest irrigated acreage were located in Harvey, McPherson and Sedgwick counties. Township 24 South, Range 03 West had 6,816 acres irrigated in 1995, which was more than any other township in Groundwater Management District No. 2. This township is located in extreme southwest Harvey County.

FIGURE 13

ACRES IRRIGATED BY LEGAL TOWNSHIP
GMD 2, KANSAS, 1995



27

12-32

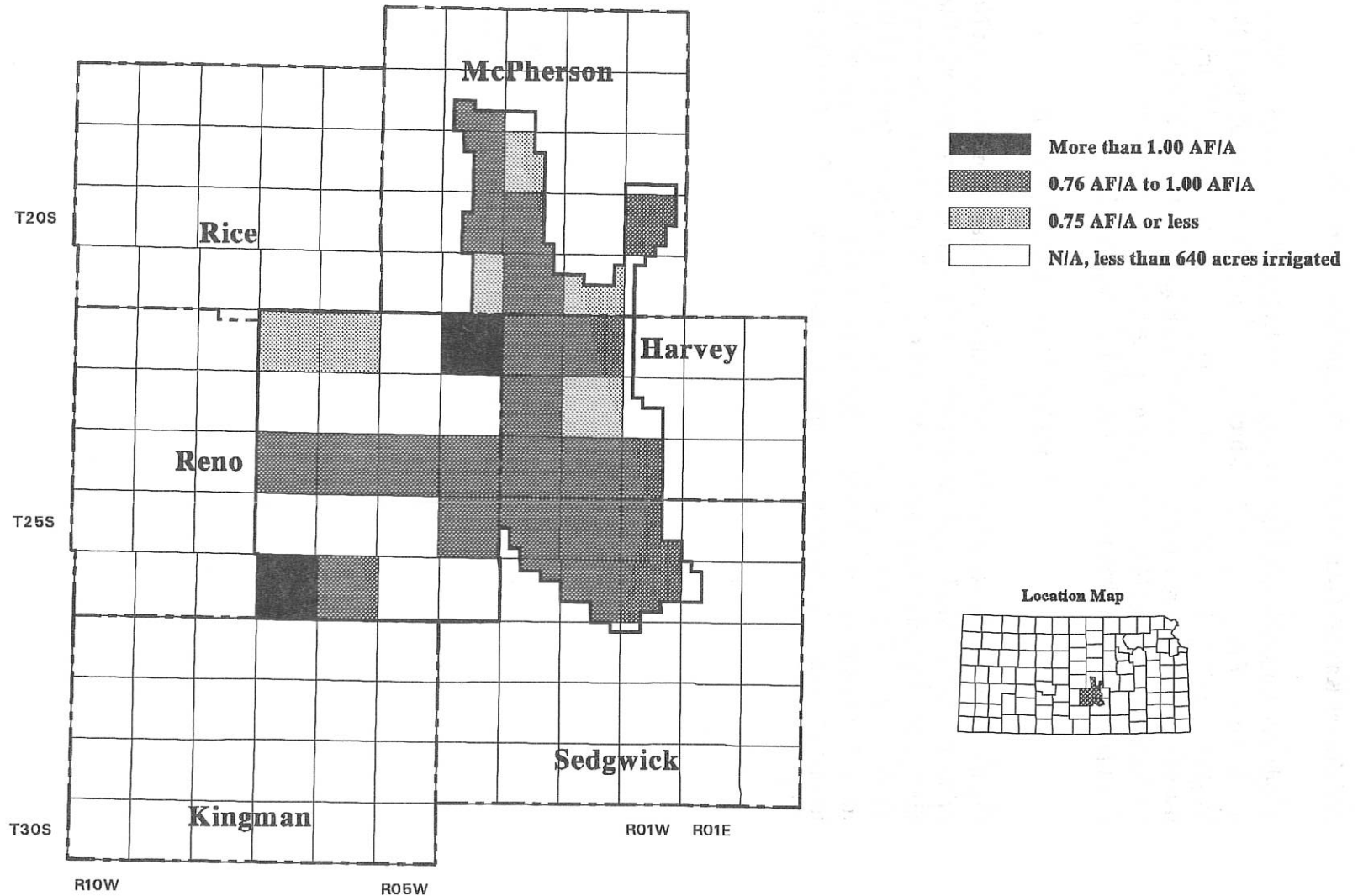
AF/A Water Use by Legal Township

The intensity of irrigation water use in Equus Beds Groundwater Management District No. 2, as measured by AF/A water use averages, is shown by legal township in Figure 14. Two townships have an AF/A water use average of more than 1.00, and 24 townships have AF/A averages between 0.76 and 1.00 AF/A. They are concentrated in Harvey, McPherson, Reno and Sedgwick counties, in the eastern and southern portions of Groundwater Management District No. 2.

Table 9, page 73, shows the ten townships with the highest AF/A water use averages in Groundwater Management District No. 2. Irrigators in Township 26 South, Range 07 West used an average of 1.21 AF/A or fifteen inches of water per acre irrigated in 1995, which was 39 percent above the Groundwater Management District No. 2 average of 0.87 AF/A. The center of this township is located in Reno County, about 26 miles southwest of the City of Hutchinson. The second highest AF/A average was 1.01 for Township 22 South, Range 04 West, which was sixteen percent above the Groundwater Management District No. 2 average of 0.87 AF/A. The center of this township is located in the northeast corner of Reno County.

FIGURE 14

AF/A WATER USE BY LEGAL TOWNSHIP
GMD 2, KANSAS, 1995



29

12-34

Southwest Kansas Groundwater Management District No. 3

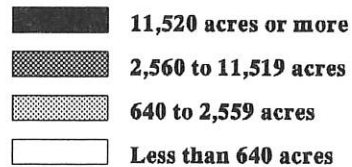
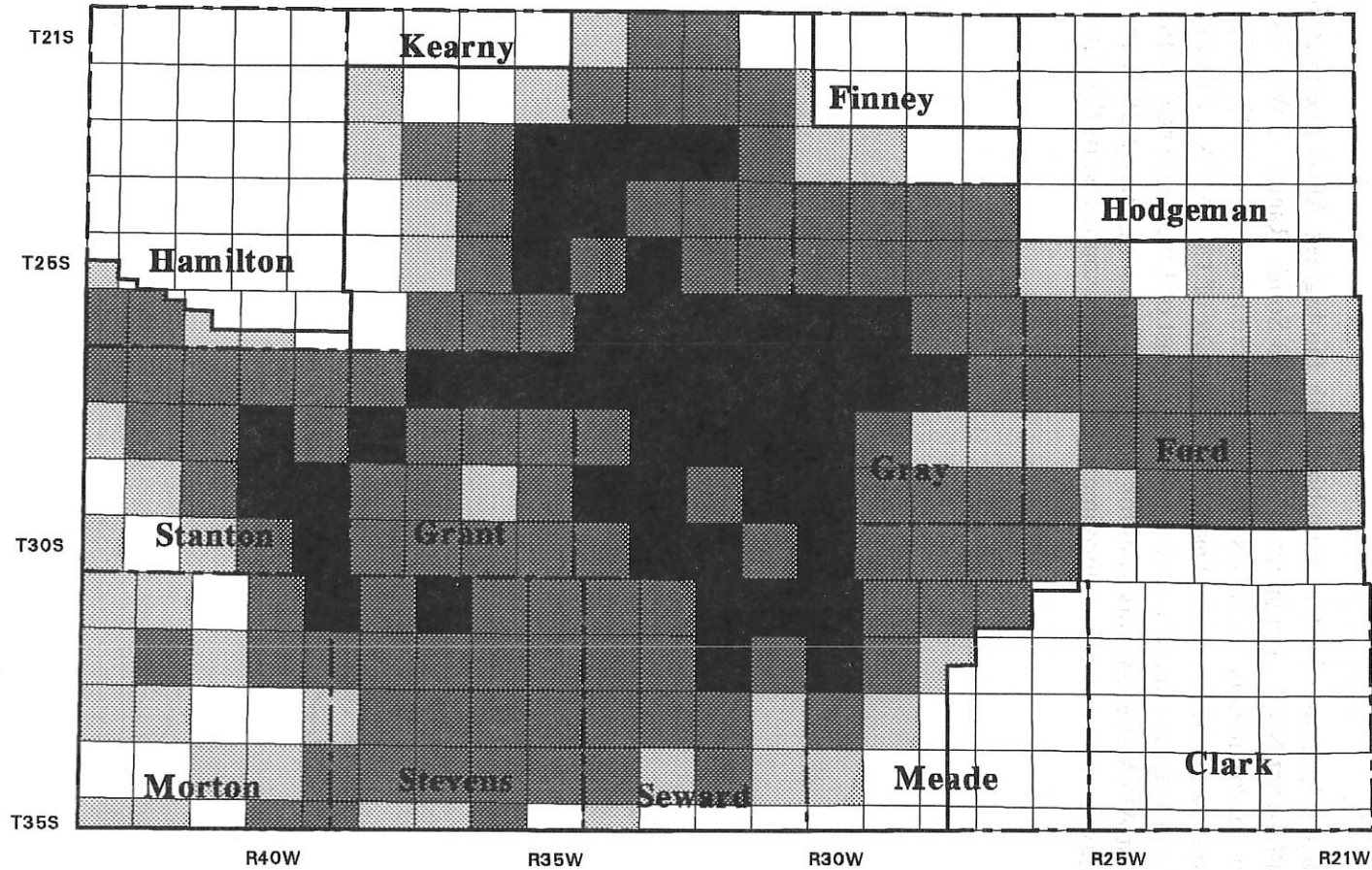
Southwest Kansas Groundwater Management District No. 3 had 1,536,670 acres irrigated in 1995, as shown in Table 7, page 71, which represented 69 percent of the 2,238,337 acres that were irrigated in Region 1, Western Kansas. Groundwater Management District No. 3's irrigation water use was 2,111,822 acre-feet or 74 percent of the Region 1 total of 2,849,701 acre-feet. Groundwater Management District No. 3's AF/A average decreased from 1.44 in 1994 to 1.37 in 1995 and was eight percent higher than the 1995 Region 1 average of 1.27 AF/A.

Acres Irrigated by Legal Township

Figure 15 shows that 47 townships in Groundwater Management District No. 3 had 11,520 acres or more irrigated, which would be equivalent to eighteen sections or more of land. Townships with the highest irrigated acreage were located in Kearny, Finney, Stanton, Grant, Haskell, Gray, Morton, Stevens, Seward and Meade counties. Township 23 South, Range 34 West had 21,644 acres irrigated and was the only township in the state with over 20,000 acres irrigated. The center of this township is located approximately fourteen miles northwest of Garden City in west-central Finney County.

FIGURE 15

ACRES IRRIGATED BY LEGAL TOWNSHIP
GMD 3, KANSAS, 1995



Location Map



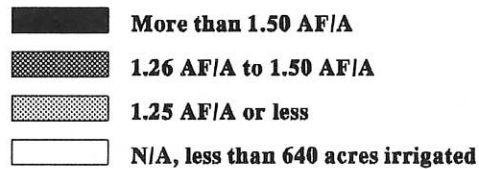
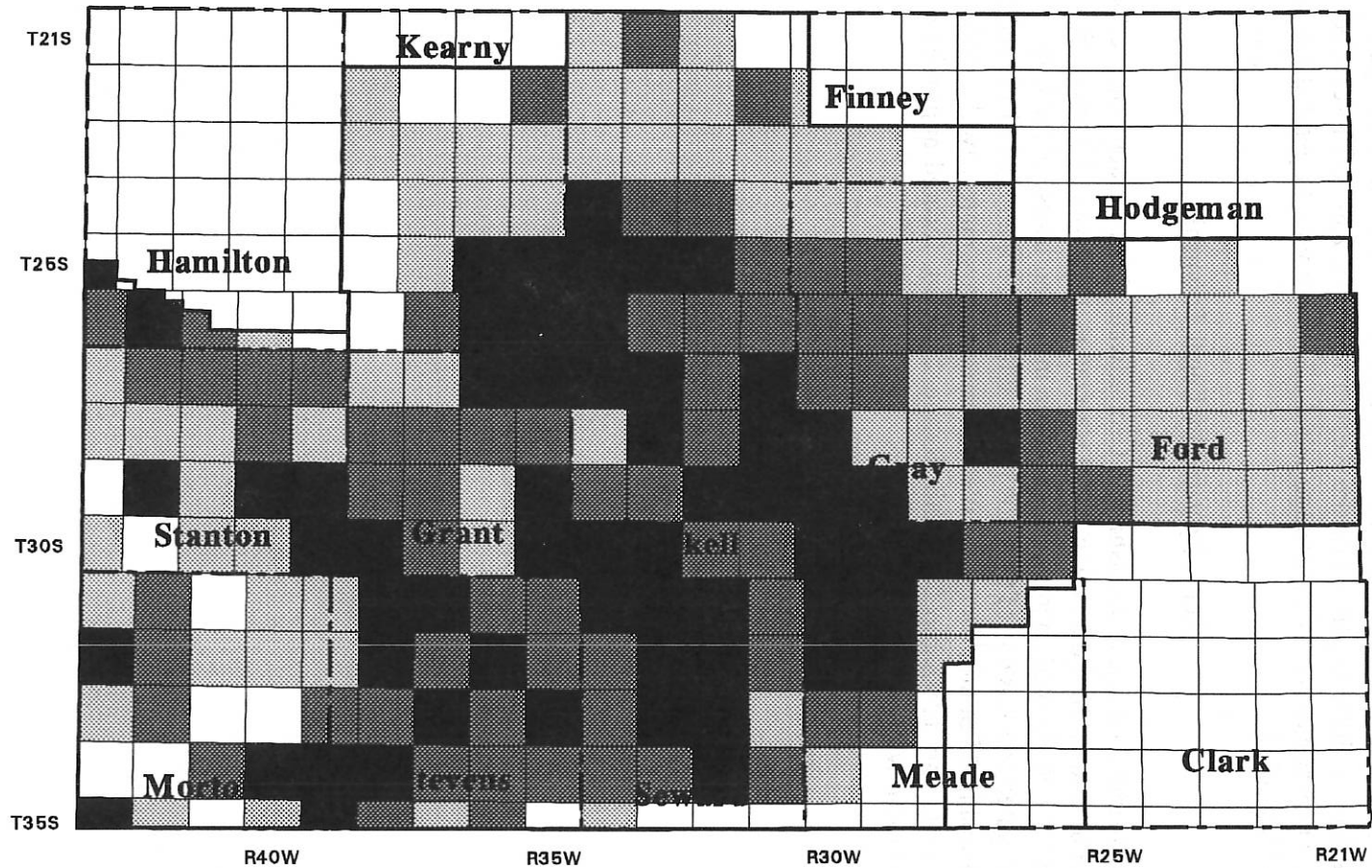
AF/A Water Use by Legal Township

Figure 16 shows the AF/A irrigation water use by township for Southwest Kansas Groundwater Management District No. 3. Sixty townships have an AF/A average greater than 1.50 and are located throughout the groundwater management district.

Table 10, page 74, shows the ten townships with the highest AF/A averages in Groundwater Management District No. 3. Irrigators in Township 33 South, Range 32 West used an average of 2.33 AF/A or approximately 28 inches of water per acre irrigated in 1995, which was 70 percent above the Groundwater Management District No. 3 average of 1.37 AF/A. This township is located in Seward County approximately twelve miles northeast of Liberal; it ranked third in 1994. The second highest AF/A average was 1.89 for Township 34 South, Range 38 West. It is located in Stevens County, and its center is approximately nine miles southwest of the City of Hugoton.

FIGURE 16

AF/A WATER USE BY LEGAL TOWNSHIP GMD 3, KANSAS, 1995



33

12-38

Northwest Kansas Groundwater Management District No. 4

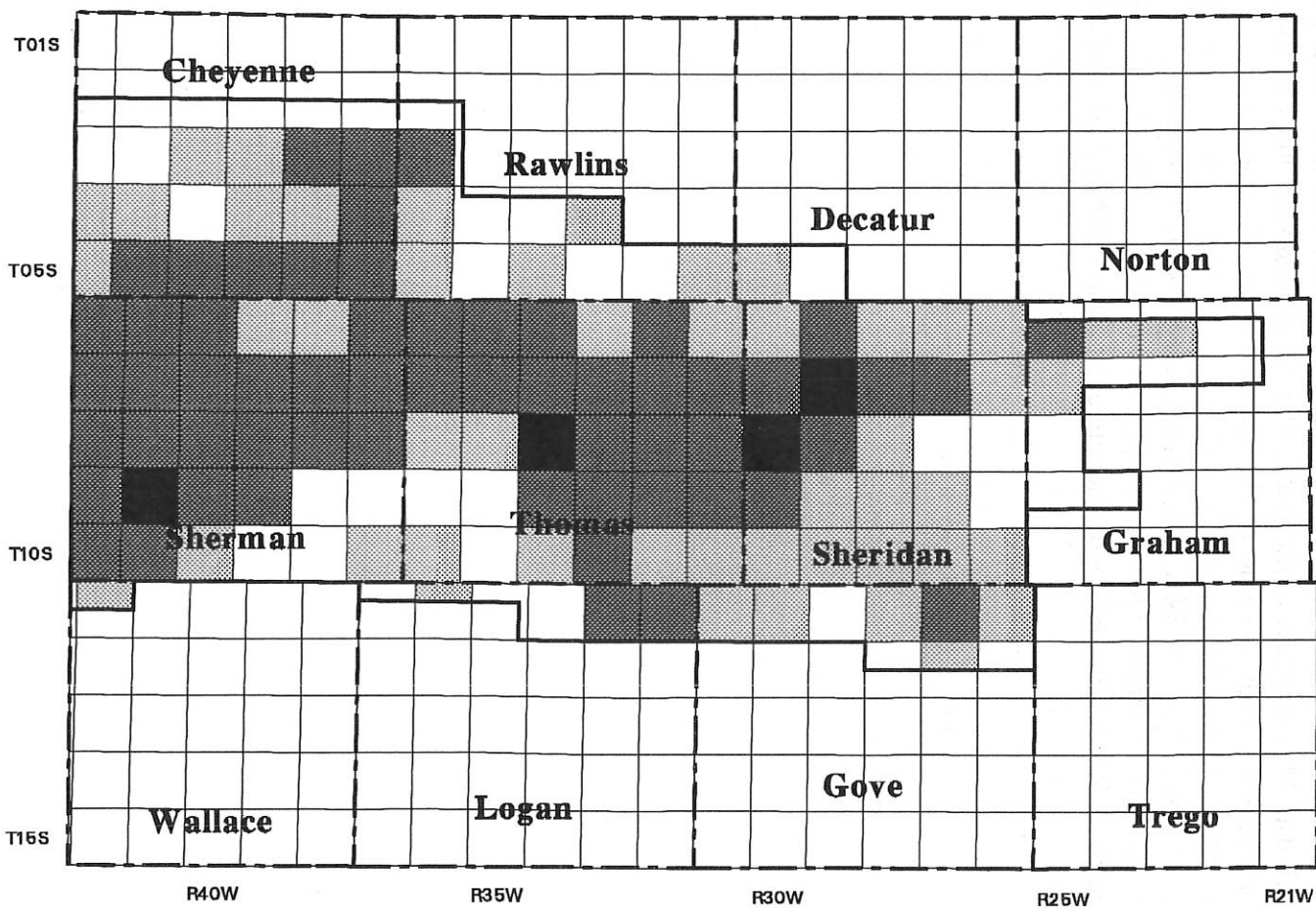
Northwest Kansas Groundwater Management District No. 4 had 354,996 acres irrigated in 1995, as shown in Table 7, page 71 which represented sixteen percent of the 2,238,337 acres irrigated in Region 1, Western Kansas. Groundwater Management District No. 4's irrigation water use was 361,379 acre-feet or thirteen percent of the Region 1 total of 2,849,701 acre-feet. Groundwater Management District No. 4's AF/A average was 1.02, which was 24 percent less than the Region 1 average of 1.27 AF/A.

Acres Irrigated by Legal Township

Figure 17 shows that four of the townships in Groundwater Management District No. 4 had 7,680 acres or more irrigated. In the 2,560 to 7,679 acre range, there were 58 townships. Township 09 South, Range 41 West, located approximately eleven miles southwest of the City of Goodland, had 9,181 acres irrigated and was one of three townships with more than 8,000 irrigated acres; the other two being Township 08 South, Range 30 West, located approximately twelve miles west of Hoxie with 8,474 acres, and Township 07 South, Range 29 West, located approximately eight miles northwest of Hoxie with 8,443 irrigated acres.

FIGURE 17

ACRES IRRIGATED BY LEGAL TOWNSHIP GMD 4, KANSAS, 1995



35



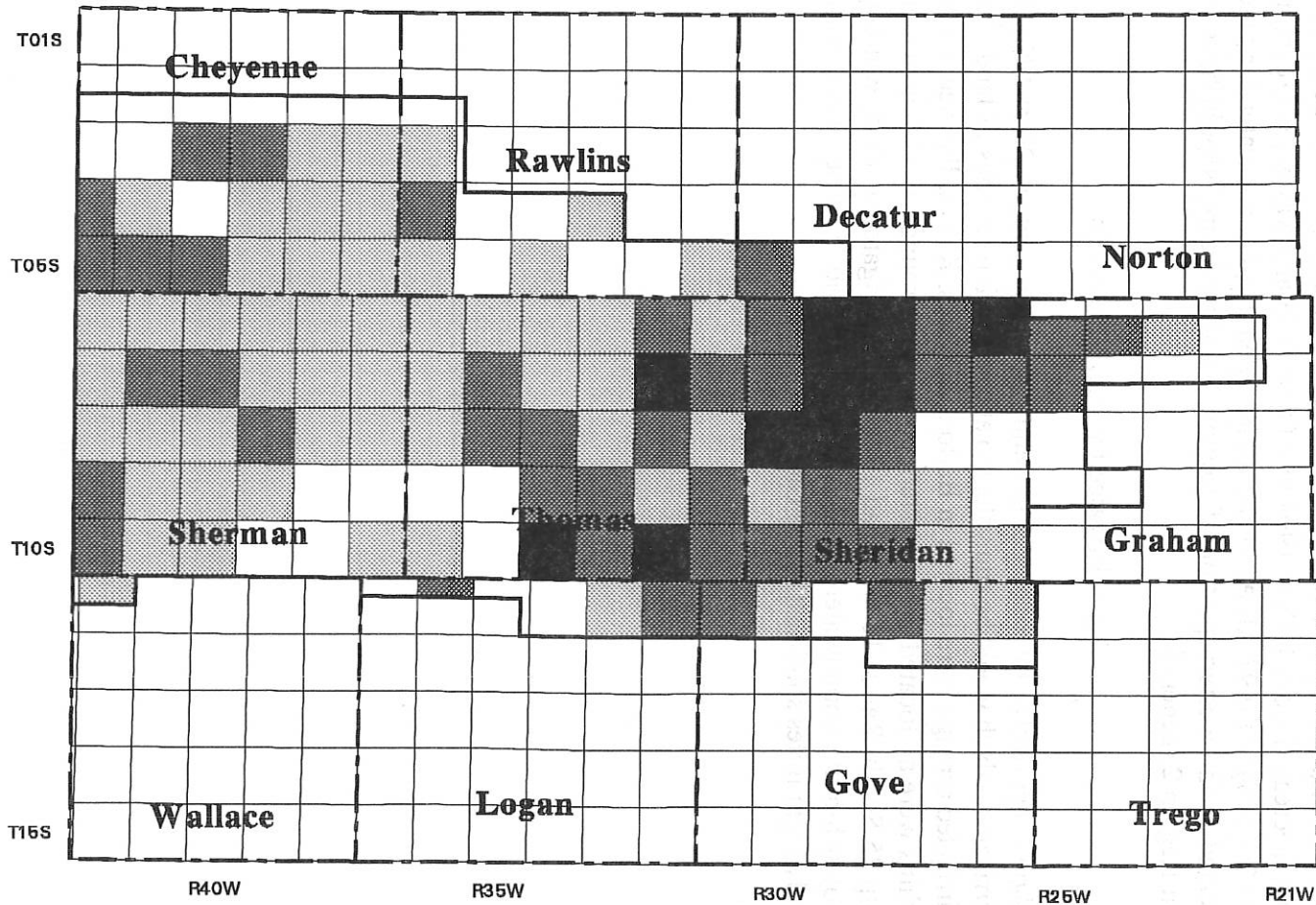
12-40

AF/A Water Use by Legal Township

Figure 18 shows the AF/A irrigation water use by township for Northwest Kansas Groundwater Management District No. 4. Table 11 on page 75 shows the ten townships with the highest AF/A averages in Groundwater Management District No. 4. Irrigators in Township 06 South, Range 26 West used an average of 1.42 AF/A or approximately seventeen inches of water per acre of land irrigated, which was 39 percent above the average for the groundwater management district. This township is located in the northeast corner of Sheridan County and did not appear in the table listing the townships with the highest AF/A averages in 1994. The second highest AF/A average was 1.35 for Townships 08 South, Range 30 West and 07 South, Range 29 West. Township 08 South, Range 30 West is located approximately 12 miles west of the City of Hoxie in Sheridan County. Township 07 South, Range 29 West is located approximately eight miles northwest of the City of Hoxie.

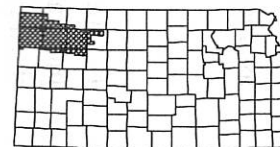
FIGURE 18

AF/A WATER USE BY LEGAL TOWNSHIP
GMD 4, KANSAS, 1995



- More than 1.25 AF/A
- 1.01 AF/A to 1.25 AF/A
- 1.00 AF/A or less
- N/A, less than 640 acres irrigated

Location Map



37

12-42

Big Bend Groundwater Management District No. 5

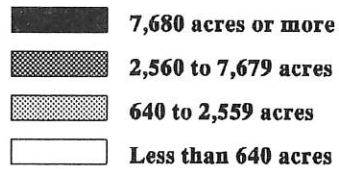
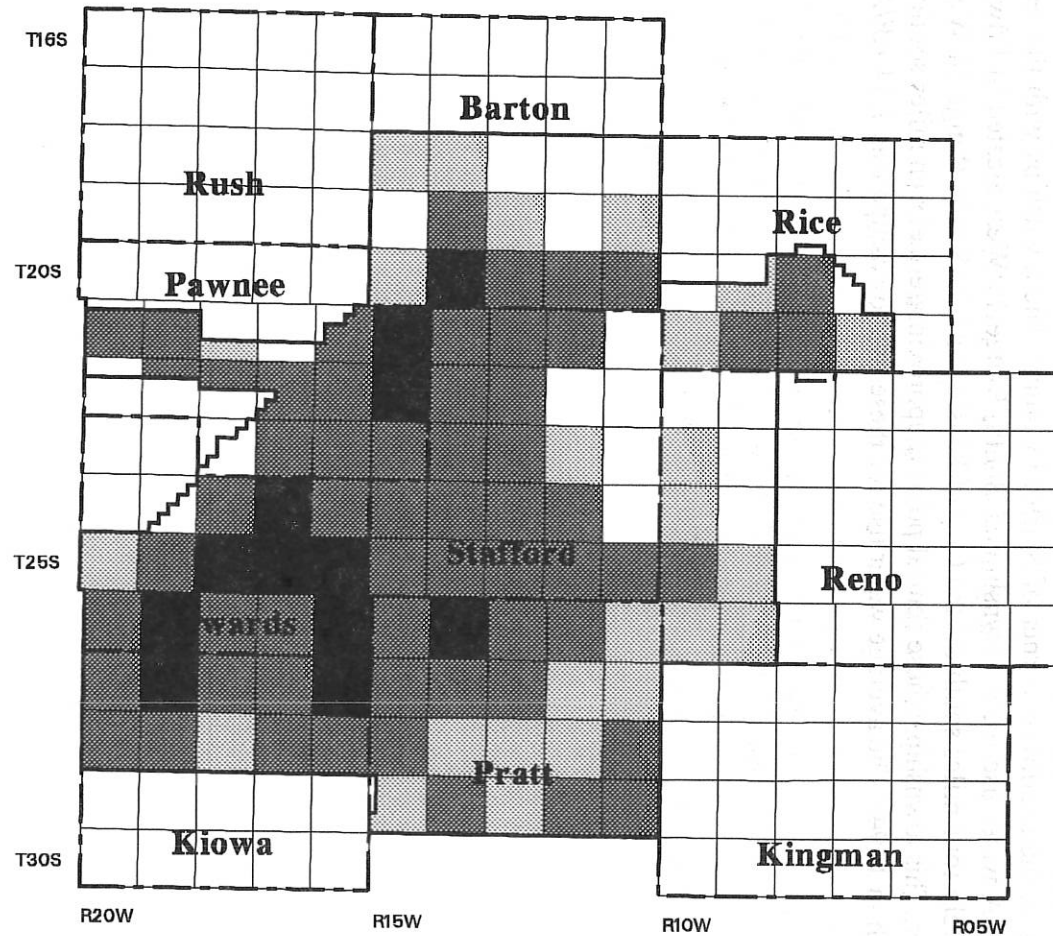
Big Bend Groundwater Management District No. 5 had 427,065 acres irrigated in 1995, as shown in Table 7, page 71, which represented 60 percent of the 715,194 acres irrigated in Region 2, Central Kansas. Groundwater Management District No. 5's irrigation water use was 452,398 acre-feet or 65 percent of the Region 2 total of 696,763 acre-feet. Groundwater Management District No. 5's AF/A average decreased from 1.32 in 1994 to 1.06 in 1995 and was nine percent higher than the 1995 Region 2 average of 0.97 AF/A. It should be noted that Groundwater Management District No. 5 is located in the western portion of Region 2 and therefore, should have a higher AF/A average than Region 2, generally.

Acres Irrigated by Legal Township

Figure 19 shows that twelve townships in Groundwater Management District No. 5 had 7,680 or more acres irrigated, which would be equivalent to at least twelve sections of land. Townships with the highest irrigated acreage were located in Barton, Edwards, Kiowa, Pawnee and Pratt counties; these townships were all located in the western portion of Groundwater Management District No. 5. Township 25 South, Range 18 West had 10,087 acres irrigated in 1995, which was more than any other township in Groundwater Management District No. 5. The center of this township is approximately eight miles southeast of the City of Kinsley.

FIGURE 19

ACRES IRRIGATED BY LEGAL TOWNSHIP GMD 5, KANSAS, 1995



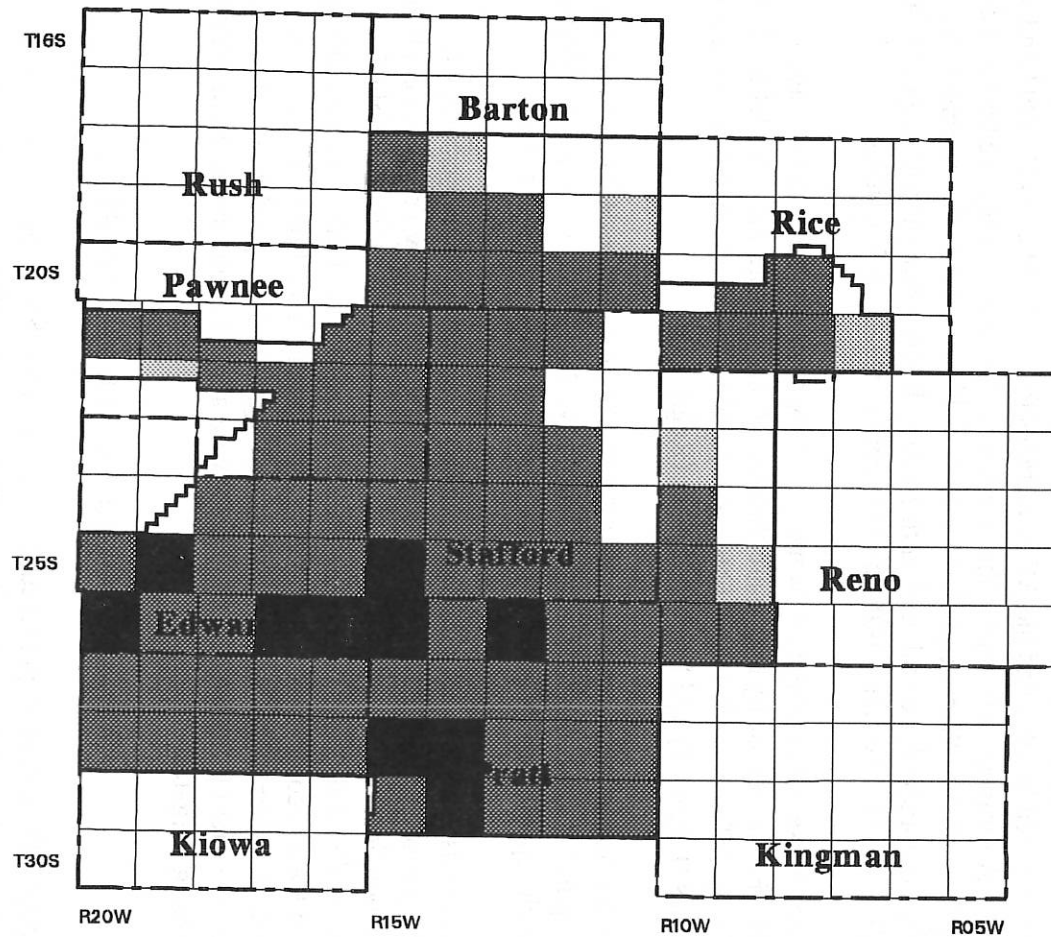
AF/A Water Use by Legal Township

Figure 20 shows that ten townships in Groundwater Management District No. 5 had an AF/A irrigation water use of more than 1.25. There were 79 townships with AF/A averages between 0.76 and 1.25.

Table 12, page 76, shows the ten townships with the highest AF/A averages in Groundwater Management District No. 5. Irrigators in Township 25 South, Range 15 West used an average of 1.35 AF/A in 1995 or approximately sixteen inches of water per acre of irrigated land, which was 27 percent above the Groundwater Management District No. 5 average of 1.06 AF/A. This township is in the southwest corner of Stafford County. The townships with the second highest average AF/A water use were Township 25 South, Range 19 West located in Edwards County, approximately four miles south of the City of Kinsley and 29 South, Range 14 West, located in Pratt County. This township, whose central point is approximately eleven miles southwest of Pratt, ranked tenth in 1994. The average water use for these two townships was 1.34 AF/A in 1995.

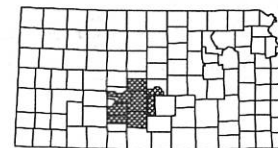
FIGURE 20

AF/A WATER USE BY LEGAL TOWNSHIP GMD 5, KANSAS, 1995



- More than 1.25 AF/A
- 0.76 AF/A to 1.25 AF/A
- 0.75 AF/A or less
- N/A, less than 640 acres irrigated

Location Map



Statewide Summary

Overview

In 1995, there were 3,571,207 acre-feet of irrigation water used; 3,006,442 acres were irrigated, and the average AF/A water use was 1.19 or approximately fourteen inches of water applied per acre of land irrigated. It should be noted that those water use figures do not include the amount of water used by irrigation districts and ditches, which reported using approximately 196,000 acre-feet in 1995.

Table 13, pages 77 through 80, is a summary of irrigation water use by county. It shows the water use and acres irrigated in 1995 and the AF/A averages for 1991, 1992, 1993, 1994 and 1995 and also the average AF/A for these five years. The summary of irrigation water use by township is in Table 14, pages 81 through 99. Water use, acres irrigated, the use above the standard and the percent of the use above the standard are included in this table. It also shows the average AF/A by township for 1991, 1992, 1993, 1994 and 1995 and the average for these five years.

Irrigation water use, acres irrigated, water use above the standard, the percent of use above the standard and AF/A water use by region are shown in Table 7, page 71. This table clearly shows the very significant differences that exist between irrigation water use in Western Kansas (Region 1), Central Kansas (Region 2) and Eastern Kansas (Region 3).

Irrigation water use in Western Kansas was 2,849,701 acre-feet in 1995, which was 80 percent of the total irrigation water use in Kansas. Similarly, 2,238,337 acres were irrigated in Western Kansas, which represented 74 percent of the total irrigated acres in the state.

The AF/A water use averages are 1.27, 0.97 and 0.47 respectively for Western, Central and Eastern Kansas. Comparisons of AF/A averages are anticipated to be very helpful in evaluating the water conservation practices of Kansas irrigators. However, the information in Table 7 does not suggest that Eastern or Central Kansas irrigators are much more conservative in irrigation practices than their Western Kansas counterparts, because factors effecting irrigation water use vary greatly across the state. A comparison of AF/A averages between legal townships in the same region, groundwater management district or county should generally be a more useful measure of water conservation practices among irrigators.

High AF/A Water Use by Legal Township

Table 15, page 100, has been prepared to allow an equitable comparison of high AF/A usage by irrigators from all Kansas townships. This table contains a ranking of the twenty Kansas townships with the highest AF/A averages in Kansas, based on the extent to which their AF/A average exceeded their respective region's AF/A average. This analysis shows that irrigators in Township 33 South, Range 32 West had the most extreme water use of any township in the state in 1995. This township's AF/A average, 2.33, exceeded the regional average of 1.27 AF/A by 83 percent. The center of Township 33 South, Range 32 West is located in Seward county, approximately 12 miles northeast of the City of Liberal. The township with the second highest use in comparison to its regional average is Township 19 South, Range 31 West. Irrigators averaged using 2.04 AF/A which

is 61 percent higher than the regional average of 1.27 AF/A. This township is located approximately 11 miles southeast of Scott City in Region 1. In comparison, the two townships with the highest AF/A averages exceeded their regional average by 55 percent in 1994.

It should not be automatically assumed that irrigators in the twenty townships listed in Table 15 are using too much water. Further evaluation is needed to find out the accuracy of the irrigation data provided by irrigators in these twenty townships. Follow-up letters were sent to all irrigators in Kansas who had points of diversion with an unusually high AF/A figure, and a response rate of over 95 percent was achieved. In response to these letters, some irrigators found that they had reported too many hours pumped, and many irrigators had reported pumping rates that were too high and submitted revised figures. However, it is likely that some irrigators in these specific twenty townships may have also overestimated the number of hours that they irrigated and the pumping rate achieved by their irrigation wells. Irrigators occasionally responded to follow-up letters with the comment that their irrigation wells had never been tested for a pumping rate, and they have simply reported their pump's capacity.

IRRIGATION WATER USE BY METER STATUS

The instructions for the 1995 Irrigation Water Use Report card requested that a beginning meter reading, an ending meter reading and a metered quantity be provided for water use if a water meter was installed. If a water meter had not been installed or the water meter did not work properly, then the irrigator was to provide the number of hours pumped and the pumping rate for each point of diversion, i.e. point from which water was obtained. However, in many cases, irrigators reported not only a metered quantity for water use but also the number of hours pumped and the pumping rate. It should be noted that if a meter had been installed during the 1995 irrigation season and partial year metered water use was given, then that quantity was not used if the number of hours was reported for the entire irrigation season and a pumping rate was provided. For the purposes of the following analysis, it was assumed that an irrigator had reported a metered quantity if: (a) a metered quantity was provided and the number of hours and pump rate were not provided or (b) a metered quantity of water use was provided, and it was not equal to the quantity of water used as calculated from the number of hours and pump rate reported. Otherwise, it was assumed that the water use was not metered for this point of diversion.

Percent Metered by Regional Location

The percent of irrigation points of diversion for which metered quantities were reported in 1995 is shown in Table 16, page 101, by regional location. Northwest Kansas Groundwater Management District No. 4 had the lowest percentage of metered points of diversion at twelve percent, which was only an increase of two percent from 1994. In Northwest Kansas Groundwater Management District No. 4, 339 points of diversion had metered quantities reported out of 2,887 points of diversion for which water use was reported. In contrast, Big Bend Groundwater Management District No. 5 had the highest percentage of metered points of diversion, 85 percent, with 2,976 metered quantities out of 3,513 points of diversion for which water use was reported. Although all points of diversion within Big Bend Groundwater Management District No. 5 are to have meters on them, some are showing up non-metered because they were installed during the middle of the irrigation season, the irrigator chose to report hours and pump rate instead of the metered quantity of water or the meters that were installed quit working during some or all of the irrigation season.

The percent of irrigation points of diversion metered in Kansas increased from 46 percent in 1994 to 55 percent in 1995. Southwest Kansas Groundwater Management District No. 3's metered points of diversion increased by twenty percent from 55 percent in 1994 to 75 percent in 1995. This was the largest percent increase of any geographical area in Kansas. Significant increases in the percentage of metered points of diversion were also achieved by Western Kansas Groundwater Management District No. 1 with an increase from 30 percent to 41 percent.

AF/A Water Use by Meter Status and Regional Location

Table 16, page 101, shows the AF/A water use averages for metered points of diversion and for non-metered points of diversion by regional location. The groundwater management district with the lowest percentage difference in AF/A was Big Bend Groundwater Management District No. 5 which had a difference of four percent. The points of diversion that were metered averaged 1.05 AF/A, while the points of diversion that were not metered averaged 1.09 AF/A. The highest percentage difference in AF/A for any regional location was fourteen percent for Northwest Kansas Groundwater Management District No. 4 with an average of 0.90 AF/A reported for metered points of diversion and an average of 1.03 AF/A reported for points of diversion that were not metered.

It appears that irrigators who have most of their points of diversion metered are able to provide better estimates of their water use from nonmetered points of diversion, than irrigators who have done little or no metering.

Interestingly enough, three of the groundwater management districts (Western Kansas Groundwater Management District No. 1, Southwest Kansas Groundwater Management District No. 3 and Big Bend Groundwater Management District No. 5) are mandating water metering. In Figure 21, the differences in the percent metered points of diversion in 1990 and 1995 can be seen among the groundwater management districts and the remainder of Kansas. The greatest difference is in Southwest Kansas Groundwater Management District No. 3. In 1990, only six percent of the points of diversion reported having meters, while 75 percent reported meters in 1995. Northwest Kansas Groundwater Management District No. 4 had the least difference with six percent of the points of diversion metered in 1990 compared to twelve percent in 1995.

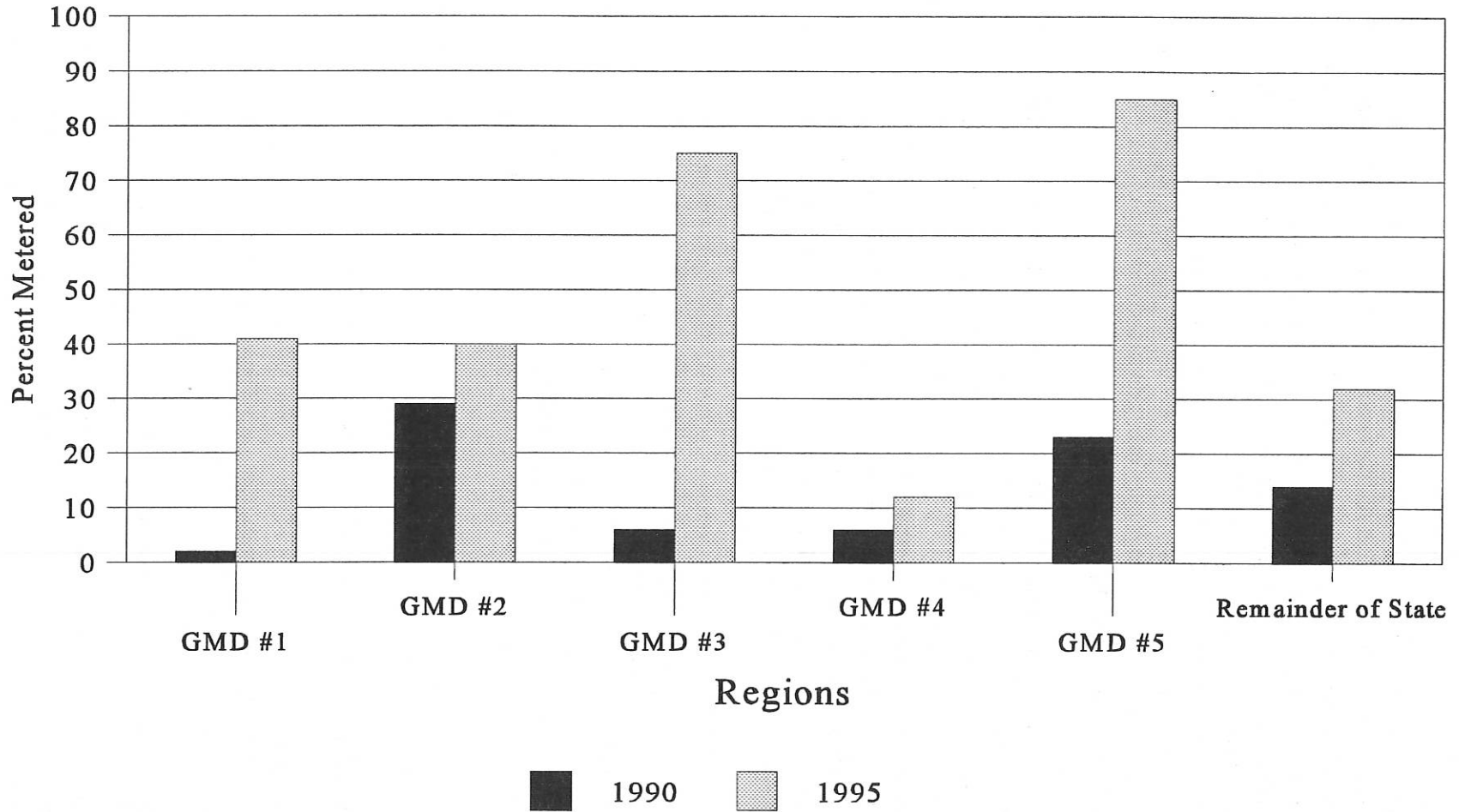
During 1990 in Northwest Kansas Groundwater Management District No. 4, which had normal precipitation, the percentage difference in AF/A for metered points of diversion and those that were not metered was 22 percent. However, during 1995, again a year that had near normal precipitation, the percentage difference in AF/A decreased to fourteen percent. In comparison in Southwest Kansas Groundwater Management District No. 3, the difference in AF/A for those points of diversion reporting meters versus those without decreased from 33 percent in 1990 to five percent in 1995. These comparisons illustrate the importance of a water metering program.

A major problem increasing in magnitude each year is the difficulty experienced by irrigators in providing water meter units of measurement and the correct multiplication factor.

Potential Over-Reporting of Irrigation Water Use

It appears from the analysis presented above, Kansas irrigators who do not have water meters many times tend to overestimate their water use. The extent of this overestimation would have been even greater if the Division of Water Resources and the Kansas Water Office had not prepared and conducted over 1,000 follow-up letters and/or telephone calls to correct or clarify 1995 irrigation water use data. During this process, it was found that (a) irrigators had some difficulty in providing an accurate estimate of the number of hours that their irrigation wells pumped, (b) many irrigators continued to report old pumping test rates or their original pumping rate capacity, because they believe its the best available information even if they have had a recent pumping test and (c) many irrigators reported the same hours and the same pumping rate every year. It appears that the

FIGURE 21
PERCENT OF POINTS OF DIVERSION REPORTING
METERED WATER USE BY REGION
1990, 1995



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1251

overestimation of irrigation water use is usually due to the irrigator overestimating the pumping rate, rather than overestimating the number of hours pumped.

It should be noted that all points of diversion from the legal townships that had the highest AF/A average in each of the five groundwater management districts in 1995 were reviewed. There was a total of 54 individual points of diversion in those five townships whose AF/A water use values exceeded their respective township AF/A water use average. The amount of water used for 38 of these 54 points of diversion was reported based on the number of hours pumped and the pumping rate. Therefore, before concluding that irrigators in townships with very high AF/A water use averages are pumping too much water, it seems reasonable to have the pumping rates tested for each specific point of diversion that had a high AF/A water use value in 1995.

If the assumption is made that the best estimates of the actual AF/A water use averages for 1995 are represented by the metered AF/A water use averages in Table 16, then it is possible to estimate the amount of irrigation water that was over-reported in 1995. This can be done for each region and each groundwater management district within a region by multiplying (the number of irrigated acres for which water use was not metered) x (the AF/A average for points of diversion that were not metered - the AF/A average for points of diversion that were metered). Therefore the estimated amount of irrigation water over-reported for each regional location is: 9,437 acre-feet for Western Kansas Groundwater Management District No. 1; 25,430 acre-feet for Southwest Kansas Groundwater Management District No. 3; 40,398 acre-feet for Northwest Kansas Groundwater Management District No. 4; 7,273 acre-feet for the remainder of Region 1; 4,849 acre-feet for Equus Beds Groundwater Management District No. 2; 2,642 acre-feet for Big Bend Groundwater Management District No. 5; 7,367 acre-feet for the remainder of Region 2; and 335 acre-feet for Region 3. This would amount to a reduction in the State's 1995 irrigation water use from 3,571,207 acre-feet to 3,473,476 acre-feet or a total reduction of 97,731 acre-feet.

IRRIGATION WATER USE BY CROP

Since 1990, the Division of Water Resources has requested that irrigators indicate the type of crop irrigated by each point of diversion. A column for crop codes was included on the 1995 Water Use Report form, and a list of seventeen crop codes was provided. The list included five major crops, alfalfa, corn, grain sorghum, soybeans and wheat, as well as a code for other crops such as oats, barley, rye, dry beans, sunflowers, etc.; a code for more than one type of crop which was irrigated from one point of diversion; and a code for double cropping.

Table 17, page 102, shows the estimated water use by crop for each regional location. The estimated use represents the estimated total amount of irrigation water divided by the total number of irrigated acres. The estimated amount of irrigation water used by a single point of diversion was assumed to be the amount of water reported if a water meter was used. If a water meter was not used, then the amount of water reported by a single point of diversion was divided by the respective regional unit's ratio of (not metered AF/A) to (metered AF/A) to adjust for the overestimation of water use.

In Western Kansas Groundwater Management District No. 1 and Southwest Kansas Groundwater Management District No. 3, alfalfa was the most intensely irrigated crop. Irrigators in Western Kansas Groundwater Management District No. 1 averaged applying an estimated 1.48 AF/A to their alfalfa while in Southwest Kansas Groundwater Management District No. 3, irrigators averaged 1.67 AF/A. Corn was the second most intensely irrigated crop in these two areas of the region ranging from 1.21 AF/A in Groundwater Management District No. 1 to 1.60 AF/A in Groundwater Management District No. 3. In Northwest Kansas Groundwater Management District No. 4 and the remainder of Region 1, corn was the most intensely irrigated crop with irrigators applying an estimated 1.09 and 1.25 AF/A respectively. Alfalfa was the next most intensely irrigated with an estimated application of 0.86 AF/A in Northwest Kansas Groundwater Management District No. 4 and 1.12 AF/A in the remainder of Region 1.

In all areas of Region 2, corn was the most intensely irrigated crop. Irrigators in Equus Beds Groundwater Management District No. 2 averaged applying an estimated 0.94 AF/A; irrigators in Big Bend Groundwater Management District No. 5 averaged 1.19 AF/A while those in the remainder of Region 2 averaged 0.93 AF/A. Soybeans were the next most intensely irrigated crop in both groundwater management districts with an average application of 0.84 AF/A in Equus Beds Groundwater Management District No. 2 and 1.12 AF/A in Big Bend Groundwater Management District No. 5. Other or multiple crops were the second most intensely irrigated in the remainder of Region 2 at an estimated 0.75 AF/A.

There were two crops in Region 3 that had less than 640 acres irrigated, alfalfa and wheat. Corn had the highest estimated AF/A average of 0.52 AF/A. With an estimated average of 0.46 AF/A, other or multiple crops had the next highest application depth; this was approximately six inches of water per acre irrigated. The crop with the lowest water application was grain sorghum with an estimated average of 0.29 AF/A, approximately three inches.

Table 18 on pages 103 through 105, compares the average AF/A water use in each county by crop, based on estimated water use. Hamilton County had the highest estimated AF/A application on two of the five major crops in this table with an average of 1.85 AF/A to corn, and 1.47 AF/A to grain sorghum. For alfalfa, Stevens County led with a value of 2.29 AF/A in 1995. Gray County applied an estimated 1.40 AF/A on soybeans which was the highest in the state in 1995 while 1.27 AF/A was applied to wheat by irrigators in Meade County.

On pages 106 through 108, Table 19 lists the number of acres irrigated by crop for each county. The acres irrigated have been rounded to the nearest hundred acres. Finney County, which has the greatest number of acres irrigated in the State of Kansas with 242,918 acres, ranked first in irrigated alfalfa acreage with 52,000 acres and grain sorghum with 14,900 acres. Haskell County ranked first in the production of corn with 109,200 acres and wheat with 76,000 acres in 1995. Soybeans were the most irrigated crop in Sedgwick County with approximately 14,600 acres which was the highest in Kansas in 1995. Sherman County had the greatest number of irrigated acres in the "other" category with approximately 26,700 acres. It appears that a greater number of acres of dry beans and sunflowers were irrigated in Sherman County than in any other county in Kansas.

IRRIGATION WATER USE BY TYPE OF IRRIGATION SYSTEM

For the first time in 1991, the Division of Water Resources requested that irrigators provide a code for the type of irrigation system used during most of the year. Six irrigation system codes were listed on the 1995 water use report; they were flood (also known as gated pipe or furrow irrigation), drip, center pivot sprinkler, LEPA center pivot sprinkler, sprinkler other than a center pivot (such as hand roll or tow line) and others, which could be a combination of two or more of the codes provided.

AF/A Water Use by Type of System and Regional Location

Irrigation research articles published by Kansas State University in 1992 report that flood (furrow) irrigation is normally 50 to 70 percent efficient. As can be seen from Table 20, page 109, Kansas irrigators using center pivot irrigation systems generally have a lower AF/A water use figure than irrigators who use flood irrigation systems. However, the differences in AF/A water use between the various types of irrigation systems are generally not of the same magnitude as has been achieved in research studies.

In Kansas, most center pivot irrigation systems are non-LEPA systems. A comparison of AF/A water use between flood irrigation systems and non-LEPA irrigation systems in Western Kansas shows that irrigators who do not irrigate within a groundwater management district have achieved the largest percent reduction in AF/A water use of 31 percent from 1.22 AF/A for flood irrigation to 0.84 AF/A for non-LEPA center pivot irrigation in 1995. Northwest Kansas Groundwater Management District No. 4 irrigators have the next largest percent reduction in percent AF/A water use of 19 percent from 1.08 AF/A for flood irrigation to 0.88 AF/A for non-LEPA center pivot irrigation.

In Central Kansas, it was also true that irrigators outside of groundwater management districts achieved the largest percent reduction in AF/A water use. They achieved a 19 percent reduction from 0.90 AF/A for flood irrigation to 0.73 AF/A for non-LEPA center pivot irrigation in 1995. Irrigators in Equus Beds Groundwater Management District No. 2 had the second largest reduction in percent AF/A water use. Their reduction was nine percent from 0.88 AF/A for flood irrigation to 0.80 AF/A for non-LEPA center pivot irrigation.

Interpretation of comparisons between the AF/A water use figures of flood irrigation systems versus non-LEPA center pivot irrigation systems at various regional locations should be made with considerable caution. For example, within Southwest Kansas Groundwater Management District No. 3, it can be seen from Table 22 that Kearny County flood irrigation systems used 0.89 AF/A and non-LEPA center pivot systems used 1.64 AF/A. This result is probably due to the fact that many irrigators with flood irrigation systems were able to supplement their ground water use with water from irrigation ditches and the amount of irrigation ditch water used is not reported by each individual irrigator. Hence, the use of irrigation ditch water in several counties in Southwest Kansas Groundwater Management District No. 3 has caused the AF/A water use average for flood and non-LEPA center pivot systems in the District to appear closer than they really are.

Acres Irrigated by Type of System and Regional Location

In 1995, Western Kansas Groundwater Management District No. 1 had 137,170 acres or 56.3 percent of the total acres irrigated in the District by flood systems as shown in Table 21, page 110, compared to 64.3 percent in 1994. In Southwest Kansas Groundwater Management District No. 3, 487,173 acres or 31.7 percent of the irrigated acres were irrigated by flood systems, compared to 38.7 percent in 1994, while 657,760 acres or 42.8 percent of the total acres were irrigated by non-LEPA center pivot systems in 1995. In Region 1, Northwest Kansas Groundwater Management District No. 4 had the largest percentage of their total land irrigated by non-LEPA center pivot systems at 54.9 percent or 194,789 acres in 1995. Flood irrigation acres for this district declined from 20.2 percent in 1994 to 16.9 percent in 1995. Flood irrigation was the most used type of system in the remainder of Region 1 irrigating 51,099 acres or 49.6 percent of the total acres irrigated in 1995, compared to 51.2 percent in 1994.

In Region 2, Big Bend Groundwater Management District No. 5 had the largest percentage of acres irrigated by non-LEPA center pivot systems at 81.5 percent or 348,238 acres. In comparison, 13.3 percent of the District's total acres were irrigated by flood systems in 1995, and only 13.1 percent in 1994. In Equus Beds Groundwater Management District No. 2, 57,310 acres or 58.7 percent were irrigated with non-LEPA center pivot systems in 1995 compared to 55.9 percent in 1994. During the 1994 irrigation season, 34.3 percent of the total acres were irrigated with flood systems while only 31.4 percent of the acres were irrigated with flood systems in 1995 in Groundwater Management District No. 2. Flood systems irrigated 77,081 acres (40.5 percent) for the remainder of Region 2, and non-LEPA center pivot systems irrigated 92,014 acres (48.3 percent) in 1995.

In Region 3, irrigators used non-LEPA center pivot systems on 26,318 acres or 49.7 percent of the total acres irrigated. Flood systems were used on 15,282 acres (28.9 percent), while sprinklers other than center pivots were used on 11.8 percent or 6,227 acres.

Water Use by Number of Acres and Type of System by County

Table 22 on pages 111 through 113 shows the number of acres irrigated and the estimated AF/A water use average by type of irrigation system for each county. The water use average was not included in this table for an irrigation system if there were less than 640 acres reported irrigated. Stevens County irrigators reported an estimated average use of 1.70 AF/A using flood irrigation systems and 1.47 AF/A using other types of systems or more than one system, which was the highest in the State of Kansas. Irrigators in Kearny County reported the highest estimated averages using non-LEPA center pivot systems with an AF/A average of 1.64. They also applied the most water with sprinklers other than center pivots using 2.10 AF/A. With 1.87 AF/A, irrigators in Seward County applied the most water per irrigated acre of any county using LEPA center pivot systems.

In Kansas, only one county, Haskell, had in excess of 90,000 acres of flood irrigation in 1995. Irrigators used flood systems on 98,590 acres or 46 percent of their irrigated land applying an estimated 1.61 AF/A. Non-LEPA center pivot systems were the most prevalent in Finney County, where they were used to irrigate 124,925 acres and to apply an estimated 1.35 AF/A. Irrigators in Thomas County applied water to more acres with LEPA center pivot sprinklers than any other

county in Kansas irrigating 26,624 acres. They used an estimated 0.83 AF/A or approximately ten inches of water during 1995. Sherman County irrigators used sprinklers other than center pivots on 1,998 acres, which was the highest total in Kansas and applied an estimated 0.62 AF/A. Other types of systems or more than one system were used on 56,288 acres applying 1.40 AF/A in Haskell County during 1995.

PUMP RATES

Table 23, page 114, includes all three regions and shows the number and percent distribution of points of diversion by regional location and by the pumping rate. This table does not include the points of diversion that had metered quantities for the entire year, since 1995 pumping rates were usually not entered into the computer system if metered quantities were reported.

Region 1, Western Kansas

The points of diversion at which irrigators reported pumping less than 400 gallons per minute are most prevalent in Western Kansas Groundwater Management District No. 1, where 66.8 percent of their pumping rates were in this category compared to 61.6 percent in 1994. Southwest Kansas Groundwater Management District No. 3 had only 14.6 percent of their points of diversion at which a pumping rate of less than 400 gallons per minute was reported. When compared with 1994's data, this was an increase of 3.0 percent. Increases in the percentage of points of diversion at which the reported pumping rates were less than 400 gallons per minute also occurred in Northwest Kansas Groundwater Management District No. 4 and the remainder of Region 1. Groundwater Management District No. 4 only increased 0.3 percent while the remainder of Region 1 increased 0.8 percent.

The reported pumping rates of 400 to 799 gallons per minute are more evenly distributed throughout Western Kansas except in Northwest Kansas Groundwater Management District No. 4 where those pumping rates are more concentrated. Groundwater Management District No. 4 had 69.6 percent of their pumping rates from 400 to 799 gallons per minute. This was an increase of 1.4 percent from the previous year. Southwest Kansas Groundwater Management District No. 3 had the largest increase in this pumping rate category with 39.7 percent of its points of diversion reporting 400 to 799 gallons per minute compared to 37.8 percent in 1994. The remainder of Region 1 also had a slight increase in this category.

Southwest Kansas Groundwater Management District No. 3 had the largest percentage of its points of diversion with reported pumping rates of 800 to 1,199 and 1,200 or more gallons per minute, with 36.1 and 9.6 percent respectively, more than any area of Region 1. In 1994, 39.0 percent of their points of diversion had pumping rates of 800 to 1,199 gallons per minute, and 11.6 percent of the points of diversion had pumping rates of 1,200 or more gallons per minute. With 1.8 percent, Northwest Kansas Groundwater Management District No. 4 and the remainder of Region 1 had the lowest percentage of points of diversion that pumped in excess of 1,199 gallons per minute in 1995.

Region 2, Central Kansas

Equus Beds Groundwater Management District No. 2, which is in the eastern half of Region 2, had 84.2 percent of its points of diversion at which pumping rates of either 400 to 799 or 800 to 1,199 gallons per minute were reported, 45.1 and 39.1 percent respectively. Of the remaining 15.8 percent, 11.2 percent reported less than 400 gallons per minute while 4.6 percent reported 1,200 or more. In 1994, 11.7 percent reported less than 400 gallons per minute while 4.5 percent reported 1,200 or more.

Big Bend Groundwater Management District No. 5 showed the same trend; however, the highest

percentage of its points of diversion were in the 800 to 1,199 gallons per minute range with 54.2 percent. Only 2.6 percent had a pumping rate of 1,200 or more gallons per minute. In 1994, 54.1 percent of its points of diversion were in the 800 to 1,199 gallons per minute range while 2.8 percent were in the range of 1,200 or more gallons per minute. Less than 400 gallons per minute were reported at 3.1 percent of the points of diversion in 1994 compared to 3.4 percent in 1995. A slight decrease was shown for the 400 to 799 gallons per minute range from 1994 to 1995 with 40.0 percent of the points of diversion in that range in 1994 and 39.8 percent in that range in 1995.

In 1995, the remainder of Central Kansas had a greater percentage, 43.3 percent, of its points of diversion in the 400 to 799 gallons per minute range; 42.1 percent of its points of diversion were in this category in 1994. Less than 400 gallons per minute were reported for 23.3 percent of its points of diversion, compared to 23.9 percent in 1994, while 29.2 percent reported 800 to 1,199. The category of 800 to 1,199 had 29.8 percent of the points of diversion in 1994. Again, the range of 1,200 or more had the least amount in 1995 with 4.2 percent, the same as in 1994.

Summary

Western Kansas irrigators reported 51 points of diversion with pumping rates of 1,600 or more gallons per minute. This was a decrease of 403 points of diversion from 1990 and 62 points of diversion from 1994. A total of 36 or 70.6 percent of them were reported for Southwest Kansas Groundwater Management District No. 3. In Central Kansas, only 22 points of diversion were reported with pumping rates of 1,600 or more gallons per minute. Twenty-one points of diversion were reported in 1994 and 43 in 1990. The portion of Region 2 outside of a groundwater management district had 77.3 percent of the region's pumping rates of 1,600 or more gallons per minute; whereas, Equus Beds Groundwater Management District No. 2 accounted for only 13.6 percent of these highest pumping rates. In Eastern Kansas, five points of diversion, or 1.2 percent, had pumping rates of 1,600 or more gallons per minute, compared to four points of diversion in 1994 and five points of diversion in 1990.

More irrigators, especially in Western Kansas, reported lower pumping rates in 1995 than they did in 1990 or 1992. This result appears to reflect more accurate water use data and a declining water table in the Ogallala Aquifer and was not as prevalent in areas of the State that receive significant recharge.

PRECIPITATION AND IRRIGATION WATER USE

It was noted earlier in the report that the AF/A water use decreased from 1994 to 1995 for all of the state. The purpose of this section of the report is to examine the effects of precipitation on AF/A water use during these two years. Precipitation records from March through October appeared to relate the most closely to changes in AF/A water use averages; therefore, this time period was chosen for further analysis. The average precipitation from March through October received by Kansas precipitation stations was 20.57 inches in 1994 and increased to 27.54 inches in 1995.

In Table 24, on page 115, there is a comparison between the precipitation received at county reporting stations from March through October in 1994 and 1995 and the AF/A water use during those two years by region and regional location. In Western Kansas, all areas received more precipitation, while the AF/A water use decreased or stayed the same. Southwest Kansas Groundwater Management District No. 3 was the only area that did not have a significant increase in rainfall. That area received an average of 16.91 inches in 1994 and 18.62 inches in 1995, and the AF/A water use decreased by 4.9 percent. Western Kansas Groundwater Management District No. 1 had a significant increase in March through October precipitation in 1995 of 19.5 percent. The water use decreased by 10.1 percent from 1.19 AF/A in 1994 to 1.07 AF/A in 1995. Northwest Kansas Groundwater Management District No. 4 and the remainder of Region 1 also had significant increases in precipitation with 23.0 and 27.1 percent respectively.

In Central Kansas, Big Bend Groundwater Management District No. 5 had a 76.0 percent average increase in precipitation from March through October and an average decrease of 19.7 percent in AF/A water use. The same trend is seen in Equus Beds Groundwater Management District No. 2 and the remainder of Region 2 where there was an increase in precipitation of 79.6 and 68.2 percent respectively, and the water use decreased by 16.3 and 1.1 percent.

It can be assumed that when there is a significant increase in the amount of precipitation there should be a significant decrease in the irrigation water used and vice versa if there is a decrease in the amount of precipitation. In 1995, this occurred in most areas of the State.

In 1995, Region 3 did not follow the assumption that less precipitation means more irrigation. There was a 21.3 percent increase in the amount of precipitation received from March through October, and there was no change in the amount of irrigation water used from 1993 to 1994. The annual usage was 0.47 AF/A for both years.

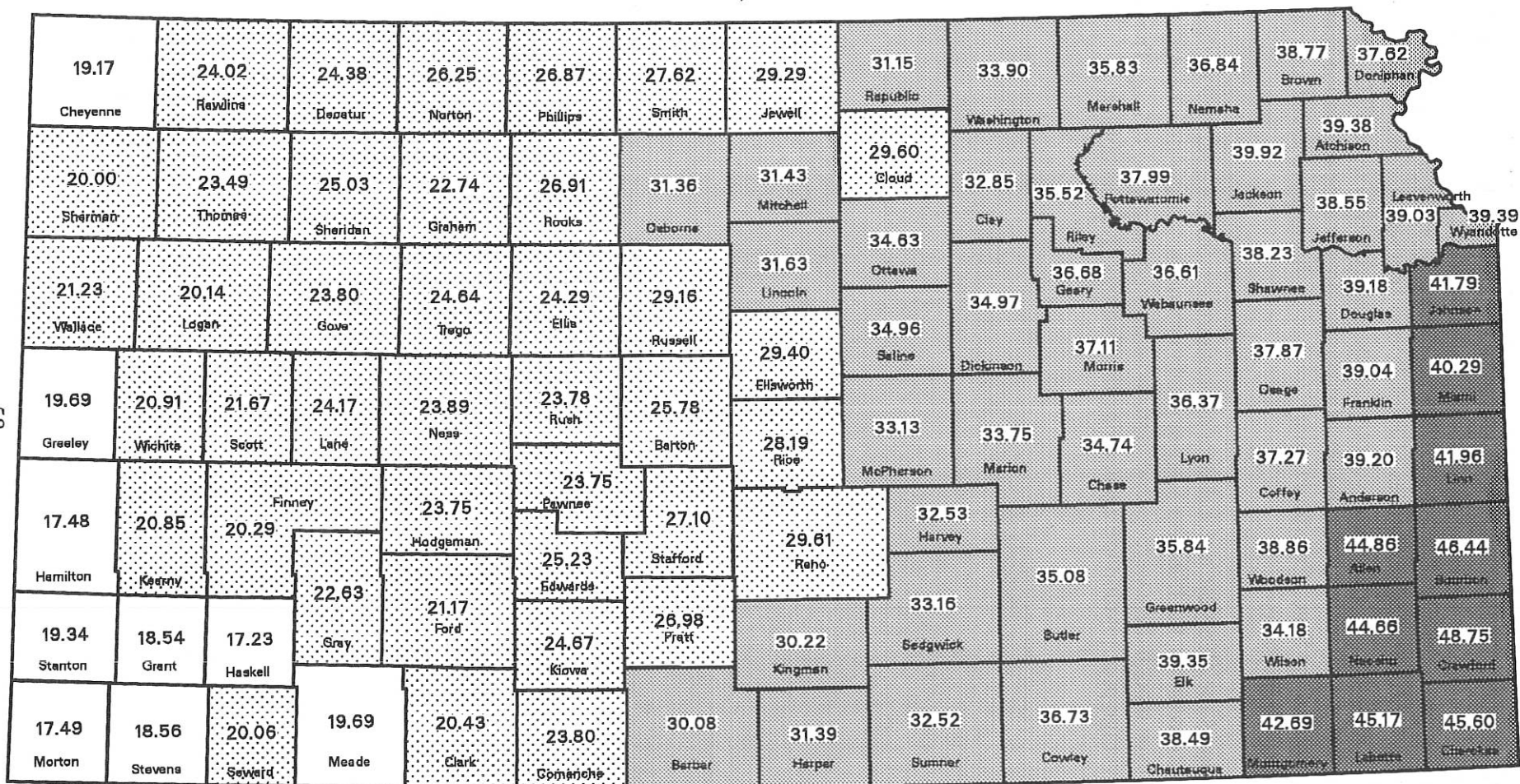
Most areas of the state received slightly above average precipitation for 1995. However, there were some areas that received average or below average precipitation, especially in the southwest part of the State. Figure 22 is a map showing the 1995 average **annual** precipitation for each county. This information was obtained from weather reporting stations that supply daily information to the U.S. Department of Commerce, National Oceanic and Atmospheric Administration and is published monthly. In some instances, there was only one reporting station in each county. For those counties that had more than one, the precipitation data for the entire year from each station were totaled and then averaged for the county.

During 1995, there were thirteen counties that received less than twenty inches of rainfall compared to 30 counties in 1994. Stevens County had 13.04 inches which was the least in the state. It was also 5.50 inches below the 1961 through 1990 normal precipitation for Stevens County. Thirty-five counties received 20.00 to 29.99 inches of rainfall, and another 41 counties had precipitation of 30.00 to 39.99 inches. The remaining counties in the state received over 40.00 inches of rainfall. Those counties receiving more than 40 inches of precipitation were located in the southeast and the northeast portions of the State. Crawford County, located in this area, received an average of 45.64 inches, the most in the state.

Figure 23 shows the five-year average annual precipitation for the years 1991 through 1995 by county. In most counties, the five-year average precipitation was greater than or equal to the thirty-year normal even though there were several years of below normal precipitation. The counties with the lowest average precipitation are again along the Colorado-Kansas border.

FIGURE 23

AVERAGE ANNUAL PRECIPITATION BY COUNTY KANSAS, 1991-1995



WATER LEVEL CHANGE

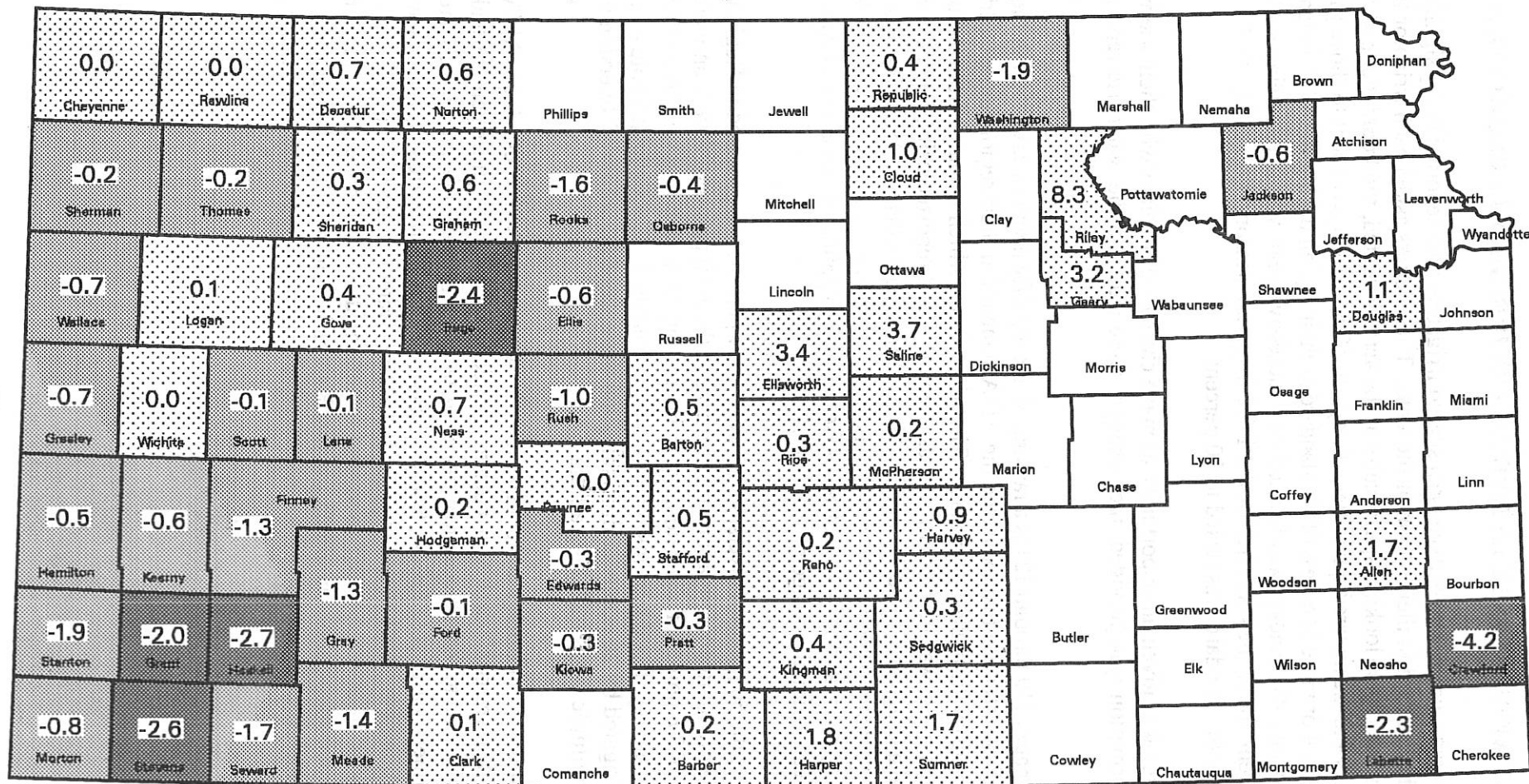
There is great concern about water level decline in irrigation wells especially in the southwest part of the state. The Kansas Geological Survey has monitoring wells throughout the state. These wells are measured yearly, and the information is provided in one of the Survey's publications. Figure 24 shows the water level change that occurred from January 1995 to January 1996. Of all the counties that have monitoring wells, sixteen counties did not have a decline in the water level. Stanton County had the greatest decline in the western half of the State; wells fell an average of 3.9 feet during the year in that county.

Figure 25 shows the five-year average water level changes for the State of Kansas. The five years included in this figure are January 1991 through January 1996. Water levels declined in much of the western half of the state, mostly concentrated in the southwest.





Table 25, pages 116 through 118, is a comparison of water use, water level change, percent change in saturated thickness and yearly precipitation for counties that have monitoring wells. Also included in this table is the five-year average for irrigation water use and average precipitation. The table was developed to determine if there are direct relationships between water use, rainfall and the water levels of wells. There has been reliable data for precipitation and water levels of wells for many years, but the data for water use has not been reliable until the last seven years.

FIGURE 25

AVERAGE WATER LEVEL CHANGE BY COUNTY
KANSAS, January 1991 - January 1996



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-  2.0 feet or more decrease
-  0.1 to 1.9 feet decrease
-  0.0 feet or more increase
-  No observation in County

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HIGHEST AF/A USERS RELATIVE TO THE IRRIGATION REGIONAL AVERAGE

For the last seven years, letters have been sent to irrigators who reported using significantly more water than the standard in their region of the state. These letters asked each irrigator to review his or her water use report looking specifically at the acres irrigated, the hours pumped, the reported pumping rates and the metered quantities, if any. In 1990, letters were sent to those irrigators who used 100 percent or more in excess of the standard in their region during the 1989 irrigation season. The percent above the standard was reduced each successive year with letters being sent for use that was 25 percent above the standard for the 1992 irrigation season. For 1993, 1994 and 1995, the percent above the standard was raised to 50 percent.

Each irrigator was given an opportunity to make changes or explain why their use was high. If revised information was provided, then changes were made on the water use report and on the database.

Table 26 on pages 119 through 121 is a ranking of the top fifty points of diversion in the entire state with 1995 AF/A water use that exceeded the AF/A standard in their region and exceeded the local regional average by the highest percentage. The AF/A figure which deviated from its local regional average by the most, was in Western Kansas, Region 1, and reported using 598 percent above the local regional average of 1.13 AF/A or 7.89 AF/A. This is equivalent to 95 inches of water applied to one acre of land. The second ranking point of diversion was also in Western Kansas. The reported water use was 6.94 AF/A or 83 inches of water applied to one acre and was 515 percent above the local regional average of 1.13 AF/A.

In Table 26, of the 50 points of diversion, 32 wells or 64 percent were located in Region 1 (Western Kansas). The predominant irrigation systems used at these 50 points of diversion were flood with 74 percent or 37 points of diversion. It is interesting to note that 70 percent of the points of diversion irrigated by flood systems were located in Region 1. Corn and multiple crops including corn were irrigated by 26 points of diversion, and there were six points of diversion that irrigated alfalfa and multiple crops including alfalfa.

The publication of information about irrigation water users with very high AF/A water use compared to their regional peers is intended to provide an incentive to all irrigators to take seriously their legal obligation to report accurate water use data and to use only the amount of water necessary for meeting their reasonable needs. Many irrigators who have reported high AF/A water use are now being required to install water meters and to prepare water conservation plans. The publication of the names of high AF/A water users and requirements of water meter installation and water conservation plan preparation should ensure that Kansas irrigators will no longer perceive that it is in their best interest to report and/or use excessive amounts of irrigation water, as many have done in the past.

Table 1

SELECTED WATER USE STATISTICS BY COUNTY, RANKED BY AF/A
REGION 1, KANSAS 1995

County	GMD ^{a/}	Water Use ^{b/} (AF)	Acres Irrigated	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{c/}	AF/A ^{d/}
Seward	3	168,091	108,758	10,949	6.5	1.55	1.52
Haskell	3	320,015	212,982	11,658	3.6	1.50	1.50
Stevens	3	208,813	140,226	7,218	3.5	1.49	1.46
Meade	3	174,951	119,644	4,968	2.8	1.46	1.43
Hamilton	3	42,807	29,640	3,532	8.3	1.44	1.41
Grant	3	188,869	137,645	5,321	2.8	1.37	1.35
Stanton	3	181,604	134,134	5,049	2.8	1.35	1.37
Kearny	3	129,321	96,586	4,112	3.2	1.34	1.31
Gray	3	248,647	191,248	6,965	2.8	1.30	1.31
Norton	--	10,515	8,118	599	5.7	1.30	0.84
Finney	3	309,174	242,918	8,016	2.6	1.27	1.22
Morton	3	60,214	49,624	1,468	2.4	1.21	1.18
Wallace	e/	68,769	57,103	1,845	2.7	1.20	1.19
Hodgeman	--	34,649	28,977	2,128	6.1	1.20	1.14
Sheridan	4	85,733	71,711	457	0.5	1.20	1.05
Decatur	4	12,820	11,321	400	3.1	1.13	1.17
Ford	3	101,096	89,914	1,689	1.7	1.12	1.10
Scott	1	66,969	61,860	1,387	2.1	1.08	1.07
Clark	--	4,015	3,835	310	7.7	1.05	0.86
Thomas	4	98,789	95,064	161	0.2	1.04	0.89
Gove	4	20,280	19,978	783	3.9	1.02	0.91
Wichita	1	81,856	80,919	1,519	1.9	1.01	0.98
Greeley	1	28,199	27,942	141	0.5	1.01	0.94
Lane	1	21,085	21,705	558	2.6	0.97	0.77
Graham	4	10,835	11,374	98	0.9	0.95	0.85
Cheyenne	4	40,620	42,804	196	0.5	0.95	0.70
Sherman	4	97,916	103,871	476	0.5	0.94	0.73
Logan	4	7,634	8,397	20	0.3	0.91	0.72

Table 1 (continued)

SELECTED WATER USE STATISTICS BY COUNTY, RANKED BY AF/A
REGION 1, KANSAS 1995

County	GMD ^{a/}	Water Use ^{b/} (AF)	Acres Irrigated	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{c/}	AF/A ^{d/}
Ness	--	4,967	5,746	78	1.6	0.86	0.78
Rawlins	4	16,642	19,293	239	1.4	0.86	1.01
Trego	--	3,807	5,000	17	0.4	0.76	0.47

^{a/} A Groundwater Management District (GMD) is listed, if any portion of a county lies within the boundary of a GMD.

^{b/} All points of diversion were included for which water use and acres were both reported.

^{c/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

^{d/} AF/A represents the total amount of metered irrigation water divided by the total number of acres irrigated by points of diversion that were metered.

^{e/} Includes portions of Groundwater Management Districts (GMD) 1 and 4.

Table 2

SELECTED WATER USE STATISTICS BY TOWNSHIPS WITH HIGHEST AF/A
 WATER USE AVERAGES, RANKED BY AF/A
 REGION 1, KANSAS 1995

Township and Range	GMD ^{a/}	County	Approximate Location of Center of Township	Water Use ^{b/} (AF)	Acres Irrig.	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{c/}
33S 32W	3	Seward	12 Miles Northeast of Liberal	6,194	2,655	1,739	28.1	2.33
19S 31W	--	Scott	11 Miles Southeast of Scott City	1,593	781	94	5.9	2.04
34S 38W	3	Stevens	9 Miles Southwest of Hugoton	12,798	6,766	689	5.4	1.89
23S 42W	--	Hamilton	12 Miles Northwest of Syracuse	4,902	2,614	761	15.5	1.88
29S 29W	3	Gray	21 Miles Southwest of Cimarron	11,463	6,216	1,182	10.3	1.84
31S 32W	3	Seward	10 Miles Southeast of Sublette	22,444	12,300	2,253	10.0	1.82
30S 39W	3	Stanton	15 Miles Southwest of Ulysses	22,919	12,707	946	4.1	1.80
26S 36W	3	Kearny	11 Miles South of Lakin	14,367	8,083	732	5.1	1.78
26S 35W	3	Kearny	Southwest Corner of Kearny County	14,976	8,625	837	5.6	1.74
29S 30W	3	Gray	Southwest Corner of Gray County	20,632	11,905	1,304	6.3	1.73
02S 21W	--	Norton	14 Miles Northeast of Norton	4,066	2,359	361	8.9	1.72
31S 33W	3	Seward	21 Miles North of Liberal	15,949	9,263	1,519	9.5	1.72
25S 43W	3	Hamilton	16 Miles Southwest of Syracuse	3,715	2,160	299	8.1	1.72
25S 35W	3	Kearny	8 Miles Southeast of Lakin	26,560	15,498	712	2.7	1.71
31S 30W	3	Meade	14 Miles Northwest of Meade	22,984	13,507	976	4.2	1.70
34S 32W	3	Seward	8 Miles Northeast of Liberal	4,875	2,877	426	8.7	1.69
27S 33W	3	Haskell	20 Miles Southwest of Garden City	23,686	14,028	780	3.3	1.69
26S 34W	3	Finney	16 Miles Southwest of Garden City	20,072	11,893	454	2.3	1.69
30S 29W	3	Meade	13 Miles Northwest of Meade	19,175	11,403	853	4.4	1.68
33S 37W	3	Stevens	1 Mile Southeast of Hugoton	10,501	6,255	388	3.7	1.68
29S 31W	3	Haskell	8 Miles Northeast of Sublette	23,107	13,789	1,109	4.8	1.68

^{a/} A Groundwater Management District (GMD) is listed if any portion of a township lies within the boundary of a GMD.

^{b/} All points of diversion were included for which water use and acres were both reported.

^{c/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

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Table 3

**SELECTED WATER USE STATISTICS BY COUNTY, RANKED BY AF/A
REGION 2, KANSAS 1995**

County ^{a/}	GMD ^{b/}	Water Use ^{c/} (AF)	Acres Irrigated	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{d/}	AF/A ^{c/}
Pratt	5	82,305	71,291	2,100	2.6	1.15	1.14
Kiowa	5	56,298	48,933	928	1.6	1.15	1.13
Edwards	5	104,905	93,131	2,466	2.4	1.13	1.12
Comanche	--	7,345	6,589	89	1.2	1.11	0.79
Stafford	5	82,441	76,771	1,544	1.9	1.07	1.08
Kingman	--	15,095	14,633	183	1.2	1.03	0.94
Osborne	--	3,423	3,394	258	7.5	1.01	1.15
Republic	--	29,351	29,224	1,343	4.6	1.00	1.01
Rush	--	10,259	10,647	165	1.6	0.96	0.97
Phillips	--	8,228	8,644	605	7.4	0.95	0.99
Barton	5	33,699	35,581	712	2.1	0.95	0.96
Jewell	--	3,005	3,190	21	0.7	0.94	g/
Pawnee	5	72,619	77,576	2,093	2.9	0.94	0.94
Mitchell	--	4,748	5,123	227	4.8	0.93	0.94
Harvey	2	24,800	27,701	492	2.0	0.90	0.81
Barber	--	2,780	3,109	66	2.4	0.89	0.93
Reno	f/	29,393	33,164	321	1.1	0.89	0.86
Rice	5	17,617	20,314	149	0.8	0.87	0.86
McPherson	2	23,878	28,217	442	1.9	0.85	0.78
Sedgwick	2	30,346	36,317	279	0.9	0.84	0.77
Smith	--	3,504	4,309	174	5.0	0.81	0.85
Saline	--	2,837	3,523	148	5.2	0.81	0.75
Cloud	--	13,631	17,836	557	4.1	0.76	0.67
Ellis	--	1,386	1,940	64	4.6	0.71	0.95
Rooks	--	1,018	1,450	107	10.6	0.70	g/
Clay	--	12,956	18,551	369	2.8	0.70	0.76
Butler	--	740	1,085	0	0.0	0.68	g/
Sumner	--	3,699	5,454	8	0.2	0.68	0.61
Harper	--	988	1,661	0	0.0	0.60	0.58
Dickinson	--	1,797	3,036	24	1.3	0.59	0.63

Table 3 (continued)

SELECTED WATER USE STATISTICS BY COUNTY, RANKED BY AF/A
REGION 2, KANSAS 1995

County ^{a/}	GMD ^{b/}	Water Use ^{c/} (AF)	Acres Irrigated	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{d/}	AF/A ^{e/}
Washington	--	3,626	6,366	54	1.5	0.57	0.64
Geary	--	1,799	3,315	74	4.1	0.54	0.59
Marion	--	979	1,926	3	0.3	0.51	0.47
Cowley	--	870	1,814	0	0.0	0.48	g/
Riley	--	1,774	3,774	7	0.4	0.47	0.34
Ottawa	--	1,769	4,022	12	0.7	0.44	0.41
Lincoln	--	246	720	19	7.7	0.34	g/

a/ Chase, Ellsworth, Morris, and Russell Counties had less than 640 acres irrigated.

b/ A Groundwater Management District (GMD) is listed if any portion of a county lies within the boundary of a GMD.

c/ All points of diversion were included for which water use and acres were both reported.

d/ AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

e/ AF/A represents the total amount of metered irrigation water divided by the total number of acres irrigated by points of diversion that were metered.

f/ Includes portions of Groundwater Management Districts (GMD) 2 and 5.

g/ AF/A was not computed for counties with less than 640 acres of metered irrigation.

Table 4

SELECTED WATER USE STATISTICS BY TOWNSHIPS WITH HIGHEST AF/A
 WATER USE AVERAGES, RANKED BY AF/A
 REGION 2, KANSAS 1995

Township and Range	GMD ^{a/}	County	Approximate Location of Center of Township	Water Use ^{b/} (AF)	Acres Irrig.	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{c/}
25S 15W	5	Stafford	Southwest Corner of Stafford County	4,389	3,242	154	3.5	1.35
25S 19W	5	Edwards	4 Miles South of Kinsley	5,156	3,851	376	7.3	1.34
29S 14W	5	Pratt	11 Miles Southwest of Pratt	3,679	2,750	133	3.6	1.34
28S 14W	5	Pratt	7 Miles Southwest of Pratt	2,361	1,787	26	1.1	1.32
28S 15W	5	Pratt	12 Miles Southwest of Pratt	4,575	3,465	261	5.7	1.32
26S 15W	5	Pratt	Northwest Corner of Pratt County	8,328	6,467	206	2.5	1.29
29S 18W	--	Kiowa	7 Miles South of Greensburg	1,327	1,033	41	3.1	1.28
26S 16W	5	Edwards	Southeast Corner of Edwards County	10,312	8,073	111	1.1	1.28
03S 05W	--	Republic	13 Miles Southwest of Belleville	1,165	914	146	12.5	1.27
26S 17W	5	Edwards	16 Miles Southeast of Kinsley	8,992	7,059	319	3.5	1.27
26S 20W	5	Edwards	Southwest Corner of Edwards County	7,840	6,162	680	8.7	1.27
26S 13W	5	Pratt	9 Miles North of Pratt	7,271	5,720	204	2.8	1.27
25S 14W	5	Stafford	15 Miles Southwest of Stafford	6,460	5,186	24	0.4	1.25
27S 17W	5	Kiowa	9 Miles Northeast of Greensburg	5,447	4,377	118	2.2	1.24
26S 14W	5	Pratt	10 Miles Northwest of Pratt	11,369	9,196	282	2.5	1.24
27S 18W	5	Kiowa	6 Miles North of Greensburg	5,924	4,825	90	1.5	1.23
21S 15W	5	Pawnee	8 Miles Northeast of Larned	9,644	7,887	816	8.5	1.22
27S 16W	5	Kiowa	Northeast Corner of Kiowa County	9,732	7,963	202	2.1	1.22
31S 18W	--	Comanche	6 Miles Northeast of Coldwater	2,534	2,077	17	0.7	1.22
26S 07W	2	Reno	9 Miles Northeast of Kingman	2,536	2,090	49	1.9	1.21
06S 12W	--	Osborne	6 Miles Northeast of Osborne	1,504	1,241	126	8.4	1.21

^{a/} A Groundwater Management District (GMD) is listed if any portion of a township lies within the boundary of a GMD.

^{b/} All points of diversion were included for which water use and acres were both reported.

^{c/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

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Table 5

**SELECTED WATER USE STATISTICS BY COUNTY, RANKED BY AF/A
REGION 3, KANSAS 1995**

County ^{a/}	Water Use ^{b/} (AF)	Acres Irrigated	Use Above Std.(AF)	Pct. Above Std.	AF/A ^{c/}	AF/A ^{d/}
Johnson	1,880	3,194	25	1.3	0.59	0.60
Shawnee	8,149	14,466	144	1.8	0.56	0.48
Pottawatomie	6,680	13,079	210	3.1	0.51	0.50
Wabaunsee	2,185	4,629	0	0.0	0.47	0.39
Douglas	703	1,677	0	0.0	0.42	0.45
Jefferson	710	1,845	0	0.0	0.38	0.33
Marshall	586	1,640	2	0.3	0.36	e/
Crawford	721	2,123	20	2.7	0.34	e/
Anderson	328	971	0	0.0	0.34	e/
Wilson	513	1,699	0	0.0	0.30	e/
Montgomery	539	1,835	0	0.0	0.29	e/
Franklin	301	1,031	0	0.0	0.29	e/
Labette	171	892	0	0.0	0.19	e/

^{a/} All counties with less than 640 acres irrigated in 1995 were omitted from this table.

^{b/} All points of diversion were included for which water use and acres were both reported.

^{c/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

^{d/} AF/A represents the total amount of metered irrigation water divided by the total number of acres irrigated by points of diversion that were metered.

^{e/} AF/A was not computed for counties with less than 640 acres of metered irrigation.

Table 6

SELECTED WATER USE STATISTICS BY TOWNSHIPS, RANKED BY AF/A
REGION 3, KANSAS 1995

Township ^{a/} and Range	County	Approximate Location of Center of Township	Water Use ^{b/} (AF)	Acres Irrig.	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{c/}
10S 08E	Pottawatomie	2 Miles East of Manhattan	722	1,084	7	0.9	0.67
11S 14E	Shawnee	11 Miles Northwest of Topeka	2,911	4,972	66	2.3	0.59
10S 13E	Shawnee	3 Miles North of Rossville	1,717	2,993	38	2.2	0.57
11S 13E	Multi-County	4 Miles South of Rossville	1,798	3,136	0	0.0	0.57
11S 15E	Shawnee	5 Miles Northwest of Topeka	917	1,734	2	0.2	0.53
09S 11E	Pottawatomie	11 Miles Northeast of Topeka	1,293	2,451	120	9.3	0.53
10S 11E	Multi-County	7 Miles Southeast of Wamego	1,170	2,312	12	1.0	0.51
11S 17E	Multi-County	12 Miles Northeast of Topeka	558	1,145	0	0.0	0.49
10S 12E	Multi-County	2 Miles Southwest of St. Marys	2,264	4,731	3	0.1	0.48
02S 07E	Marshall	2 Miles North of Marysville	308	680	0	0.0	0.45
10S 10E	Multi-County	2 Miles South of Wamego	1,684	3,929	1	0.0	0.43
15S 24E	Multi-County	11 Miles Southeast of Olathe	337	832	2	0.6	0.40
09S 10E	Pottawatomie	5 Miles North of Wamego	675	1,670	0	0.0	0.40
12S 20E	Multi-County	4 Miles Northeast of Lawrence	545	1,402	0	0.0	0.39
30S 22E	Crawford	16 Miles West of Pittsburg	231	782	0	0.0	0.30

^{a/} All townships with less than 640 acres irrigated were omitted from this table.

^{b/} All points of diversion were included for which water use and acres were both reported.

^{c/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

Table 7

SELECTED WATER USE STATISTICS BY REGION AND REGIONAL LOCATION
KANSAS, 1991 - 1995

Region	Regional Location	1995									
		Water Use ^{a/} (AF)	Acres Irrigated	Use Above Region Standard (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
1	Western KS GMD No. 1	260,173	243,628	5,298	2.0	1.36	1.10	0.89	1.19	1.07	1.12
	Southwest KS GMD No. 3	2,111,822	1,536,670	69,054	3.3	1.67	1.38	1.22	1.44	1.37	1.42
	Northwest KS GMD No. 4	361,379	354,996	1,514	0.4	1.33	0.79	0.76	1.08	1.02	1.00
	Remainder of Western KS	116,327	103,043	6,491	5.6	1.44	0.86	0.74	1.13	1.13	1.06
2	Equus Beds GMD No. 2	85,132	97,628	1,051	1.2	1.16	0.62	0.66	1.04	0.87	0.87
	Big Bend GMD No. 5	452,398	427,065	9,933	2.2	1.40	0.79	0.75	1.32	1.06	1.06
	Remainder of Central KS	159,233	190,501	5,123	3.2	1.20	0.55	0.58	0.85	0.84	0.80
3	Eastern Kansas	24,743	52,911	499	2.0	0.67	0.32	0.22	0.47	0.47	0.43
Kansas	NA	3,571,207	3,006,442	98,963	2.8	1.49	1.11	1.00	1.28	1.19	1.21

^{a/} All points of diversion were included for which water use and acres were both reported.

^{b/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

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Table 8

SELECTED WATER USE STATISTICS BY TOWNSHIPS WITH TEN HIGHEST AF/A
 WATER USE AVERAGES, RANKED BY AF/A
 WESTERN KANSAS GROUNDWATER MANAGEMENT DISTRICT NO. 1
 KANSAS, 1995

Township and Range	County	Approximate Location of Center of Township	Water Use ^{a/} (AF)	Acres Irrig.	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{b/}	GMD Avg. AF/A	Pct. Dev. From GMD Avg.
14S 41W	Wallace	10 Miles Southwest of Sharon Springs	9,249	6,224	259	2.8	1.49	1.07	+39
15S 42W	Wallace	17 Miles Southwest of Sharon Springs	1,306	908	48	3.7	1.44	1.07	+35
18S 29W	Lane	3 Miles West of Dighton	970	679	5	0.5	1.43	1.07	+34
14S 42W	Wallace	14 Miles Southwest of Sharon Springs	12,448	8,805	539	4.3	1.41	1.07	+32
19S 32W	Scott	7 Miles Southwest of Scott City	1,993	1,443	12	0.6	1.38	1.07	+29
13S 42W	Wallace	12 Miles West of Sharon Springs	2,593	1,917	29	1.1	1.35	1.07	+26
18S 33W	Scott	3 Miles West of Scott City	7,129	5,313	660	9.3	1.34	1.07	+25
14S 43W	Wallace	18 Miles Southwest of Sharon Springs	1,363	1,036	0	0.0	1.32	1.07	+23
16S 41W	Greeley	14 Miles Northwest of Tribune	7,605	6,129	6	0.1	1.24	1.07	+16
15S 41W	Wallace	12 Miles Southwest of Sharon Springs	5,464	4,520	162	3.0	1.21	1.07	+13

^{a/} All points of diversion were included for which water use and acres were both reported.

^{b/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

Table 9

**SELECTED WATER USE STATISTICS BY TOWNSHIPS WITH TEN HIGHEST AF/A
WATER USE AVERAGES, RANKED BY AF/A
EQUUS BEDS GROUNDWATER MANAGEMENT DISTRICT NO. 2
KANSAS, 1995**

Township and Range	County	Approximate Location of Center of Township	Water Use ^{a/} (AF)	Acres Irrig.	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{b/}	GMD Avg. AF/A	Pct. Dev. From GMD Avg.
26S 07W	Reno	26 Miles Southwest of Hutchinson	2,536	2,090	49	1.9	1.21	0.87	+39
22S 04W	Reno	Northeast Corner of Reno County	2,223	2,195	36	1.6	1.01	0.87	+16
26S 06W	Reno	21 Miles Southwest of Hutchinson	2,068	2,058	50	2.4	1.00	0.87	+15
20S 04W	McPherson	8 Miles Southwest of McPherson	3,370	3,387	17	0.5	1.00	0.87	+15
25S 02W	Sedgwick	17 Miles Northwest of Wichita	6,135	6,308	94	1.5	0.97	0.87	+11
24S 02W	Harvey	4 Miles South of Halstead	5,927	6,218	63	1.1	0.95	0.87	+9
24S 03W	Harvey	9 Miles Southwest of Halstead	6,466	6,816	319	4.9	0.95	0.87	+9
22S 03W	Harvey	Northwest Corner of Harvey County	4,809	5,088	70	1.5	0.95	0.87	+9
20S 03W	McPherson	5 Miles South of McPherson	1,841	1,958	17	0.9	0.94	0.87	+8
23S 03W	Harvey	7 Miles Northwest of Halstead	2,121	2,258	0	0.0	0.94	0.87	+8

^{a/} All points of diversion were included for which water use and acres were both reported.

^{b/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

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12-78

Table 10

SELECTED WATER USE STATISTICS BY TOWNSHIPS WITH TEN HIGHEST AF/A
 WATER USE AVERAGES, RANKED BY AF/A
 SOUTHWEST KANSAS GROUNDWATER MANAGEMENT DISTRICT NO. 3
 KANSAS, 1995

Township and Range	County	Approximate Location of Center of Township	Water Use ^{a/} (AF)	Acres Irrig.	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{b/}	GMD Avg. AF/A	Pct. Dev. From GMD Avg.
33S 32W	Seward	12 Miles Northeast of Liberal	6,194	2,655	1,739	28.1	2.33	1.37	+70
34S 38W	Stevens	9 Miles Southwest of Hugoton	12,798	6,766	689	5.4	1.89	1.37	+38
29S 29W	Gray	21 Miles Southwest of Cimarron	11,463	6,216	1,182	10.3	1.84	1.37	+34
31S 32W	Seward	10 Miles Southeast of Sublette	22,444	12,300	2,253	10.3	1.82	1.37	+33
30S 39W	Stanton	Southeast Corner of Stanton County	22,919	12,707	946	4.1	1.80	1.37	+31
26S 36W	Kearny	11 Miles South of Lakin	14,367	8,083	732	5.1	1.78	1.37	+30
26S 35W	Kearny	13 Miles Southeast of Lakin	14,976	8,625	837	5.6	1.74	1.37	+27
29S 30W	Gray	Southwest Corner of Gray County	20,632	11,905	1,304	6.3	1.73	1.37	+26
31S 33W	Seward	21 Miles North of Liberal	15,949	9,263	1,519	9.5	1.72	1.37	+26
25S 43W	Hamilton	18 Miles Southwest of Syracuse	3,715	2,160	299	8.1	1.72	1.37	+26

^{a/} All points of diversion were included for which water use and acres were both reported.

^{b/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

Table 11

**SELECTED WATER USE STATISTICS BY TOWNSHIPS WITH TEN HIGHEST AF/A
WATER USE AVERAGES, RANKED BY AF/A
NORTHWEST KANSAS GROUNDWATER MANAGEMENT DISTRICT NO. 4
KANSAS, 1995**

Township and Range	County	Approximate Location of Center of Township	Water Use ^{a/} (AF)	Acres Irrig.	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{b/}	GMD Avg. AF/A	Pct. Dev. From GMD Avg.
06S 26W	Sheridan	Northeast Corner of Sheridan County	1,002	706	30	3.0	1.42	1.02	+39
08S 30W	Sheridan	12 Miles West of Hoxie	11,453	8,474	36	0.3	1.35	1.02	+32
07S 29W	Sheridan	10 Miles Northwest of Hoxie	11,406	8,443	17	0.1	1.35	1.02	+32
07S 28W	Sheridan	6 Miles North of Hoxie	7,501	5,636	0	0.0	1.33	1.02	+30
10S 34W	Thomas	17 Miles Southwest of Hoxie	1,151	870	18	1.5	1.32	1.02	+29
06S 28W	Sheridan	12 Miles North of Hoxie	2,032	1,576	48	2.3	1.29	1.02	+26
08S 29W	Sheridan	6 Miles West of Hoxie	6,906	5,369	7	0.1	1.29	1.02	+26
10S 32W	Thomas	18 Miles Southeast of Colby	2,424	1,887	7	0.3	1.28	1.02	+25
06S 29W	Sheridan	13 Miles Northwest of Hoxie	4,102	3,235	24	0.6	1.27	1.02	+25
07S 32W	Thomas	10 Miles Northeast of Colby	5,976	4,745	0	0.0	1.26	1.02	+24

^{a/} All points of diversion were included for which water use and acres were both reported.

^{b/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

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12-80

Table 12

SELECTED WATER USE STATISTICS BY TOWNSHIPS WITH TEN HIGHEST AF/A
 WATER USE AVERAGES, RANKED BY AF/A
 BIG BEND GROUNDWATER MANAGEMENT DISTRICT NO. 5
 KANSAS, 1995

Township and Range	County	Approximate Location of Center of Township	Water Use ^{a/} (AF)	Acres Irrig.	Use Above Std. (AF)	Pct. Above Std.	AF/A ^{b/}	GMD Avg. AF/A	Pct. Dev. From GMD Avg.
25S 15W	Stafford	Southwest Corner of Stafford County	4,389	3,242	154	3.5	1.35	1.06	+27
25S 19W	Edwards	4 Miles South of Kinsley	5,156	3,851	376	7.3	1.34	1.06	+26
29S 14W	Pratt	11 Miles Southwest of Pratt	3,679	2,750	133	3.6	1.34	1.06	+26
28S 14W	Pratt	7 Miles Southwest of Pratt	2,361	1,787	26	1.1	1.32	1.06	+25
28S 15W	Pratt	13 Miles Southwest of Pratt	4,575	3,465	261	5.7	1.32	1.06	+25
26S 15W	Pratt	Northwest Corner of Pratt County	8,328	6,476	206	2.5	1.29	1.06	+22
26S 16W	Edwards	Southeast Corner of Edwards County	10,312	8,073	111	1.1	1.28	1.06	+21
26S 17W	Edwards	16 Miles Southeast of Kinsley	8,992	7,059	319	3.5	1.27	1.06	+20
26S 20W	Edwards	Southwest Corner of Edwards County	7,840	6,162	680	8.7	1.27	1.06	+20
26S 13W	Pratt	9 Miles North of Pratt	7,271	5,720	204	2.8	1.27	1.06	+20

^{a/} All points of diversion were included for which water use and acres were both reported.

^{b/} AF/A represents the total amount of irrigation water divided by the total number of acres irrigated.

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Table 13

**IRRIGATION WATER USE, ACRES IRRIGATED AND AF/A WATER USE AVERAGE
BY COUNTY
KANSAS 1991-1995**

County	1995		AF/A ^{b/}					
	Water Use ^{a/} (AF)	Acres Irrigated	1991	1992	1993	1994	1995	Avg.
Allen	29	160	0.92	c/	c/	c/	c/	0.92
Anderson	328	971	0.57	c/	0.36	0.49	0.34	0.44
Atchison	76	210	0.41	c/	c/	c/	c/	0.41
Barber	2,780	3,109	1.22	0.85	0.89	1.20	0.89	1.01
Barton	33,699	35,581	1.34	0.62	0.56	1.24	0.95	0.94
Bourbon	84	375	0.32	c/	0.17	c/	c/	0.25
Brown	13	35	c/	c/	c/	c/	c/	c/
Butler	740	1,085	1.11	0.95	1.07	0.90	0.68	0.94
Chase	16	30	c/	c/	c/	c/	c/	c/
Chautauqua	21	160	c/	c/	c/	c/	c/	c/
Cherokee	37	152	c/	c/	c/	c/	c/	c/
Cheyenne	40,620	42,804	1.28	0.94	1.01	1.21	0.95	1.08
Clark	4,015	3,835	1.42	0.85	0.83	1.11	1.05	1.05
Clay	12,956	18,551	1.23	0.37	0.20	0.70	0.70	0.64
Cloud	13,631	17,836	1.14	0.20	0.15	0.68	0.76	0.59
Coffey	65	166	c/	c/	c/	c/	c/	c/
Comanche	7,345	6,589	1.33	1.09	1.15	1.27	1.11	1.19
Cowley	870	1,814	0.97	0.39	0.44	0.38	0.48	0.53
Crawford	721	2,123	0.44	0.15	0.25	0.32	0.34	0.30
Decatur	12,820	11,321	1.24	0.56	0.48	0.79	1.13	0.84
Dickinson	1,797	3,036	0.86	0.37	c/	0.59	0.59	0.60
Doniphan	36	513	0.34	c/	c/	c/	c/	0.34
Douglas	703	1,677	0.66	0.18	0.10	0.55	0.42	0.38
Edwards	104,905	93,131	1.42	0.84	0.81	1.36	1.13	1.11
Elk	0	0	c/	c/	c/	c/	c/	c/
Ellis	1,386	1,940	1.02	0.55	0.33	0.82	0.71	0.69
Ellsworth	504	567	c/	c/	c/	0.76	c/	0.76
Finney	309,174	242,918	1.61	1.16	1.10	1.43	1.27	1.31
Ford	101,096	89,914	1.53	1.02	1.00	1.21	1.12	1.18

Table 13 (continued)

**IRRIGATION WATER USE, ACRES IRRIGATED AND AF/A WATER USE AVERAGE
BY COUNTY
KANSAS 1991-1995**

County	1995		AF/A ^{b/}					
	Water Use ^{a/} (AF)	Acres Irrigated	1991	1992	1993	1994	1995	Avg.
Franklin	301	1,031	0.37	c/	0.19	0.32	0.29	0.29
Geary	1,799	3,315	0.75	0.23	c/	0.66	0.54	0.55
Gove	20,280	19,978	1.31	0.65	0.55	1.02	1.02	0.91
Graham	10,835	11,374	1.27	0.60	0.34	0.91	0.95	0.81
Grant	188,869	137,645	1.66	1.48	1.15	1.42	1.37	1.42
Gray	248,647	191,248	1.62	1.22	1.13	1.35	1.30	1.32
Greeley	28,199	27,942	1.46	1.20	1.07	1.28	1.01	1.20
Greenwood	78	282	c/	c/	c/	c/	c/	c/
Hamilton	42,807	29,640	1.71	1.36	1.26	1.43	1.44	1.44
Harper	988	1,661	1.00	0.70	0.70	0.73	0.60	0.75
Harvey	24,800	27,701	1.20	0.71	0.67	1.09	0.90	0.91
Haskell	320,015	212,982	1.79	1.52	1.29	1.55	1.50	1.53
Hodgeman	34,649	28,977	1.56	0.84	0.64	1.19	1.20	1.09
Jackson	0	0	c/	c/	c/	c/	c/	c/
Jefferson	710	1,845	0.67	0.29	c/	0.59	0.38	0.48
Jewell	3,005	3,190	1.22	0.31	0.29	0.71	0.94	0.69
Johnson	1,880	3,194	0.71	0.45	0.36	0.65	0.59	0.55
Kearny	129,321	96,586	1.70	1.36	1.28	1.53	1.34	1.44
Kingman	15,095	14,633	1.42	0.94	1.03	1.22	1.03	1.13
Kiowa	56,298	48,933	1.53	0.96	1.07	1.37	1.15	1.22
Labette	171	892	0.36	0.15	c/	0.19	0.19	0.22
Lane	21,085	21,705	1.13	0.83	0.66	1.09	0.97	0.94
Leavenworth	314	639	0.72	c/	c/	c/	c/	0.72
Lincoln	246	720	1.02	c/	c/	0.53	0.34	0.63
Linn	29	64	c/	c/	c/	c/	c/	c/
Logan	7,634	8,397	1.32	0.95	0.73	0.93	0.91	0.97
Lyon	31	140	c/	c/	c/	c/	c/	c/
Marion	979	1,926	0.84	0.32	0.29	0.77	0.51	0.55
Marshall	586	1,640	0.62	0.21	c/	0.28	0.36	0.37

Table 13 (continued)

**IRRIGATION WATER USE, ACRES IRRIGATED AND AF/A WATER USE AVERAGE
BY COUNTY
KANSAS 1991-1995**

County	1995		AF/A ^{b/}					
	Water Use ^{a/} (AF)	Acres Irrigated	1991	1992	1993	1994	1995	Avg.
McPherson	23,878	28,217	1.21	0.44	0.49	1.03	0.85	0.80
Meade	174,951	119,644	1.73	1.37	1.31	1.48	1.46	1.47
Miami	123	203	c/	c/	c/	c/	c/	c/
Mitchell	4,748	5,123	1.30	0.26	c/	0.81	0.93	0.83
Montgomery	539	1,835	0.48	0.20	0.32	0.27	0.29	0.31
Morris	84	263	c/	c/	c/	c/	c/	c/
Morton	60,214	49,624	1.65	1.49	1.27	1.26	1.21	1.38
Nemaha	25	80	c/	c/	c/	c/	c/	c/
Neosho	57	144	c/	c/	c/	c/	c/	c/
Ness	4,967	5,746	1.64	0.80	0.37	1.20	0.86	0.97
Norton	10,515	8,118	1.53	0.65	0.65	1.13	1.30	1.05
Osage	96	223	c/	c/	c/	c/	c/	c/
Osborne	3,423	3,394	0.95	0.42	c/	0.83	1.01	0.80
Ottawa	1,769	4,022	0.83	0.25	0.10	0.44	0.44	0.41
Pawnee	72,619	77,576	1.40	0.64	0.48	1.21	0.94	0.93
Phillips	8,228	8,644	1.39	0.78	0.57	0.96	0.95	0.93
Pottawatomie	6,680	13,079	0.82	0.32	0.17	0.46	0.51	0.46
Pratt	82,305	71,291	1.36	0.88	0.97	1.44	1.15	1.16
Rawlins	16,642	19,293	1.17	0.63	0.72	0.88	0.86	0.85
Reno	29,393	33,164	1.14	0.64	0.67	1.05	0.89	0.88
Republic	29,351	29,224	1.31	0.37	0.29	0.67	1.00	0.73
Rice	17,617	20,314	1.29	0.53	0.50	1.22	0.87	0.88
Riley	1,774	3,774	0.90	0.33	c/	0.85	0.47	0.64
Rooks	1,018	1,450	1.00	0.51	0.22	0.68	0.70	0.62
Rush	10,259	10,647	1.35	0.21	0.36	0.90	0.96	0.76
Russell	3	3	c/	c/	c/	c/	c/	c/
Saline	2,837	3,523	1.27	0.49	0.36	0.86	0.81	0.76
Scott	66,969	61,860	1.34	1.12	0.88	1.17	1.08	1.12
Sedgwick	30,346	36,317	1.21	0.76	0.82	1.08	0.84	0.94

Table 13 (continued)

IRRIGATION WATER USE, ACRES IRRIGATED AND AF/A WATER USE AVERAGE
BY COUNTY
KANSAS 1991-1995

County	1995		AF/A ^{b/}					
	Water Use ^{a/} (AF)	Acres Irrigated	1991	1992	1993	1994	1995	Avg.
Seward	168,091	108,758	1.82	1.60	1.40	1.52	1.55	1.58
Shawnee	8,149	14,466	0.76	0.33	0.10	0.54	0.56	0.46
Sheridan	85,733	71,711	1.46	0.79	0.56	1.15	1.20	1.03
Sherman	97,916	103,871	1.26	0.87	0.84	1.03	0.94	0.99
Smith	3,504	4,309	0.95	0.59	0.24	0.64	0.81	0.65
Stafford	82,441	76,771	1.39	0.81	0.67	1.34	1.07	1.06
Stanton	181,604	134,134	1.56	1.46	1.25	1.43	1.35	1.41
Stevens	208,813	140,226	1.72	1.64	1.33	1.50	1.49	1.54
Sumner	3,699	5,454	1.24	0.81	0.82	1.10	0.68	0.93
Thomas	98,789	95,064	1.36	0.67	0.75	1.08	1.04	0.98
Trego	3,807	5,000	1.08	0.54	0.44	0.97	0.76	0.76
Wabaunsee	2,185	4,629	0.82	0.36	0.10	0.41	0.47	0.43
Wallace	68,769	57,103	1.45	1.20	0.94	1.28	1.20	1.21
Washington	3,626	6,366	0.94	0.27	0.13	0.39	0.57	0.46
Wichita	81,856	80,919	1.33	1.06	0.83	1.13	1.01	1.07
Wilson	513	1,699	0.46	c/	0.21	0.29	0.30	0.32
Woodson	51	214	c/	c/	c/	c/	c/	c/
Wyandotte	114	70	c/	c/	c/	c/	c/	c/
Total	3,571,207	3,006,442	1.49	1.11	1.00	1.28	1.19	1.21

^{a/} All points of diversion were included for which water use and acres were both reported.

^{b/} AF/A represents the total amount of irrigated water divided by the total number of acres irrigated.

^{c/} AF/A was not computed for counties with less than 640 acres of irrigation.

Table 14

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
01S 03W	Republic	7,284	7,022	139	1.9	1.43	0.47	0.29	0.62	1.04	0.77
01S 04W	Republic	7,778	7,344	384	4.9	1.30	0.47	0.30	0.64	1.06	0.75
01S 05W	Republic	3,017	3,325	141	4.7	1.23	0.24	0.28	0.63	0.91	0.66
01S 06W	Jewell	2,401	2,622	19	0.8	1.18	0.31	0.29	0.74	0.92	0.69
01S 19W	Phillips	2,058	2,169	124	6.0	1.52	0.73	0.56	1.21	0.95	0.99
01S 20W	Phillips	4,175	3,715	441	10.6	1.53	0.83	0.80	1.05	1.12	1.07
01S 21W	Norton	0	0	0	0.0	1.23	c/	c/	c/	c/	1.23
01S 27W	Decatur	1,619	1,210	41	2.5	1.27	c/	0.49	0.88	1.34	1.00
01S 30W	Decatur	1,453	1,750	5	0.4	1.27	0.54	0.24	0.53	0.83	0.68
01S 38W	Cheyenne	2,660	1,667	107	4.0	1.59	1.38	1.51	1.75	1.60	1.57
01S 39W	Cheyenne	0	0	0	0.0	0.79	0.74	c/	c/	c/	0.77
02S 07E	Marshall	308	680	0	0.0	c/	0.21	c/	0.26	0.45	0.31
02S 05E	Washington	244	817	0	0.0	1.17	c/	c/	0.31	0.30	0.59
02S 03E	Washington	0	0	0	0.0	0.84	c/	c/	c/	c/	0.84
02S 05W	Republic	853	999	48	5.6	1.23	0.30	c/	0.66	0.85	0.76
02S 20W	Phillips	490	1,056	0	0.0	1.26	0.85	0.21	0.40	0.46	0.64
02S 21W	Norton	4,066	2,359	361	8.9	1.75	0.69	0.82	1.52	1.72	1.30
02S 22W	Norton	1,524	1,298	71	4.7	1.76	0.66	0.78	1.44	1.17	1.16
02S 28W	Decatur	1,339	1,092	20	1.5	0.98	c/	0.38	0.54	1.23	0.78
02S 30W	Decatur	657	691	0	0.0	1.06	c/	0.42	c/	0.95	0.81
02S 32W	Rawlins	1,062	952	27	2.5	1.47	c/	0.85	0.82	1.12	1.07
02S 33W	Rawlins	0	0	0	0.0	1.27	c/	c/	c/	c/	1.27
02S 36W	Rawlins	578	701	0	0.0	c/	c/	c/	1.00	0.82	0.91
02S 39W	Cheyenne	914	880	0	0.0	1.42	1.38	0.97	1.02	1.04	1.17
03S 05E	Washington	0	0	0	0.0	1.17	c/	c/	c/	c/	1.17
03S 04W	Republic	2,990	3,280	151	5.0	1.23	0.30	c/	0.81	0.91	0.81
03S 05W	Republic	1,165	914	146	12.5	c/	c/	c/	0.76	1.27	1.02
03S 25W	Norton	0	0	0	0.0	c/	c/	c/	0.48	c/	0.48
03S 29W	Decatur	1,415	1,066	27	1.9	1.24	0.50	0.52	1.05	1.33	0.93
03S 33W	Rawlins	690	901	13	1.9	0.99	0.34	0.56	0.84	0.77	0.70
03S 34W	Rawlins	0	0	0	0.0	1.01	c/	c/	0.81	c/	0.91
03S 35W	Rawlins	521	662	0	0.0	c/	c/	c/	0.81	0.79	0.80
03S 36W	Rawlins	3,013	3,006	162	5.4	1.34	0.63	0.66	0.77	1.00	0.88
03S 37W	Cheyenne	2,987	3,548	0	0.0	1.14	0.76	1.03	1.24	0.84	1.00
03S 38W	Cheyenne	2,427	3,184	0	0.0	1.26	0.69	0.91	1.18	0.76	0.96
03S 39W	Cheyenne	884	825	0	0.0	1.28	1.18	1.03	1.47	1.07	1.21
03S 40W	Cheyenne	755	680	0	0.0	1.32	1.14	0.91	1.26	1.11	1.15
04S 04W	Republic	5,579	5,477	293	5.2	1.33	0.26	0.25	0.77	1.02	0.73

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
04S 15W	Smith	0	0	0	0.0	1.24	c/	c/	c/	c/	1.24
04S 16W	Phillips	1,093	1,328	0	0.0	1.13	0.68	0.30	0.83	0.82	0.75
04S 26W	Decatur	0	0	0	0.0	1.55	c/	c/	c/	c/	1.55
04S 33W	Rawlins	998	2,486	0	0.0	1.48	0.42	0.48	0.71	0.40	0.70
04S 34W	Rawlins	0	0	0	0.0	c/	c/	c/	c/	c/	c/
04S 36W	Rawlins	2,684	2,246	0	0.0	1.15	0.81	1.08	1.31	1.20	1.11
04S 37W	Cheyenne	3,832	3,836	8	0.2	1.55	0.85	1.13	1.06	1.00	1.12
04S 38W	Cheyenne	998	1,374	0	0.0	1.11	0.78	0.89	0.81	0.73	0.86
04S 39W	Cheyenne	1,851	2,068	0	0.0	1.50	1.15	0.96	1.45	0.90	1.19
04S 40W	Cheyenne	0	0	0	0.0	0.64	c/	0.46	0.96	c/	0.69
04S 41W	Cheyenne	1,085	1,106	0	0.0	1.73	1.13	1.05	1.33	0.98	1.24
04S 42W	Cheyenne	1,064	854	5	0.5	1.30	0.72	0.94	1.28	1.25	1.10
05S 01E	Washington	2,012	2,979	38	1.9	0.96	0.30	0.10	0.49	0.68	0.51
05S 01W	Cloud	2,699	3,230	32	1.2	1.15	0.31	0.15	0.78	0.84	0.65
05S 02W	Cloud	2,985	3,629	31	1.0	1.30	0.15	c/	0.75	0.82	0.76
05S 03W	Cloud	2,281	3,649	3	0.1	1.02	0.12	c/	0.62	0.63	0.60
05S 04W	Cloud	2,959	3,404	480	16.2	1.17	0.19	c/	0.69	0.87	0.73
05S 13W	Smith	955	1,200	18	1.9	0.96	0.66	c/	0.61	0.80	0.76
05S 14W	Smith	0	0	0	0.0	0.76	c/	c/	0.33	c/	0.55
05S 23W	Norton	0	0	0	0.0	1.12	0.28	c/	c/	c/	0.70
05S 28W	Decatur	631	716	3	0.5	1.01	0.32	c/	0.56	0.88	0.69
05S 30W	Decatur	1,235	1,126	0	0.0	1.25	0.71	0.69	1.07	1.10	0.96
05S 31W	Rawlins	439	642	0	0.0	c/	c/	c/	c/	0.68	0.68
05S 33W	Rawlins	0	0	0	0.0	c/	c/	c/	c/	c/	c/
05S 34W	Rawlins	1,481	1,579	0	0.0	1.40	0.78	1.15	1.06	0.94	1.07
05S 36W	Rawlins	1,315	1,893	0	0.0	0.81	0.57	0.69	0.70	0.69	0.69
05S 37W	Cheyenne	2,130	2,917	0	0.0	1.33	0.97	1.03	0.97	0.73	1.01
05S 38W	Cheyenne	1,834	2,784	0	0.0	1.38	1.03	1.08	1.14	0.66	1.06
05S 39W	Cheyenne	2,477	2,939	0	0.0	1.03	0.85	0.92	1.33	0.84	0.99
05S 40W	Cheyenne	6,035	5,974	42	0.7	1.39	0.83	1.00	1.32	1.01	1.11
05S 41W	Cheyenne	3,964	3,332	0	0.0	1.27	1.18	1.21	1.22	1.19	1.21
05S 42W	Cheyenne	2,035	1,842	34	1.7	1.07	1.08	0.94	1.16	1.10	1.07
06S 21E	Atchison	0	0	0	0.0	0.20	c/	c/	c/	c/	0.20
06S 02E	Clay	945	1,961	0	0.0	1.17	0.36	0.18	0.46	0.48	0.53
06S 01E	Clay	3,506	5,377	27	0.8	1.39	0.39	0.20	0.58	0.65	0.64
06S 01W	Cloud	2,284	2,879	12	0.5	1.22	0.17	0.17	0.67	0.79	0.60
06S 09W	Mitchell	0	0	0	0.0	c/	c/	c/	c/	c/	c/
06S 11W	Osborne	672	746	30	4.5	1.09	c/	c/	c/	0.90	1.00

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
06S 12W	Osborne	1,504	1,241	126	8.4	1.11	c/	c/	0.82	1.21	1.05
06S 21W	Graham	0	0	0	0.0	c/	c/	c/	c/	c/	c/
06S 23W	Graham	620	684	0	0.0	0.91	0.44	c/	0.40	0.91	0.67
06S 24W	Graham	1,007	969	0	0.0	1.39	0.79	0.35	0.93	1.04	0.90
06S 25W	Graham	3,150	2,577	0	0.0	1.85	0.82	0.49	1.07	1.22	1.09
06S 26W	Sheridan	1,002	706	30	3.0	1.58	0.84	0.45	1.08	1.42	0.79
06S 27W	Sheridan	2,080	2,018	31	1.5	1.26	0.82	0.44	0.89	1.03	0.89
06S 28W	Sheridan	2,032	1,576	48	2.3	1.43	0.81	0.45	1.07	1.29	1.01
06S 29W	Sheridan	4,102	3,235	24	0.6	1.40	0.52	0.52	1.15	1.27	0.90
06S 30W	Sheridan	3,103	2,488	29	0.9	1.46	1.08	0.74	1.27	1.25	1.16
06S 31W	Thomas	1,986	2,267	0	0.0	1.42	0.68	0.70	0.86	0.88	0.91
06S 32W	Thomas	2,929	2,735	42	1.4	1.21	0.58	0.68	1.04	1.07	0.92
06S 33W	Thomas	1,804	1,887	0	0.0	1.32	0.52	0.83	1.06	0.96	0.94
06S 34W	Thomas	3,062	3,647	0	0.0	1.13	0.40	0.66	1.04	0.84	0.81
06S 35W	Thomas	2,636	2,841	0	0.0	1.14	0.40	0.58	1.08	0.93	0.83
06S 36W	Thomas	3,121	3,576	0	0.0	1.31	0.63	0.71	0.95	0.87	0.89
06S 37W	Sherman	2,769	3,001	64	2.3	1.19	0.74	0.82	0.82	0.92	0.90
06S 38W	Sherman	1,233	1,252	0	0.0	1.21	0.87	0.65	0.98	0.98	0.94
06S 39W	Sherman	2,054	2,235	0	0.0	0.83	0.66	0.37	1.01	0.92	0.76
06S 40W	Sherman	2,233	3,334	0	0.0	0.79	0.58	0.62	0.82	0.67	0.70
06S 41W	Sherman	2,907	4,082	0	0.0	1.20	0.74	0.73	0.91	0.71	0.86
06S 42W	Sherman	2,901	3,411	6	0.2	1.22	0.88	0.87	1.07	0.85	0.98
07S 02E	Clay	5,271	6,871	149	2.8	1.25	0.36	0.17	0.78	0.77	0.67
07S 06W	Mitchell	466	686	29	6.2	1.31	c/	c/	c/	0.68	1.00
07S 07W	Mitchell	886	1,364	0	0.0	1.52	0.34	c/	0.92	0.65	0.86
07S 08W	Mitchell	2,118	1,879	169	8.0	1.05	0.22	c/	0.95	1.13	0.84
07S 13W	Osborne	0	0	0	0.0	0.65	c/	c/	c/	c/	0.65
07S 14W	Osborne	0	0	0	0.0	1.06	c/	c/	c/	c/	1.06
07S 18W	Rooks	528	669	84	15.9	c/	0.59	c/	c/	0.79	0.69
07S 25W	Graham	1,114	1,101	0	0.0	1.22	1.02	0.47	1.53	1.01	1.25
07S 26W	Sheridan	2,517	2,038	2	0.1	1.55	0.92	0.21	0.98	1.24	0.98
07S 27W	Sheridan	3,678	3,436	0	0.0	1.26	0.72	0.33	1.03	1.07	0.88
07S 28W	Sheridan	7,501	5,636	0	0.0	1.71	0.88	0.59	1.32	1.33	1.17
07S 29W	Sheridan	11,406	8,443	17	0.1	1.49	0.76	0.53	1.37	1.35	1.10
07S 30W	Sheridan	6,997	5,749	12	0.2	1.48	0.72	0.61	1.22	1.22	1.05
07S 31W	Thomas	6,793	5,483	0	0.0	1.41	0.75	0.70	1.08	1.24	1.04
07S 32W	Thomas	5,976	4,745	0	0.0	1.61	0.59	0.93	1.28	1.26	1.13
07S 33W	Thomas	3,288	3,449	0	0.0	1.45	0.65	0.85	1.14	0.95	1.01

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
07S 34W	Thomas	3,626	3,697	0	0.0	1.23	0.61	0.77	1.06	0.98	0.93
07S 35W	Thomas	3,631	3,055	0	0.0	1.42	0.80	0.94	1.36	1.19	1.14
07S 36W	Thomas	4,244	4,651	45	1.1	1.34	0.80	0.78	1.02	0.91	0.97
07S 37W	Sherman	4,281	4,456	3	0.1	1.42	0.93	0.79	1.12	0.96	1.04
07S 38W	Sherman	2,584	2,853	0	0.0	1.69	0.64	0.90	1.18	0.96	1.07
07S 39W	Sherman	2,928	3,351	76	2.6	1.03	0.60	0.49	0.85	0.87	0.77
07S 40W	Sherman	3,731	3,662	30	0.8	1.47	0.72	0.73	1.18	1.02	1.02
07S 41W	Sherman	3,935	3,790	30	0.8	1.15	0.75	0.88	0.96	1.04	0.96
07S 42W	Sherman	3,074	3,101	0	0.0	1.27	1.08	0.99	1.07	0.99	1.08
08S 03E	Clay	1,720	2,036	63	3.7	1.10	0.37	c/	0.81	0.85	0.78
08S 02E	Clay	1,279	1,976	118	9.3	1.11	0.37	0.31	0.72	0.65	0.63
08S 21W	Graham	948	1,456	44	4.6	0.80	0.40	0.28	0.73	0.65	0.57
08S 24W	Graham	713	902	0	0.0	1.25	0.44	0.28	0.91	0.79	0.73
08S 28W	Sheridan	3,025	2,498	42	1.4	1.66	0.87	0.67	1.10	1.21	1.10
08S 29W	Sheridan	6,906	5,369	7	0.1	1.84	0.82	0.59	1.31	1.29	1.17
08S 30W	Sheridan	11,453	8,474	36	0.3	1.57	0.90	0.70	1.25	1.35	1.15
08S 31W	Thomas	6,809	6,965	0	0.0	1.36	0.69	0.69	1.04	0.98	0.95
08S 32W	Thomas	5,284	4,322	0	0.0	1.55	0.80	0.91	1.26	1.22	1.15
08S 33W	Thomas	4,692	4,917	0	0.0	1.40	0.41	0.64	1.27	0.95	0.93
08S 34W	Thomas	8,538	7,725	4	0.0	1.38	0.66	0.73	1.18	1.11	1.01
08S 35W	Thomas	1,115	906	0	0.0	1.58	0.90	0.88	1.30	1.23	1.18
08S 36W	Thomas	650	952	0	0.0	0.89	0.67	0.59	0.72	0.68	0.71
08S 37W	Sherman	4,848	4,913	0	0.0	1.25	0.62	0.71	1.11	0.99	0.94
08S 38W	Sherman	3,141	3,274	0	0.0	1.38	0.65	0.96	1.09	0.96	0.94
08S 39W	Sherman	6,903	6,457	43	0.6	1.47	0.98	1.01	1.07	1.07	1.12
08S 40W	Sherman	5,208	5,466	72	1.4	1.43	0.99	1.08	1.16	0.95	1.12
08S 41W	Sherman	2,820	2,875	0	0.0	1.11	1.07	0.93	1.08	0.98	1.03
08S 42W	Sherman	3,871	4,299	32	0.8	1.37	1.11	0.91	0.83	0.90	1.02
09S 11E	Pottawatomie	1,293	2,451	120	9.3	0.83	0.29	c/	0.33	0.53	0.50
09S 10E	Pottawatomie	675	1,670	0	0.0	0.65	0.29	c/	0.44	0.40	0.45
09S 24W	Graham	0	0	0	0.0	c/	c/	0.38	c/	c/	0.38
09S 25W	Graham	803	691	12	1.4	1.43	0.62	c/	1.19	1.16	1.10
09S 27W	Sheridan	991	1,216	4	0.4	0.92	0.44	0.30	0.86	0.81	0.67
09S 28W	Sheridan	1,945	2,155	0	0.0	1.41	0.45	0.39	0.93	0.90	0.82
09S 29W	Sheridan	2,901	2,448	60	2.1	1.30	0.61	0.70	1.11	1.19	0.98
09S 30W	Sheridan	6,052	6,519	84	1.4	1.12	0.70	0.46	0.87	0.93	0.82
09S 31W	Thomas	3,438	3,333	0	0.0	1.44	0.77	0.75	0.93	1.03	0.98
09S 32W	Thomas	3,635	3,945	21	0.6	1.37	0.73	0.77	1.07	0.92	0.97

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
09S 33W	Thomas	7,751	7,198	12	0.2	1.32	0.64	0.66	1.08	1.08	0.96
09S 34W	Thomas	3,822	3,658	0	0.0	1.30	0.69	0.56	1.02	1.04	0.92
09S 39W	Sherman	2,867	3,362	9	0.3	1.26	1.16	0.96	1.00	0.85	1.05
09S 40W	Sherman	6,279	6,587	20	0.3	1.27	0.91	0.87	1.04	0.95	1.01
09S 41W	Sherman	8,825	9,181	85	1.0	1.09	0.95	0.97	1.03	0.96	1.00
09S 42W	Sherman	7,117	6,658	4	0.1	1.43	0.95	0.87	1.18	1.07	1.10
10S 13E	Shawnee	1,717	2,993	38	2.2	0.81	0.40	c/	0.58	0.57	0.59
10S 12E	Multi-County	2,264	4,731	3	0.1	0.81	0.35	0.10	0.43	0.48	0.43
10S 11E	Multi-County	1,170	2,312	12	1.0	0.84	0.32	0.18	0.44	0.51	0.46
10S 10E	Multi-County	1,684	3,929	1	0.0	0.82	0.34	c/	0.39	0.43	0.50
10S 09E	Multi-County	536	751	0	0.0	0.95	c/	c/	0.82	0.71	0.83
10S 08E	Pottawatomie	722	1,084	7	0.9	0.90	0.41	c/	0.55	0.67	0.63
10S 08E	Riley	219	772	3	1.2	1.04	c/	c/	0.50	0.28	0.61
10S 07E	Riley	304	753	4	1.3	0.87	c/	c/	c/	0.40	0.64
10S 26W	Sheridan	849	921	2	0.2	c/	c/	c/	0.82	0.92	0.87
10S 27W	Sheridan	519	672	0	0.0	c/	c/	c/	c/	0.77	0.77
10S 28W	Sheridan	821	763	0	0.0	1.45	c/	c/	0.94	1.08	1.16
10S 29W	Sheridan	1,806	1,617	1	0.1	1.21	0.77	0.75	1.11	1.12	0.99
10S 30W	Sheridan	2,608	2,327	0	0.0	1.39	1.13	0.72	1.16	1.12	1.10
10S 31W	Thomas	1,535	1,247	5	0.3	1.34	0.72	0.52	0.87	1.23	0.94
10S 32W	Thomas	2,424	1,887	7	0.3	1.49	0.77	1.20	1.24	1.28	1.20
10S 33W	Thomas	3,729	3,445	6	0.2	1.41	0.98	0.84	0.99	1.08	1.06
10S 34W	Thomas	1,151	870	18	1.5	1.65	0.51	0.80	0.53	1.32	0.96
10S 36W	Thomas	825	1,236	0	0.0	1.14	1.16	0.83	0.74	0.67	0.91
10S 37W	Sherman	1,884	1,880	0	0.0	0.99	0.72	0.79	0.86	1.00	0.87
10S 40W	Sherman	2,049	2,230	0	0.0	0.88	0.76	0.58	0.79	0.92	0.79
10S 41W	Sherman	2,301	2,898	0	0.0	0.96	0.82	0.72	0.94	0.79	0.85
10S 42W	Sherman	4,616	4,212	0	0.0	1.66	1.27	1.26	1.29	1.10	1.32
11S 18E	Multi-County	0	0	0	0.0	0.50	c/	c/	0.48	c/	0.49
11S 17E	Multi-County	558	1,145	0	0.0	0.82	0.31	c/	0.73	0.49	0.59
11S 16E	Multi-County	0	0	0	0.0	0.64	c/	c/	0.59	c/	0.62
11S 15E	Shawnee	917	1,734	2	0.2	0.66	0.30	c/	0.52	0.53	0.50
11S 14E	Shawnee	2,911	4,972	66	2.3	0.80	0.32	0.10	0.57	0.59	0.48
11S 13E	Multi-County	1,798	3,136	0	0.0	0.71	0.30	c/	0.50	0.57	0.52
11S 07E	Riley	261	816	0	0.0	0.97	c/	c/	c/	0.32	0.65
11S 06E	Multi-County	557	934	27	4.9	c/	c/	c/	0.68	0.60	0.64
11S 03W	Ottawa	615	895	10	1.6	0.93	c/	c/	0.60	0.69	0.74
11S 04W	Ottawa	0	0	0	0.0	0.74	c/	c/	c/	c/	0.74

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
11S 26W	Gove	754	901	0	0.0	1.10	0.40	c/	0.76	0.84	0.78
11S 27W	Gove	3,220	3,512	0	0.0	1.18	0.40	0.42	0.99	0.92	0.78
11S 28W	Gove	1,951	1,874	9	0.5	1.62	0.58	0.48	1.10	1.04	0.96
11S 30W	Gove	2,360	2,377	8	0.3	1.69	0.72	0.69	1.01	0.99	1.02
11S 31W	Gove	1,861	1,710	32	1.7	1.55	1.01	0.76	1.14	1.09	1.11
11S 32W	Logan	3,180	2,760	18	0.6	1.35	0.95	0.73	0.99	1.15	1.03
11S 33W	Logan	2,007	2,727	0	0.0	1.33	0.84	0.65	0.77	0.74	0.87
11S 36W	Logan	1,139	960	0	0.0	1.52	1.41	1.43	1.39	1.19	1.39
11S 42W	Wallace	754	800	0	0.0	1.13	0.94	0.68	1.10	0.94	0.96
12S 20E	Multi-County	545	1,402	0	0.0	0.62	0.10	0.11	0.48	0.39	0.34
12S 05E	Geary	585	1,342	0	0.0	c/	c/	c/	0.43	0.44	0.44
12S 04E	Multi-County	503	788	0	0.1	c/	c/	c/	c/	0.64	0.64
12S 02W	Ottawa	92	813	0	0.0	0.62	0.14	c/	0.20	0.11	0.27
12S 23W	Trego	891	1,614	7	0.8	1.13	0.34	0.37	0.79	0.55	0.64
12S 27W	Gove	1,261	1,380	73	5.8	1.02	0.49	0.34	1.17	0.91	0.79
12S 28W	Gove	0	0	0	0.0	0.89	c/	c/	c/	c/	0.89
13S 24E	Johnson	0	0	0	0.0	0.60	0.38	0.39	0.49	c/	0.47
13S 02E	Dickinson	0	0	0	0.0	0.92	0.36	c/	0.58	c/	0.62
13S 25W	Trego	817	984	0	0.0	1.16	c/	c/	0.95	0.83	0.98
13S 37W	Logan	422	782	0	0.0	0.91	0.74	0.45	0.60	0.54	0.65
13S 42W	Wallace	3,058	2,418	29	1.0	1.75	1.09	0.98	1.54	1.26	1.32
14S 39W	Wallace	2,116	2,160	69	3.3	1.00	1.15	0.67	0.95	0.98	0.95
14S 40W	Wallace	5,634	4,864	221	3.9	1.47	1.39	0.87	1.34	1.16	1.25
14S 41W	Wallace	9,485	6,344	297	3.1	1.60	1.44	1.10	1.39	1.50	1.41
14S 42W	Wallace	12,448	8,805	539	4.3	1.61	1.34	1.27	1.41	1.41	1.41
14S 43W	Wallace	1,363	1,036	0	0.0	1.00	0.81	1.12	1.47	1.32	1.15
15S 24E	Multi-County	337	832	2	0.6	0.81	0.53	0.27	0.30	0.40	0.46
15S 02W	Saline	0	0	0	0.0	1.02	c/	c/	c/	c/	1.02
15S 26W	Gove	1,464	1,011	281	19.2	1.14	0.92	0.39	1.21	1.45	1.02
15S 27W	Gove	859	1,009	0	0.0	1.10	0.51	c/	1.33	0.85	0.95
15S 28W	Gove	735	734	0	0.0	c/	c/	c/	0.93	1.00	0.97
15S 29W	Gove	649	692	0	0.0	0.98	c/	c/	1.09	0.94	1.00
15S 38W	Wallace	5,671	5,464	72	1.3	1.32	1.16	0.87	1.10	1.04	1.10
15S 39W	Wallace	7,726	7,253	27	0.3	1.45	1.11	0.77	1.17	1.07	1.11
15S 40W	Wallace	11,679	10,426	378	3.2	1.62	1.23	0.97	1.31	1.12	1.25
15S 41W	Wallace	5,464	4,520	162	3.0	1.31	0.97	0.84	1.29	1.21	1.12
15S 42W	Wallace	1,306	908	48	3.7	0.90	0.75	0.60	0.89	1.44	0.92
16S 19E	Franklin	0	0	0	0.0	0.36	c/	c/	c/	c/	0.36

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
16S 02W	Saline	664	746	6	1.0	1.58	c/	c/	0.82	0.89	1.10
16S 03W	Saline	1,020	1,163	10	1.0	1.57	0.48	0.44	1.01	0.88	0.88
16S 29W	Lane	872	746	35	4.1	1.66	1.10	0.82	1.02	1.17	1.15
16S 30W	Lane	1,940	2,845	127	6.5	1.08	0.60	0.30	0.73	0.68	0.68
16S 33W	Scott	1,623	1,462	16	1.0	1.61	1.23	0.97	1.39	1.11	1.26
16S 34W	Scott	6,451	5,810	65	1.0	1.38	0.87	0.92	1.05	1.11	1.07
16S 35W	Wichita	5,014	5,805	31	0.6	1.13	1.04	0.73	1.01	0.86	0.95
16S 36W	Wichita	7,624	7,185	30	0.4	1.21	1.07	0.97	1.44	1.06	1.15
16S 37W	Wichita	9,328	8,232	308	3.3	1.43	1.11	1.00	1.20	1.13	1.17
16S 38W	Wichita	12,282	10,518	195	1.6	1.58	1.08	0.99	1.29	1.17	1.22
16S 39W	Greeley	7,795	8,558	0	0.0	1.44	1.32	1.05	1.34	0.91	1.21
16S 40W	Greeley	3,121	2,990	31	1.0	1.54	0.94	0.92	1.14	1.04	1.12
16S 41W	Greeley	7,605	6,129	6	0.1	1.59	1.47	1.46	1.42	1.24	1.44
16S 42W	Greeley	4,777	4,811	0	0.0	1.24	0.90	0.90	1.06	0.99	1.02
17S 03W	McPherson	1,519	1,373	179	11.8	1.49	0.53	c/	1.17	1.11	1.08
17S 04W	McPherson	2,024	2,001	63	3.1	1.65	0.70	0.42	1.15	1.01	0.99
17S 05W	McPherson	746	956	43	5.8	1.08	0.38	c/	1.13	0.78	0.67
17S 27W	Lane	823	720	0	0.0	1.07	0.73	0.25	0.86	1.14	0.81
17S 28W	Lane	3,855	4,324	39	1.0	1.32	1.17	1.14	1.32	0.89	1.17
17S 29W	Lane	5,210	4,945	102	2.0	1.14	1.04	0.79	1.21	1.05	1.05
17S 30W	Lane	3,476	3,828	10	0.3	0.99	0.57	0.36	0.97	0.91	0.76
17S 31W	Scott	4,525	4,851	7	0.2	1.24	1.32	1.26	1.11	0.93	1.17
17S 32W	Scott	9,064	9,517	274	3.0	1.15	1.08	0.97	1.36	0.95	1.10
17S 33W	Scott	5,936	5,478	100	1.7	1.25	0.94	0.84	1.11	1.08	1.05
17S 34W	Scott	4,596	4,102	8	0.2	1.04	0.99	0.63	1.14	1.12	0.98
17S 35W	Wichita	8,167	8,247	30	0.4	1.50	1.12	0.74	1.11	0.99	1.09
17S 36W	Wichita	7,872	7,182	225	2.9	1.33	1.07	0.88	1.12	1.10	1.10
17S 37W	Wichita	5,002	5,530	0	0.0	1.35	1.09	0.83	0.93	0.90	1.02
17S 38W	Wichita	4,146	3,532	122	2.9	1.61	1.21	1.23	1.39	1.17	1.32
17S 39W	Greeley	2,236	3,085	25	1.1	1.43	1.45	1.09	1.53	0.72	1.24
17S 40W	Greeley	1,429	1,394	0	0.0	1.76	1.17	0.86	1.32	1.03	1.23
18S 04W	McPherson	1,602	1,810	23	1.5	0.97	0.49	0.34	0.99	0.88	0.73
18S 14W	Barton	762	1,097	21	2.7	1.18	0.24	0.29	0.82	0.69	0.64
18S 15W	Barton	1,205	1,561	0	0.0	1.06	c/	c/	0.99	0.77	0.94
18S 16W	Rush	2,252	2,342	1	0.0	1.57	0.15	0.30	0.91	0.96	0.78
18S 17W	Rush	2,570	2,653	47	1.8	1.23	c/	c/	0.96	0.97	1.05
18S 18W	Rush	2,499	2,311	92	3.7	1.15	c/	0.44	0.95	1.08	0.91
18S 19W	Rush	2,323	2,185	25	1.1	1.48	0.27	0.37	0.96	1.06	0.83

Table 14 (continued)

SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
18S 20W	Rush	616	1,156	0	0.0	1.34	c/	c/	0.59	0.53	0.82
18S 28W	Lane	715	746	0	0.0	1.13	0.70	0.60	0.96	0.96	0.87
18S 29W	Lane	1,044	767	5	0.5	1.13	1.08	c/	1.67	1.36	1.31
18S 30W	Lane	3,149	2,784	240	7.6	1.02	0.59	0.48	1.17	1.13	0.88
18S 31W	Scott	0	0	0	0.0	1.06	c/	c/	c/	c/	1.06
18S 32W	Scott	5,912	4,911	20	0.3	1.47	1.17	0.94	1.22	1.20	1.20
18S 33W	Scott	7,129	5,313	660	9.3	1.58	1.31	0.75	1.39	1.34	1.27
18S 34W	Scott	1,550	1,886	10	0.7	1.14	0.73	0.66	0.74	0.82	0.82
18S 35W	Wichita	5,146	6,210	146	2.8	1.08	0.98	0.58	0.80	0.83	0.85
18S 36W	Wichita	4,511	4,275	39	0.9	1.23	1.08	0.67	1.17	1.06	1.04
18S 37W	Wichita	6,591	5,945	381	5.8	1.32	1.02	0.68	1.13	1.11	1.05
18S 38W	Wichita	3,663	5,266	4	0.1	1.10	1.02	0.76	1.08	0.70	0.93
18S 39W	Greeley	0	0	0	0.0	c/	c/	c/	c/	c/	c/
19S 03W	McPherson	733	1,051	11	1.5	0.95	0.30	0.44	0.92	0.70	0.66
19S 04W	McPherson	2,141	2,806	5	0.2	1.11	0.27	0.47	0.99	0.76	0.72
19S 11W	Barton	528	790	0	0.0	1.18	c/	0.25	1.25	0.67	0.67
19S 13W	Barton	2,445	2,475	258	10.6	1.34	0.41	0.53	1.17	0.99	0.89
19S 14W	Barton	4,682	5,845	78	1.7	1.36	0.45	0.49	1.20	0.80	0.86
19S 22W	Ness	0	0	0	0.0	0.94	c/	c/	c/	c/	0.94
19S 31W	Scott	1,593	781	94	5.9	c/	c/	c/	1.76	2.04	1.90
19S 32W	Scott	1,993	1,443	12	0.6	1.99	1.52	1.07	1.07	1.38	1.41
19S 33W	Scott	5,771	4,876	63	1.1	1.46	1.51	0.85	1.24	1.18	1.25
19S 35W	Wichita	842	964	0	0.0	1.28	0.88	0.61	0.87	0.87	0.90
19S 37W	Wichita	663	677	7	1.1	1.04	0.83	0.37	0.78	0.98	0.80
20S 17E	Multi-County	0	0	0	0.0	c/	c/	c/	0.73	c/	0.73
20S 02E	Marion	0	0	0	0.0	c/	c/	c/	c/	c/	c/
20S 01W	McPherson	1,009	1,315	10	1.0	1.22	0.55	0.41	0.91	0.77	0.77
20S 03W	McPherson	1,905	2,157	17	0.9	1.20	0.35	0.54	1.19	0.88	0.83
20S 04W	McPherson	3,474	3,494	17	0.5	1.27	0.45	0.75	1.20	0.99	0.93
20S 08W	Rice	4,483	4,551	125	2.8	1.31	0.48	0.49	1.21	0.99	0.90
20S 09W	Rice	1,827	2,036	3	0.2	1.43	0.48	0.51	1.11	0.90	0.87
20S 11W	Barton	2,738	3,280	4	0.2	1.21	0.53	0.56	1.05	0.83	0.84
20S 12W	Barton	3,971	4,181	43	1.1	1.38	0.83	0.64	1.34	0.95	1.03
20S 13W	Barton	5,059	5,101	60	1.2	1.25	0.66	0.54	1.16	0.99	0.92
20S 14W	Barton	9,653	8,512	164	1.7	1.52	0.72	0.65	1.44	1.13	1.09
20S 15W	Barton	2,473	2,486	84	3.4	1.38	0.59	0.63	1.33	0.99	0.98
20S 22W	Ness	1,602	1,524	31	1.9	1.62	0.89	0.74	1.09	1.05	1.08
20S 23W	Ness	2,540	2,880	47	1.9	2.20	0.98	0.23	1.66	0.88	1.19

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
20S 32W	Scott	2,737	2,460	23	0.8	1.35	1.09	0.88	1.00	1.11	1.09
20S 33W	Scott	6,034	6,623	18	0.3	1.30	1.14	0.83	1.08	0.91	1.05
20S 34W	Scott	568	937	0	0.0	1.72	1.02	0.60	1.04	0.61	1.00
20S 38W	Wichita	823	910	0	0.0	1.14	0.95	0.72	1.09	0.90	0.96
21S 02W	McPherson	1,033	1,506	23	2.2	0.98	0.56	0.28	0.65	0.69	0.63
21S 03W	McPherson	5,061	6,101	20	0.4	1.29	0.43	0.53	0.98	0.83	0.81
21S 04W	McPherson	2,087	2,854	0	0.0	1.09	0.41	0.39	0.93	0.73	0.71
21S 07W	Rice	1,402	2,118	0	0.0	1.26	0.60	0.46	1.07	0.66	0.81
21S 08W	Rice	4,331	5,001	21	0.5	1.33	0.48	0.46	1.23	0.87	0.87
21S 09W	Rice	3,875	4,406	0	0.0	1.23	0.56	0.59	1.38	0.88	0.93
21S 10W	Rice	736	777	0	0.0	1.51	0.72	0.66	1.20	0.95	1.01
21S 12W	Stafford	5,418	4,638	27	0.5	1.61	0.91	0.77	1.43	1.17	1.18
21S 13W	Stafford	4,512	4,143	28	0.6	1.38	1.06	0.67	1.16	1.09	1.07
21S 14W	Stafford	7,781	6,949	71	0.9	1.35	0.70	0.55	1.32	1.12	1.01
21S 15W	Pawnee	9,644	7,887	816	8.5	1.45	0.79	0.58	1.34	1.22	1.08
21S 16W	Pawnee	3,479	3,318	273	7.8	1.37	0.44	0.39	1.26	1.05	0.90
21S 17W	Pawnee	362	642	0	0.0	c/	c/	c/	c/	0.56	0.56
21S 18W	Pawnee	1,876	2,104	15	0.8	1.45	0.61	0.31	1.18	0.89	0.89
21S 19W	Pawnee	4,873	4,878	99	2.0	1.70	0.54	0.38	1.25	1.00	0.97
21S 20W	Pawnee	5,767	5,401	113	2.0	1.34	0.51	0.44	1.27	1.07	0.93
21S 21W	Hodgeman	7,053	5,656	832	11.8	1.56	0.59	0.50	1.13	1.25	1.01
21S 22W	Hodgeman	2,031	1,690	80	3.9	1.75	0.71	0.57	1.05	1.20	1.06
21S 24W	Hodgeman	1,327	982	171	12.9	1.26	0.56	0.38	1.32	1.35	0.97
21S 25W	Hodgeman	686	688	53	7.7	1.50	c/	c/	1.21	1.00	1.24
21S 32W	Finney	5,325	6,714	3	0.1	1.52	0.97	0.93	1.07	0.79	1.06
21S 33W	Finney	8,082	5,829	376	4.7	1.81	1.11	1.08	1.38	1.39	1.35
21S 34W	Finney	634	685	0	0.0	c/	c/	c/	c/	0.93	0.93
22S 02W	Harvey	906	1,009	26	2.8	1.02	0.58	0.44	0.97	0.90	0.78
22S 03W	Harvey	4,809	5,088	70	1.5	1.34	0.62	0.51	1.04	0.95	0.89
22S 04W	Reno	2,223	2,195	36	1.6	1.24	0.61	0.63	1.12	1.01	0.92
22S 06W	Reno	733	1,092	9	1.2	1.08	0.58	0.45	0.68	0.67	0.69
22S 07W	Reno	992	1,389	16	1.6	1.06	0.60	0.42	0.85	0.71	0.73
22S 13W	Stafford	4,915	4,399	376	7.7	1.32	0.71	0.51	1.29	1.12	0.99
22S 14W	Stafford	7,246	7,306	45	0.6	1.49	0.85	0.59	1.28	0.99	1.04
22S 15W	Pawnee	9,286	8,865	208	2.2	1.34	0.73	0.50	1.25	1.05	0.97
22S 16W	Pawnee	6,454	7,377	125	1.9	1.29	0.71	0.51	1.23	0.87	0.92
22S 17W	Pawnee	4,929	6,104	111	2.3	1.68	0.71	0.58	1.30	0.81	1.02
22S 18W	Pawnee	3,903	4,304	135	3.4	1.39	0.62	0.41	0.99	0.91	0.86

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
22S 19W	Pawnee	3,561	6,586	0	0.0	1.38	0.37	0.21	0.88	0.54	0.68
22S 21W	Hodgeman	4,876	3,755	208	4.3	1.68	0.94	0.57	1.44	1.30	1.19
22S 22W	Hodgeman	5,815	4,770	437	7.5	1.61	1.13	0.75	1.31	1.22	1.20
22S 30W	Finney	1,428	1,697	0	0.0	1.19	0.64	0.59	1.12	0.84	0.88
22S 31W	Finney	8,207	6,503	93	1.1	1.44	0.96	0.83	1.33	1.26	1.16
22S 32W	Finney	5,028	5,664	110	2.2	1.17	1.00	0.82	0.97	0.89	0.97
22S 33W	Finney	13,462	10,980	138	1.0	1.41	0.88	0.79	1.21	1.23	1.10
22S 34W	Finney	8,117	7,301	170	2.1	1.24	0.92	0.69	0.97	1.11	0.99
22S 35W	Kearny	1,510	1,086	0	0.0	1.47	0.99	0.87	0.81	1.39	1.11
22S 38W	Kearny	735	734	6	0.8	1.09	c/	0.86	c/	1.00	0.98
23S 02W	Harvey	2,635	3,700	10	0.4	1.19	0.62	0.50	1.04	0.71	0.81
23S 03W	Harvey	2,121	2,258	0	0.0	1.26	0.77	0.69	1.19	0.94	0.97
23S 10W	Reno	433	650	0	0.0	1.04	c/	0.32	0.86	0.67	0.58
23S 11W	Stafford	0	0	0	0.0	0.73	c/	0.28	0.63	c/	0.55
23S 12W	Stafford	1,768	1,882	69	3.9	1.61	0.74	0.79	1.31	0.94	1.08
23S 13W	Stafford	4,855	4,408	7	0.1	1.53	0.79	0.68	1.32	1.10	1.08
23S 14W	Stafford	5,012	5,045	26	0.5	1.24	0.74	0.62	1.29	0.99	0.98
23S 15W	Pawnee	5,507	5,715	0	0.0	1.22	0.64	0.61	1.27	0.96	0.94
23S 16W	Pawnee	6,719	6,699	47	0.7	1.32	0.73	0.51	1.25	1.00	0.96
23S 17W	Pawnee	4,644	5,558	151	3.3	1.33	0.66	0.46	1.18	0.84	0.89
23S 18W	Pawnee	559	652	0	0.0	1.28	c/	c/	c/	0.86	1.07
23S 22W	Hodgeman	2,372	1,653	82	3.5	2.02	1.13	0.89	1.49	1.43	1.39
23S 23W	Hodgeman	1,139	1,307	21	1.8	1.43	0.73	0.53	1.03	0.87	0.92
23S 26W	Hodgeman	1,020	889	37	3.7	1.33	1.17	1.36	1.21	1.15	1.24
23S 29W	Finney	751	754	0	0.0	1.88	0.57	0.45	1.06	1.00	0.99
23S 30W	Finney	360	774	0	0.0	1.11	0.54	0.52	0.93	0.47	0.71
23S 31W	Finney	6,002	5,992	378	6.3	1.37	0.82	0.71	1.11	1.00	1.15
23S 32W	Finney	13,687	11,675	168	1.2	1.55	0.87	1.01	1.33	1.17	1.19
23S 33W	Finney	19,477	18,931	388	2.0	1.65	0.91	0.76	1.31	1.03	1.13
23S 34W	Finney	21,919	21,644	584	2.7	1.73	0.90	0.63	1.16	1.01	1.09
23S 35W	Kearny	16,901	15,605	102	0.6	1.79	1.12	0.96	1.33	1.08	1.26
23S 36W	Kearny	4,031	5,075	42	1.0	1.00	0.80	0.68	0.89	0.79	0.83
23S 37W	Kearny	3,519	3,978	0	0.0	0.90	0.65	0.67	0.80	0.88	0.78
23S 38W	Kearny	1,189	1,140	0	0.0	0.97	0.89	0.94	1.00	1.04	0.97
23S 41W	Hamilton	2,134	2,208	35	1.6	2.32	1.02	0.94	1.28	0.97	1.31
23S 42W	Hamilton	4,902	2,614	761	15.5	2.54	2.11	1.56	1.73	1.88	1.96
23S 43W	Hamilton	1,205	852	0	0.0	1.47	1.07	0.93	c/	1.41	1.22
24S 01W	Harvey	1,760	2,249	5	0.3	1.04	0.61	0.49	1.05	0.78	0.79

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
24S 02W	Harvey	5,927	6,218	63	1.1	1.19	0.83	0.86	1.17	0.95	1.00
24S 03W	Harvey	6,466	6,816	319	4.9	1.21	0.75	0.75	1.07	0.95	0.95
24S 04W	Reno	3,148	3,371	23	0.7	0.98	0.49	0.60	1.04	0.93	0.81
24S 05W	Reno	2,010	2,516	18	0.9	0.92	0.56	0.54	0.81	0.80	0.73
24S 06W	Reno	1,075	1,171	0	0.0	0.95	0.51	0.67	0.90	0.92	0.79
24S 07W	Reno	1,191	1,408	0	0.0	0.82	0.41	0.40	0.93	0.85	0.68
24S 10W	Reno	1,319	1,596	31	2.4	1.36	0.48	0.55	0.88	0.83	0.82
24S 12W	Stafford	2,810	2,564	43	1.5	1.27	0.71	0.61	1.50	1.10	1.04
24S 13W	Stafford	6,178	5,809	315	5.1	1.43	0.86	0.73	1.42	1.06	1.10
24S 14W	Stafford	5,067	4,747	128	2.5	1.33	0.78	0.71	1.41	1.07	1.06
24S 15W	Stafford	3,168	3,427	76	2.4	1.25	0.71	0.69	1.40	0.92	0.99
24S 16W	Edwards	6,707	6,865	34	0.5	1.34	0.61	0.56	1.29	0.98	0.96
24S 17W	Edwards	8,274	8,534	24	0.3	1.43	0.78	0.66	1.31	0.97	1.03
24S 18W	Edwards	6,827	7,029	79	1.2	1.39	0.82	0.69	1.35	0.97	1.04
24S 24W	Hodgeman	3,542	2,820	126	3.6	1.31	0.81	0.73	1.03	1.26	1.03
24S 25W	Hodgeman	2,075	2,297	0	0.0	1.58	0.76	0.40	1.09	0.90	0.95
24S 27W	Gray	3,552	3,100	5	0.1	1.58	0.89	1.21	1.30	1.15	1.23
24S 28W	Gray	6,334	7,327	0	0.0	1.19	0.84	0.56	0.97	0.86	0.88
24S 29W	Gray	6,482	6,025	39	0.6	1.55	0.86	0.63	1.09	1.08	1.04
24S 30W	Gray	7,686	9,403	0	0.0	1.18	0.80	0.60	0.80	0.82	0.84
24S 31W	Finney	7,794	7,886	0	0.0	1.50	1.01	0.87	1.21	0.99	1.12
24S 32W	Finney	8,923	6,828	535	6.0	1.68	1.34	1.27	1.49	1.31	1.42
24S 33W	Finney	12,553	9,148	324	2.6	1.76	1.32	1.32	1.69	1.37	1.49
24S 34W	Finney	19,978	13,267	862	4.3	1.57	1.57	1.50	1.78	1.51	1.59
24S 35W	Kearny	13,984	13,051	228	1.6	1.73	1.31	1.16	1.50	1.07	1.35
24S 36W	Kearny	6,679	5,935	302	4.5	1.43	0.97	0.91	1.46	1.13	1.18
24S 37W	Kearny	648	1,050	0	0.0	1.25	0.58	0.73	0.82	0.62	0.80
24S 39W	Hamilton	4,025	3,126	586	14.6	1.40	1.25	1.28	1.57	1.29	1.36
24S 40W	Hamilton	2,835	2,293	11	0.4	1.73	1.29	1.30	1.32	1.24	1.38
24S 41W	Hamilton	3,286	1,983	492	15.0	1.99	1.37	1.83	1.78	1.66	1.73
24S 43W	Hamilton	1,418	920	5	0.3	1.90	1.70	1.33	1.56	1.54	1.61
25S 23E	Bourbon	0	0	0	0.0	0.25	c/	c/	c/	c/	0.25
25S 01W	Sedgwick	4,809	6,013	17	0.4	1.18	0.67	0.77	1.06	0.80	0.90
25S 02W	Sedgwick	6,135	6,308	94	1.5	1.17	0.60	0.83	1.12	0.97	0.94
25S 03W	Sedgwick	4,883	6,214	0	0.0	1.26	0.72	0.71	0.94	0.79	0.88
25S 04W	Reno	1,458	1,786	0	0.0	1.12	0.74	0.67	0.92	0.82	0.85
25S 08W	Reno	901	1,076	0	0.0	1.19	0.59	0.77	1.18	0.84	0.91
25S 09W	Reno	1,597	2,290	0	0.0	1.47	0.78	0.76	1.36	0.70	1.01

Table 14 (continued)

SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
25S 10W	Reno	2,195	2,615	0	0.0	1.21	0.51	0.64	1.06	0.84	0.85
25S 11W	Stafford	2,370	2,588	0	0.0	1.23	0.57	0.56	1.10	0.92	0.88
25S 12W	Stafford	3,158	2,941	52	1.7	1.36	0.82	0.66	1.31	1.07	1.04
25S 13W	Stafford	6,256	5,937	102	1.6	1.40	0.83	0.66	1.39	1.05	1.07
25S 14W	Stafford	6,460	5,186	24	0.4	1.43	0.90	0.81	1.52	1.25	1.18
25S 15W	Stafford	4,389	3,242	154	3.5	1.47	1.00	0.96	1.51	1.35	1.26
25S 16W	Edwards	8,874	8,170	18	0.2	1.32	0.78	0.80	1.29	1.09	1.06
25S 17W	Edwards	10,020	9,263	151	1.5	1.44	0.87	0.74	1.19	1.08	1.06
25S 18W	Edwards	10,904	10,087	125	1.1	1.42	0.83	0.76	1.43	1.08	1.10
25S 19W	Edwards	5,156	3,851	376	7.3	1.44	0.90	0.82	1.41	1.34	1.18
25S 20W	Edwards	2,139	1,829	161	7.5	1.41	0.72	0.70	1.43	1.17	1.09
25S 22W	Ford	0	0	0	0.0	1.38	c/	c/	1.23	c/	1.31
25S 23W	Ford	1,125	1,142	0	0.0	1.36	0.96	0.68	1.09	0.99	1.02
25S 25W	Ford	879	697	69	7.9	0.85	0.50	0.44	0.75	1.26	0.76
25S 26W	Ford	1,610	1,854	19	1.2	1.13	0.76	0.56	0.95	0.87	0.85
25S 27W	Gray	2,446	3,080	0	0.0	1.57	1.01	0.66	0.95	0.79	1.00
25S 28W	Gray	4,521	6,210	0	0.0	1.37	1.05	0.60	0.85	0.73	0.92
25S 29W	Gray	10,476	7,961	498	4.8	1.85	1.57	1.02	1.40	1.32	1.43
25S 30W	Gray	11,907	8,470	409	3.4	1.91	1.45	1.22	1.53	1.41	1.50
25S 31W	Finney	10,325	6,891	357	3.5	1.59	1.21	1.47	1.67	1.50	1.49
25S 32W	Finney	17,334	10,820	767	4.4	1.82	1.42	1.52	1.77	1.60	1.63
25S 33W	Finney	19,631	12,956	461	2.3	1.79	1.31	1.43	1.78	1.52	1.57
25S 34W	Finney	16,351	10,015	414	2.5	1.67	1.53	1.60	1.86	1.63	1.66
25S 35W	Kearny	26,560	15,498	712	2.7	1.83	1.78	1.70	1.79	1.71	1.76
25S 36W	Kearny	16,098	10,300	947	5.9	1.99	1.52	1.52	1.68	1.56	1.65
25S 37W	Kearny	884	710	0	0.0	1.78	1.70	1.58	1.41	1.25	1.54
25S 38W	Kearny	0	0	0	0.0	c/	c/	1.68	c/	c/	1.68
25S 43W	Hamilton	3,715	2,160	299	8.1	1.59	1.47	1.24	1.48	1.72	1.50
26S 01W	Sedgwick	2,277	2,650	17	0.7	1.15	0.61	0.61	0.94	0.86	0.83
26S 02W	Sedgwick	3,840	4,559	35	0.9	1.14	0.82	0.87	1.12	0.84	0.96
26S 03W	Sedgwick	1,183	1,318	0	0.0	1.19	0.70	0.86	1.06	0.90	0.94
26S 06W	Reno	2,068	2,058	50	2.4	1.22	0.95	0.95	1.32	1.00	1.09
26S 07W	Reno	2,536	2,090	49	1.9	1.27	1.00	1.03	1.10	1.21	1.12
26S 09W	Reno	1,259	1,261	0	0.0	1.16	0.66	0.77	1.24	1.00	0.97
26S 10W	Reno	2,159	2,056	21	1.0	1.46	0.91	0.87	1.12	1.05	1.08
26S 11W	Pratt	1,786	1,676	13	0.7	1.36	0.89	0.93	1.22	1.07	1.09
26S 12W	Pratt	3,125	2,750	35	1.1	1.36	0.81	0.75	1.41	1.14	1.09
26S 13W	Pratt	7,271	5,720	204	2.8	1.35	0.90	1.11	1.59	1.27	1.24

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
26S 14W	Pratt	11,369	9,196	282	2.5	1.31	0.91	0.99	1.42	1.24	1.17
26S 15W	Pratt	8,328	6,476	206	2.5	1.51	0.91	0.97	1.58	1.29	1.25
26S 16W	Edwards	10,312	8,073	111	1.1	1.45	0.85	1.04	1.53	1.28	1.23
26S 17W	Edwards	8,992	7,059	319	3.5	1.55	0.91	1.03	1.59	1.27	1.27
26S 18W	Edwards	7,744	6,567	198	2.6	1.41	0.87	0.79	1.36	1.18	1.12
26S 19W	Edwards	10,265	8,828	185	1.8	1.50	0.99	0.92	1.36	1.16	1.19
26S 20W	Edwards	7,840	6,162	680	8.7	1.33	0.98	1.07	1.16	1.27	1.16
26S 21W	Ford	1,161	920	22	1.9	1.26	0.84	1.09	1.30	1.26	1.15
26S 22W	Ford	656	818	0	0.0	1.71	0.93	c/	1.34	0.80	1.20
26S 23W	Ford	990	972	20	2.0	1.88	0.72	0.95	0.98	1.02	1.11
26S 24W	Ford	719	930	8	1.1	0.88	0.81	0.55	0.84	0.77	0.77
26S 25W	Ford	3,630	3,424	65	1.8	1.50	1.04	0.98	1.34	1.06	1.18
26S 26W	Ford	11,288	7,636	108	1.0	1.87	1.44	1.27	1.62	1.48	1.54
26S 27W	Gray	13,940	10,160	79	0.6	1.76	1.36	1.37	1.47	1.37	1.47
26S 28W	Gray	12,518	9,195	316	2.5	1.55	1.12	1.27	1.45	1.36	1.35
26S 29W	Gray	19,538	14,278	290	1.5	1.65	1.31	1.18	1.37	1.37	1.38
26S 30W	Gray	21,450	15,076	274	1.3	1.88	1.42	1.21	1.58	1.42	1.50
26S 31W	Finney	19,231	14,510	391	2.0	1.72	1.30	1.14	1.43	1.33	1.38
26S 32W	Finney	20,698	15,380	511	2.5	1.58	1.26	1.23	1.43	1.35	1.37
26S 33W	Finney	22,600	17,357	419	1.9	1.75	1.30	1.20	1.48	1.30	1.41
26S 34W	Finney	20,072	11,893	454	2.3	1.74	1.58	1.56	1.89	1.69	1.69
26S 35W	Kearny	14,976	8,625	837	5.6	2.27	1.95	1.67	2.06	1.74	1.94
26S 36W	Kearny	14,367	8,083	732	5.1	1.68	1.68	1.76	1.85	1.78	1.75
26S 37W	Kearny	5,065	4,031	7	0.1	1.87	1.57	1.29	1.66	1.26	1.53
26S 40W	Hamilton	387	720	0	0.0	0.76	0.48	c/	c/	0.54	0.59
26S 41W	Hamilton	1,409	1,103	41	2.9	1.54	1.31	0.78	1.52	1.28	1.29
26S 42W	Hamilton	10,268	6,727	554	5.4	1.56	1.37	1.20	1.46	1.53	1.42
26S 43W	Hamilton	6,583	4,550	748	11.4	1.58	1.24	1.27	1.11	1.45	1.33
27S 01W	Sedgwick	0	0	0	0.0	1.36	c/	0.82	2.49	c/	1.56
27S 08W	Kingman	3,698	3,594	16	0.4	1.40	1.08	1.06	1.28	1.03	1.17
27S 09W	Kingman	1,914	1,887	40	2.1	1.50	0.96	1.11	1.27	1.01	1.17
27S 10W	Kingman	2,298	1,920	27	1.2	1.53	0.94	1.08	1.34	1.20	1.22
27S 11W	Pratt	1,969	1,809	130	6.6	1.55	0.95	1.06	1.35	1.09	1.20
27S 12W	Pratt	1,042	930	14	1.3	1.54	1.09	1.07	1.54	1.12	1.27
27S 13W	Pratt	3,736	3,108	161	4.3	1.25	0.76	0.86	1.28	1.20	1.07
27S 14W	Pratt	7,880	7,258	90	1.1	1.26	0.95	0.97	1.40	1.09	1.13
27S 15W	Pratt	7,743	7,052	132	1.7	1.25	0.90	0.91	1.42	1.10	1.12
27S 16W	Kiowa	9,732	7,963	202	2.1	1.51	0.92	1.13	1.56	1.22	1.27

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
27S 17W	Kiowa	5,447	4,377	118	2.2	1.54	1.05	1.26	1.41	1.24	1.30
27S 18W	Kiowa	5,924	4,825	90	1.5	1.75	1.19	1.09	1.53	1.23	1.36
27S 19W	Kiowa	10,950	9,121	252	2.3	1.61	1.05	1.04	1.39	1.20	1.26
27S 20W	Kiowa	3,261	3,486	0	0.0	1.42	0.90	0.88	1.11	0.94	1.05
27S 21W	Ford	765	721	0	0.0	1.08	0.77	0.70	0.71	1.06	0.86
27S 22W	Ford	3,815	4,098	0	0.0	1.42	0.90	0.81	1.11	0.93	1.03
27S 23W	Ford	3,450	2,812	24	0.7	1.43	1.04	1.47	1.40	1.23	1.31
27S 24W	Ford	9,703	8,058	270	2.8	1.76	0.89	0.98	1.23	1.20	1.21
27S 25W	Ford	7,293	6,583	60	0.8	1.27	0.69	0.82	1.10	1.11	1.00
27S 26W	Ford	6,892	6,043	95	1.4	1.56	1.05	1.00	1.21	1.14	1.19
27S 27W	Gray	7,708	6,818	187	2.4	1.53	1.06	1.06	1.30	1.13	1.22
27S 28W	Gray	14,354	12,301	127	0.9	1.34	1.07	1.10	1.21	1.17	1.18
27S 29W	Gray	16,573	12,741	342	2.1	1.50	1.07	1.13	1.29	1.30	1.26
27S 30W	Gray	18,978	13,245	574	3.0	1.73	1.39	1.30	1.50	1.43	1.47
27S 31W	Haskell	28,395	17,888	1,507	5.3	1.87	1.61	1.60	1.75	1.59	1.68
27S 32W	Haskell	24,308	17,056	532	2.2	1.65	1.39	1.23	1.58	1.43	1.46
27S 33W	Haskell	23,686	14,028	780	3.3	1.86	1.53	1.43	1.83	1.69	1.67
27S 34W	Haskell	18,298	11,741	513	2.8	1.57	1.47	1.35	1.66	1.56	1.52
27S 35W	Grant	24,068	14,703	560	2.3	2.02	1.80	1.49	1.66	1.64	1.72
27S 36W	Grant	22,017	13,830	396	1.8	1.85	1.68	1.52	1.70	1.59	1.67
27S 37W	Grant	14,046	12,737	0	0.0	1.41	1.36	1.02	1.24	1.10	1.23
27S 38W	Grant	8,208	9,589	9	0.1	1.39	1.20	0.88	1.18	0.86	1.10
27S 39W	Stanton	12,471	8,982	491	3.9	1.43	1.40	1.34	1.20	1.39	1.35
27S 40W	Stanton	9,574	7,301	158	1.7	1.48	1.64	1.05	1.27	1.31	1.35
27S 41W	Stanton	9,533	7,278	74	0.8	1.38	1.38	1.16	1.38	1.31	1.32
27S 42W	Stanton	9,598	7,082	149	1.6	1.57	1.35	1.27	1.53	1.36	1.42
27S 43W	Stanton	4,436	4,442	69	1.6	1.44	1.18	0.98	1.64	1.00	1.25
28S 01W	Sedgwick	1,243	1,307	0	0.0	1.29	0.98	1.00	1.16	0.95	1.08
28S 02W	Sedgwick	0	0	0	0.0	1.15	0.57	0.78	0.71	c/	0.80
28S 09W	Kingman	808	876	0	0.0	1.60	0.66	0.93	0.99	0.92	1.02
28S 11W	Pratt	4,559	4,360	5	0.1	1.47	0.83	1.04	1.41	1.05	1.16
28S 12W	Pratt	1,389	1,678	0	0.0	1.25	0.75	0.77	1.01	0.83	0.92
28S 13W	Pratt	1,491	1,410	99	6.6	1.39	0.68	0.86	1.74	1.06	1.15
28S 14W	Pratt	2,361	1,787	26	1.1	1.37	0.82	0.93	1.50	1.32	1.19
28S 15W	Pratt	4,575	3,465	261	5.7	1.41	0.89	0.97	1.56	1.32	1.23
28S 16W	Kiowa	3,300	2,831	26	0.8	1.44	0.89	0.89	1.43	1.17	1.16
28S 17W	Kiowa	3,724	3,605	36	1.0	1.53	0.80	1.02	1.31	1.03	1.14
28S 18W	Kiowa	2,633	2,222	77	2.9	1.32	1.02	1.02	1.20	1.19	1.15

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
28S 19W	Kiowa	4,256	4,156	10	0.2	1.44	0.94	1.09	1.27	1.02	1.15
28S 20W	Kiowa	2,913	2,819	0	0.0	1.58	0.80	1.01	1.17	1.03	1.12
28S 21W	Ford	4,623	4,239	131	2.8	1.44	0.93	0.89	1.11	1.09	1.09
28S 22W	Ford	3,995	4,500	18	0.5	1.37	0.89	0.94	1.15	0.89	1.05
28S 23W	Ford	3,967	3,423	119	3.0	1.46	1.10	1.10	1.14	1.16	1.19
28S 24W	Ford	5,848	5,204	13	0.2	1.62	1.04	1.04	1.19	1.12	1.20
28S 25W	Ford	3,519	3,032	21	0.6	1.73	1.09	0.99	1.11	1.16	1.22
28S 26W	Ford	3,272	2,503	49	1.5	1.97	1.56	1.08	1.35	1.31	1.45
28S 27W	Gray	1,722	1,140	112	6.5	2.28	1.75	1.80	1.86	1.51	1.84
28S 28W	Gray	1,597	1,920	0	0.0	1.16	1.03	0.96	1.04	0.83	1.00
28S 29W	Gray	5,359	4,746	23	0.4	1.40	0.93	0.94	1.19	1.13	1.12
28S 30W	Gray	22,412	13,518	1,096	4.9	1.74	1.36	1.40	1.61	1.66	1.55
28S 31W	Haskell	22,237	14,024	970	4.4	2.01	1.69	1.55	1.73	1.59	1.71
28S 32W	Haskell	17,088	12,380	212	1.2	1.62	1.49	1.35	1.48	1.38	1.46
28S 33W	Haskell	25,239	16,032	1,206	4.8	1.72	1.49	1.32	1.58	1.57	1.54
28S 34W	Haskell	7,168	7,314	117	1.6	1.62	1.31	1.03	1.22	0.98	1.23
28S 35W	Grant	13,426	9,783	454	3.4	1.54	1.45	1.02	1.44	1.37	1.36
28S 36W	Grant	6,664	4,598	112	1.7	1.67	1.47	1.37	1.70	1.45	1.53
28S 37W	Grant	5,397	4,139	0	0.0	1.54	1.28	1.10	1.32	1.30	1.31
28S 38W	Grant	16,156	11,982	607	3.8	1.48	1.31	0.86	1.35	1.35	1.27
28S 39W	Stanton	12,054	10,367	135	1.1	1.60	1.40	1.23	1.25	1.16	1.33
28S 40W	Stanton	23,818	16,099	723	3.0	1.73	1.65	1.49	1.55	1.48	1.58
28S 41W	Stanton	11,266	9,801	111	1.0	1.64	1.43	1.08	1.25	1.15	1.31
28S 42W	Stanton	6,366	6,411	69	1.1	1.40	1.24	0.90	1.27	0.99	1.16
28S 43W	Stanton	477	920	0	0.0	1.19	0.86	1.23	0.73	0.52	0.91
29S 04E	Butler	0	0	0	0.0	c/	c/	c/	0.90	c/	0.90
29S 01E	Sedgwick	2,639	3,793	1	0.0	1.39	0.99	0.98	1.15	0.70	1.04
29S 01W	Sedgwick	1,645	1,813	43	2.6	1.38	0.95	1.06	1.22	0.91	1.10
29S 07W	Kingman	1,194	1,091	11	0.9	1.41	1.15	1.13	1.40	1.09	1.24
29S 10W	Kingman	0	0	0	0.0	1.32	0.80	1.06	c/	c/	1.06
29S 11W	Pratt	4,121	4,063	122	3.0	1.46	0.99	1.05	1.36	1.01	1.17
29S 12W	Pratt	3,012	3,205	45	1.5	1.14	0.79	0.91	1.34	0.94	1.02
29S 13W	Pratt	1,386	1,252	109	7.9	1.89	1.28	1.31	1.51	1.11	1.42
29S 14W	Pratt	3,679	2,750	133	3.6	1.46	0.76	0.87	1.52	1.34	1.19
29S 15W	Pratt	1,483	1,346	33	2.2	1.46	0.68	0.81	1.22	1.10	1.05
29S 17W	Kiowa	0	0	0	0.0	1.46	c/	c/	c/	c/	1.46
29S 18W	Kiowa	1,327	1,033	41	3.1	1.53	0.73	1.17	1.05	1.28	1.15
29S 19W	Kiowa	1,257	1,046	0	0.0	1.41	0.81	1.01	1.38	1.20	1.16

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
29S 21W	Ford	885	773	0	0.0	1.59	0.91	1.05	1.56	1.14	1.25
29S 22W	Ford	4,246	4,512	6	0.1	1.61	0.96	0.89	1.21	0.94	1.12
29S 23W	Ford	2,951	2,599	60	2.0	1.69	0.93	0.74	0.80	1.14	1.06
29S 24W	Ford	1,609	2,769	0	0.0	1.94	1.09	1.31	1.53	0.58	1.29
29S 25W	Ford	3,645	2,490	107	2.9	1.66	1.24	1.13	1.06	1.46	1.31
29S 26W	Ford	8,038	6,259	405	5.0	1.44	1.33	1.20	1.32	1.28	1.31
29S 27W	Gray	3,699	3,711	0	0.0	1.55	1.15	1.10	0.98	1.00	1.16
29S 28W	Gray	3,298	2,702	108	3.3	1.59	1.38	1.20	1.35	1.22	1.35
29S 29W	Gray	11,463	6,216	1,182	10.3	1.87	1.43	1.44	1.67	1.84	1.65
29S 30W	Gray	20,632	11,905	1,304	6.3	1.82	1.36	1.33	1.61	1.73	1.57
29S 31W	Haskell	23,107	13,789	1,109	4.8	1.94	1.53	1.42	1.61	1.68	1.64
29S 32W	Haskell	17,153	11,248	762	4.4	1.65	1.35	0.98	1.35	1.52	1.37
29S 33W	Haskell	21,326	15,509	672	3.2	1.65	1.49	1.03	1.33	1.38	1.38
29S 34W	Haskell	18,379	12,576	400	2.2	2.55	1.83	1.40	1.67	1.46	1.78
29S 35W	Grant	9,981	6,608	620	6.2	1.76	1.84	1.12	1.48	1.51	1.54
29S 36W	Grant	2,940	2,558	28	1.0	1.36	1.09	1.21	1.34	1.15	1.23
29S 37W	Grant	9,155	7,057	356	3.9	1.74	1.39	1.12	1.30	1.30	1.37
29S 38W	Grant	12,800	9,360	326	2.5	1.62	1.25	1.18	1.29	1.37	1.34
29S 39W	Stanton	19,973	12,719	737	3.7	1.76	1.54	1.43	1.63	1.57	1.59
29S 40W	Stanton	19,649	12,949	972	4.9	1.51	1.62	1.43	1.61	1.52	1.54
29S 41W	Stanton	3,853	4,217	0	0.0	1.56	1.45	1.06	1.20	0.91	1.24
29S 42W	Stanton	2,188	1,414	265	12.1	1.83	1.43	1.06	1.39	1.55	1.45
30S 22E	Crawford	231	782	0	0.0	0.39	c/	0.30	0.27	0.30	0.32
30S 01E	Sumner	1,178	1,832	0	0.0	1.38	1.07	0.90	1.11	0.64	1.02
30S 04W	Sumner	609	755	0	0.0	1.31	0.98	c/	c/	0.81	1.03
30S 10W	Kingman	1,826	1,872	0	0.0	1.46	0.65	0.84	1.19	0.98	1.02
30S 11W	Barber	1,573	1,579	29	1.9	1.19	0.90	0.95	1.42	1.00	1.09
30S 22W	Clark	640	829	0	0.0	1.64	0.47	c/	c/	0.77	0.96
30S 24W	Clark	674	800	0	0.0	1.18	c/	0.69	0.74	0.84	0.86
30S 25W	Clark	0	0	0	0.0	0.91	0.58	c/	1.00	c/	0.83
30S 26W	Meade	7,429	5,913	124	1.7	1.63	1.04	1.00	1.18	1.26	1.22
30S 27W	Meade	13,150	10,039	253	1.9	1.80	1.26	1.25	1.35	1.31	1.39
30S 28W	Meade	11,894	7,812	204	1.7	1.73	1.38	1.37	1.40	1.52	1.48
30S 29W	Meade	19,175	11,403	853	4.4	1.75	1.37	1.43	1.57	1.68	1.56
30S 30W	Meade	23,066	14,439	653	2.8	1.91	1.49	1.44	1.64	1.60	1.62
30S 31W	Haskell	13,809	10,071	182	1.3	1.51	1.42	1.05	1.25	1.37	1.32
30S 32W	Haskell	25,014	17,595	600	2.4	1.64	1.37	1.16	1.38	1.42	1.39
30S 33W	Haskell	19,133	12,231	1,362	7.1	1.70	1.61	1.32	1.55	1.56	1.55

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
30S 34W	Haskell	15,977	9,754	740	4.6	2.02	1.71	1.33	1.59	1.64	1.66
30S 35W	Grant	8,746	5,654	655	7.5	2.08	1.81	1.30	1.42	1.55	1.63
30S 36W	Grant	5,248	4,691	0	0.0	1.94	1.65	0.90	0.86	1.12	1.29
30S 37W	Grant	14,345	10,343	671	4.7	1.42	1.30	1.01	1.41	1.39	1.31
30S 38W	Grant	15,672	10,013	527	3.4	1.73	1.46	1.19	1.58	1.57	1.51
30S 39W	Stanton	22,919	12,707	946	4.1	1.66	1.49	1.36	1.74	1.80	1.61
30S 40W	Stanton	8,805	7,087	73	0.8	1.45	1.38	1.21	1.24	1.24	1.30
30S 41W	Stanton	1,404	1,442	22	1.6	1.09	0.99	0.60	0.83	0.97	0.90
30S 43W	Stanton	2,240	2,381	45	2.0	1.33	1.39	1.07	1.26	0.94	1.20
31S 21E	Multi-County	0	0	0	0.0	c/	c/	c/	c/	c/	c/
31S 02E	Sumner	715	990	0	0.0	1.27	0.47	0.87	1.02	0.72	0.87
31S 04W	Sumner	501	802	0	0.0	1.03	c/	0.65	0.92	0.62	0.81
31S 18W	Comanche	2,534	2,077	17	0.7	1.32	1.06	1.08	1.28	1.22	1.19
31S 19W	Comanche	989	826	0	0.0	1.32	1.19	1.26	1.42	1.20	1.28
31S 26W	Meade	366	994	0	0.0	0.69	0.40	0.39	0.59	0.37	0.49
31S 27W	Meade	5,089	4,539	10	0.2	1.86	1.64	1.11	1.34	1.12	1.41
31S 28W	Meade	8,435	6,906	59	0.7	1.69	1.39	1.18	1.32	1.22	1.36
31S 29W	Meade	17,712	11,310	999	5.6	1.65	1.52	1.25	1.52	1.57	1.50
31S 30W	Meade	22,984	13,507	976	4.2	1.67	1.26	1.45	1.75	1.70	1.57
31S 31W	Seward	20,966	14,698	321	1.5	1.78	1.44	1.31	1.44	1.43	1.48
31S 32W	Seward	22,444	12,300	2,253	10.0	1.92	1.84	1.46	1.66	1.82	1.74
31S 33W	Seward	15,949	9,263	1,519	9.5	1.98	1.57	1.46	1.53	1.72	1.65
31S 34W	Seward	5,983	3,757	319	5.3	2.07	1.85	1.49	1.84	1.59	1.77
31S 35W	Stevens	15,226	10,928	280	1.8	1.85	1.66	1.14	1.51	1.39	1.51
31S 36W	Stevens	13,650	9,328	405	3.0	1.65	1.53	1.12	1.41	1.46	1.43
31S 37W	Stevens	24,363	14,848	1,004	4.1	1.81	1.85	1.34	1.54	1.64	1.64
31S 38W	Stevens	13,902	9,070	75	0.5	1.81	1.81	1.54	1.92	1.53	1.72
31S 39W	Multi-County	14,855	12,078	127	0.9	1.51	1.45	1.06	1.23	1.23	1.30
31S 40W	Morton	3,721	4,037	0	0.0	1.52	1.42	0.67	0.95	0.92	1.10
31S 42W	Morton	1,757	1,176	59	3.3	1.81	1.95	1.69	1.19	1.49	1.63
31S 43W	Morton	1,170	1,525	0	0.0	1.35	1.17	1.06	0.92	0.77	1.05
32S 15E	Montgomery	0	0	0	0.0	0.38	c/	c/	c/	c/	0.38
32S 06W	Harper	429	846	0	0.0	c/	c/	c/	0.82	0.51	0.67
32S 18W	Comanche	1,437	1,302	23	1.6	1.43	1.16	1.33	1.42	1.10	1.29
32S 20W	Comanche	889	944	0	0.0	1.26	1.09	1.09	1.16	0.94	1.11
32S 21W	Clark	0	0	0	0.0	1.79	0.90	0.76	1.98	c/	1.36
32S 28W	Meade	1,243	1,205	0	0.0	1.00	1.12	0.99	1.05	1.03	1.04
32S 29W	Meade	6,116	4,057	38	0.6	1.66	1.41	1.11	1.75	1.51	1.49

Table 14 (continued)

**SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995**

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
32S 30W	Meade	19,773	12,969	373	1.9	2.03	1.65	1.59	1.68	1.52	1.69
32S 31W	Seward	13,797	10,223	377	2.7	1.64	1.49	1.47	1.42	1.35	1.47
32S 32W	Seward	21,867	13,771	771	3.5	1.90	1.58	1.34	1.61	1.59	1.60
32S 33W	Seward	10,403	6,308	877	8.4	1.74	1.63	1.34	1.62	1.65	1.60
32S 34W	Seward	14,403	10,008	664	4.6	2.27	2.12	1.63	1.46	1.44	1.78
32S 35W	Stevens	10,000	7,676	440	4.4	1.63	1.53	1.30	1.21	1.30	1.39
32S 36W	Stevens	12,419	8,083	1,068	8.6	1.92	1.79	1.30	1.55	1.54	1.62
32S 37W	Stevens	4,228	3,192	83	2.0	1.60	1.48	0.99	1.38	1.32	1.35
32S 38W	Stevens	5,746	3,661	343	6.0	1.83	1.65	1.56	1.55	1.57	1.63
32S 39W	Multi-County	7,377	6,322	29	0.4	1.68	1.37	1.12	1.32	1.17	1.33
32S 40W	Morton	3,185	2,843	97	3.0	1.44	1.38	1.06	1.02	1.12	1.20
32S 41W	Morton	1,513	1,470	10	0.7	2.39	1.87	1.24	1.19	1.03	1.54
32S 42W	Morton	6,886	5,320	41	0.6	1.70	1.23	1.46	1.20	1.29	1.38
32S 43W	Morton	3,601	2,305	388	10.8	1.64	1.63	1.36	1.36	1.56	1.51
33S 03E	Cowley	494	843	0	0.0	0.98	c/	0.40	0.31	0.59	0.57
33S 20W	Comanche	0	0	0	0.0	1.33	1.07	1.55	1.24	c/	1.30
33S 29W	Meade	1,906	1,375	174	9.1	1.46	1.31	1.35	1.07	1.39	1.32
33S 30W	Meade	11,960	8,364	252	2.1	1.68	1.33	1.29	1.42	1.43	1.43
33S 31W	Seward	2,193	1,915	143	6.5	1.26	0.76	0.81	1.19	1.15	1.03
33S 32W	Seward	6,194	2,655	1,739	28.1	1.60	1.55	1.56	2.00	2.33	1.81
33S 33W	Seward	9,686	6,129	361	3.7	2.02	1.39	1.44	1.54	1.58	1.59
33S 34W	Seward	6,447	4,454	159	2.5	1.69	1.74	1.62	1.13	1.45	1.53
33S 35W	Stevens	11,208	7,387	512	4.6	1.89	1.74	1.71	1.49	1.52	1.67
33S 36W	Stevens	8,716	6,153	0	0.0	1.65	1.72	1.39	1.55	1.42	1.55
33S 37W	Stevens	10,501	6,255	388	3.7	1.62	1.58	1.41	1.52	1.68	1.56
33S 38W	Stevens	12,488	9,249	154	1.2	1.53	1.49	1.13	1.21	1.35	1.34
33S 39W	Multi-County	3,435	2,478	0	0.0	1.23	1.37	1.46	1.29	1.39	1.35
33S 41W	Morton	0	0	0	0.0	1.65	c/	c/	c/	c/	1.65
33S 42W	Morton	2,796	1,860	477	17.1	1.40	1.32	1.37	1.61	1.50	1.44
33S 43W	Morton	2,716	2,255	0	0.0	1.74	1.22	1.16	1.34	1.20	1.33
34S 30W	Meade	2,159	2,404	0	0.0	1.27	0.86	0.98	0.95	0.90	0.99
34S 31W	Seward	1,253	945	0	0.0	1.77	1.29	1.25	1.44	1.33	1.42
34S 32W	Seward	4,875	2,877	426	8.7	1.48	1.54	1.33	1.33	1.69	1.47
34S 33W	Seward	3,051	2,358	659	21.6	1.25	1.00	0.94	1.02	1.29	1.10
34S 34W	Seward	5,525	3,895	361	6.5	1.64	1.48	1.22	1.69	1.42	1.49
34S 35W	Stevens	9,220	6,470	678	7.4	1.46	1.19	1.13	1.56	1.43	1.35
34S 36W	Stevens	11,758	8,440	130	1.1	1.63	1.52	1.33	1.46	1.39	1.47
34S 37W	Stevens	5,319	4,080	330	6.2	2.11	1.94	1.56	1.43	1.30	1.67

Table 14 (continued)

SELECTED WATER USE STATISTICS
BY LEGAL TOWNSHIP, KANSAS 1991-1995

Township and Range	County	1995				AF/A ^{b/}					
		Water Use ^{a/} (AF)	Acres Irr.	Use Above Std. (AF)	Pct. Above Std.	1991	1992	1993	1994	1995	Avg.
34S 38W	Stevens	12,798	6,766	689	5.4	1.95	2.05	1.57	1.80	1.89	1.85
34S 39W	Multi-County	4,722	3,010	311	6.6	1.63	1.63	1.48	1.69	1.57	1.60
34S 40W	Morton	1,440	903	4	0.2	c/	c/	c/	1.20	1.59	1.40
34S 41W	Morton	1,830	1,240	61	3.3	2.11	1.80	2.13	2.01	1.48	1.91
35S 34W	Seward	2,004	2,324	0	0.0	0.65	0.90	1.02	1.36	0.86	0.96
35S 36W	Stevens	3,869	2,986	77	2.0	1.47	1.56	1.30	1.52	1.30	1.43
35S 37W	Stevens	2,466	1,965	71	2.9	1.46	1.03	0.95	0.99	1.25	1.14
35S 38W	Stevens	2,264	1,570	32	1.4	1.58	1.28	1.07	1.07	1.44	1.29
35S 39W	Multi-County	8,438	5,265	323	3.8	1.97	2.21	1.89	1.86	1.60	1.91
35S 40W	Morton	3,160	2,610	0	0.0	2.40	2.40	1.48	1.05	1.21	1.71
35S 42W	Morton	822	711	0	0.0	1.31	0.96	0.71	c/	1.16	1.04
35S 43W	Morton	2,627	1,712	1	0.0	1.36	1.24	1.33	1.47	1.53	1.39

a/ All points of diversion were included for which water use and more than 640 acres were both reported.

b/ AF/A represents the total amount of irrigated water, divided by the total number of acres irrigated.

c/ AF/A was not computed for townships and ranges with less than 640 irrigated acres.

Table 15

TOWNSHIPS WITH HIGHEST AF/A WATER USE AVERAGES RELATIVE TO THEIR REGION
 RANKED BY PERCENT ABOVE THE REGIONAL AF/A AVERAGE
 KANSAS, 1995

Township and Range	Region	GMD ^{a/}	County	Approximate Location of Center of Township	AF/A ^{b/}	Regional Average AF/A	Pct. Dev. From Reg. Avg.
1. 33S 32W	1	3	Seward	12 Miles Northeast of Liberal	2.33	1.27	+83
2. 19S 31W	1	--	Scott	11 Miles Southeast of Scott City	2.04	1.27	+61
3. 10S 08E	3	--	Pottawatomie	2 Miles East of Manhattan	0.67	0.43	+56
4. 34S 38W	1	3	Stevens	9 Miles Southwest of Hugoton	1.89	1.27	+49
5. 23S 42W	1	--	Hamilton	12 Miles Northwest of Syracuse	1.88	1.27	+48
6. 29S 29W	1	3	Gray	21 Miles Southwest of Cimarron	1.84	1.27	+45
7. 31S 32W	1	3	Seward	10 Miles Southeast of Sublette	1.82	1.27	+43
8. 30S 39W	1	3	Stanton	15 Miles Southwest of Ulysses	1.80	1.27	+42
9. 26S 36W	1	3	Kearny	11 Miles South of Lakin	1.78	1.27	+40
10. 25S 15W	2	5	Stafford	Southwest Corner of Stafford County	1.35	0.97	+39
11. 25S 19W	2	5	Edwards	4 Miles South of Kinsley	1.34	0.97	+38
12. 29S 14W	2	5	Pratt	11 Miles Southwest of Pratt	1.34	0.97	+38
13. 26S 35W	1	3	Kearny	Southwest Corner of Kearny County	1.74	1.27	+37
14. 11S 14E	3	--	Shawnee	11 Miles Northwest of Topeka	0.59	0.43	+37
15. 29S 30W	1	3	Gray	Southwest Corner of Gray County	1.73	1.27	+36
16. 28S 14W	2	5	Pratt	7 Miles Southwest of Pratt	1.32	0.97	+36
17. 28S 15W	2	5	Pratt	12 Miles Southwest of Pratt	1.32	0.97	+36
18. 02S 21W	1	--	Norton	14 Miles Northeast of Norton	1.72	1.27	+35
19. 31S 33W	1	3	Seward	21 Miles North of Liberal	1.72	1.27	+35
20. 25S 43W	1	3	Hamilton	16 Miles Southwest of Syracuse	1.72	1.27	+35

^{a/} A Groundwater Management District (GMD) is listed if any portion of a township lies within the boundary of a GMD.

^{b/} All points of diversion were included for which water use and acres were both reported.

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Table 16

COMPARISON OF AF/A USE BY METER STATUS AND REGIONAL LOCATION
KANSAS, 1995

Region	Regional Location	Metered		Not Metered		Percent Metered	Pct. Diff. AF/A
		No. of Points of Diversion	AF/A ^{a/}	No. of Points of Diversion	AF/A ^{a/}		
1	Western Kansas GMD No. 1	849	1.03	1,207	1.10	41	+7
	Southwest Kansas GMD No. 3	6,038	1.36	2,050	1.43	75	+5
	Northwest Kansas GMD No. 4	339	0.90	2,548	1.03	12	+14
	Remainder of Region 1	298	1.06	1,000	1.16	23	+9
2	Equus Beds GMD No. 2	415	0.82	611	0.91	40	+11
	Big Bend GMD No. 5	2,976	1.05	537	1.09	85	+4
	Remainder of Region 2	929	0.80	1,647	0.86	36	+8
3	Eastern Kansas	215	0.46	420	0.47	34	+2
Kansas	NA	12,059	1.22	10,020	1.14	55	-7

^{a/} AF/A represents the total amount of irrigated water, divided by the total number of acres irrigated.

Table 17

ESTIMATED AF/A^{a/} WATER USE BY CROP, REGION AND REGIONAL LOCATION
KANSAS, 1995

Region	Regional Location	Type of Crop					
		Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Other or Multiple Crops
1	Western Kansas GMD No. 1	1.48	1.21	0.82	b/	0.67	0.99
	Southwest Kansas GMD No. 3	1.67	1.60	0.98	1.30	0.79	1.30
	Northwest Kansas GMD No. 4	0.86	1.09	0.75	0.86	0.40	0.78
	Remainder of Region 1	1.12	1.25	0.85	0.74	0.61	1.01
2	Equus Beds GMD No. 2	0.56	0.94	0.65	0.84	0.30	0.81
	Big Bend GMD No. 5	0.94	1.19	0.75	1.12	0.44	0.97
	Remainder of Region 2	0.55	0.93	0.64	0.74	0.35	0.75
3	Eastern Kansas	b/	0.52	0.29	0.44	b/	0.46

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^{a/} Estimated AF/A represents the estimated total amount of irrigation water divided by the total number of irrigated acres. The estimated amount of irrigation water used by a single point of diversion was assumed to be the amount of water reported if a water meter was used. If a water meter was not used, then the amount of water reported by a single point of diversion was divided by the respective Regional Location's ratio of (not metered AF/A) to (metered AF/A) to adjust for overestimation of water use.

^{b/} Less than 640 acres were reported for points of diversion that were devoted solely to irrigation of this crop.

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Table 18

**ESTIMATED AF/A^a WATER USE AVERAGE BY TYPE OF CROP BY COUNTY
KANSAS, 1995**

County ^{b/}	Type of Crop					
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Other or Multiple Crops
Barber	c/	1.07	c/	c/	c/	0.61
Barton	0.78	1.07	0.79	1.10	c/	0.90
Butler	c/	c/	c/	0.85	c/	c/
Cheyenne	0.98	1.06	c/	c/	0.49	0.72
Clark	c/	c/	c/	c/	c/	0.84
Clay	c/	0.73	c/	0.52	c/	0.69
Cloud	c/	0.79	0.56	0.74	c/	0.72
Comanche	c/	1.19	c/	c/	c/	0.95
Cowley	c/	c/	c/	c/	c/	0.55
Crawford	c/	c/	c/	c/	c/	0.25
Decatur	0.70	1.13	c/	c/	c/	0.90
Dickinson	c/	c/	c/	c/	c/	0.58
Douglas	c/	c/	c/	c/	c/	0.42
Edwards	1.08	1.20	0.87	1.15	0.46	1.03
Ellis	c/	c/	c/	c/	c/	0.69
Finney	1.56	1.53	1.06	1.35	0.81	1.12
Ford	1.47	1.25	0.90	1.07	0.59	0.99
Geary	c/	0.62	c/	c/	c/	0.54
Gove	c/	1.00	0.85	c/	0.66	0.89
Graham	0.73	1.09	c/	c/	0.31	0.70
Grant	1.89	1.80	c/	c/	1.08	1.29
Gray	1.55	1.63	0.81	1.40	0.63	1.15
Greeley	c/	1.02	c/	c/	c/	0.93
Hamilton	1.50	1.85	1.47	c/	c/	1.36
Harper	c/	c/	c/	c/	c/	0.47
Harvey	c/	0.98	0.70	0.83	c/	0.84
Haskell	1.51	1.70	c/	c/	0.97	1.46
Hodgeman	c/	1.48	0.80	c/	0.51	1.05
Jefferson	c/	0.36	c/	c/	c/	0.32
Jewell	c/	0.94	c/	0.69	c/	c/

Table 18 (continued)

ESTIMATED AF/A^a WATER USE AVERAGE BY TYPE OF CROP BY COUNTY
KANSAS, 1995

County ^{b/}	Type of Crop					
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Other or Multiple Crops
Johnson	c/	c/	c/	c/	c/	0.59
Kearny	1.78	1.68	0.80	c/	0.72	1.01
Kingman	0.83	1.20	0.79	1.03	c/	0.85
Kiowa	0.89	1.29	1.05	1.31	0.38	1.07
Lane	c/	1.06	c/	c/	c/	0.88
Logan	c/	0.98	c/	c/	c/	0.75
Marion	c/	0.64	c/	c/	c/	0.43
McPherson	c/	0.88	0.56	0.81	c/	0.82
Meade	1.36	1.70	0.95	c/	1.27	1.40
Mitchell	c/	1.07	c/	c/	c/	0.87
Montgomery	c/	0.34	c/	c/	c/	0.19
Morton	1.53	1.41	0.87	c/	1.09	1.18
Ness	c/	c/	0.95	c/	0.57	0.79
Norton	c/	1.33	c/	c/	c/	0.92
Osborne	c/	1.25	0.75	c/	c/	0.86
Ottawa	c/	0.49	c/	c/	c/	0.44
Pawnee	0.91	1.16	0.69	0.92	0.38	0.89
Phillips	c/	0.88	c/	c/	c/	1.00
Pottawatomie	c/	0.56	c/	0.42	c/	0.52
Pratt	0.93	1.26	c/	1.15	0.43	1.09
Rawlins	0.76	1.10	c/	c/	c/	0.63
Reno	0.56	1.04	0.82	0.94	c/	0.79
Republic	c/	1.02	c/	0.92	c/	0.82
Rice	c/	0.96	0.58	0.87	c/	0.82
Riley	c/	0.55	c/	0.50	c/	0.40
Rush	c/	c/	0.82	c/	c/	1.00
Saline	c/	c/	c/	c/	c/	0.86
Scott	1.13	1.26	0.76	c/	0.80	1.03
Sedgwick	c/	0.88	0.49	0.81	c/	0.75
Seward	2.07	1.70	1.01	c/	0.85	1.49

Table 18 (continued)

ESTIMATED AF/A^{a/} WATER USE AVERAGE BY TYPE OF CROP BY COUNTY
KANSAS, 1995

County ^{b/}	Type of Crop					
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Other or Multiple Crops
Shawnee	c/	0.60	c/	0.57	c/	0.54
Sheridan	0.78	1.18	0.84	c/	0.36	0.98
Sherman	0.96	1.09	0.63	c/	0.42	0.77
Smith	c/	0.96	c/	c/	c/	0.65
Stafford	0.79	1.18	0.75	1.18	0.56	1.00
Stanton	c/	1.73	1.20	c/	0.68	1.32
Stevens	2.29	1.65	1.43	c/	0.90	1.42
Sumner	c/	0.56	c/	0.73	c/	0.51
Thomas	0.89	1.06	0.72	0.97	0.26	0.75
Trego	c/	0.84	0.31	c/	c/	0.85
Wabaunsee	c/	0.55	c/	0.36	c/	0.46
Wallace	1.37	1.37	0.92	c/	0.57	1.12
Washington	c/	0.61	c/	0.49	c/	0.48
Wichita	c/	1.29	0.85	c/	0.73	0.94
Wilson	c/	c/	c/	0.22	c/	c/

^{a/} Estimated AF/A represents the estimated total amount of irrigation water divided by the total number of irrigated acres. The estimated amount of irrigation water used by a single point of diversion was assumed to be the amount of water reported if a water meter was used. If a water meter was not used, then the amount of water reported by a single point of diversion was divided by the respective Regional Location's ratio of (not metered AF/A) to (metered AF/A) to adjust for overestimation of water use.

^{b/} All counties that did not have at least 640 acres irrigated for one or more crops were omitted from this table.

^{c/} Less than 640 acres were reported for points of diversion that were devoted solely to irrigation of this crop.

Table 19

**ESTIMATED NUMBER OF ACRES IRRIGATED BY CROP^{b/}
KANSAS, 1995**

County ^{a/}	Type of Crop					
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Other
Allen	0	200	0	0	0	0
Anderson	0	500	100	300	0	0
Atchison	0	0	0	200	0	0
Barber	400	1,400	600	200	500	100
Barton	4,200	16,000	5,200	7,700	1,600	800
Bourbon	0	100	0	200	0	100
Butler	0	200	0	700	0	200
Chautauqua	0	0	0	100	0	0
Cherokee	0	100	100	100	0	0
Cheyenne	4,500	20,000	400	1,100	4,500	12,200
Clark	400	1,400	700	100	1,300	0
Clay	100	8,900	700	8,400	200	300
Cloud	700	11,000	1,500	4,100	500	100
Coffey	0	0	0	100	0	0
Comanche	600	4,200	400	0	1,200	300
Cowley	100	400	400	500	400	200
Crawford	0	1,000	0	900	0	200
Decatur	1,500	8,400	300	400	300	500
Dickinson	300	1,000	600	1,100	100	100
Doniphan	0	400	0	100	0	0
Douglas	0	500	0	700	400	0
Edwards	15,000	54,700	2,200	13,700	5,400	2,100
Ellis	200	200	400	0	400	700
Ellsworth	0	300	0	100	200	0
Finney	52,000	95,600	14,900	8,000	64,400	7,600
Ford	9,400	48,300	10,900	3,600	16,100	1,700
Franklin	0	200	100	700	0	0
Geary	400	1,700	200	800	100	200
Gove	500	11,400	3,700	100	3,200	1,100
Graham	1,600	6,800	500	0	1,900	600
Grant	10,500	56,700	14,400	1,800	50,900	3,300
Gray	25,800	84,700	17,000	6,300	52,900	4,500
Greeley	400	20,000	900	0	5,400	1,200
Greenwood	100	200	0	0	0	0
Hamilton	7,900	6,800	4,600	0	7,400	2,300

Table 19 (continued)

ESTIMATED NUMBER OF ACRES IRRIGATED BY CROP^{b/}
KANSAS, 1995

County ^{a/}	Type of Crop					
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Other
Harper	0	400	600	400	300	0
Harvey	400	11,100	4,200	11,000	900	100
Haskell	6,400	109,200	9,900	7,100	76,000	4,400
Hodgeman	1,600	12,500	5,400	800	8,300	500
Jackson	0	0	0	0	0	0
Jefferson	0	1,000	0	800	0	100
Jewell	0	2,100	100	1,000	0	0
Johnson	0	0	0	0	0	2,800
Kearny	27,900	35,000	5,000	2,800	20,100	5,800
Kingman	1,100	6,400	1,600	3,800	1,100	400
Kiowa	5,400	25,700	1,500	8,200	5,700	2,500
Labette	0	100	100	300	0	300
Lane	200	11,400	3,500	0	6,500	100
Leavenworth	0	200	0	200	0	100
Lincoln	0	100	100	100	400	0
Linn	0	0	0	0	0	100
Logan	300	3,900	900	100	1,400	1,700
Lyon	0	0	0	100	0	0
Marion	300	1,100	200	200	0	100
Marshall	0	700	300	500	0	100
McPherson	800	12,300	3,300	10,800	700	300
Meade	7,700	57,100	11,200	3,500	34,500	5,600
Miami	0	0	0	0	0	100
Mitchell	400	2,500	700	800	300	400
Montgomery	0	800	400	500	0	100
Morris	0	200	0	100	0	0
Morton	2,000	16,000	10,500	200	19,200	1,700
Nemaha	0	0	0	0	0	100
Neosho	0	0	0	0	0	100
Ness	900	300	2,000	0	2,100	300
Norton	700	6,100	300	100	500	500
Osage	0	0	0	100	0	100
Osborne	100	1,500	1,100	300	100	200
Ottawa	200	1,600	700	1,400	0	100
Pawnee	13,800	27,200	12,900	10,900	10,100	2,700

Table 19 (continued)

ESTIMATED NUMBER OF ACRES IRRIGATED BY CROPS^{b/}
KANSAS, 1995

County ^{a/}	Type of Crop					
	Alfalfa	Corn	Grain Sorghum	Soybeans	Wheat	Other
Phillips	600	7,300	100	200	100	300
Pottawatomie	500	7,700	700	3,900	200	200
Pratt	7,500	44,800	900	9,700	4,900	3,500
Rawlins	3,500	7,400	2,000	500	1,700	4,200
Reno	2,800	11,800	5,400	8,700	3,300	1,200
Republic	400	23,100	500	5,000	100	100
Rice	800	11,500	2,900	3,100	1,000	1,000
Riley	100	1,500	400	1,500	0	200
Rooks	600	400	100	100	100	200
Rush	1,200	2,200	4,600	1,800	600	400
Saline	400	1,100	600	1,100	0	400
Scott	3,200	27,000	11,800	200	17,900	1,700
Sedgwick	500	12,300	4,600	14,600	1,700	2,600
Seward	8,100	47,200	10,300	4,500	36,000	2,700
Shawnee	0	6,400	200	7,300	0	500
Sheridan	1,900	51,600	4,400	4,100	7,200	2,400
Sherman	3,600	47,700	3,300	500	22,000	26,700
Smith	200	2,400	500	1,000	100	100
Stafford	4,900	47,000	4,900	10,000	8,200	1,800
Stanton	3,200	61,600	8,700	700	58,000	2,000
Stevens	9,200	65,800	11,000	1,200	48,800	4,200
Sumner	200	1,100	600	3,100	300	200
Thomas	1,100	66,800	3,000	4,300	8,700	11,100
Trego	500	1,400	1,400	400	700	500
Wabaunsee	100	2,400	200	1,700	0	200
Wallace	2,900	30,300	1,300	0	14,100	8,500
Washington	200	3,500	600	2,000	0	0
Wichita	3,500	29,700	11,900	1,200	28,600	6,100
Wilson	0	400	200	1,000	100	0
Wyandotte	0	0	0	0	0	100

^{a/} All counties that did not have at least 50 acres irrigated for one or more crops were omitted from this table.

^{b/} The number of acres irrigated was rounded to the nearest hundred.

Table 20

ESTIMATED AF/A^{a/} WATER USE BY TYPE OF IRRIGATION SYSTEM, REGION
AND REGIONAL LOCATION
KANSAS, 1995

Region	Regional Location	Type of Irrigation System				
		Flood	Non-LEPA Center Pivot Sprinkler	LEPA ^{b/} Center Pivot Sprinkler	Sprinkler (Non-Center Pivot)	Other or Multiple
1	Western Kansas GMD No. 1	1.09	0.96	0.97	0.90	0.92
	Southwest Kansas GMD No. 3	1.44	1.33	1.33	1.43	1.30
	Northwest Kansas GMD No. 4	1.08	0.88	0.84	0.78	0.90
	Remainder of Region 1	1.22	0.84	0.99	0.85	0.93
2	Equus Beds GMD No. 2	0.88	0.80	0.62	0.49	0.85
	Big Bend GMD No. 5	0.99	1.07	1.00	0.67	1.03
	Remainder of Region 2	0.90	0.73	0.88	0.59	0.72
3	Eastern Kansas	0.58	0.42	0.34	0.44	0.40

^{a/} Estimated AF/A represents the estimated total amount of irrigation water divided by the total number of irrigated acres. The estimated amount of irrigation water used by a single point of diversion was assumed to be the amount of water reported if a water meter was used. If a water meter was not used, then the amount of water reported by a single point of diversion was divided by the respective Regional Location's ratio of (not metered AF/A) to (metered AF/A) to adjust for overestimation of water use.

^{b/} It appears likely that many irrigators have reported center pivot systems with low pressure drop nozzles as LEPA systems.

Table 21

ACRES IRRIGATED AND PERCENT DISTRIBUTION BY TYPE OF IRRIGATION SYSTEM,
REGION AND REGIONAL LOCATION
KANSAS, 1995

Region	Regional Location	Type of Irrigation System									
		Flood		Non-LEPA Center Pivot Sprinkler		LEPA ^{a/} Center Pivot Sprinkler		Sprinkler (Non- Center Pivot)		Other or Multiple	
		Acres	Pct.	Acres	Pct.	Acres	Pct.	Acres	Pct.	Acres	Pct.
1	Western Kansas GMD No. 1	137,170	56.3	41,313	17.0	33,328	13.7	577	0.2	31,240	12.8
	Southwest Kansas GMD No. 3	487,173	31.7	657,760	42.8	93,401	6.1	7,550	0.5	290,786	18.9
	Northwest Kansas GMD No. 4	60,138	16.9	194,789	54.9	74,158	20.9	4,661	1.3	21,250	6.0
	Remainder of Region 1	51,099	49.6	27,801	27.0	8,586	8.3	4,510	4.4	11,047	10.7
2	Equus Beds GMD No. 2	30,690	31.4	57,310	58.7	1,669	1.7	1,454	1.5	6,505	6.7
	Big Bend GMD No. 5	56,709	13.3	348,238	81.5	14,630	3.4	1,146	0.3	6,342	1.5
	Remainder of Region 2	77,081	40.5	92,014	48.3	7,647	4.0	4,772	2.5	8,987	4.7
3	Eastern Kansas	15,282	28.9	26,318	49.7	1,720	3.2	6,227	11.8	3,364	6.4
Kansas	NA	1,015,342	32.7	1,445,543	46.5	235,139	7.6	30,897	1.0	379,521	12.2

^{a/} It appears likely that many irrigators have reported center pivot systems with low pressure drop nozzles as LEPA systems.

Table 22

**ACRES AND ESTIMATED AF/A^{a/} WATER USE AVERAGE BY TYPE OF
IRRIGATION SYSTEM BY COUNTY
KANSAS, 1995**

County ^{b/}	Type of Irrigation System									
	Flood		Non-LEPA Center Pivot Sprinkler		LEPA ^{c/} Center Pivot Sprinkler		Sprinkler (Non- Center Pivot)		Other or Multiple	
	Acres	AF/A	Acres	AF/A	Acres	AF/A	Acres	AF/A	Acres	AF/A
Barber	d/	d/	2,601	0.87	d/	d/	d/	d/	d/	d/
Barton	15,652	0.90	18,473	0.98	914	1.05	d/	d/	d/	d/
Butler	d/	d/	d/	d/	736	0.84	d/	d/	d/	d/
Cheyenne	9,033	1.05	22,971	0.79	7,261	0.65	1,356	1.33	2,183	0.79
Clark	d/	d/	2,835	0.89	d/	d/	d/	d/	d/	d/
Clay	10,327	0.75	7,165	0.54	d/	d/	d/	d/	794	0.74
Cloud	8,498	0.81	6,755	0.54	d/	d/	d/	d/	1,728	0.76
Comanche	d/	d/	5,742	1.03	d/	d/	d/	d/	d/	d/
Cowley	d/	d/	1,461	0.47	d/	d/	d/	d/	d/	d/
Crawford	d/	d/	1,192	0.32	d/	d/	d/	d/	654	0.37
Decatur	4,280	1.26	3,697	0.85	1,317	0.96	895	0.56	1,132	1.20
Dickinson	d/	d/	1,696	0.53	d/	d/	d/	d/	d/	d/
Douglas	d/	d/	1,413	0.43	d/	d/	d/	d/	d/	d/
Edwards	2,549	1.34	86,694	1.11	2,974	1.16	d/	d/	778	1.19
Ellis	d/	d/	695	0.60	d/	d/	d/	d/	d/	d/
Finney	76,339	1.14	124,925	1.35	20,576	1.35	1,162	1.03	19,916	1.02
Ford	12,183	1.26	62,680	1.05	5,398	1.39	d/	d/	9,392	1.15
Geary	d/	d/	2,370	0.44	d/	d/	d/	d/	d/	d/
Gove	8,122	1.01	5,937	0.78	3,840	0.98	d/	d/	1,846	0.85
Graham	939	1.19	8,340	0.85	1,282	0.73	d/	d/	d/	d/
Grant	46,218	1.40	45,365	1.39	12,453	1.26	d/	d/	33,195	1.29
Gray	42,362	1.55	117,149	1.20	15,315	1.24	d/	d/	15,846	1.23
Greeley	10,287	1.09	4,969	1.06	10,651	0.90	d/	d/	2,035	0.73
Hamilton	11,243	1.54	10,469	1.39	2,313	1.26	d/	d/	5,615	1.27
Harper	d/	d/	1,430	0.57	d/	d/	d/	d/	d/	d/
Harvey	9,106	0.93	16,288	0.82	d/	d/	d/	d/	1,743	0.79
Haskell	98,590	1.61	53,169	1.38	3,383	1.01	1,552	1.45	56,288	1.40
Hodgeman	18,805	1.20	5,808	0.86	2,189	1.32	d/	d/	2,127	0.80
Jefferson	829	0.49	d/	d/	d/	d/	d/	d/	d/	d/
Jewell	1,942	1.01	980	0.66	d/	d/	d/	d/	d/	d/

Table 22 (continued)

**ACRES AND ESTIMATED AF/A^{a/} WATER USE AVERAGE BY TYPE OF
IRRIGATION SYSTEM BY COUNTY
KANSAS, 1995**

County ^{b/}	Type of Irrigation System									
	Flood		Non-LEPA Center Pivot Sprinkler		LEPA ^{c/} Center Pivot Sprinkler		Sprinkler (Non- Center Pivot)		Other or Multiple	
	Acres	AF/A	Acres	AF/A	Acres	AF/A	Acres	AF/A	Acres	AF/A
Johnson	d/	d/	1,287	0.49	d/	d/	1,469	0.65	d/	d/
Kearny	30,693	0.89	46,772	1.64	6,656	1.23	1,731	2.10	10,734	1.10
Kingman	d/	d/	12,330	1.00	1,245	1.11	d/	d/	d/	d/
Kiowa	868	1.35	45,719	1.14	1,714	1.12	d/	d/	d/	d/
Labette	d/	d/	691	0.14	d/	d/	d/	d/	d/	d/
Lane	14,669	1.01	1,729	0.70	1,305	1.26	d/	d/	3,582	0.65
Logan	1,689	1.01	2,568	0.80	3,669	0.70	d/	d/	d/	d/
Marion	d/	d/	1,556	0.47	d/	d/	d/	d/	d/	d/
Marshall	d/	d/	951	0.29	d/	d/	d/	d/	d/	d/
McPherson	13,453	0.92	12,143	0.69	d/	d/	d/	d/	2,068	0.80
Meade	65,560	1.56	31,456	1.31	1,091	1.20	d/	d/	21,206	1.36
Mitchell	3,163	1.07	1,830	0.63	d/	d/	d/	d/	d/	d/
Montgomery	d/	d/	1,476	0.28	d/	d/	d/	d/	d/	d/
Morton	18,184	1.22	14,203	1.16	3,755	1.13	d/	d/	13,054	1.23
Ness	5,425	0.83	d/	d/	d/	d/	d/	d/	d/	d/
Norton	3,986	1.50	1,896	0.65	709	1.08	d/	d/	1,153	1.17
Osborne	3,228	0.98	d/	d/	d/	d/	d/	d/	d/	d/
Ottawa	1,182	0.59	2,592	0.34	d/	d/	d/	d/	d/	d/
Pawnee	32,925	0.94	39,920	0.91	3,124	1.01	d/	d/	1,561	0.91
Phillips	5,065	1.14	2,003	0.40	d/	d/	d/	d/	1,102	0.68
Pottawatomie	4,883	0.58	6,069	0.49	684	0.29	d/	d/	884	0.50
Pratt	1,269	1.65	65,603	1.16	2,587	0.84	d/	d/	1,706	1.04
Rawlins	2,779	1.07	8,747	0.65	3,414	0.75	1,988	0.71	2,365	0.97
Reno	2,139	0.71	27,867	0.86	d/	d/	735	0.53	1,800	0.93
Republic	12,498	1.01	13,005	0.90	1,883	0.98	d/	d/	1,781	0.88
Rice	1,252	0.85	17,032	0.85	1,421	0.94	d/	d/	d/	d/
Riley	1,116	0.42	1,878	0.49	d/	d/	d/	d/	d/	d/
Rush	9,724	0.98	d/	d/	d/	d/	d/	d/	d/	d/
Saline	1,720	0.82	942	0.67	d/	d/	d/	d/	d/	d/
Scott	44,445	1.07	5,973	1.04	3,371	0.82	d/	d/	8,036	0.91

Table 22 (continued)

ACRES AND ESTIMATED AF/A^{a/} WATER USE AVERAGE BY TYPE OF IRRIGATION SYSTEM BY COUNTY KANSAS, 1995

County ^{b/}	Type of Irrigation System									
	Flood		Non-LEPA Center Pivot Sprinkler		LEPA ^{c/} Center Pivot Sprinkler		Sprinkler (Non-Center Pivot)		Other or Multiple	
	Acres	AF/A	Acres	AF/A	Acres	AF/A	Acres	AF/A	Acres	AF/A
Sedgwick	12,471	0.82	19,820	0.77	1,117	0.46	1,589	0.67	1,320	0.88
Seward	41,102	1.68	46,072	1.49	1,395	1.87	d/	d/	19,595	1.29
Shawnee	6,514	0.62	6,328	0.53	d/	d/	1,203	0.43	d/	d/
Sheridan	14,580	1.22	31,471	1.05	17,075	0.99	1,132	0.98	7,453	1.06
Sherman	20,617	1.05	61,726	0.80	13,782	0.76	1,998	0.62	5,748	0.67
Smith	2,928	0.85	715	0.57	d/	d/	d/	d/	d/	d/
Stafford	4,608	1.22	68,891	1.07	1,902	0.84	d/	d/	1,101	0.90
Stanton	33,357	1.48	38,267	1.24	14,003	1.58	d/	d/	48,271	1.26
Stevens	21,394	1.70	70,212	1.43	7,600	1.36	d/	d/	40,446	1.47
Sumner	d/	d/	5,004	0.66	d/	d/	d/	d/	d/	d/
Thomas	6,831	1.02	58,244	0.95	26,624	0.83	d/	d/	3,300	0.96
Trego	1,464	0.88	2,591	0.56	d/	d/	d/	d/	d/	d/
Wabaunsee	1,454	0.61	2,701	0.42	d/	d/	d/	d/	d/	d/
Wallace	16,133	1.50	21,201	0.95	11,692	1.04	d/	d/	8,067	1.25
Washington	1,917	0.57	3,693	0.49	d/	d/	d/	d/	d/	d/
Wichita	53,832	1.01	9,933	0.88	7,221	0.97	d/	d/	9,821	0.83
Wilson	d/	d/	745	0.32	d/	d/	d/	d/	d/	d/

^{a/} Estimated AF/A represents the estimated total amount of irrigation water divided by the total number of irrigated acres. The estimated amount of irrigation water used by a single point of diversion was assumed to be the amount of water reported if a water meter was used. If a water meter was not used, then the amount of water reported by a single point of diversion was divided by the respective Regional Location's ratio of (not metered AF/A) to (metered AF/A) to adjust for overestimation of water use.

^{b/} All counties that did not have at least 640 acres irrigated by one or more irrigation systems were omitted from this table.

^{c/} It appears likely that many irrigators have reported center pivot systems with low pressure drop nozzles as LEPA systems.

^{d/} Less than 640 acres were reported for points of diversion that were irrigated by this type of irrigation system.

Table 23

NUMBER AND PERCENT DISTRIBUTION OF POINTS OF DIVERSION^{a/}
 BY PUMP RATE, REGION AND REGIONAL LOCATION
 KANSAS, 1995

Pump Rate	Region 1								Region 2						Region 3	
	GMD 1		GMD 3		GMD 4		Other		GMD 2		GMD 5		Other			
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
1-199	341	28.3	65	3.2	74	2.9	141	14.1	31	5.1	2	0.4	125	7.6	28	6.7
200-399	465	38.5	234	11.4	381	15.0	341	34.1	37	6.1	16	3.0	259	15.7	25	6.0
400-599	227	18.8	281	13.7	950	37.3	294	29.4	79	12.9	42	7.8	363	22.0	64	15.2
600-799	92	7.6	532	26.0	823	32.3	126	12.6	197	32.2	172	32.0	351	21.3	112	26.7
800-999	32	2.6	584	28.5	195	7.6	58	5.8	173	28.3	234	43.6	350	21.3	118	28.1
1,000-1,199	20	1.7	156	7.6	80	3.1	22	2.2	66	10.8	57	10.6	130	7.9	54	12.8
1,200-1,399	19	1.6	98	4.8	27	1.1	8	0.8	20	3.3	11	2.0	41	2.5	8	1.9
1,400-1,599	7	0.6	64	3.1	12	0.5	5	0.5	5	0.8	1	0.2	11	0.7	6	1.4
1,600-1,799	3	0.2	25	1.2	5	0.2	0	0.0	2	0.3	1	0.2	5	0.3	2	0.5
1,800-1,999	1	0.1	6	0.3	0	0.0	2	0.2	1	0.2	0	0.0	3	0.2	0	0.0
2,000 or More	0	0.0	5	0.2	1	0.0	3	0.3	0	0.0	1	0.2	9	0.5	3	0.7
Total	1,207	100.0	2,050	100.0	2,548	100.0	1,000	100.0	611	100.0	537	100.0	1,647	100.0	420	100.0

^{a/} Represents primarily unmeasured water use.

Table 24

COMPARISON OF PRECIPITATION AND AF/A WATER USE
BY REGION AND REGIONAL LOCATION
KANSAS, 1994, 1995

Region	Regional Location	Precipitation ^{a/}			AF/A ^{b/}		
		1995	1994	Pct. Diff.	1995	1994	Pct. Diff.
1	Western Kansas GMD No. 1	19.19	16.06	+19.5	1.07	1.19	-10.1
	Southwest Kansas GMD No. 3	18.62	16.91	+10.1	1.37	1.44	-4.9
	Northwest Kansas GMD No. 4	20.24	16.45	+23.0	1.02	1.08	-5.6
	Remainder of Region 1	20.58	16.19	+27.1	1.13	1.13	0
2	Equus Beds GMD No. 2	35.01	19.49	+79.6	0.87	1.04	-16.3
	Big Bend GMD No. 5	25.86	14.69	+76.0	1.06	1.32	-19.7
	Remainder of Region 2	30.84	18.34	+68.2	0.84	0.85	-1.1
3	Eastern Kansas	34.86	28.73	+21.3	0.47	0.47	0

^{a/} Average precipitation received from March through October by all reporting stations.

^{b/} AF/A represents the total amount of irrigated water, divided by the total number of acres irrigated.

TABLE 25

**WATER USE, WATER LEVEL CHANGE, PERCENT CHANGE IN SATURATED
THICKNESS AND PRECIPITATION BY COUNTY
KANSAS, 1940-1995**

County ^{a/}	1995 Irrig. Water Use (AF)	5-Year Avg. Irrig. Water Use (AF)	Jan 95- Jan 96 Water Level Change (Feet)	Percent Change in Saturated Thickness 1944-1996	Jan 91-Jan 96 Avg. Water Level Change (Feet)	1995 Precip.	Avg. Precip. (5 years)
Allen	29	239	NA	NA	1.7	38.10	44.86
Barber	2,780	3,049	NA	NA	0.2	36.02	30.08
Barton	33,699	33,281	0.6	-3.1	0.5	26.55	25.78
Cheyenne	40,620	47,145	0.2	-5.7	0.0	20.72	19.17
Clark	4,015	4,634	NA	NA	0.1	22.19	20.43
Cloud	13,631	9,633	NA	NA	1.0	29.73	29.60
Crawford	721	622	NA	NA	-4.2	45.64	48.75
Decatur	12,820	8,956	0.7	3.6	0.7	18.73	24.38
Douglas	703	672	1.5	NA	1.1	37.00	39.18
Edwards	104,905	104,229	1.0	-9.5	-0.3	30.08	25.23
Ellis	1,386	1,102	NA	NA	-0.6	21.77	24.29
Ellsworth	504	377	NA	NA	3.4	29.22	29.40
Finney	309,174	323,793	-0.1	-30.5	-1.3	15.77	20.29
Ford	101,096	106,824	-0.3	-17.7	-0.1	23.54	21.17
Geary	1,799	1,080	NA	NA	3.2	42.19	36.68
Gove	20,280	16,609	-0.3	-9.5	0.4	23.49	23.80
Graham	10,835	9,269	0.8	9.0	0.6	24.97	22.74
Grant	188,869	198,701	-2.4	-42.3	-2.0	15.45	18.54
Gray	248,647	253,886	-1.5	-20.4	-1.3	19.81	22.63
Greeley	28,199	33,123	-0.9	-40.4	-0.7	18.64	19.69
Hamilton	42,807	42,456	-0.7	-13.0	-0.5	15.19	17.48
Harper	988	1,279	NA	NA	1.8	34.25	31.39
Harvey	24,800	24,410	2.1	NA	0.9	36.75	32.53
Haskell	320,015	331,700	-2.7	-28.9	-2.7	14.73	17.23
Hodgeman	34,649	30,164	-2.0	4.0	0.2	23.20	23.75
Jackson	0	72	NA	NA	-0.6	45.28	39.92
Kearny	129,321	141,261	0.1	-25.6	-0.6	20.98	20.85
Kingman	15,095	16,546	1.2	24.8	0.4	34.70	30.22
Kiowa	56,298	59,402	0.0	-2.9	-0.3	24.59	24.67

Table 25 (continued)

**WATER USE, WATER LEVEL CHANGE, PERCENT CHANGE IN SATURATED
THICKNESS AND PRECIPITATION BY COUNTY
KANSAS, 1940-1995**

County ^{a/}	1995 Irrig. Water Use (AF)	5-Year Avg. Irrig. Water Use (AF)	Jan 95- Jan 96 Water Level Change (Feet)	Percent Change in Saturated Thickness 1944-1996	Jan 91-Jan 96 Avg. Water Level Change (Feet)	1995 Precip.	Avg. Precip. (5 years)
Labette	171	215	NA	NA	-2.3	42.48	45.17
Lane	21,085	19,352	-1.2	-23.6	-0.1	21.13	24.17
Logan	7,634	8,202	-1.3	-18.3	0.1	18.79	20.14
McPherson	23,878	23,142	0.9	NA	0.2	37.90	33.13
Meade	174,951	180,646	-2.2	-11.4	-1.4	20.66	19.69
Morton	60,214	70,353	-2.2	-26.1	-0.8	15.31	17.49
Ness	4,967	4,305	0.1	NA	0.7	21.28	23.89
Norton	10,515	8,452	0.9	NA	0.6	24.60	26.25
Osborne	3,423	2,361	-0.1	NA	-0.4	25.77	31.36
Pawnee	72,619	69,283	-0.3	-11.3	0.0	24.52	23.75
Pratt	82,305	82,610	-0.4	-1.5	-0.3	26.11	26.98
Rawlins	16,642	14,357	-1.7	-6.5	0.0	22.49	24.02
Reno	29,393	28,677	1.3	-5.5	0.2	33.31	29.61
Republic	29,351	20,266	NA	NA	0.4	28.42	31.15
Rice	17,617	18,370	1.2	NA	0.3	31.48	28.19
Riley	1,774	1,957	NA	NA	8.3	37.75	35.52
Rooks	1,018	980	NA	NA	-1.6	27.01	26.91
Rush	10,259	7,616	NA	NA	-1.0	22.05	23.78
Saline	2,837	2,653	NA	NA	3.7	33.20	34.96
Scott	66,969	67,834	-0.9	-42.1	-0.1	17.69	21.67
Sedgwick	30,346	32,977	0.8	NA	0.3	37.41	33.16
Seward	168,091	171,571	-1.8	-13.7	-1.7	15.47	20.06
Sheridan	85,733	72,945	-0.6	-18.4	0.3	23.66	25.03
Sherman	97,916	104,968	-0.6	-19.3	-0.2	20.82	20.00
Stafford	82,441	82,229	1.0	-1.1	0.5	32.04	27.10
Stanton	181,604	203,485	-3.9	-46.2	-1.9		
Stevens	208,813	211,336	-4.2	-16.3	-2.6	13.04	18.56
Sumner	3,699	4,703	NA	NA	1.7	38.12	32.52
Thomas	98,789	94,271	-0.8	-15.2	-0.2	20.84	23.49

Table 25 (continued)

WATER USE, WATER LEVEL CHANGE, PERCENT CHANGE IN SATURATED THICKNESS AND PRECIPITATION BY COUNTY KANSAS, 1940-1995

County ^{a/}	1995 Irrig. Water Use (AF)	5-Year Avg. Irrig. Water Use (AF)	Jan 95-Jan 96 Water Level Change (Feet)	Percent Change in Saturated Thickness 1944-1996	Jan 91-Jan 96 Avg. Water Level Change (Feet)	1995 Precip.	Avg. Precip. (5 years)
Trego	3,807	3,338	NA	NA	-2.4	29.05	24.64
Wallace	68,769	70,717	-2.0	-48.2	-0.7	22.37	21.23
Washington	3,626	3,164	NA	NA	-1.9	33.81	33.90
Wichita	81,856	88,487	-0.5	-44.5	0.0	19.17	20.91

^{a/} All counties with no water level data were omitted from this table.

Table 26

TOP FIFTY IRRIGATION WATER USERS WITH POINTS OF DIVERSION FOR WHICH REPORTED WATER USE EXCEEDED THE REGIONAL STANDARD AND EXCEEDED THE LOCAL REGIONAL AVERAGE^{a/} BY THE HIGHEST PERCENTAGE
KANSAS, 1995

Rank	File No.	Name	County	SEC	TWP	RNG	CIN	Wtr. Use (AF)	Ac. Irr.	AF/A	Reg. Avg. AF/A	Pct. Abv. Avg.	Crop	Irr. Sys.
1.	22,896	John E. Knopp	Hamilton	19	24	39W	07	276	35	7.89	1.13	598	Multiple	Flood
2.	24,048	Duane Stutz Corp.	Gove	01	15	26W	03	49	7	6.94	1.13	515	Corn	Flood
3.	7,147	Peter C. Zerr	Gove	36	12	30W	01	125	19	6.57	1.13	481	Grain Sorghum	Flood
4.	10,521	Beatrice Wasson	Gray	06	26	28W	01	159	20	7.95	1.37	481	Corn	Flood
5.	36,108	King Farm, Inc.	Hodgeman	07	21	24W	02	122	20	6.08	1.13	438	Corn	Flood
6.	6,628	Gary L. Johnson	McPherson	09	17	03W	02	52	12	4.31	0.84	414	Soybeans	Flood
7.	38,957	USD #321, St. Marys	Pottawatomie	15	10	12E	05	5	2	2.41	0.47	413	Other	Sprinkler
8.	26,274	Veryl H. Holmes	Hodgeman	34	22	22W	04	497	93	5.34	1.13	373	Corn	Flood
9.	34,782	Arthur J. Meier	Shawnee	22	11	16E	03	43	20	2.13	0.47	354	Corn	Flood
10.	MI0007-IR	Rabbit Creek Golf Co.	Miami	04	17	25E	01	88	42	2.09	0.47	345	Golf Course	Sprinkler
11.	5,924	Irvin C. Nondorf	Republic	20	03	04W	01	134	36	3.72	0.84	343	Corn	Flood
12.	2,454	J.F. Gerstberger, Jr.	Wichita	27	16	37W	01	474	102	4.65	1.07	334	Multiple	Flood
13.	22,957	Lester Wolters	Osborne	12	06	13W	02	87	24	3.62	0.84	331	Corn	Flood
14.	27,435	Stanley Young	Hodgeman	16	21	21W	01	1,114	232	4.80	1.13	325	Multiple	Flood
15.	14,379	Carter Farms, Inc.	Hamilton	27	23	42W	03	427	89	4.80	1.13	325	Alfalfa	Flood
16.	25,628	Clarence Hendrich	Smith	31	05	12W	01	103	29	3.55	0.84	322	Corn	Flood
17.	29,805	Verlene Veteto	Republic	35	03	05W	01	138	39	3.54	0.84	322	Corn	Flood
18.	26,299	V. Phillip Soice	Gray	13	28	30W	05	103	18	5.72	1.37	318	Corn	Flood
19.	RO0010	LaDonna Schneider	Rooks	30	07	18W	01	139	40	3.47	0.84	313	Corn	Flood

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Table 26 (continued)

TOP FIFTY IRRIGATION WATER USERS WITH POINTS OF DIVERSION FOR WHICH REPORTED WATER USE EXCEEDED THE REGIONAL STANDARD AND EXCEEDED THE REGIONAL AVERAGE^{a/} BY THE HIGHEST PERCENTAGE KANSAS, 1995

Rank	File No.	Name	County	SEC	TWP	RNG	CIN	Wtr. Use (AF)	Ac. Irr.	AF/A	Reg. Avg. AF/A	Pct. Abv. Avg.	Crop	Irr. Sys.
20.	7,632	V. Phillip Soice	Gray	13	28	30W	02	179	32	5.59	1.37	308	Corn	Flood
21.	36,469	K 4 Farms	Stevens	27	32	36W	03	1,410	260	5.42	1.37	296	Alfalfa	Ctr. Pvt.
22.	25,572	Eugene & Janet K. Walker	Wallace	04	14	42W	02	224	53	4.22	1.07	294	Corn	Flood
23.	19,796	Walter G. Johnson	McPherson	03	17	03W	13	91	28	3.26	0.84	288	Corn	Flood
24.	FI0208	Robert L. Jones	Finney	11	24	34W	02	315	60	5.25	1.37	283		Flood
25.	21,116	Hutchinson Hospital Corp.	Reno	05	23	05W	02	3	1	3.30	0.87	279	Other	Sprinkler
26.	SG0097	City of Wichita	Sedgwick	20	27	01E	01	6	2	3.16	0.84	277	Other	Sprinkler
27.	27,148	Craig P. & Jeanette D. Elliott	Republic	05	04	05W	01	78	25	3.13	0.84	273	Soybeans	Flood
28.	41,289	Madison Golf Course	Greenwood	24	22	11E	01	3	2	1.74	0.47	270	Golf Course	Sprinkler
29.	8,548	Vernon Thiessen	Mitchell	02	07	08W	01	34	11	3.08	0.84	267	Corn	Flood
30.	28,959	Rock Ormiston	Seward	32	33	32W	01	653	130	5.02	1.37	267	Multiple	Ctr. Pvt.
31.	3,094	Bobbie Lee Mahler	Wichita	23	18	37W	01	580	150	3.87	1.07	261	Multiple	Flood
32.	13,088	Fred Askren	Finney	03	23	31W	02	593	120	4.94	1.37	261	Multiple	Ctr. Pvt.
33.	593	John E. Knopp	Hamilton	19	24	39W	02	177	44	4.03	1.13	257	Wheat	Flood
34.	8,057	Charles Duff	Scott	25	18	33W	03	986	259	3.81	1.07	256	Multiple	Flood
35.	SC0050	Charles Duff	Scott	25	18	33W	02	76	20	3.80	1.07	255	Wheat	Flood
36.	22,757	Ezra J. Aeschliman	Gray	31	29	28W	01	184	38	4.84	1.37	253	Corn	Flood
37.	24,659	Larry Combs	Finney	06	23	34W	04	386	80	4.83	1.37	252	Multiple	Flood
38.	SC0050	Charles Duff	Scott	25	18	33W	01	78	21	3.71	1.07	247	Corn	Flood

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Table 26 (continued)

**TOP FIFTY IRRIGATION WATER USERS WITH POINTS OF DIVERSION FOR WHICH REPORTED WATER USE EXCEEDED THE REGIONAL STANDARD AND EXCEEDED THE REGIONAL AVERAGE^{a/} BY THE HIGHEST PERCENTAGE
KANSAS, 1995**

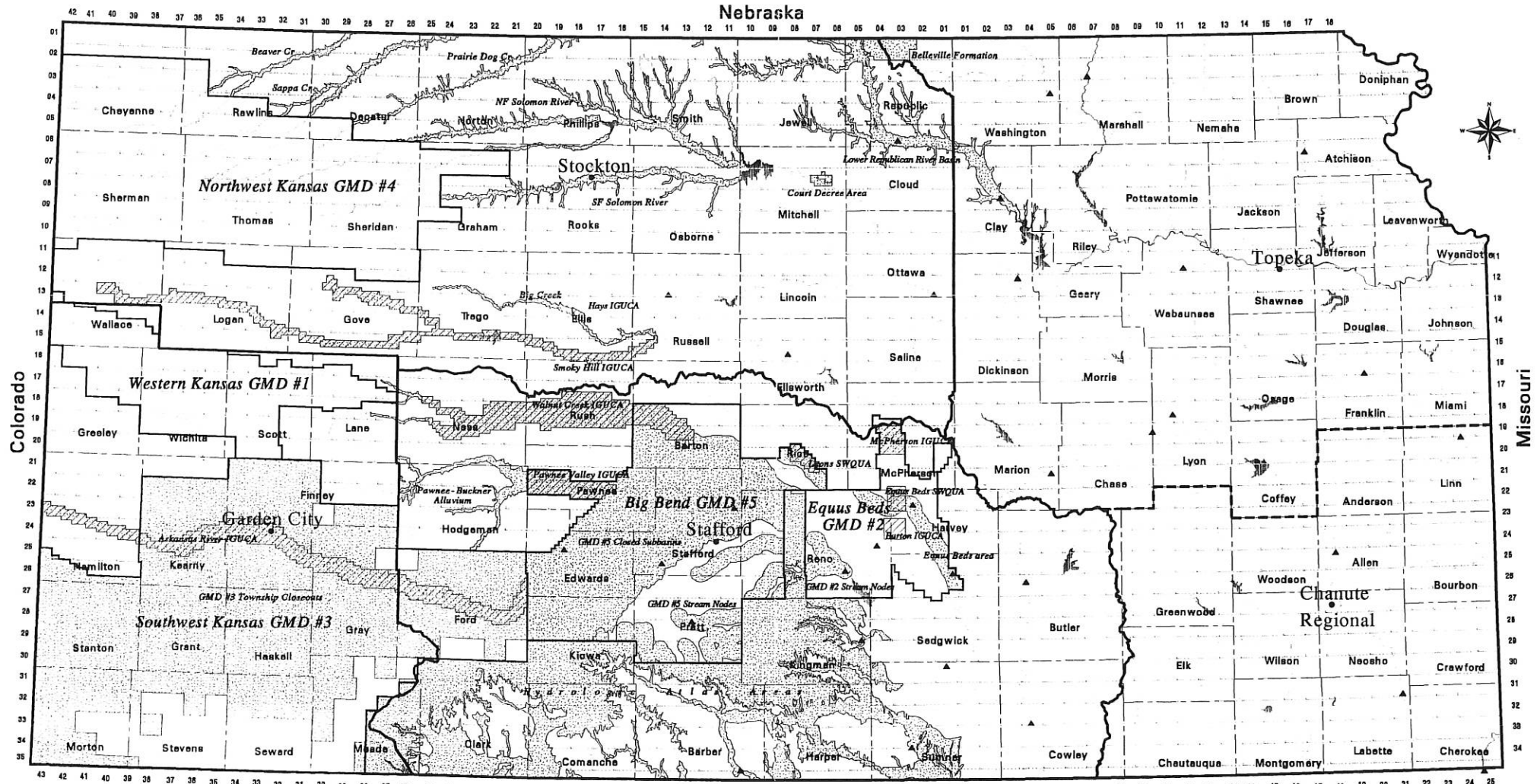
Rank	File No.	Name	County	SEC	TWP	RNG	CIN	Wtr. Use (AF)	Ac. Irr.	AF/A	Reg. Avg. AF/A	Pct. Abv. Avg.	Crop	Irr. Sys.
39.	37,876-IR	American Golf Corp.	Wyandotte	20	10	23E	07	114	70	1.63	0.47	247	Golf Course	Sprinkler
40.	13,611	Joe Moore	Clark	26	30	21W	01	175	45	3.89	1.13	244	Alfalfa	Flood
41.	8,084	Glen R. Warner	Hodgeman	33	21	21W	02	193	50	3.87	1.13	242	Corn	Flood
42.	24,659	Larry Combs	Finney	06	23	34W	03	375	80	4.68	1.37	242	Multiple	Flood
43.	16,514	Nicholas Berning	Wichita	20	18	35W	03	84	23	3.64	1.07	240	Corn	Flood
44.	17,705	Golden Belt Feeders, Inc.	Stafford	20	22	13W	01	468	130	3.60	1.06	240	Corn	Ctr. Pvt.
45.	10,928	Duane Stutz Corp.	Gove	01	15	26W	02	402	105	3.83	1.13	239	Orchard	Ctr. Pvt. LEPA
46.	16,535	James L. Gooch	Stevens	08	35	36W	01	28	6	4.64	1.37	239	Wheat	Flood
47.	16,514	Nicholas Berning	Wichita	20	18	35W	02	80	22	3.62	1.07	238	Corn	Flood
48.	5,726	Savolt, Inc.	Finney	28	21	33W	01	557	122	4.57	1.37	233	Multiple	Ctr. Pvt.
49.	32,124	Nick R. Hatcher	Seward	12	34	33W	04	1,179	260	4.53	1.37	231	Alfalfa	Ctr. Pvt.
50.	33,027	Glenn A. Mull	Pawnee	08	21	15W	10	324	94	3.45	1.06	225	Multiple	Flood

^{a/} Local regional averages are shown in Table 7.

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Closed and Restricted Areas



Kansas Department of Agriculture
 Division of Water Resources
 Technical Service Section and the
 Subbasin Water Resources Management Program

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

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

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

- County
- Field Office Boundary
- Chanute Regional Boundary

- Field Office
- Name of affected area
- MDS Gaging Station

Disclaimer—Features on this map represent conditions as of the date of map and are subject to change. The user is referred to specific policies, regulations, and/or orders of the Chief Engineer.
 January 10, 1997

*House Environment
 1-16-97
 Attachment 13*

*House Environment
 1-16-97
 Attachment 13*

A SYNOPSIS OF THE KANSAS WATER RESOURCE AGENCIES

1. **Kansas Department of Health and Environment:** Water Quality Issues, Water Quality Standards, Water Discharge Permits, Non-Point Source Pollution, Remediation, Waste Management

2. **Kansas Department of Agriculture:**

2a. Division of Inspections: Fertilizer Management

2b. Division of Plant Health: Pesticide Management

2c. Division of Water Resources: Floodplain Management, Structures (Dams, levees, channel changes), Interstate Compacts, Water rights, permits and administration, Special management (Groundwater Management Districts, Intensive Groundwater Use Control Areas, Subbasin Management), Water use and conservation, Water transfers.

3. **Kansas Department of Wildlife and Parks:** Environmental Protection and Investigation, Habitat Improvement, Threatened and Endangered Species, Stream Recreation, Lake Recreation.

4. *Kansas Corporation Commission* - Conservation Division: Oil and Gas activities, remediation, well permitting and plugging, injection wells.

5. *Board of Regents:*

5a. Kansas State Cooperative Extension: Agriculture Research, Education, Information Outreach, State Forestry.

5b. Kansas Geological Survey: Groundwater Investigations, Stream-Aquifer Studies, Mineral Intrusion, Geochemistry.

5c. Kansas Biological Survey: Aquatic Biology, Ecological Investigations

6. **Adjutant General** - Division of Emergency Management: Disaster Assistance, Emergency Water Supply.

7. State Conservation Commission: Programs for Land Treatment and Water Conservation, Non-Point Source Pollution, Riparian Protection, Watershed Dams, Multipurpose Small Lakes

8. **Kansas Water Office:** Policy, Basin Planning, Program Coordination, State Water Plan Fund, Hydrology, Research, Water Conservation, Weather Modification, Reservoir Management, Marketing Program, Assurance Program, Small Lake Water Supply, Geographic Information System.

Note: Agencies in Bold are Governor Appointments; Italicized Agencies have Terms

*House Environment
1-16-97
Attachment 14*