

Kansas Water Plan

Data and Research Policy and Institutional Framework

January 2009

Overview

Accurate and timely data is crucial to both planning and management of water resources in Kansas. Basic analysis and research is coordinated through the water planning process and the Kansas Water Authority. All state agencies with water resource responsibilities target data collection and analysis on high priority water resource issues and in support of the Kansas Water Plan objectives.

Geospatial data, as available from each water resource related agency, is shared through the Geographic Information Systems (GIS) Policy Board and the Data Access and Support Center (DASC). The GIS Policy Board was initiated in 1989. Administrative support for the GIS Policy Board is contained within the Department of Administration. The DASC⁽¹⁾ is located at and partially supported by the Kansas Geological Survey (KGS).

Research is primarily carried out at the Kansas Board of Regents' universities and by federal agencies. Statutory guidance indicates that it is the responsibility of the KWO to coordinate and guide data collection and research toward issues of importance within the *Kansas Water Plan*.

The state develops and supports research, through the Kansas Water Resources Institute (KWRI)⁽²⁾, on high priority water resource issues and objectives of the state, as identified through the state water planning process. The KWRI fosters the dissemination and application of research results, and facilitates effective communication among water resource professionals in Kansas.

Programs are designed to a level of completeness and accuracy to support planning and management of the state's water resources.

Kansas Water Plan Guidance

- It is a policy of the state that all state agencies with responsibilities affecting water resources of the State shall carry on basic data collection, research and analyses concerning matters relating to the water resources of the state.⁽³⁾
- It is a policy of the state that the KWO review and coordinate financial assistance for research that may be provided by federal or state agencies to public corporations concerned with management, conservation and development of water resources to prevent duplication of effort.⁽³⁾
- The KWO has a mandate to collect and compile information pertaining to a wide range of water issues and, in so doing, collect and compile information obtainable from other agencies, instrumentalities and political subdivisions of the state and the federal government.⁽⁴⁾

Objectives

- Target data collection, research projects, and data sharing activities to address specific water resource issues as identified in the Kansas water planning process and to support and guide state water resource program operations.

WATER MANAGEMENT AUTHORITIES AND PROGRAMS

Data Collection

Streams

Flow and stream surface elevation is automatically collected at 170 locations by gages maintained and operated by the U.S. Geological Survey (USGS). A number of these gages (147) are operated in conjunction

with state and local cooperators. This information is supplied in near real time to the Internet through satellite uplink. Stream gage data are used for flood forecasting, reservoir operations, water right administration, water quality monitoring and interstate compact compliance as well as a host of other uses. Long-term stream gages provide the ability to complete analyses of changes in the hydrologic system in response to management or watershed changes.

Water quality in flowing streams is measured primarily by the Kansas Department of Health and Environment (KDHE). KDHE collects grab samples at established sites on a rotational basis to determine water quality conditions and any changes that may be happening over time. The USGS also has established a few continuous real time water quality monitoring stations in Kansas. This information is used to establish total maximum daily loading (TMDL) values as well as measure impact of management practices.

Aquatic species monitoring is used to determine the relative water quality and changes that may be happening to the overall biological stream community. Monitoring is conducted by the Kansas Department of Wildlife and Parks (KDWP), KDHE and university researchers at Kansas State University (KSU), Kansas University's Kansas Biological Survey (KBS) and other regents' institutions.

Reservoirs

The U.S. Army Corps of Engineers (Corps) and U.S. Bureau of Reclamation (Bureau) operate 24 federal reservoirs within the State of Kansas. For each of these reservoirs the respective federal agency collects daily information regarding lake surface elevation, water in storage, releases, evaporation and inflow. This information is used by state and federal agencies for reservoir operations as well as analysis of flood risk and reservoir yield.

In 2006, the KBS started a Bathymetric Survey Program. This Program is conducted in cooperation with the KWO and other local and state agencies. The survey program measures reservoir storage and sediment accumulation. Data from this program is used to estimate the sediment rate in Kansas reservoirs and the chemical composition of the sediment that has been deposited.

Information on the quality of water in reservoirs is collected by the KDHE. This information is used in conjunction with stream information to determine reservoir loading and contaminant source.

Ground Water

Ground water levels are measured throughout the high plains aquifer system by a cooperative program of the KGS⁽⁵⁾, the Kansas Department of Agriculture – Division of Water Resources⁽⁶⁾ (DWR) and the local groundwater management districts. These measurements show the depth to water and change from the previous year. When combined with bedrock elevations from drilling logs, the measurements show the saturated thickness remaining in the aquifer.

Limited ground water quality data are collected by local public water suppliers in cooperation with the KDHE. This information is used primarily to determine whether safe drinking water laws and rules are being met. Additionally, ground water quality data are measured at contamination remediation sites as well as around certain solid waste land fills.

Water Use

The DWR collects information each year about water use in Kansas. Information for the previous calendar year is self-reported by each water right holder in Kansas by March 1. This information is used for water right compliance. When combined with water level measurements, these data can be used for multiple analyses related to Kansas' aquifers and ground water movement.

The KWO collects a limited amount of water use information for holders of Water Marketing Program contracts. This information shows the amount of water directly withdrawn from reservoirs each year. This information is used for contract compliance as well as passed along to the Corps to be combined with other reservoir information.

Climate

Information about [precipitation](#), wind speed, temperature, and other atmospheric conditions is measured at numerous weather stations throughout the state. These stations are operated by several government agencies for a variety of purposes. Agencies involved in this effort include the National Weather Service (NWS), the USDA Natural Resources Conservation Service, KSU, the Kansas Department of Transportation, and local groundwater management districts.

In addition to automated airport stations, the NWS maintains a volunteer Cooperative Observer Program. Some of these stations, most of which are not automated, have been in operation for over 100 years. KSU operates a network of 14 automated weather stations located at KSU agricultural experiment stations. KSU also provides operation and maintenance for 16 additional automated stations that provide data primarily for irrigation scheduling.

Development of a multi-purpose Kansas mesonet of automated stations was initiated in 2008. Mesonet stations eventually will be deployed in all Kansas counties. KSU will operate and maintain this network.

Data Storage

Data are stored and organized in a number of different manners within Kansas to serve various purposes.

Data Access and Support Center - Geographic Information Systems

GIS data are developed by a number of agencies and research organizations in Kansas. Basic GIS data are stored at the DASC at the KGS. This Center and the basic data development are overseen by the Kansas GIS Policy Board established by executive order.

Weather Data Library

KSU maintains a Weather Data Library⁽⁷⁾ within its Department of Agronomy. The library serves as a repository for the weather data observed within the state. It is affiliated with the High Plains Climate Center and the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center. Information available from the Weather Data Library comes from a number of sources and is delivered to a wide variety of clients through either the internet or customer response. The State Climatologist oversees the library.

National Water Information System

The USGS collects and maintains a national database of water information.⁽⁸⁾ This information ranges from streamflow measurement, to lake levels to ground water levels in certain cases. This information is readily accessible on the Internet.

Ground Water Levels

The KGS maintains the WIZARD database, a repository of information for freshwater wells drilled into Kansas aquifers. Data are available through the KGS website.

Research

Kansas Water Resources Institute

The KWRI⁽²⁾ was established in 1965 as part of the Water Resources Research Act. It is a component of a national network of water resources institutes in every state and trust territory of the United States.

KWRI works to develop and support research on the high priority water resource issues and objectives of the state. KWRI also helps foster the dissemination and application of research results, as well as facilitates effective communication among water resource professionals in Kansas. The Institute supports research

through a competitive grant program. KWRI distributes and applies research results through conferences, briefings, white papers, and newsletters. The Institute also helps sponsor the annual Water and the Future of Kansas conference.

State Agencies

Each of the Governor's Natural Resources Subcabinet agencies conduct water resources research to support the agencies' missions. In addition, the KGS and KBS serve as research resources to the state. Both agencies are non-regulatory and non-degree granting research and service units of the University of Kansas.

The mission of the KGS is to conduct geological studies and research and to collect, correlate, preserve, and disseminate information leading to a better understanding of the geology of Kansas, with special emphasis on water quality and quantity.

In 2006, the Applied Science and Technology Reservoir Assessment (ASTRA) Initiative⁽⁹⁾ was created at the KBS in response to the need for information regarding the status and conditions of Kansas reservoirs.

Federal Agencies

Several federal agencies contribute water resources research to the state of Kansas including the USGS. Through the Kansas Water Science Center⁽¹⁰⁾, the USGS conducts research and produces publications about water resources.

Universities

Kansas' six state universities, 19 community colleges, and a municipal university conduct research that directly supports the goals and objectives of the water resource agencies in the state.

Resources

1. Kansas Data Access and Support Center. <http://www.kansasgis.org/>
2. Kansas Water Resources Institute (KWRI). <http://www.k-state.edu/media/webzine/institute/KSwater.html>
3. K.S.A. 82a-901 *et seq.* - State Water Planning Act. <http://www.kslegislature.org/legsrv-statutes/getStatuteInfo.do>
4. K.S.A. 74-2608 *et seq.* <http://www.kslegislature.org/legsrv-statutes/getStatuteInfo.do>
5. Kansas Geological Survey. <http://www.kgs.ku.edu>
6. Kansas Department of Agriculture-Division of Water Resources. <http://www.ksda.gov/cid/2>
7. Kansas State University, Weather Data Library. <http://www.oznet.ksu.edu/wdl/>
8. U.S. Geological Survey, National Water Information System. <http://waterdata.usgs.gov/nwis>
9. Kansas Biological Survey, Applied Science and Technology for Reservoir Assessment. <http://www.kars.ku.edu/astra>
10. U.S. Geological Survey, Kansas Water Science Center. <http://ks.water.usgs.gov/>