

# Neosho River Basin Management Categories

January 2009

## WATER CATEGORIES

The following categories include issues identified in the [Neosho River basin](#) plan as items that require attention in addition to the basin priority issues. These issues are addressed within the following management categories:

- Water Management
- Water Conservation
- Public Water Supply
- Water Quality
- Wetland and Riparian Management
- Flood Management
- Water-Based Recreation

These categories also correspond to the statewide management categories and policies of the *Kansas Water Plan* found in [Volume II](#). These documents contain new policy issues and the existing policy and statutory framework that relate to the management categories.

## ISSUE: WATER MANAGEMENT

### Applicable *Kansas Water Plan* Objectives

- Achieve sustainable yield management of Kansas surface and ground water sources outside of the Ogallala-High Plains aquifer and areas specifically exempt by regulation. Sustainable yield management would be a goal that sets water management criteria to ensure long term trends in water use will move as close as possible to stable ground water levels and maintenance of sufficient streamflows.

### Applicable Programs

The following programs help to meet the objectives in the Water Management (quantity) category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Agriculture-Division of Water Resources: Water Appropriation Program
- Kansas Geological Survey and Kansas Department of Agriculture-Division of Water Resources: Water Well Measurement
- Kansas Geological Survey: Stream Aquifer Interactions
- USDA-Natural Resources Conservation Service: Environmental Quality Incentive Program
- Kansas Water Office: Water Marketing Program
- Kansas Water Office: Water Assurance Program

## ISSUE: WATER CONSERVATION

Water conservation is essential for the effective management of water resources in the basin to assure that a sufficient, long-term supply of water is available for the beneficial uses of the people of the state. Conservation is defined as a careful preservation and protection of something, especially the planned management of a natural resource to prevent exploitation or destruction.

Water conservation activities apply to all uses; irrigation, municipal, industrial, etc, from all sources. Municipal (33%) and industrial uses (49%) account for the majority of water used in the basin. Irrigation and recreation uses both accounted for 8 percent with stock water (1 percent) and other uses (1 percent) making up the balance (2006).

Of the 111 [public water suppliers](#) in the basin 83 have developed a water conservation plan as of 2006. Twenty four plans following the new 2007 guidelines have been updated.

Most water utilities consider water as a commodity and encourage the use of water by their customers by striving to keep rates low. The availability of plentiful inexpensive water is promoted by communities in attracting new growth. More recently, communities are adopting rate structures that result in increased unit cost with increased use. This is one form of demand management.

The four basic types of water rate structures used in Kansas are described as 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 the amount of water used. With a decreasing block rate, the unit cost of water decreases

### 2007 Kansas Municipal Water Conservation Plan Guidelines



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as usage increases. The unit cost of water is the same for all levels of usage with a uniform block rate. With an increasing block rate, the unit cost of water rises as usage increases.

The type of rate structure can affect gallons per capita per day (gpcd) usage. Systems with flat rates tend to use considerably more water per capita than systems that meter customer use. The other three types of rate structures, in which cost depends on amount of water used, have a less dramatic effect on gpcd. Decreasing block rates are assumed to discourage conservation because customers are charged lower rates for high-volume usage. Increasing block rates are considered an effective way to promote conservation among high-volume users while keeping the cost of moderate use affordable. However, the use of these types of rate structures does not appear to influence usage by individual customers as much as does the total monthly water cost and the geographic area in which they live.

Municipal Water Conservation Plans include drought stage triggers (Table 1) that are the signals that water shortage or other conditions indicative of drought have reached certain stages or levels. They act as the signal to begin implementation of actions appropriate to the stage. Triggers may be related to supply conditions or demand levels. A given stage should have more than one trigger to confirm that conditions are worsening. A water utility or other municipal water entity should enact the appropriate stage whenever the agreed upon set of triggers is reached. Delay in action may lead to a major disruption of the water supply system at a later time.

**Table 1**

**Drought Stage Triggers used by public water suppliers with surface water sources:**

1. Lake level in terms of elevation or capacity.
2. Stream level in terms of flow or stage.
3. Water level in relation to the dam.
4. Peak daily demand levels.
5. Percent capacity of treatment plant operations over a number of days.
6. Capacity of water system storage and ability to recover.
7. The provider for purchased water has issued a drought stage.
8. Emergency conditions related to repairs or water quality.
9. The Kansas Water Office has issued a drought stage based on the remaining water marketing storage in a basin reservoir.

Unaccounted for water includes any unmetered uses such as water used for fire fighting, plus water loss in the distribution system. Technical assistance is available through KWO for systems with more than 30% unaccounted for water. High amounts of unaccounted for water may result from water line breaks, under registering customers, unmetered uses, faulty metering, or inaccurate accounting. The statewide average percentage of unaccounted for water use in 2006 was 14%. Management of unaccounted for water is a fundamental tool in providing adequate water supply. Some unaccounted for water represents water that has been treated and then has been wasted and lost the potential to be put to beneficial uses.

### Applicable *Kansas Water Plan Objectives*

- Reduce the number of public water suppliers with excessive “unaccounted for” water by first targeting those with 30 percent or more “unaccounted for” water.
- All non-domestic points of diversion meeting predetermined criteria will be metered, gaged, or otherwise measured.
- Conservation plans will be required for water rights meeting priority criteria under K.S.A. 82a-733 if it is determined that such a plan would result in significant water management improvement.

### Applicable Programs

The following programs help to meet the objectives in the Water Conservation management category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Agriculture-Division of Water Resources: Water Appropriation Program
- Kansas State University Research and Extension: Water Conservation and Management Program
- State Conservation Commission: Water Resources Cost-Share Program
- Kansas Water Office: Water Conservation Program
- USDA-Farm Services Agency: Conservation Reserve Program

### ISSUE: PUBLIC WATER SUPPLY

See [Water Supply Management and Conservation Basin Priority Issue](#).

In addition to the Basin Priority Issue Water Supply Management and Conservation, there are continuing needs

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to ensure that programs are in place and managed to address reducing the number of public water supply systems that are vulnerable to drought, and ensuring that systems have the technical, financial and managerial capacity to meet future needs for water quality and quantity.

Drought vulnerable water supplies are those suppliers most likely to be first impacted by drought due to basic source, distribution system or treatment capacity limitations; or that rely on a single well as a water supply source. Drought vulnerable water supplies were surveyed in 2003 and 2006. The number of public water suppliers considered drought vulnerable decreased from five to zero between the two surveys. There are currently no drought vulnerable water supplies in the basin. These reductions can be attributed to the Kansas Department of Health and Environment efforts in the Technical, Financial and Managerial and the KANCAP Programs.

There are 111 [public water suppliers](#) in the Neosho basin, of which 56 are rural water districts. There are six public wholesale water supply districts (PWWSDs) in the basin. About 77% of water used is from surface sources. The Cottonwood/Neosho River Basin Assurance District is also active in the basin. The Corps operates [Council Grove](#), [Marion](#) and [John Redmond](#) reservoirs in coordination with the state to meet assurance district member's needs during periods of low flow.

Water usage in gpcd is calculated for each water system in the state from reported data on water use and population served. Average gpcd figures for large, medium, and small water suppliers are calculated in eight regions of the state based on similar geographic areas. The Neosho basin is located in regions 7 and 8. Average gpcd for large, medium and small suppliers in region 7 are 148, 107, and 96 respectively. Average gpcd in region 8 are 130, 102 and 84 for large, medium and small suppliers. This serves as a reference to indicate if individual suppliers are above or below average usage for the region.

## Applicable Kansas Water Plan Objectives

- Ensure that sufficient [surface water](#) storage is available to meet projected year 2040 public water supply needs for areas of Kansas with current or potential access to surface water storage.
- Less than five percent of public water suppliers will be drought vulnerable.
- Ensure that all public water suppliers have the technical, financial and managerial capability to meet their needs and to meet Safe Drinking Water Act re-

quirements.

## Applicable Programs

The following programs help to meet the objectives in the Public Water Supply management category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Agriculture-Division of Water Resources: Water Appropriation Program
- Kansas Department of Health and Environment: Public Water Supply Program
- Kansas Water Office: State Water Planning Program
- Kansas Water Office: Water Conservation Program

## ISSUE: WATER QUALITY

See the [Watershed Restoration and Protection Basin Priority Issue](#)

Water quality and related water resource issues are addressed through a combination of watershed restoration and protection efforts utilizing voluntary, incentive-based approaches, as well as regulatory programs.

## Applicable Kansas Water Plan Objectives

- Reduce the average concentration of bacteria, biochemical oxygen demand, solids, metals, nutrients, pesticides and sediment that adversely affect the water quality of Kansas lakes and streams.
- Ensure that water quality conditions are maintained at a level equal to or better than year 2000 conditions.
- Reduce the average concentration of dissolved solids, metals, nitrates, pesticides and volatile organic chemicals that adversely affect the water quality of Kansas ground water.
- Maintain, enhance, or restore priority wetlands and riparian areas.
- Nutrient reduction goals will be included in all WRAPS projects within the basin.
- All public water suppliers will complete and implement a source water protection plan.

## Applicable Programs

The following programs help to meet the objectives in the Water Quality management category. For more information on the programs and associated policies, see the [Programs Manual](#).

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- Kansas Department of Health and Environment: State Water Plan Program (Contamination Remediation)
- Kansas Corporation Commission: Conservation Division Programs
- Kansas Department of Health and Environment: Local Environmental Protection Program
- Kansas Department of Health and Environment: Watershed Management Section/WRAPS
- State Conservation Commission: Nonpoint Source Pollution Control Program
- State Conservation Commission: Water Resources Cost-Share Program

### ISSUE: WETLAND AND RIPARIAN MANAGEMENT

See the [Watershed Restoration and Protection Priority Issue](#) for a discussion of current activities concerning wetland and riparian area protection.

The primary approach to wetland and riparian management in the basin focuses on providing technical and financial assistance to landowners to protect and restore these resources in priority watersheds through the implementation of best management practices.

#### Applicable Kansas Water Plan Objectives

- Maintain, enhance or restore priority wetlands and riparian areas.

#### Applicable Programs

The following programs help to meet the objectives in the Wetland and Riparian Management category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Forest Service: Forest Stewardship Program and Conservation Tree Planting Program
- State Conservation Commission: Riparian and Wetland Protection Program
- State Conservation Commission: Kansas Water Quality Buffer Initiative
- Kansas Water Office: State Water Planning Program
- Kansas Department of Wildlife and Parks: Wildlife Habitat Improvement Program

### ISSUE: FLOOD MANAGEMENT

The primary approach to flood management in the basin focuses on floodplain management through community participation in the National Flood Insurance Program

(NFIP) administered by the Kansas Department of Agriculture-Division of Water Resources (DWR) and the reduction of rural flood damages through the construction of watershed dams in organized [watershed districts](#).

The Neosho basin has 42 communities (cities and counties) participating in the NFIP. One community has been suspended from the program and nine communities with identified flood hazard areas do not participate. The counties, and incorporated cities within each, shown in Table 2 are in the process of updating their flood maps and will receive new flood hazard zone maps by September 2010. The counties and incorporated communities within each, listed in Table 3 have received new Flood Insurance Rate maps.

There are 15 active watershed districts in the basin.

#### Applicable Kansas Water Plan Objectives

- Reduce the vulnerability to damage from floods within identified priority communities or areas.

Table 2 Updating Flood Hazard Maps	
Allen County	
Crawford County	
Marion County	
Labette County	
Neosho County	

Table 3 New Countywide Flood Insurance Rate Maps	
Lyon County	Feb. 20, 2008
Cherokee County	Nov. 19, 2009

#### Applicable Programs

The following programs help to meet the objectives in the Flood Management category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Agriculture-Division of Water Resources: Water Structures Program/Floodplain Management
- State Conservation Commission: Watershed Dam Construction Program
- State Conservation Commission: Watershed Planning Assistance Program

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## ISSUE: WATER-BASED RECREATION

Rivers, streams and lakes of Kansas represent a valuable recreational resource. Consideration of water based recreation problems and concerns are addressed in the [Water-Based Recreation Policy Section](#). Even though the Neosho basin has a wide variety and fairly high number of public water recreation sites proportional to the area covered, there is a demand for more water based-recreation facilities to meet the needs of the population.

The Neosho River and its tributaries are not among the three rivers in the state legally open for public access. The approach to enhancing opportunities for recreation is to improve access to water bodies that exist in the basin that are open to public use.

### Applicable *Kansas Water Plan Objectives*

- Increase public recreational opportunities at Kansas lakes and streams.

### Applicable Programs

The following programs help to meet the objectives in the Water-Based Recreation management category. For more information on the programs and associated policies, see the [Programs Manual](#).

- Kansas Department of Wildlife and Parks: Rivers and Stream Access
- Kansas Department of Wildlife and Parks: Community Fisheries Assistance Program
- Kansas Water Office: State water planning.

## ISSUES FOR FUTURE CONSIDERATION

Comprehensive Flood Assessment.