



## Kanopolis Lake: First Reservoir Built in Kansas by Corps of Engineers, Pools Managed by Corps and Kansas Water Office

**T**he horrific flood of 1903 was likely still on the minds of many Kansans in the 1930's. The national economy was in poor shape, low prices for agricultural commodities were the norm, and higher than normal temperatures with lower than normal rainfall resulted in poor harvests. Much of Kansas had experienced at least one dust storm. With the conditions of the current day, one might think that flooding was the last thing on their minds.

The Kansas State Historical Society has made available a report on the 1903 Smoky Hill - Kansas River Flood. It says the flood of '03 claimed the lives of 57 people (most of them in Shawnee County) and six of seven railroad bridges over the river in Kansas City were washed away. It was likely that it took years for the recovery to be complete. While likely smaller and less damaging than the '03 Flood, Salina also experienced flooding in 1927, 1928 and twice in 1929. Maybe Kansans of that generation were more apt to believe that the extremes are normal; drought today and flood tomorrow.

In the 1930's, it was common for a Flood Protection Act to be passed by Congress every year. The 1938 Flood Protection Act allowed the engineers of the U.S. Army Corps of Engineers to decide where flood protection projects would be most helpful and effective. Kanopolis Dam was one of these projects chosen by the Corps. The same act allowed the Secretary of War to allow for "domestic" storage behind these flood control structures in addition to the storage to be provided for flood water. Almost half of the total designed storage pool was dedicated to uses other than flood protection.

Work on the dam started in 1940, but after the outbreak of World War II, construction was

suspended in 1942. After the war ended, work resumed in 1946 and the gates were closed in May of 1948. The lake pools reached normal levels only a few months later in July of 1948.

Much of this "domestic" use of water was likely envisioned by the Corps to be used by an irrigation district. This irrigation district may have been created on paper, but it never became a functional entity.

In 1979, Rural Water District No. 1, Ellsworth County, also more commonly known as Post Rock Rural Water District, was established. It was designed with the idea that water from the reservoir could be treated and used by the residents of Ellsworth County and beyond. It is by far, in terms of area, the largest rural water district in Kansas. Until 2001, Post Rock Rural Water District and the Corps of Engineers negotiated annual contracts for the purchase of water from the conservation pool. A water treatment plant was constructed and potable water has been made available to thousands of Kansans.



**The Post Rock Rural Water District Surface Water Treatment Plant and Laboratory is located near the south end of the Kanopolis Lake Dam. The intake to access lake water is currently being extended 20 feet to reach deeper water and avoid problems with siltation at the present location of the intake.**

## Reservoir Facts

In 1946, post-construction measurements of the reservoir determined that 73,200 acre-feet of water storage was available. The surface of the reservoir at “normal” pool was 3,980 acres. The design rate of sedimentation was estimated to be 451 acre-feet per year, with a total reservoir sedimentation lifespan of 100 years. In 2007, another survey was conducted which found that the capacity has been reduced to 48,378 acre-feet with a water surface area of 2,975 acres. Sedimentation has been less than the expected rate, only being 422 acre-feet per year. In 2016, it was estimated that capacity has dropped to 4,954 acre-feet. The top of the Multi-purpose Pool is at an elevation of 1,463 feet, m.s.l. The Flood Pool tops out at 1,508 feet, m.s.l.

In 2001, ownership and operation of the “surplus” storage capacity was offered to the State of Kansas by the federal government at original construction prices. At Kanopolis, the State of Kansas purchased a portion of the original “domestic” or Multi-purpose Pool. The Corps continues to own 53.4 percent of this pool, now considered to be the Water Quality Pool. Releases from the reservoir from this pool are made to help maintain acceptable water quality and flow in the Smoky Hill River below the reservoir. Until recently, the Corps followed a minimum release schedule, which had established monthly water release values that did not consider actual downstream flow conditions. In recent years, the Kansas Water Office has successfully negotiated a change in the procedures for water quality releases. A downstream target flow at the Mentor, Kansas, gage has been established, and now the Kansas Water Office shares decision making responsibility with the Corps regarding the timing and amount of the releases. This more active co-management approach has allowed more water to remain in storage for more benefits.

The remaining 46.6 percent of the Multi-purpose Pool, approximately 20,949 acre-feet, is managed for water marketing by the Kansas Water Office. The first marketing commitment was made to the existing water user, the Post Rock Rural Water District. They now contract with the Kansas Water Office instead of the Corps. A multi-year contract has been signed, lasting through 2041 for 2,700 acre-feet of the pool (6 percent of the



**Normal and designed-for water seepage from the Kanopolis Dam is collected and conveyed to the Smoky Hill River via a small creek.**

total pool) for a dependable water supply through a 2 percent chance drought. There is 7,741 acre-feet of storage (17 percent) that remains available, after agreements were reached with various downstream water users to purchase 23.23 percent of the Multi-purpose Pool (estimated to contain 10,444 acre-feet in 2016).

A number of steps had to be accomplished involving many parties to manage the releases for downstream water users. Starting with unusually dry conditions in central



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Water from the Sand Creek flows toward the Smoky Hill River and is measured at the structure commonly called the V-Notch. Discharge from the control gates takes into account the quantity water flowing through the V-Notch when adjustments to the downstream flow rates are taken.

Kansas in 2006, a discussion among irrigators, public water systems and state agencies started that resulted in legislation creating the Lower Smoky Hill Water Supply Access Program in 2011.

### Smoky Hill Water Supply Access Program

The legislation that was passed allowed surface water users of the Smoky Hill River from the Kanopolis Dam to the river's confluence with the Saline River to join together,

to purchase water supply storage in the reservoir. The first significant action after the legislation passed was the successful formation of the Lower Smoky Hill River Special Irrigation District in December of 2013. The Irrigation District represents the irrigators that have water rights that are in good standing with the Kansas Department of Agriculture's Division of Water Resources, and have voluntarily committed to financially supporting the Access District. With the irrigators organized as a single participant, they were eligible to join with the municipal, industrial and recreational water right owners to incorporate the Lower Smoky Hill Water Supply Access District. This incorporation was accomplished on December 5, 2016, in Salina. With this momentum, the Kansas Water Authority authorized the Kansas Water Office Director to negotiate the amount of water storage to be available to the Access District. On December 29, 2016, the agreement was signed to sell 7,733 acre-feet of storage for municipal use to the City of Salina, and 2,711 acre-feet of storage for irrigation use. The work isn't over yet, as the responsibilities of the Kansas Water Office, the Division of Water Resources and the Access District need to be formalized in an operating agreement. Items that will need to be included in the agreement include, but are not limited to, surface water inflows, water releases, determinations of when diversions can occur, triggers to suspend water diversions, communication methods, operation and maintenance costs, etc. It is

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This view of the north shore of Kanopolis Lake from the dam shows some of the recreational activities that are available to visitors.



likely that the operating agreement will be reviewed after five years, and earlier if all the parties agree.

With 7,741 acre-feet of storage remaining, there has been some interest by other parties to obtain storage. There are already applications pending which have been filed by the Post Rock Rural Water District, McPherson Board of Public Utilities, the city of Russell, and White Energy Partners (that owns an ethanol production plant near Russell). There appears to be no urgency held by the applicants to move forward at this time, while they consider other less-costly alternatives.

In this day and age, most are in agreement that the cheap and easy solutions to the challenges we face no longer exist.

But the Access District project shows us that success is possible when people cooperate to achieve a shared goal. We will be watching the evolution of the Access District to see how much more success is achieved and if this model of cooperation can be used elsewhere.

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