# Cost Benefit of Groundwater-friendly Practices
# Sand Creek Station Golf Course, Newton, Kansas

## Site Background

Sand Creek Station is a 225-acre, 18-hole, Jeff Brauer-designed public golf course owned by the City of Newton, Kansas. The course opened in July 2006 and features bentgrass greens, tees, and fairways. Sand Creek has received several awards including Golf Digest's "top 10 courses to play under 75 dollars." The course is surrounded by a 560 lot subdivision constructed on former farmland.

The land where the course was constructed was donated by land developers, who also contributed $600,000 and $2,400 per lot sold to the City of Newton to help pay for the construction of the golf course. In addition, the city uses a portion of the new taxes generated by the new homes to help pay the costs of constructing the golf course.

Sand Creek Station Golf Course staff performs all course maintenance, including mowing, watering, irrigation system maintenance, fertilizer and chemical applications

The course has participated in the Groundwater Guardian Green Site program since 2008.

## Reclaimed Water Use

The City of Newton, including the golf course, is located in south-central Kansas, a part of the state where water use, water quality, and groundwater levels are extremely important. Specifically, the Equus Bed Aquifer is an important source of water to many cities in the area, including Newton and Wichita. Current water use practices and recharge of the aquifer to meet future needs are important items to be considered by cities and residents of this portion of Kansas.

In 2003, city leaders approached Representative Todd Tiahrt (4th Congressional District) about obtaining a grant to help offset additional construction costs for the access and infrastructure to use reclaimed water. Tiahrt says, "As the demand and cost for water continue to rise, many golf courses are opting to use recycled or reclaimed water as it is often called." Other options for a water source would have been drilling wells or tapping into the city water supply. The City of Newton received an approximately $450,000 federal grant which allowed the City to install a supply line for the reclaimed water to the golf course. The monies were secured through a State and Tribal Assistance Grant (STAG), earmarked through the VA/HUD bill, which was wrapped into the Omnibus signed into law January 23, 2004.

Using the reclaimed water for irrigation provided both a means of effluent water disposal for the city and a source of water for the golf course, where turfgrass could help to filter the effluent water. By using reclaimed water for irrigation purposes, the City of Newton, with the help of Sand Creek Station, was able to help safeguard local groundwater resources, which supplies water for residential, agriculture, and industrial uses.

Sand Creek Station receives the reclaimed water for irrigation from the city's wastewater plant, which is located about three-fourths of a mile north of the course. Contractors installed an 18-inch line with 14-feet of head from the wastewater plant to Sand Creek Station Golf Course. As a result, the city is able to supply 1.2 million gallons of reclaimed water per day to the holding pond on the golf course, which has a three million-gallon capacity.

Purple pipe and purple valve boxes were required when constructing the irrigation system. Other requirements for using reclaimed water on the course included:

- Not using the reclaimed water to fill the course's lakes or ponds.
- Using part circle heads around the lakes.
- Restricting access to the area during irrigation, except for hand watering.
- Sampling fecal coliform levels in the water twice a month.
- Posting signs on the course noting the use of reclaimed water.

Sand Creek Station does not pay for the reclaimed water and has an ample supply, thus providing a great economic benefit to this practice.

The course has approximately 100 acres of irrigated turf. During the summer of 2007, staff noticed a black layer forming around drains in the fairways and on greens where surface drainage is poor. The greens are core aerated in the spring and fall, and eight millimeter needle tines are used during the summer to help improve drainage in these areas as needed. The reclaimed water also has high levels of nitrate. In fact for every one inch of irrigation water applied, we get an estimated .1 lb N per 1000 square feet. This does cause excessive growth at times, and must be taken into account when planning the fertility program. Staff has had positive results using Primo to slow growth on greens, tees, and fairways.

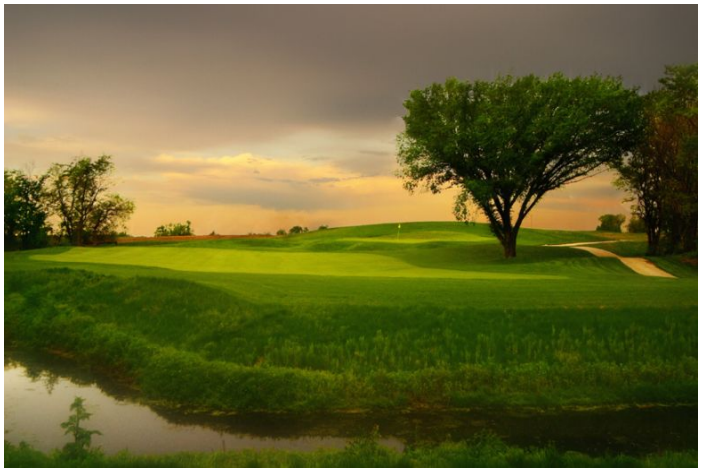
In an area where water rights can be difficult to obtain, purchasing municipal water can be expensive, and water conservation is important, using recycled water can be a good solution. Coordinating the development of the necessary infrastructure with community leaders, Congressmen, and others helped to provide this solution for Sand Creek Station.

"Recycled water is a reliable source during drought periods compared to city wells and lakes," Tiahrt says. "It is also a cost-effective means of wastewater disposal for the city. In addition, recycled water is more economical than other water sources that could be used to irrigate the golf course. The impact on the environment has been positive because the turfgrass provides a natural filtration system for the recycled water, reducing chances of contaminated groundwater."

Houchen notes, "Sand Creek Station's use of recycled water helps to protect an important underground aquifer. Using recycled water presents its own set of challenges for golf course maintenance, but it provides many benefits as well."

Visit http://www.sandcreekgolfclub.com for more information about the Sand Creek Station Golf Course.

*Adapted with permission from "Developing the Infrastructure for Reclaimed Water at Sand Creek Station" by James Houchen, Superintendent, developed for the Golf Course Superintendents Association of America's Environmental Institute for Golf.*



Sand Creek Station Golf Course


Signs noting the use of reclaimed water


Valve boxes noting the use of reclaimed water