

## ARSENIC IN DRINKING WATER COMPLIANCE SUCCESS STORIES

# Yukon, OK: Purchasing Water From a Neighboring Public Water System

### Case Study Contact Information

Matt Maly  
Engineer  
City of Yukon  
(405) 520-5117

The City of Yukon, Oklahoma, renegotiated its existing arrangement with nearby Oklahoma City to increase the amount of water purchased from Oklahoma City and reduce the rates charged per thousand gallons. Yukon also installed a new meter on the transmission line to automate the blending process that reduces arsenic levels in finished water.

---

### Lessons Learned

While the City of Yukon is still considering installing arsenic treatment for their own wells, the decrease in the purchased water rate negotiated with Oklahoma City (described below, in “Funding Process”) has meant that the cost of treatment will likely be equal to or greater than the costs of purchasing water. The City may investigate treatment options in the future as new or refined arsenic removal technologies become available.

### Background

The City of Yukon, located in central Oklahoma approximately 16 miles west of Oklahoma City, is a community water system serving about 20,400 people. The City currently has 15 active wells, the water from which is blended and chlorinated prior to the entry point to the distribution system, to meet an average daily demand of 2.5 MGD. The City’s source water monitoring results showed that several wells have at times exceeded the previous 50 parts per billion (ppb) maximum contaminant level (MCL) and seven wells had arsenic levels that exceeded the revised 10 ppb MCL; other wells were close to the 10 ppb limit. In samples collected between February 2005 and January 2006, arsenic levels at the entry point to the distribution system ranged from 11 to 37 ppb.

## **Alternative Considered**

The City investigated forming a regional water authority with other neighboring water systems to construct an 88 mile pipeline extension and install pumping equipment to draw water from another aquifer, the Arbuckle-Simpson aquifer. Although the aquifer does not have elevated levels of arsenic, the water is very hard and would require softening treatment. However, a state law passed in 2003 "...prevents the Oklahoma Water Resources Board from granting ground water permits that would allow any city outside of south-central Oklahoma to pump ground water from the Arbuckle-Simpson aquifer and pipe it out of the area," at least until further study on the impact of pumping is completed. The law has withstood several legal challenges by local landowners. Ultimately, due to the strong opposition to this proposal, as well as the treatment needs for this water supply, this alternative was eliminated.

## **Selected Compliance Strategy**

The City of Yukon has had a purchased water arrangement with Oklahoma City for at least 20 years. Prior to the new arsenic standard of 10 ppb, Yukon typically purchased approximately 5 to 10 percent of its required supply from Oklahoma City.

To comply with the new arsenic standard, the City of Yukon increased the amount of water purchased from Oklahoma City to 45 to 50 percent of the required supply, depending on the arsenic levels of the Yukon wells being used at any given time. The purchased water is blended with water from Yukon's wells (through a common transmission line) for delivery to customers.

This increased purchased water/blending arrangement has been in place since January 2006. Arsenic levels at the entry point to the distribution system were in the range of 8 to 10 ppb when this arrangement was first implemented, but have since decreased to a range of 3 to 4 ppb as a result of operational adjustments.

To facilitate the blending, Yukon installed a meter in the transmission line. Yukon's meter is adjusted to reflect the amount of water that the City intends to take from Oklahoma City and transmits the information via a programmable logic controller (PLC) to a central computer; Oklahoma City meters transmit to the same PLC. Based on the information from the meters, the pumps (which have variable frequency drives) are automatically adjusted to ensure the required volume of water is delivered to Yukon. The ratio of water coming from Oklahoma City is reviewed and/or adjusted on a daily basis.

## **Funding Process**

Yukon is using local water revenues to address arsenic compliance; an increase in customer water rates was not necessary, as the City negotiated a new purchased water rate with Oklahoma City. Prior to the increase in the amount of water purchased, the average cost of purchasing water was approximately \$3.00 per thousand gallons. The new reduced rate is approximately \$1.18 per thousand gallons. The rate is calculated based on the number of gallons that Yukon reserves from Oklahoma City each month and the number of gallons actually purchased each month. While the amount of water purchased is greater than before, the City did not believe that the costs were high enough to require rate increases.