

# Groundwater Monitoring and Assessment Program (GMAP)

## FACT SHEET



With approximately 386 million acre-feet of groundwater in storage, Oklahoma's aquifers provide enormous benefits for multiple uses, including agriculture, public and private water supply, and industry. This invaluable resource is susceptible to local depletion as well as pollution sources that can be extremely challenging and expensive to remediate.

Interest in the assessment of Oklahoma's groundwater resources began with groundwater level data collection in the 1950s, and it continued with allocation studies in the early 1970s and an attempt to characterize ambient groundwater quality conditions in the late 1980s. For more than four decades, the OWRB has directed an annual winter (January-March) well measurement program, used to relate changes in groundwater levels in some areas of the state with departures from normal (mean) precipitation levels.

While useful, this information is limited in its scope due to its uneven distribution across the state. Historically, groundwater quality monitoring activities have focused on compliance with specific regulations, and funding for groundwater studies has been constrained. In general, insufficient data have been available to manage and protect groundwater resources adequately in the majority of the state's major aquifers.

In 2012, due to a priority recommendation of the Oklahoma Comprehensive Water Plan (OCWP), the Oklahoma Legislature and Governor appropriated funding to initiate Oklahoma's first holistic, long-term, aquifer-based Groundwater Monitoring and Assessment Program (GMAP). This funding commitment fully recognized the importance of Oklahoma's groundwater resources and their susceptibility to both depletion and pollution.

### Comprehensive Groundwater Monitoring

GMAP will examine the ambient quality and quantity of Oklahoma's groundwater resources to identify areas that are impaired and improve understanding of the effects of seasonal, climatic, and usage patterns. This data will aid water resource planners and managers in making informed decisions that ultimately result in improved sustainability of water supplies.

Assessments of Oklahoma's groundwater will be achieved through both a baseline monitoring network and a long-term (trend) monitoring network within each of the state's major aquifers. This will provide Oklahoma with information on individual aquifer characteristics as well as a more general assessment.

### Baseline Monitoring Network

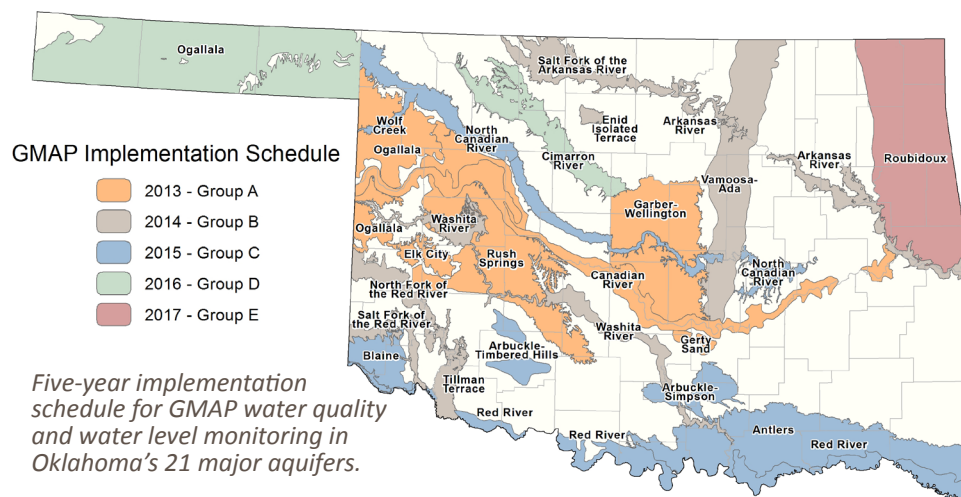
The baseline network, sampled in its entirety every five years, will provide a general characterization of regional groundwater quality and groundwater levels. The third of five baseline phases will begin in 2015 and continue through 2017. The ultimate objective is to sample every major aquifer in the state.

Through quality analyses, the natural geochemistry of the aquifers will be assessed to identify concerns. Water samples will be taken from existing groundwater wells and analyzed for parameters such as nutrients, dissolved metals, alkalinity, hardness, dissolved oxygen, pH, and total dissolved solids.

### Trend Monitoring Network

A sub-set of wells from the baseline monitoring network will be used for trend monitoring, evaluated multiple times per year. Multiple assessments of water level and chemistry will facilitate recognition of seasonal changes, changes due to climate variability, and/or changes due to usage over time. The differences in these changes as well as aquifer response will be identified in all of the state's major aquifers. To further facilitate this effort, a select number of wells will be equipped with water level data loggers to monitor changes on the scale of weeks, days, or even hours.

Data collected through the program will be made available to the public in a variety of formats, including a yearly report as part of the Beneficial Use Monitoring Program (BUMP) report available on the OWRB website.



[www.owrb.ok.gov/gmap](http://www.owrb.ok.gov/gmap)