

**Before the Oklahoma Water Resources Board  
State of Oklahoma**

IN THE MATTER of Determining the Maximum )  
Annual Yield for the Arbuckle Simpson Groundwater )  
Basin underlying parts of Murray, Pontotoc, Johnston, )  
Garvin, Coal and Carter Counties )

RESPONSE TO PROTESTANTS' POST-HEARING BRIEF  
IN OPPOSITION TO THE ARBUCKLE-SIMPSON TENTATIVE  
MAXIMUM ANNUAL YIELD/EQUAL PROPORTIONATE SHARE

Comes now the United States Fish and Wildlife Service (USFWS) and National Park Service (NPS), both agencies of the Department of the Interior (the DOI Agencies), in accordance with the Posthearing Order, issued May 18, 2012, and submits the following Response to the Protestant's Post-Hearing Brief in Opposition to the Arbuckle-Simpson Tentative Maximum Annual Yield/Equal Proportionate Share.

The DOI Agencies have similar statutory mandates to manage resources dependent upon the groundwater emanating from the Arbuckle-Simpson aquifer for the enjoyment and benefit of future generations. A significant reduction in groundwater discharge to either Pennington Creek or Travertine Creek would adversely affect the ability of the DOI Agencies to protect and preserve the waters and water-related resources of Chickasaw National Recreation Area, Tishomingo National Fish Hatchery, and Tishomingo National Wildlife Refuge.

In their post-hearing brief (Protestants' Brief) submitted May 31, 2012, the Protestants spent a great deal of time trying to show that the storage coefficient used in the USGS Model (Christenson et al., 2011) was too low. However, the Protestants have failed to mention that other parameters controlling groundwater flow would need to be adjusted if the storage coefficient was changed in order to properly recalibrate the model. Such a recalibration process

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may or may not result in any significant change in the aquifer's response to groundwater withdrawals. Therefore, it is quite possible that after making the necessary adjustments to those parameters and recalibrating the model, the use of a higher storage coefficient for the upper part of the aquifer would have a negligible effect on the model output.

The Protestants state that "...the unconfined zone gives up a huge amount of water which [sic] much less draw down in water level as would result from pumping a confined aquifer."<sup>1</sup> However, there is no evidence to support this assertion. The Protestants failed to submit any evidence regarding the areal extent of the unconfined zone, the amount of water contained in the unconfined zone, or the amount of drawdown that would result from withdrawing groundwater from the unconfined zone. The fact that the Protestants could find only one well completed in the upper 20 meters of the Arbuckle-Simpson aquifer suggests that this zone may not be extensive in area and may not be an abundant source of groundwater. Furthermore, the data from a single well is clearly insufficient to support the Protestants' assertion that an unreasonable storage coefficient was used in the upper part of the USGS model, and therefore, it is seriously flawed.

Dr. Poeter states in her 2006 Darcy Lecture<sup>2</sup> that the most useful models are those that best match observations in the field and are "a balance of fit and parsimony." In other words, the best models are those that fit the data without being too complex. The USGS model is a sufficiently simple representation of the Arbuckle-Simpson aquifer system that produces results that clearly match observed values from springs and streams in the modeled area.

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<sup>1</sup> Protestants' Brief, p. 23, lines 16-17.

<sup>2</sup> Dr. Poeter's 2006 Darcy Lecture can be viewed at the following website - <http://www.youtube.com/watch?v=wz5cVMDRlww>

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TENTATIVE MAXIMUM ANNUAL YIELD/EQUAL PROPORTIONATE SHARE

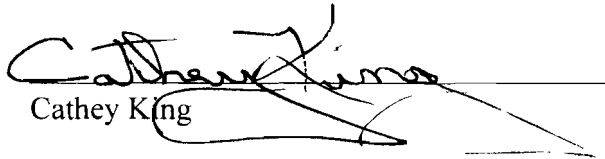
Respectfully submitted this 13<sup>th</sup> day of June, 2012.

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**CERTIFICATE OF SERVICE**

I hereby certify that on the 13<sup>th</sup> day of June, 2012, a true and correct copy of the foregoing document was placed in the U.S. Postal Service, with proper postage thereon, to the attached mailing list. In addition, I certify that on the 13<sup>th</sup> day of June, 2012, a true and correct copy of the foregoing document was electronically forwarded to the e-mail addresses shown on the attached distribution list.

  
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