

**IN THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE**

IN RE:

**PETITION OF TENNESSEE AMERICAN
WATER COMPANY TO CHANGE AND
INCREASE CERTAIN RATES AND
CHARGES SO AS TO PERMIT IT TO
EARN A FAIR AND ADEQUATE RATE
OF RETURN ON ITS PROPERTY USED
AND USEFUL IN FURNISHING WATER
SERVICE TO ITS CUSTOMERS**

DOCKET NO. 08-00039

**THE CONSUMER ADVOCATE'S REBUTTAL TO THE AFFIDAVIT OF DR.
EDWARD SPITZNAGEL, JR.**

Robert E. Cooper, Jr., Attorney General and Reporter for the State of Tennessee, by and through the Consumer Advocate and Protection Division of the Office of the Attorney General ("Consumer Advocate"), responds to the affidavit of Dr. Edward Spitznagel, Jr., which was incorporated into *Tennessee American Water Company's Comments in Response to the Notice of Administrative Notice* filed on September 3, 2008.

The introduction of a sworn affidavit after the final hearing on the merits in this matter, and after the date for post-hearing briefs, is untimely and inappropriate procedurally. The Authority's *Notice of Administrative Notice* of August 29, 2008 did not schedule any new testimony. Accordingly, the affidavit is outside the procedural schedule and was filed during the Authority's deliberation of the merits of this case. The Consumer Advocate has had no opportunity to cross-examine Dr. Spitznagel regarding his new testimony; therefore, the Consumer Advocate requests the Authority to either strike the late-filed Spitznagel affidavit from the evidentiary record or allow the

Consumer Advocate to rebut this testimony by filing its own responsive affidavit, which is attached.

Following is the Consumer Advocate's rebuttal:

The Spitznagel affidavit serves no purpose other than to characterize the highly technical contents of the journal article and unpublished paper the company has submitted. In this regard, Dr. Spitznagel's affidavit is incorrect. Specifically, paragraph number 5 states that a 1989 modification of the PDSI accounts for "some weaknesses" before concluding without explanation in paragraph number 6 that "some or all of Alley's 1984 critique has been addressed." These assertions of fact misrepresent the attempts to remedy some of the deficiencies of the PDSI and are not supported by the article or the unpublished paper that was submitted.

Indeed, the attached affidavit of Dr. Michael Hayes, who co-authored the journal article submitted by the company, states plainly in paragraph number 5 that Alley's criticisms of the PDSI were not addressed by Dr. Hayes and his colleagues. Rather, the article co-authored by Dr. Hayes, "A Self Calibrating Palmer Drought Severity Index," details the updating of the PDSI through the "SC-PDSI" for purposes of making spatial comparisons (comparing one region's PDSI data to another). However, as provided in the attached affidavit of Dr. Hayes, the authors never intended their work to be construed as a remedy for the PDSI problems identified by Alley, but focused instead on spatial comparability (*see* attached Hayes affidavit at paragraph number 4). In fact the authors specifically stated in clear and concise language at p. 2346 of the article that no attempts were made to "address other previously documented deficiencies of the PDSI," citing Alley's *The Palmer Drought Severity Index: Limitations and Assumptions* (1984). It is clear that Dr. Spitznagel's reliance on the work of Dr. Hayes and his colleagues is, in this case, misplaced. Thus, twenty years after Alley published his critique of the PDSI, many, if not most, of his conclusions

remain recognized and accepted in the professional climatology field. Dr. Spitznagel's representations in his affidavit that "some or all" weaknesses and noted deficiencies of the PDSI have been addressed are simply incorrect.

Furthermore, a plain reading of the unpublished paper "A Review of the Palmer Drought Severity Index and Where Do You Go From Here?" ("Heddinghaus paper") by Thomas Heddinghaus and Paul Sabol, presented at a conference in 1991, does not in any way establish that "some or all" shortcomings described by Alley have somehow been adjusted and rectified. The 1989 modification, briefly noted in the Heddinghaus paper, adjusted only one aspect of the PDSI in attempting to calculate when a drought is over. The unpublished paper goes on to list other deficiencies noted by Alley in the 1984 critique.¹

Clearly, Alley's critique remains valid as explicitly noted in both the article and the unpublished paper submitted by the company. Indeed, one cannot find academic literature addressing the PDSI without a reference to Alley's 1984 critique. Be that as it may, the Authority's mission is not to judge or mediate an academic debate. One of the many questions before the Authority in this rate case is not whether the PDSI is a reliable model for measuring drought, but whether the PDSI is an appropriate tool for normalizing water usage and whether the end results of the proposed WNA are just and reasonable. As noted in *Estimating Water Usage in United States: A New Paradigm for National Water-Use Information Program* at p. 104, published by the National

¹ It is interesting to note that the Heddinghaus paper provides the results of a survey which included a question to PDSI users regarding how accurately the PDSI meets the needs of users. The Heddinghaus paper states that the "almost universal answer given" was that the PDSI was used as a general indicator in conjunction with three or four other indexes to monitor drought. Thus, even when employed for the purposes in which it is designed, to monitor drought, professional users employ other indexes in conjunction with their efforts rather than rely solely on the PDSI. Heddinghaus paper at 245.

Academy of Sciences in 2002, again citing Alley, concerns remain as to the use of the PDSI in measuring water usage in the specific context of water usage regression models.²

The Consumer Advocate requests the Authority to either strike the late-filed Spitznagel affidavit or accept and consider the Consumer Advocate's rebuttal of Dr. Spitznagel's new testimony.

RESPECTFULLY SUBMITTED,



RYAN L. McGEHEE
Assistant Attorney General
Office of the Attorney General and Reporter
Consumer Advocate and Protection Division
P.O. Box 20207
Nashville, TN 37202-0207

Dated: September 9, 2008.

² Tr. Vol. 4 at 463-464. *Notice of Administrative Notice* (August 29, 2008).

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing is being served via U.S. Mail and/or electronic mail upon:

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This the 9th day of September, 2008.



RYAN L. McGEHEE
Assistant Attorney General

#122516

AFFIDAVIT OF DR. MICHAEL HAYES

STATE OF NEBRASKA)

COUNTY OF LANCASTER)

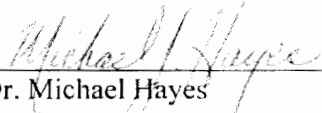
CITY OF LINCOLN)

After having been duly sworn, I do hereby depose and aver as follows:

1. I am the Director of the National Drought Mitigation Center in the School of Resources at the University of Nebraska-Lincoln.
2. I co-authored the article "A Self-Calibrating Palmer Drought Severity Index" (herein "article") published in the Journal of Climate, Volume 17 at 2335 in 2004.
3. The work and results thereof detailed in the article addressed: 1) improving the spatial comparability of the Palmer Drought Severity Index ("PDSI"), and 2) adjusting the frequency of extreme events.
4. The article was not intended to address all criticisms associated with the PDSI, but rather was strictly confined to addressing spatial comparability and adjusting the frequency of extreme events.
5. As noted in the article, no attempts were made to address other previously documented deficiencies of the PDSI, such as those noted by William Alley's article "The Palmer Drought Severity Index: Limitations and Assumptions" published in 1984 by the Journal of Climate and Applied Meteorology.

6. I have no opinion regarding the use of the PDSI in relation to water usage regression models, "weather normalization" as the term relates to public utilities or any other specific methodology of measuring water usage.

FURTHER AFFIANT SAITH NOT.


Dr. Michael Hayes

Sworn to and subscribed before me
this the 8th day of September, 2008.


NOTARY PUBLIC

My commission expires:

122505

