



California Regional Water Quality Control Board

Colorado River Basin Region



Linda S. Adams
Secretary for
Environmental Protection

73-720 Fred Waring Drive, Suite 100, Palm Desert, California 92260
(760) 346-7491 • Fax (760) 341-6820
<http://www.waterboards.ca.gov/coloradoriver>

Arnold Schwarzenegger
Governor

TO: Gerald W. Bowes, Ph.D.
Manager, CalEPA Scientific Peer Review Program
Office of Research, Planning and Performance
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

FROM: 
Jose Angel, Assistant Executive Officer
Colorado River Basin
Regional Water Quality Control Board

DATE: July 28, 2010

SUBJECT: REQUEST FOR EXTERNAL PEER REVIEW OF A BASIN PLAN AMENDMENT TO PROHIBIT WASTEWATER DISCHARGES FROM SEPTIC TANK SUB-SURFACE DISPOSAL SYSTEMS IN THE TOWN OF YUCCA VALLEY, SAN BERNARDINO COUNTY, CA

To comply with the requirements of Health and Safety Code Section 57004, the Colorado River Basin Regional Water Quality Control Board (Region 7), requests by transmittal of this memorandum that the State Water Board initiate the process to obtain reviewers through the University of California to provide external peer review of a proposed Basin Plan amendment.

The subject amendment will incorporate into the Region's Basin Plan a prohibition of wastewater discharge from septic tank sub-surface disposal systems in the Town of Yucca Valley. Pursuant to the California Water Code Section 13280, prohibitions for septic system discharges must have:

.....substantial evidence in the record that discharge of waste from such disposal systems will result in violation of water quality objectives, will impair present or future beneficial uses of water, will cause pollution, nuisance, or contamination, or will unreasonably degrade the quality of any waters of the state.

There is substantial evidence to indicate septic system use in Yucca Valley has caused violations of water quality standards, and is threatening to cause, conditions of pollution, contamination, nuisance, or unreasonably degrade the quality of waters of the state. A study conducted by the U.S. Geological Survey (*Evaluation of the Source and Transport of High Nitrate Concentrations in Ground Water, Warren Subbasin, California, Water*

Scientific Peer Review Request for Yucca Valley Septic Prohibition

July 28, 2010

Page 2

Resources Investigation Report 03-4009, 2003), found municipal supply wells in Yucca Valley operated by the Hi-Desert Water District (the local water purveyor) impacted by nitrates from septic system discharges, with some wells increasing from background levels of 10 mg/l nitrate to more than the United States Environmental Protection Agency maximum contaminant level of 45 mg/l nitrate. Additionally, septic system failures have been reported at businesses in the Valley, such as at the Wal-Mart department store, and the Sizzler restaurant.

Three attachments are enclosed that provide further information for this action. Attachment I describes the area and the need for the amendment; Attachment II identifies the scientific issues to be evaluated through external peer review; and Attachment III lists individuals involved in the development of the amendment.

The draft staff report, describing the scientific basis for the amendment, is ready for external peer review. Recent groundwater data, collected from 2002 through early 2010, is attached to the staff report as an appendix. We request peer reviewers with expertise in hydrogeology, particularly ground water flow and solute-transport models, and ground water contamination from septic tank discharges. We further request peer reviewers complete their review within 45 days (if possible), so public review can proceed before the end of the calendar year.

If you have questions regarding this request, please contact Joan Stormo, Senior Engineering Geologist, at (760) 776-8982 (jstormo@waterboards.ca.gov). Thank you very much for your assistance in this matter.

cc: Caren Trgovcich, SWRCB, Office of Research, Planning and Performance

File: BP YV Prohibition

Attachment I: Summary of the proposed amendment of prohibition of septic system sub-surface waste discharges in the Town of Yucca Valley.

Yucca Valley is located in San Bernardino County, in the high desert area of the Mojave Desert, approximately 122 miles east of Los Angeles. The town includes 25,625 acres, and according to the U.S. Census Bureau, had a population of 17,000 in 2000. Yucca Valley is a popular retirement community undergoing rapid growth. The California Department of Finance estimates that the Town's population increased 24% from 2000 to 2007. The U.S. Census Bureau reported 7,952 housing units, (6,949 occupied units) and 483 commercial businesses in Yucca Valley in 2000, with an additional 1249 single family residential housing units requesting permits between 2000 and 2010.

Yucca Valley relies on ground water from the Warren Valley aquifer for municipal supply. The aquifer is recharged naturally by precipitation and intermittent streams, and artificially by recharge basins constructed between 1995 and 2006. The recharge basins receive 4,000 acre-feet per year from the State Water Project via the Hi-Desert Water District (District). The District provides domestic water service to Yucca Valley, and currently operates seventeen wells within the Warren Valley Ground Water Subbasin. The District estimates that over 10,000 homes, and all commercial businesses in Town, use septic tank and sub-surface disposal systems to process and dispose of municipal, domestic, and industrial wastes.

Based on the information provided below, Regional Water Board staff believes substantial evidence exists to indicate septic system use in Yucca Valley is causing violations of water quality standards, and causing or threatening to cause, pollution, contamination, or nuisance. A 2003 study by the U.S. Geological Survey (Water Resources Investigations Report 03-4009) found District wells degraded by nitrates from septic system discharges. Prior to initiating artificial recharge in 1995, nitrate concentrations in ground water wells averaged under 10 mg/l. Within three years of beginning recharge, nitrate concentrations in ground water increased to 110 mg/l. The USGS study attributes rising ground water intercepting zones of high nitrates from septic tank discharges as the cause for elevated nitrates in ground water in the Warren Subbasin. In addition, septic system failures have been reported for several businesses, such as the Wal-Mart department store, and the Sizzler restaurant.

Regional Water Board staff is proposing a Basin Plan amendment to address these, and future water quality threats and adverse impacts to ground water supplies in Yucca Valley from septic system discharges.

Attachment II: Description of Scientific Issues to be addressed by Peer Reviewers

The statute mandate for external scientific peer review (Health and Safety Code Section 57004) states that the reviewer is responsible for determining whether the scientific portion of the proposed rule is based upon sound scientific knowledge, methods, and practices.

We request that you make this determination for the issues discussed below, which are the scientific basis for the proposed regulatory action. Explanatory statements are provided to narrow the review.

1. Use of the study, "Evaluation of the source and transport of high nitrate concentrations in ground water, Warren Subbasin, California" published by USGS in 2003, as the main scientific basis for the proposed Basin Plan Amendment

The study employs general methodologies to identify nitrate sources in ground water in the Warren Subbasin. The results of this study indicate septage from septic tank discharges are the primary source of high-nitrate levels in ground water.

2. Modeling used in the USGS study

The study uses ground water flow and solute transport models to better understand contaminant transport in ground water in the Warren Subbasin aquifer. Models use hypothetical flow and hydraulic head estimates to predict nitrate concentrations in ground water wells due to rising ground water. The models predicted nitrate levels similar to that observed in actual wells, indicating mixing of imported water with native ground water, with entrainment of high nitrate septage in the unsaturated zone.

3. Adequacy of data used in the USGS study

Ground water samples were collected throughout the Warren Subbasin, and evaluated for nitrogen isotopes, dissolved organic carbon and fluorescence, and caffeine and pharmaceuticals. Ground water elevation and general water quality data were also collected to calibrate ground water flow and solute transport models.

4. Relationship of septic tank discharges to ground water recharge efforts used in the USGS study

The study proposes two discrete conceptual models to explain rising nitrate levels in ground water:

- (1) downward migration of septage through the unsaturated zone to the water table, and
- (2) rising ground water levels due to artificial recharge, entraining nitrate rich septage in the unsaturated zone.

The study concludes that a rapid rise in ground water due to artificial recharge entrained large volumes of septage stored in the unsaturated zone, causing nitrate levels in ground water to increase dramatically.

5. Groundwater data collected subsequent to USGS study (2002 – 2010)

Reviewers may consider if the initial rise in ground water was sufficient to flush nitrate accumulating in the unsaturated zone from septic tank effluent, and thereby eliminate future water quality threats from rising ground water, and septic tank discharges.

“The Big Picture”

Reviewers are not limited to addressing the specific issue presented above, and asked to contemplate the following questions.

- (a) Does the Regional Water Board staff report and proposed implementation language omit any scientific issues that are part of the scientific basis of the proposed rule? If so, please comment with respect to the statute language given above.
- (b) Taken as a whole, is the scientific portion of the proposed rule based upon sound scientific knowledge, methods, and practices?

Reviewers should be aware that some proposed actions rely significantly on professional judgment where available scientific data to support the statute requirement for absolute scientific rigor are limited. In these situations, the proposed course of action is favored over no action.

The preceding guidance will ensure that reviewers have an opportunity to comment on all aspects of the scientific basis of the proposed Regional Water Board action. The Board has a legal obligation to consider and respond to all comments received on the scientific portions of the proposed rule. Because of this obligation, reviewers are encouraged to focus feedback on the scientific issues that are relevant to the central regulatory elements being proposed.

Attachment III: Individuals involved in the Proposed Amendment of Prohibition of Septic system sub-surface discharges in the town of Yucca Valley

Technical Advisory Committee (TAC)

Shane Stueckle, Town of Yucca Valley

Kris Collins, Yucca Valley Chamber of Commerce

Joseph Glowitz, Hi-Desert Water District

Citizens in the TAC

Larry Briggs, J.B. Homburg, Dave Mahaffey, Ramon Mendoza, Sabrina Peukert, Mike Reynolds, and David Rodriguez

Other Agency

Mike Farrell, San Bernardino County, Department of Public Safety