Nitrates in Groundwater: The Path to a Solution

What We Have ♦ What We Need
Overview

• Ensure clean drinking water for affected communities
• Nitrate management has been a priority for years, and we’re making progress
• California must base proposed solutions on reliable data and analysis
• More information would better inform decisions
• We are committed to working with you
SB X2-1 Mandate Is Not Yet Met

The SWRCB in consultation with other agencies...**shall** develop pilot projects in the Tulare Lake Basin and the Salinas Valley...that focus on nitrate contamination and do all of the following:

(a)(1) In collaboration with relevant agencies and utilizing existing data...
Uncited Studies

- “California GAMA Special Study: Nitrate Fate and Transport in the Salinas Valley,” 2011, Lawrence Livermore National Laboratory and California State University, East Bay
- “California GAMA Domestic Wells: Nitrate and Water Isotopic Data for Tulare County,” 2010, Lawrence Livermore National Laboratory
- “Nitrate dynamics within the Pajaro River, a nutrient-rich, losing stream,” University of California–Santa Cruz, 2006
Where Better Analysis Will Be Helpful

**Total Tests with Repeats**
Sample Data Set

- 60.6% Total Samples-Low
- 31.7% Total Samples-Medium
- 7.7% Total Samples-High

**Unique Wells Only**
Sample Data Set

- 77.5% Unique Samples-Low
- 16.7% Unique Samples-Medium
- 5.8% Unique Samples-High

Source: SWRCB GeoTracker/GAMA MCDPH Public Service Wells with 15+ Connections 1980–2012
Where Better Analysis Will Be Helpful

Number of Wells in Each Year Exceeding MCL

- Total Samples with Repeats
- Unique Well Samples

Source: SWRCB GeoTracker/GAMA MCDPH Public Service Wells with 15+ Connections 1980–2012
Where Better Analysis Will Be Helpful

Percentage of 200 Monterey Co. Wells with NO$_3$ Levels > MCL 2002-2010

- Discrete Years Method
- Report Method
- Linear Regression Trend

- 0 of 3 > MCL
- 0 of 5
The USGS relies upon a spatially unbiased grid to select its well locations to assess aquifer-scale groundwater quality in the Salinas Valley.

CDPH well data are used to identify well contaminants, extrapolate within grid cells, and perform spatially-weighted calculations at aquifer scale.

Use of this methodology prevents statistical distortions caused by numerous areas in the CDPH databases with heavy clusters of exceedence wells, such as that seen north of the city of Salinas.

Where Better Analysis Will Be Helpful

- Alternate sources may be significant
- Nitrate dilution does occur
- Experts say Salinas Valley and Tulare Lake Basin should be analyzed separately
  - USGS
  - Lawrence Livermore Lab
  - Monterey County Regional Water Authority
Alternate Causation: Chualar Canyon

The report fails to adequately explain high groundwater nitrates found in natural vegetation areas distant from manmade sources of nitrates.

This local small system well east of Chualar tested 97 mg/l NO₃ in 2011, over double the nitrate MCL.

Source: 971 Local Small Water System Wells with 2-4 Connections, Monterey County Department of Public Health, 2011
Alternate Causation: Hudson Landing Rd.

The exceeding wells are located in the drainage flow from a hilltop at Pajaro Valley Golf Course to the lowlands below. Golf courses apply nitrate fertilizers to their turf.

Sources: Small System Wells: Monterey County Department of Health, 2011; Base Maps: Google Earth and Google Terrain
Scientific Validation is Critical

- Independent peer review can resolve concerns about:
  - Data integrity and gaps
  - Statistical analysis
  - Inconsistencies with other studies
  - Errors and omissions
Summary

The State Water Board must have the benefit of a scientifically defensible study that meets the legislative mandate and has been validated in peer review before sending a report to the Legislature.
We Are Committed To A Solution

- Agricultural practices have evolved and today are reducing nitrates in groundwater
- We have a track record of working toward solutions and achieving results
- This will be no exception