



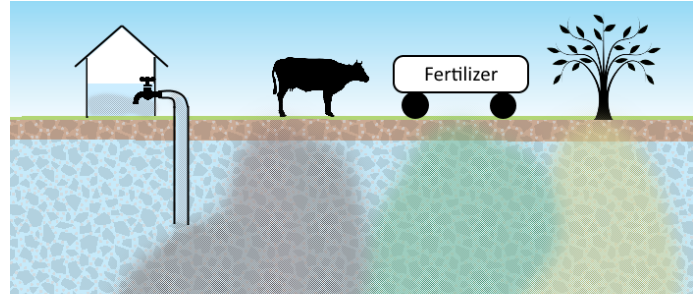
## CV-SALTS Works to Address Nitrate and Salt Contamination

Nitrate contamination can make groundwater unsafe to drink and high salinity can harm crops. Nitrate comes primarily from application of fertilizers on farms and from cattle and dairy operations and can come from septic tanks in local areas. Salinity can accumulate in soils with irrigation, and irrigation water from the Delta adds additional salts.

Central Valley Salinity Alternatives for Long-Term Sustainability, or CV-SALTS, is focused on reducing nitrate and salt contamination. The CV-SALTS stakeholders include representatives of agriculture, cities, industry, State agencies, and environmental justice organizations, which have been meeting since 2006. CV-SALTS has developed a Salt and Nitrate Management Plan (SNMP) for the Central Valley with the following goals:

1. Ensure a safe drinking water supply  
*Where reasonable, feasible, and practicable:*
2. Achieve balanced salt and nitrate loading
3. Clean up salt and nitrate in groundwater basins

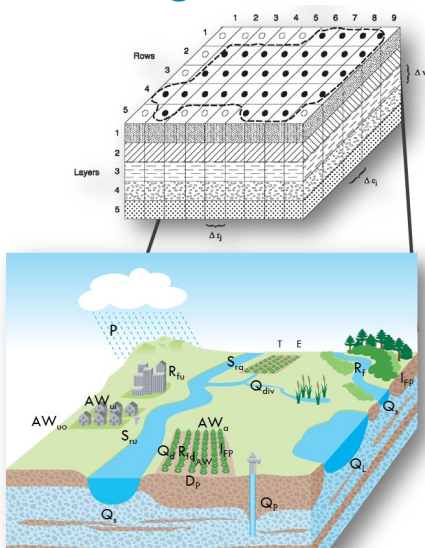
The Central Valley Regional Water Board is working with CV-SALTS on amendments to the Central Valley Basin Plan that will create requirements to control and reduce nitrate and salt in the Valley. Implementation strategies, such as the formation of management zones, provision of replacement drinking water, funding for projects, and a pathway to regulatory compliance for dischargers, are expected.



Contaminants like nitrate and salt spread through groundwater and can impact the drinking water pumped by wells.  
Figure adapted from Union of Concerned Scientists, 2017, Getting Involved in Groundwater.

Additional information on CV-SALTS and nitrate and salt contamination can be found at: <https://www.cvsalinity.org/>. Community Water Center has a PowerPoint presentation on Central Valley groundwater quality including more information on CV SALTS on our web page: <http://www.communitywatercenter.org>

## Modeling: Understanding and Predicting Groundwater Conditions



Movement of contaminants in groundwater is complex and influenced by many factors. Groundwater computer models are used to predict how potential actions may impact groundwater quality. These models rely upon information such as streamflow measurements, rainfall records, groundwater pumping records, and soil and geological characteristics in order to predict how contaminants travel in groundwater. The more and better data you have, the more confidence you can have in the model.

Results from groundwater models must be checked against real measurements to make sure the model is as accurate as possible in a process called calibration. The more data available, the better calibrated a model can be – but no model is precisely calibrated, especially when trying to predict many years into the future. Models can be useful tools to inform decision-making, especially for relative comparisons of scenarios, but their results cannot be taken to be perfectly accurate.

Models can predict groundwater conditions based on an understanding of the hydrogeologic system. Figure adapted from: Union of Concerned Scientists, 2017, Getting Involved in Groundwater. USGS, 2005, MODFLOW-2005, The U.S. Geological Survey Modular Ground-Water Model – the Ground-Water Flow Process.

Additional information on groundwater modeling can be found at:

- The Union of Concerned Scientists: <http://www.ucsusa.org/cagroundwatertoolkit>
- Stanford University: <http://waterinthewest.stanford.edu/sites/default/files/Groundwater-Model-Report.pdf>



# Groundwater Quality: Risks and Solutions

## Alta Irrigation District (AID) Study

Detailed modeling studies have been conducted for the AID area to test if such efforts can lead to projects and programs that meet the CV-SALTS goals and can be used Valley-wide. Specifically, the AID model compared nitrate and total dissolved solids (TDS, or salt) concentrations projected 50 years into the future for several possible “management scenarios.” The model predicted that nitrate concentrations in the aquifer would increase to more than double the Maximum Contaminant Level (MCL, a regulatory drinking water standard) in many areas if no mitigation or interventions were implemented, and predicted lower concentrations if nitrate management actions are implemented. These results showed that action is needed in the AID area to protect groundwater.



Alta Irrigation District is located in Tulare, Fresno, and Kings Counties and in the Kings Groundwater Subbasin.

Additional information on this study can be found at: <http://bit.ly/2EUTJPI>

## Nitrate and Salt Management Strategies



Many nitrate reduction strategies exist and have been successfully implemented to reduce nitrate entering groundwater and drinking water supplies. These include source control measures (such as reduced fertilizer use, improved crop management, and improved irrigation efficiency), groundwater remediation, and treating drinking water or providing alternate drinking water supplies. CV-SALTS has recommended the creation of nitrate “Management Zones” to implement nitrate source control measures, and the use of a nitrate permitting strategy that would allow additional nitrate use only if accompanied by management actions that would mitigate additional nitrate contamination.

CV-SALTS has recommended the creation of nitrate “Management Zones” under a permitting strategy that would implement a combination of measures to ensure safe drinking water supplies, reduce nitrate loading and improve groundwater quality.

## Ways to Get Involved with Groundwater

Other frameworks and organizations focus on improving and protecting groundwater quality. You can get involved by participating in these programs or attending public meetings.

- The Sustainable Groundwater Management Act (SGMA) requires groundwater to be managed to avoid certain “undesirable results,” including worsening groundwater quality. SGMA requires newly formed local Groundwater Sustainability Agencies (GSAs) to actively engage with stakeholders.
- Integrated Regional Water Management (IRWM) Plans address water planning issues, including water quality.
- Participate in future Management Zones.
- Contact Community Water Center to get involved.

Additional information can be found at:

- SGMA at <http://www.water.ca.gov/groundwater/sgm/>
- IRWM at <http://www.water.ca.gov/irwm/>

## Potential Sources of Funding for Groundwater Projects

The State Water Resources Control Board (SWRCB) has several programs that can fund management and treatment of nitrate and other contamination problems, and some programs are specifically for Disadvantaged Communities. Implementation of CV-SALTS may result in additional funding sources. The California Department of Water Resources (DWR) has funding for groundwater projects and programs. The Community Water Center can help communities find funding sources for projects related to nitrate and salt contamination.

Additional information can be found at:

- SWRCB at [https://www.waterboards.ca.gov/water\\_issues/programs/grants\\_loans/scap/](https://www.waterboards.ca.gov/water_issues/programs/grants_loans/scap/)
- DWR at <http://www.water.ca.gov/irwm/grants/sgwp/>

*Community-driven water solutions through organizing, education, and advocacy.*

*Soluciones de agua impulsadas por la comunidad a través de la organización, educación y defensa al acceso al agua potable.*

[www.communitywatercenter.org](http://www.communitywatercenter.org)