

CENTRAL VALLEY SALT AND NITRATE ACCUMULATIONS IN WATER RESOURCES TO BE ADDRESSED THROUGH NEW, INNOVATIVE REGULATIONS

NITRATES AND SALTS ARE CONTRIBUTING TO UNSAFE DRINKING WATER AND DECREASED AGRICULTURAL PRODUCTIVITY IN PORTIONS OF CENTRAL VALLEY

Over the last 150 years, increased agricultural, municipal, and industrial activities, coupled with population growth and the redistribution of valley waters, have resulted in dramatic increases in salts and nitrates. Salts and nitrates have been accumulating in groundwater and soils, and salts have been accumulating in surface waters—a situation that continues to worsen. Communities rely on these waters for agriculture, industry, and drinking water supplies, and overall quality of life. In portions of the Central Valley, these concentrations are negatively impacting or threaten to impact the region's water and soil quality. The accumulations are causing poor water quality and, in some communities, unsafe drinking water. To improve water quality and preserve the quality of life in the Valley, new and improved agricultural, industrial, and municipal water system management practices are needed to reduce salt and nitrate discharges and to protect and provide safe drinking water.

WHAT IS BEING DONE ABOUT THE SALT AND NITRATE BUILD-UPS?

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) is considering new policies and regulations that will implement the newly developed [Salt and Nitrate Management Plan](#) (SNMP). The SNMP was developed under the stakeholder-led Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative. The plan provides a framework to meet three prioritized management goals: (1) First, ensure safe drinking water; (2) next, work to achieve balanced salt and nitrate loadings; and (3) finally, plan and implement a long-term, groundwater restoration program. Notably, required and voluntary activities leading to salt and nitrate balance are already underway, including preparation and implementation of nutrient management plans, improved irrigation practices, real-time management of discharges, pilot studies, monitoring, and research. The SNMP proposes a strategy to support, continue, and expand current efforts and to establish funding and management structures to address the long-term challenges.

WHAT ARE LONG-TERM OUTCOMES OF IMPLEMENTING NEW SALT AND NITRATE MANAGEMENT PLAN?

The SNMP defines five long-term outcomes: (1) sustain the Central Valley's lifestyle; (2) support regional economic growth; (3) retain a world-class agricultural economy; (4) maintain a reliable, high-quality water supply for municipal, agricultural, and industrial uses; and (5) protect and enhance water quality in Central Valley streams, rivers, and groundwater basins.

ADDITIONAL BACKGROUND INFORMATION

CALIFORNIA'S CENTRAL VALLEY

The Central Valley (Valley) stretches 500 miles from the Oregon border to the Kern County/Los Angeles County line and is about 125 miles wide, bounded by the Sierras to the east and the Coast Range to the west. Its watersheds encompass 60,000 square miles or almost 40 percent of the land in California. The region includes four hydrologic regions: Sacramento River Valley to the north, the drier San Joaquin River Valley to the south, the semi-arid Tulare Basin at the southernmost end, and the Delta where the San Joaquin and Sacramento Rivers connect and flow to San Francisco Bay. The Valley is home to nearly 8 million people or 20 percent of the state's population. It is one of the world's most productive agricultural regions, with hundreds of different crops grown. Most of the Valley's agricultural productivity relies on irrigation from both surface water diversions and groundwater pumping. The Valley also supports thousands of food production facilities for fruit, vegetable, and nut processing, specialty foods, dairy products, animal packing, grain milling, wineries, and many more.

CENTRAL VALLEY WATER BOARD REGULATES WATER QUALITY

The Central Valley Water Board is a regulatory board made up of seven (7) members appointed by the Governor and approved by the California Senate. The Central Valley Water Board's legal authority is established by the California Water Code (Porter-Cologne Water Quality Control Act) and the California Code of Regulations. The Central Valley Water Board sets policies and regulations, issues permits, and conducts enforcement to protect the quality of surface and groundwater to ensure these waters are safe to be used by residents, visitors, businesses, industries and others that may use our waters. Two Water Quality Control Plans provide the basis for regulating water quality—Sacramento River-San Joaquin River Basin Plan and the Tulare Lake Basin Plan. The law requires all municipalities and agencies, businesses, industry and others that conduct activities that may alter the quality of surface or groundwater to first obtain a permit from the Central Valley Water Board. Permits are currently issued to municipalities, industry, dairies, and irrigated agriculture to control salts and nitrates.

WATER SUPPLIES ARE AFFECTED BY SALT AND NITRATE

Recent technical studies show that municipal and domestic drinking water and agricultural irrigation water supplies are the uses most sensitive to salt and nitrate impacts.

CHALLENGES FOR LONG-TERM MANAGEMENT OF SALT AND NITRATE

- The Valley is home to nearly 7 million acres of irrigated agriculture, and hundreds of dairies, food processors, and wastewater treatment plants.
- The Valley's agriculture produces food that helps feed the nation and the world.
- Dams and imported water supplies, so important for the Valley economy, have reduced the natural flushing of salt and increased the amount of salt brought into the Valley.
- More salts enter the Lower San Joaquin and Tulare Lake Basins than naturally leave or are physically removed. Approximately 2-million tons of salt accumulate in the San Joaquin Valley every year.
- Drought and other issues increase the use of groundwater with higher concentrations of salt.
- Salt concentrations in the groundwater are naturally high in some areas and increasing in most areas.
- There are few economically feasible options for removing salt from the Valley.
- Failure to address and abate the salt accumulation will result in devastating losses of prime agricultural land and agricultural related jobs.
- Nitrates continue to accumulate in groundwater from a variety of sources.
- Diffuse use of natural and synthetic fertilizer is a significant source of nitrates, which can enter groundwater.
- Many groundwater basins are impacted by nitrate concentrations from both historic and current uses.
- Community and individual drinking water sources in some broad areas have been polluted by nitrates.
- Options to feasibly and economically treat and restore polluted groundwater areas are limited.

CV-SALTS INITIATIVE IS FIRST STEP TOWARD NEW SOLUTIONS FOR MANAGING SALTS AND NITRATES

Solutions for addressing the threat to water supplies and soils from salts and nitrates are complex, multi-faceted, and will take time and funding to implement. In 2006, a broad coalition of representatives from agriculture, cities, industry, environmental and environmental justice interests, and state and federal regulatory agencies started to develop an environmentally and economically sustainable plan for managing salts and nitrates. This effort is known as the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative. In 2008, a subset of stakeholders including regulated entities, communities, agriculture, and associations formed the Central Valley Salinity Coalition to help fund and support CV-SALTS efforts. After thorough discussion and vetting through broad-based, stakeholder-led, and publicly accessible CV-SALTS Executive Committee meetings, the CV-SALTS Salt and Nitrate Management Plan (SNMP) was completed in December 2016.

SALT AND NITRATE MANAGEMENT PLAN OFFERS NEW REGULATORY FRAMEWORK

Existing State regulations limit the Central Valley Water Board's ability to consider new, innovative salt or nitrate management strategies, particularly as they relate to regulating nitrates and providing safe drinking water. The SNMP is based on results of extensive technical work including in depth studies such as the *Strategic Salt Accumulation Land and Transport Study (SSALTS)* and *Nitrate Implementation Measures Study (NIMS)*. SSALTS and NIMS comprehensively assessed the treatment and management options for addressing salt and nitrate. The SNMP also includes recommended implementation actions, new policies and changes to current policies, monitoring, and milestones and timelines, that together address legacy and ongoing salt and nitrate accumulations. It establishes the minimum or default expectations for managing salts and nitrates in discharges to surface and groundwater. Given the sheer size and variability of environmental conditions and sources of salt and nitrate in the Valley, the SNMP takes a practical, adaptable approach for applying management requirements tailored to local conditions and needs. Implementing the SNMP recommendations would be phased, allowing resources to be allocated to the most significant water quality priorities first. The SNMP recommends changes to the Basin Plans that will add additional flexibility to the current regulatory framework, and that support opportunities for more localized decision making.

SALT SOLUTIONS FOCUS ON LONG-TERM STRATEGIES

SSALTS shows that current salinity management activities may only address about 15% of the annual salt load in the Central Valley. Accordingly, long-term solutions are needed to address the other 85%. These management actions include development of regional de-salters, a regulated brine line, or other projects that would be needed for containment or removal of salt, as well as management actions including reasonable and feasible treatment controls, agricultural management, alternative water supplies, and other actions. These long-term management solutions will require significant additional planning, as well as State and federal funding to implement. In the meantime, the SNMP finds that the highest water quality priority is the need to address nitrate-impacted drinking water sources. To effectively allocate resources and balance water quality priorities, the SNMP recommends an approach that addresses nitrate as the immediate priority while at the same time make progress on addressing the long-term salt management needs for the Valley. A phased, long-term salinity management program will include innovative salt management strategies for both the short- and long-term and move the Valley toward salt balance and managed restoration of impacted areas, where reasonable and feasible.

KEY ELEMENTS OF THE SNMP

Assessment of Current Conditions: The SNMP identifies current ambient water quality and estimated available assimilative capacity in upper, lower, and production zones of groundwater basins and sub-basins.

Regulatory Analyses: The SNMP describes research to define reasonable protection of existing and probable future beneficial uses of water for Municipal and Domestic Supply (MUN) and Agricultural Supply (AGR).

Technical Analyses: The SNMP describes studies to provide the basis for recommendations for the short and long-term management of salt and nitrate throughout the Central Valley, including nitrate drinking water treatment and local and regional salinity management needs, such as a regulated brine line for salt export.

Archetype/Prototype Studies (“Proofs of Concept”): To better explain potential policy changes (and how they might work in practice), the SNMP includes Proofs of Concept studies that provide examples and/or guidelines for consideration when implementing various elements of the SNMP.

Recommended Policies: The SNMP identifies a number of proposed policy changes or clarifications to the Basin Plans to facilitate SNMP implementation by providing new authorities for the Central Valley Water Board to supplement its existing authorities. These proposed changes are described in additional supporting fact sheets available on the CV-SALTS website listed below.

The SNMP is also implemented through three Central Valley Water Board Basin Plan amendments that are planned for adoption in 2017:

Municipal Supply in Agricultural Areas: Incorporating a process into the Basin Plans for determining appropriate designation and level of protection of MUN in agriculturally dominated water bodies;

Salt and Boron in the Lower San Joaquin River: Setting salt/boron water quality objectives and adding/modifying an implementation program for the Lower San Joaquin River; and

Beneficial Uses in the Tulare Lake Basin: Evaluating the designation/de-designation of the MUN and AGR beneficial uses in a portion of the Tulare Lake Bed Groundwater Basin.

NEXT STEPS

March 9, 2017: SNMP presented to the Central Valley Water Board

October 2017: Draft Basin Plan Policy Amendments drafted to reflect the recommended SNMP policy changes

February 2018: Basin Plan Amendments discussed at public hearing by the Central Valley Water Board

April 2018: Basin Plan Amendments considered for approval by the Central Valley Water Board

July 2018: SNMP considered for approval by the State Water Resource Control Board and subsequently the California Office of Administrative Law and approval of surface water portions by the U.S. Environmental Protection Agency

October 2018: SNMP implementation

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CV-SALTS: www.cvsalinity.org

Daniel Cozad, Central Valley Salinity Coalition, (909) 747-5240, dcozad@cvsalinity.org

Central Valley Water Board: www.waterboards.ca.gov/centralvalley/water_issues/salinity/index.shtml

Glen Meeks, Central Valley Water Quality Control Board, (916) 464-4701, Glenn.Meeks@waterboards.ca.gov