



California Agriculture Regulatory Update:

Water Supply, Nitrate and Salinity



December 2022

PREPARED BY:



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Introduction

As California agriculture enters 2023, regulations on water quality and quantity continue to develop as growers, collectively represented by third parties, respond to expanding monitoring, reporting and management requirements. This update focuses on developments in regulations related to water supply, salt and nitrate, with a focus on activities between June and December 2022.

- **SGMA**
groundwater basin management
- **ILRP**
on-farm groundwater nitrate contamination prevention
- **CV-SALTS**
salt and nitrate control
- **Bay-Delta Plan**
surface water quality management

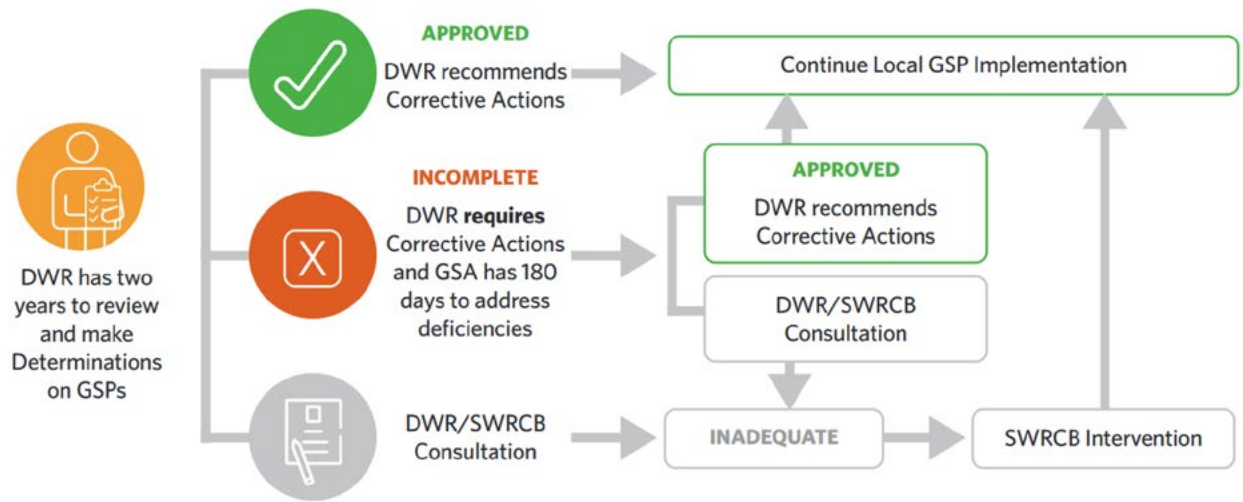
Sustainable Groundwater Management Act - SGMA

Background

California passed legislation to formally regulate groundwater in 2014. To this end, the California Department of Water Resources (DWR) assigned a priority to each of California's 515 groundwater basins, based on factors such as groundwater pumping, population, and groundwater level history. Ninety-four groundwater basins were assigned high or medium priority. Together with adjudicated areas (where legal judgments negate the need for a GSP), the area represented by high and medium priority basins represents 98% of all pumping (20M ac-ft/year); 83% of the California's population (25M people) and 88% of irrigated land (6.7M ac).

GSP Review Status

California DWR empowered local agencies, called **Groundwater Sustainability Agencies (GSAs)**, within the 94 high and medium priority basins to plan how to balance their overdrafted groundwater basins by 2040. These plans, called **Groundwater Sustainability Plans (GSPs)**, were submitted to DWR for approval, which can take up to two years.



Source: Groundwater Leadership Forum Review of DWR Determinations on GSPs in Critically Overdrafted Basins. <https://groundwaterexchange.org/wp-content/uploads/2022/08/NGO-DWR-Determinations-Analysis-2022.pdf>.

To date, only eight GSPs have been approved by DWR. One (Tulare Lake) has been deemed inadequate after a resubmittal, and 38 have an incomplete status after DWR review. Another 70 GSPs are in review by DWR. Regardless of review schedule, GSAs are required by SGMA to begin implementing their GSPs immediately after submittal (January 2020 for high priority groundwater basins that are critically overdrafted and January 2022 for other high priority basins and medium priority basins) and provide annual reports every April.

GSP Implementation & Funding

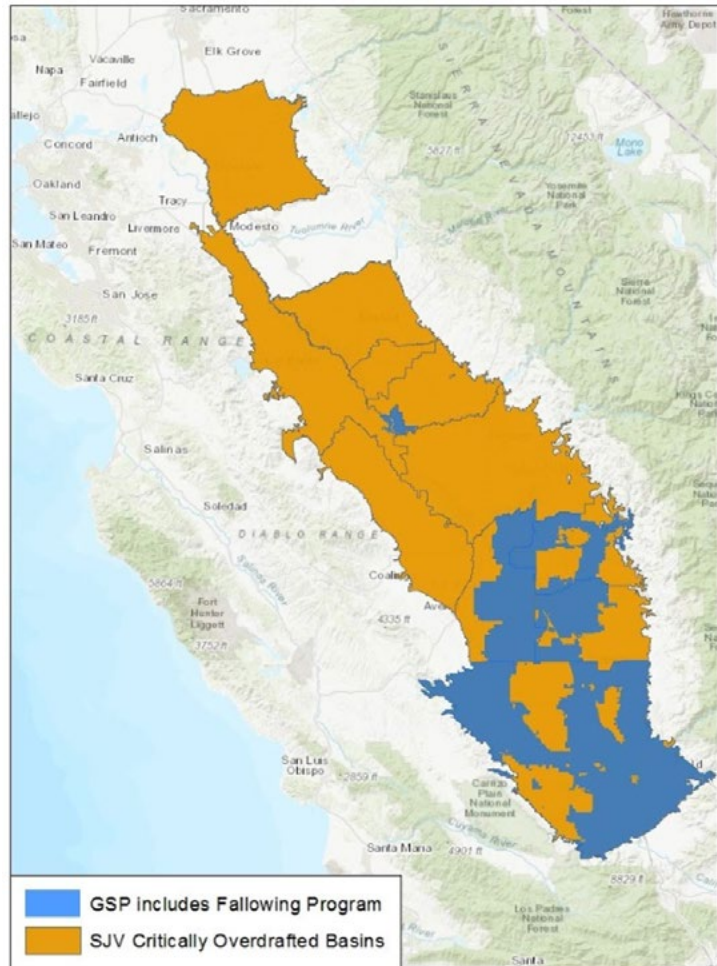
The GSPs describe projects and management actions to manage groundwater that may be funded by DWR through the Sustainable Groundwater Management Grant Program. Round 2 of this grant program, announced in 2022, will provide funding to GSAs and other responsible entities to update their GSPs (or alternative plans) or for construction projects and management actions required for implementation. This funding is for eligible applicants with projects located in medium and high priority basins, including critically overdrafted basins. The Legislature has provided, or will provide, approximately \$230 million to DWR for SGMA implementation activities, including planning and implementation projects. The award amounts are estimated to range between \$1M to \$20M, will be announced in August 2023, and are expected to fund three years of work.

All top priority groundwater basins are in the beginning stages of implementing groundwater management actions and actively pursuing funding through Round 2 or previous SGMA grants. However, the impacts of SGMA and other regulatory programs are recognized across all California state agencies. One of the main impacts of SGMA is the estimated 500,000 and 1,000,000 acres of farmland expected to be taken out of production because of SGMA.

The California Department of Conservation has initiated the Multibenefit Land Repurposing Program (MLRP), which has received \$90M in appropriations to date. The MLRP seeks to increase regional capacity to repurpose agricultural land to reduce reliance on groundwater while providing community health, economic wellbeing, water supply, habitat, renewable energy, and climate benefits. Round 1 MLRP grant awards were announced in 2022, and Round 2 awards will be announced in spring 2023. Round 2 grants will award \$40M to fund groundwater sustainability projects that reduce groundwater use, repurpose irrigated agricultural land, and provide wildlife habitat.

Source: Public Policy Institute of California. (2020). A Review of Groundwater Sustainability Plans in the San Joaquin Valley. <https://www.ppic.org/wp-content/uploads/ppic-review-of-groundwater-sustainability-plans-in-the-san-joaquin-valley.pdf>.

GSPs with Following Programs as of 2020 (Does *not* Include High and Medium Priority GSPs submitted in 2022)



Examples of repurposing agricultural land

- Creation of multibenefit recharge areas
- Restoring floodplains
- Transitioning irrigated land to dryland farming or non-irrigated rangeland
- Transitioning to less water intensive crops, including for native seed production
- Reestablishment of tribal land uses
- Facilitation of renewable energy projects that have an overall net GHG reduction
- Creation of parks or community recreation areas
- Incentive payments to landowners, farmers, and ranchers to implement multibenefit
- Easement acquisitions, including conservation easement and flood easement acquisitions, to facilitate land repurposing and protect repurposed land uses

Determining Agricultural Consumptive Use for SGMA

For developing, implementing and monitoring GSPs, it is critical that GSAs accurately measure or estimate water use, which can be challenging on agricultural fields. And as drought looms large, causing water suppliers to make unprecedented cutbacks to their agricultural customers, measuring and tracking agricultural water use is even more important.

While agricultural water conservation has traditionally focused on replacing less efficient irrigation systems with more efficient ones, this approach undermines the importance of agricultural irrigation in groundwater basin recharge. Reducing water “losses” through deep percolation will not necessarily improve sustainability of a groundwater basin. SGMA has brought these realizations into clearer view.

Improving water management and groundwater basin sustainability is more concerned with understanding and managing evapotranspiration (ET) from cropped fields. For this reason, water suppliers such as irrigation districts are prioritizing the measurement and estimation of agricultural field ET. This data provides them with a better understanding of consumptive use (not applied water) on cropped fields.



Learn More



California Department of Water Resources

<https://water.ca.gov/programs/groundwater-management/sgma-groundwater-management>



Irrigated Lands Regulatory Program - ILRP

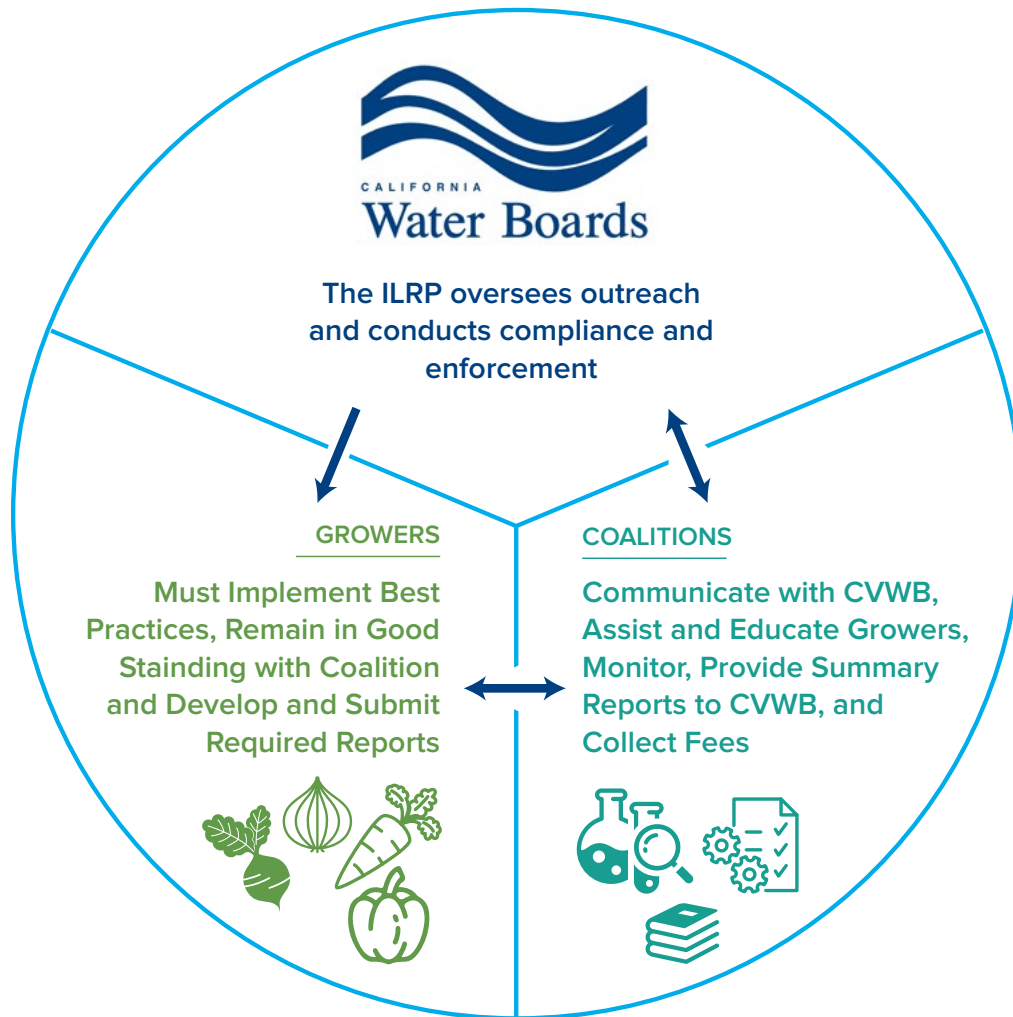
Background

The ILRP is a complex regulatory program with many components. Initially, its focus was on developing and implementing **Irrigation and Nitrogen Management Plan (INMP) Summary Reports**. Farmers report on how much irrigation and nitrogen they are applying and submit this information to their water quality coalitions, who then summarize this information in a report to the Regional Water Quality Control Board. This information informs the overall strategy to manage nitrogen inputs to groundwater, which is an overarching program that everything else fits into called the **Management Practices Evaluation Program (MPEP)**.

The Management Practices Evaluation Program has three parts:

- 1. Management Practice Assessment** - This effort uses modeling and field data to find out which farm management practices are the most effective at protecting groundwater from nitrate contamination.
- 2. Groundwater Protection Formula, Values and Targets** - A formula used to determine the current nitrate loading to groundwater (value) and what loading rates are required to achieve compliance with groundwater quality standards in each township (targets).
- 3. Groundwater Quality Management Plans** - These plans describe how the best protective practices (determined through the management practice assessment) will be implemented to ensure loading rates required to achieve the groundwater protection targets are not exceeded.

The MPEP and Groundwater Quality Management Plans were initiated several years ago and are ongoing. However, the groundwater protection formula and values have only recently been developed within the last two years, and the targets are still under development.



Source: https://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/grower_outreach/#ilrphandouts

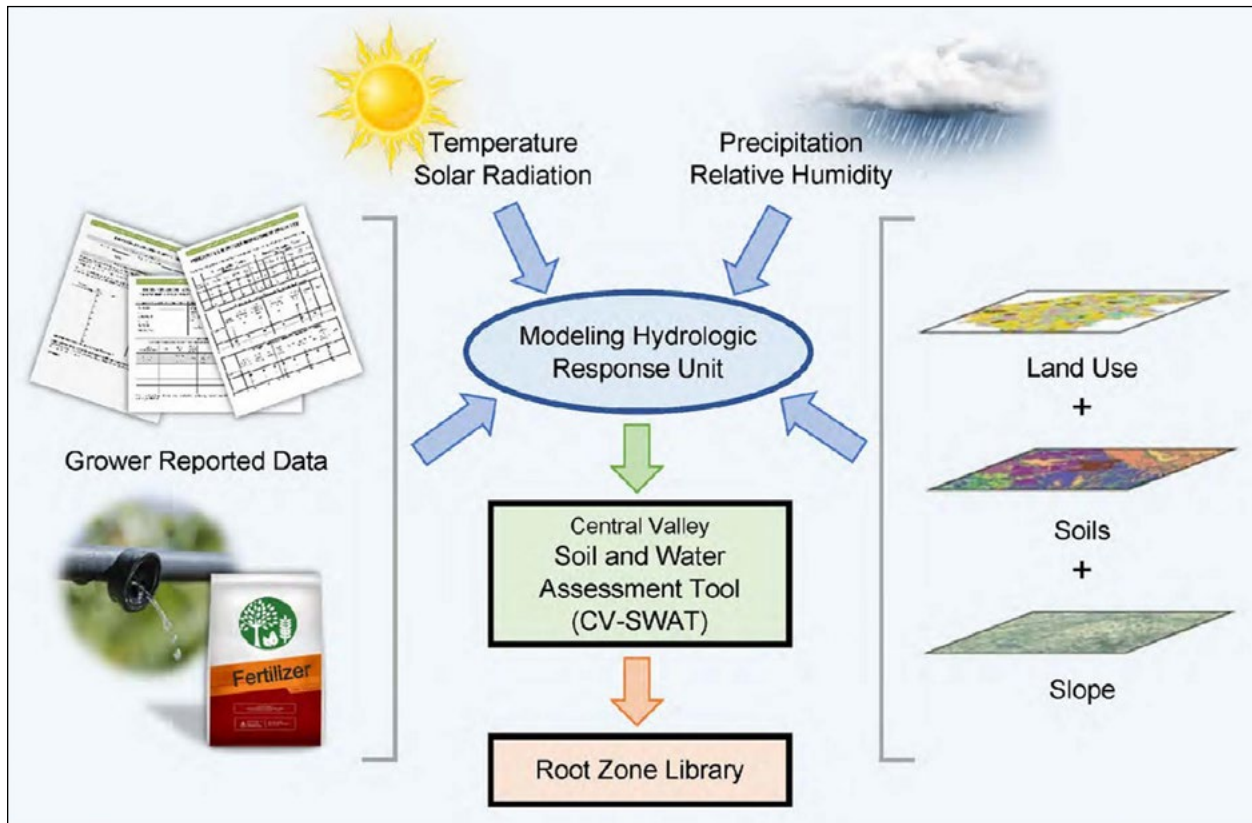
Groundwater Protection Values, Formula and Targets

The **groundwater protection formula** is used to calculate groundwater protection values and targets for high vulnerability (those more likely to experience groundwater nitrate contamination) townships.

Groundwater protection values represent the estimated nitrate loading from farming practices and were subject to public review and comment. A model called the Soil and Water Assessment Tool (SWAT) was used to calculate the values using data such as fertilizer applications, irrigation types, and soil types. This data came from irrigation and nitrogen application information collected from farmers and summarized by groundwater quality coalitions.

The **groundwater protection targets** are calculated from groundwater protection values and agricultural scenarios to estimate how much nitrate loading can occur before groundwater nitrate exceeds acceptable levels. Targets will be released for public review and comments before executive officer approval. Now in development, the targets must be incorporated into each Coalition's Groundwater Quality Management Plan by summer 2023 and will be reviewed every five years.

How the SWAT model uses grower reported data, climate variables, and land data to calculate Groundwater Protection Values



Source: September 20, 2022 Central Valley Regional Water Quality Control Board Update to the State Water Board

Learn More



California Department of Water Resources
www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/ilrp_decision_tree.pdf



Central Valley Alternatives for Long-term Sustainability - CV-SALTS

Background

CV-SALTS is a collaborative initiative between industry, government, agriculture, and communities to address and control nitrate and salt accumulation in California water supplies. While the CV-SALTS salt control program is implemented at the Central Valley wide scale, the nitrate control program is administered by local organizations called Management Zones. Both programs apply to all industries and local governments, but the nitrate program is implemented by prioritizing areas according to nitrate exceedances (above the drinking water standard) in groundwater. Currently, the initial phase of the salt control program is under way, Priority 1 Management Zones are implementing their plans, and Priority 2 Management Zones are beginning to form.



**PROVIDE SAFE DRINKING
WATER SUPPLIES**
Short & long term solutions



**REDUCE SALT &
NITRATE IMPACTS**
Timeframe & costs vary



**RESTORE GROUND
WATER QUALITY**
Where reasonable & feasible

Source: <https://www.cvsalinity.org/resources/>

Salt Control Program Prioritization and Optimization Study

The **Prioritization and Optimization (P&O) Study** is the first of three phases in the salt control program and intends to provide information on the best management options for reducing salt accumulations in different parts of the Central Valley. Phase 2 includes environmental permitting, design and funding acquisition for projects identified in the P&O Study, and Phase 3 includes construction and completion of those physical and non-physical (management) projects.

The P&O Study began in December 2021 and is expected to take 10 to 15 years. To date, P&O study efforts have focused on a Baseline Characterization Report, which is a compilation of data including land use, water quality, salt sources, and other information relevant to both science and policy of salt management. Throughout this process, data management tools and databases are being developed and models for evaluating salt accumulation in pilot areas as well as the entire Central Valley have been selected. The information in the Baseline Characterization Report will be used as foundational information for the remainder of the study, which aims to predict how different management approaches will affect salt accumulation in different parts of the Central Valley under various scenarios, such as drought, and natural factors such as soil type and climate.

Nitrate Control Program Management Zone Outreach and Implementation

Management Zones represent dischargers from several industries within defined geographical areas, including agriculture, dairies, wineries, food processors, oil and gas, and municipal (community wastewater facilities). Priority 1 Management Zones have been implementing their Early Action Plans since May 2021. Developing (Priority 2) groundwater basins /subbasins include Yolo, Merced, Kern County (west side south), Tulare Lake, Kern County (Poso), Delta Mendota, Eastern San Joaquin, and Madera, who will receive a notice to comply in 2023 or 2024.

Priority 1 Management Zones active since May 2021

- Valley Water Collaborative (encompassing Modesto and Turlock groundwater subbasins)
- Chowchilla Management Zone
- Kings Water Alliance
- Kaweah Water Foundation
- Tule Basin Management Zone

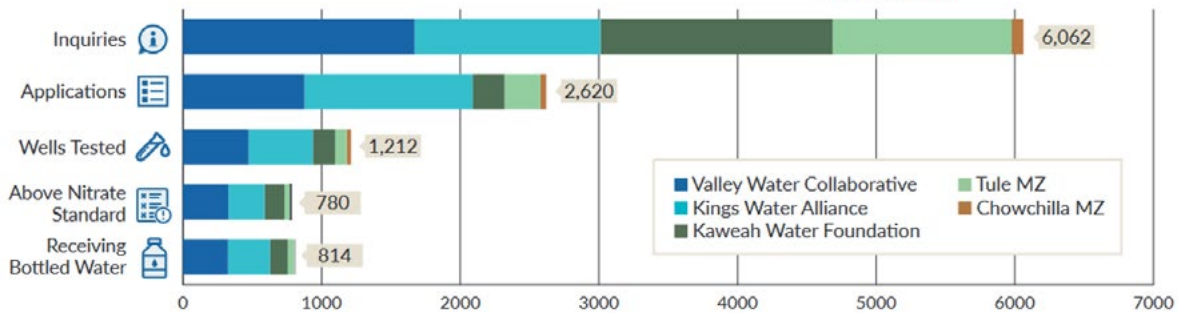
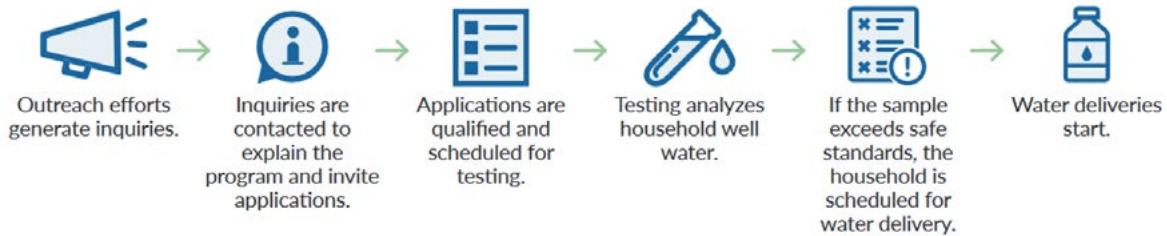
To date, Management Zones provide drinking water to approximately 1,240 households (including fill stations), have tested over 1,200 wells, and have received applications for well testing from approximately 2,630 domestic well users. To accomplish this, Priority 1 Management Zones have engaged in numerous outreach activities to encourage well owners to apply for free drinking water, not without challenges.

Limitations on personal interactions and social gatherings during the COVID pandemic; poor internet access in some areas; little awareness about water quality problems; language and cultural barriers; and distrust of government programs are all challenges in providing safe drinking water in the Central Valley.

To meet these challenges, Management Zones have used social media; mailers such as postcards and flyers; door to door canvassing; schools, community events and partner community organizations; mainstream media such as radio and television; and connection through local officials, community leaders, educators, and reporters to reach domestic well users.

PROGRAM GOAL
Provide safe drinking water to households whose wells exceed nitrate standards.

Households Processed for Bottled Water Deliveries



64% 64% of wells tested have exceeded the nitrate standard

846 836 gallons per day provided to households from 7 free water fill stations.

Source: <https://www.cvsalinity.org/resources/>

Learn More



CV-SALTS

www.cvsalinity.org

Valley Water Collaborative (Modesto and Turlock subbasins)

<https://valleywaterc.org>

Chowchilla Management Zone

<https://www.maderacountywater.com/cv-salts>

Kings Water Alliance

<http://kingswateralliance.org>

Kaweah Water Foundation

<http://www.kaweahwater.org>

Tule Basin Management Zone

<https://www.tulemz.com>



Bay-Delta Plan

Background

The main purpose of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan (Bay-Delta Plan) is to address the decline of native aquatic species in the Bay-Delta and related ecosystems. Recent developments related to this on-going controversial plan and its implementation include voluntary agreements, a new report on surface water storage, and the initiation of the environmental impact report (EIR) for Lower San Joaquin River flow and southern Delta salinity.

Voluntary Agreements

Voluntary agreements are adaptive implementation methods of managing flows and biological resources through means other than solely by flow objectives. They may include strategies such as managing flows as total volume (rather than percentage) and timing releases of water. Voluntary agreements were signed by parties throughout Northern, Central and Southern California. They will be funded by participating public water agencies and the state and federal governments over a period of eight years. The March 2022 memorandum of understanding that provided the framework for voluntary agreements has since been revised (August, 2022) and resubmitted to the State Water Resources Board for review.



Source: A Roadmap to Achieving the Voluntary Agreements. (Association of California Water Agencies October 2020). https://voluntaryagreements.org/wp-content/uploads/2020/10/A-Roadmap-to-Achieving-the-VAs_10.9.20.pdf.

The framework includes a science program designed to inform adaptive management addressing climate change and native fish populations. It includes investment of nearly \$3B to improve fish and wildlife habitat and more than 45,000 ac set aside to help recover salmon and other native fish species. While proponents state that a diverse coalition of interests, such as public agencies, conservation groups, tribal communities and federal representatives will oversee voluntary agreements implementation, voluntary agreements and the process by which they were developed remain controversial and face legal opposition.

Storing Water for the Environment – August 2022 Report

The Public Policy Institute of California (PPIC) released a report in August, 2022 on using reservoirs and other infrastructure to better manage water for the environment. The main highlights of the report were:

1. Although large dams are essential for managing California’s water, they have significantly harmed native fishes.
2. Reservoir storage is needed—and can be managed differently to support the environment.
3. Reserving reservoir storage space for the environment—along with a share of inflow—can help improve river health below dams.
4. California already has good models for how to govern and fund this approach, which many ongoing regulatory and planning efforts would benefit from adopting.



The report concluded that multiple planning activities and regulations could use environmental water more efficiently if they included storage space, along with inflows.

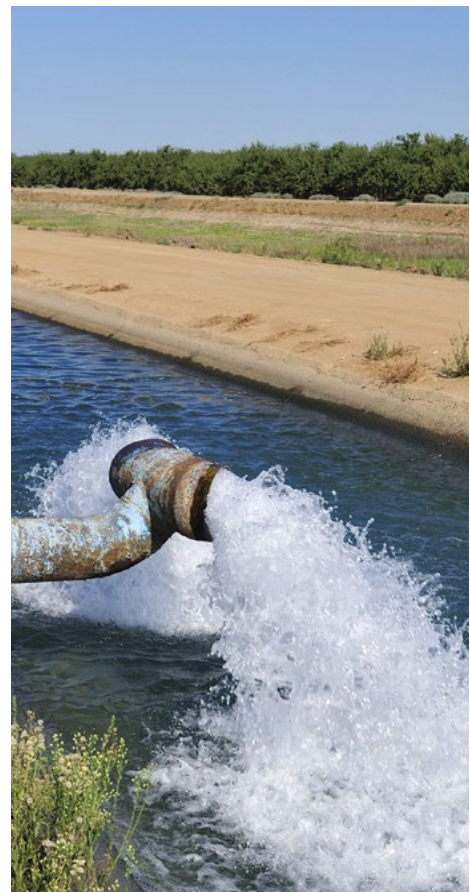
Recommendations of the PPIC report **Storing Water for the Environment**

1. The California Environment Flows Framework is setting criteria for functional flows (components of a river's flow that sustain native species and their ecosystems) in rivers throughout the state. Flexible operation of reservoir storage will be necessary to meet these goals in rivers with large dams and multiple competing uses of water.
2. The Lower San Joaquin River component of the Bay–Delta Plan Update relies on bypassing a portion of reservoir inflow into rivers to meet its environmental objectives. This effort could better meet these objectives if it used a functional flows approach, supported by flexibly operated storage in tributary reservoirs.
3. Voluntary Agreements are being negotiated as part of the broader Bay–Delta Plan Update for the Sacramento–San Joaquin Delta watershed. The agreements would be strengthened if new water—along with water that is currently assigned by regulation to environmental uses—was granted storage space and managed flexibly and in a regionally coordinated fashion.
4. A Coordinated Long-Term Agreement to govern Central Valley Project and State Water Project operations is being renegotiated. Water quality and endangered species protection would benefit from the creation of a well-defined budget and reservoir space for the ecosystem.
5. State investments in environmental water are growing significantly, creating a unique opportunity to expand assets available to the environment to improve freshwater ecosystem conditions.

Lower San Joaquin River (LSJR) Flows and Delta Salinity

The State Water Board held a public scoping meeting to receive input on environmental information to be considered for a proposed regulation to implement LSJR flows and southern Delta salinity water quality objectives of the Bay-Delta Plan. The Implementation Regulation will cover:

- The geographic area of the LSJR flow objectives including the watersheds of the three salmon bearing tributaries to the San Joaquin River: the Stanislaus, Tuolumne, and Merced Rivers to the San Joaquin River near Vernalis, and through the Delta.
- The geographic area for the southern Delta salinity objective, which encompasses the lands and channels from Vernalis north to Stockton, the bulk of which are within the boundary of the South Delta Water Agency including: the San Joaquin River from Vernalis to Brandt Bridge, Middle River from Old River to Victoria Canal, and Old River/Grant Line Canal from the Head of Old River to West Canal.
- Areas receiving water exported from the LSJR and Bay-Delta that could be impacted by implementation of the LSJR flow objectives and southern Delta salinity objective.



This regulation is commonly known as “Unimpaired Flows”, which requires:

- From February through June, that at least 40% of the unimpaired flow be maintained in the Stanislaus, Tuolumne, and Merced Rivers, within an adaptive range of 30 to 50% of the unimpaired flow, inclusive.
- During February through June, the LSJR flow objectives and program of implementation require the maintenance of a minimum base flow of 1,000 cubic feet per second (cfs), with an adaptive range between 800 and 1,200 cfs, inclusive, as measured at Vernalis on the San Joaquin River. This means that if the percent of unimpaired flow is being met but flows are insufficient to achieve the base flow at Vernalis, then additional flows will be necessary.
- During October, the LSJR flow objectives and program of implementation require the maintenance of a minimum baseflow, as measured at Vernalis on the San Joaquin River, of 1,000 cfs, plus an additional 28 thousand ac-ft pulse flow or a minimum monthly average flow of 2,000 cfs, whichever is less.

The southern Delta salinity objective, expressed as a 30-day running average of electrical conductivity, is 1.0 dS/m and applies year-round in three river segments rather than specific point locations.

Learn More



California Water Boards

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/



Land IQ provides these semi-annual regulatory updates to help our clients stay informed about regulatory programs related to agriculture and water in California. To learn more about the regulatory and technical support that Land IQ provides to irrigation and water supply districts, GSAs, commodity groups, and private and public agencies, please visit our website at www.landiq.com or contact:

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