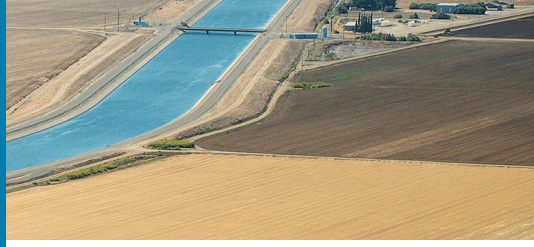


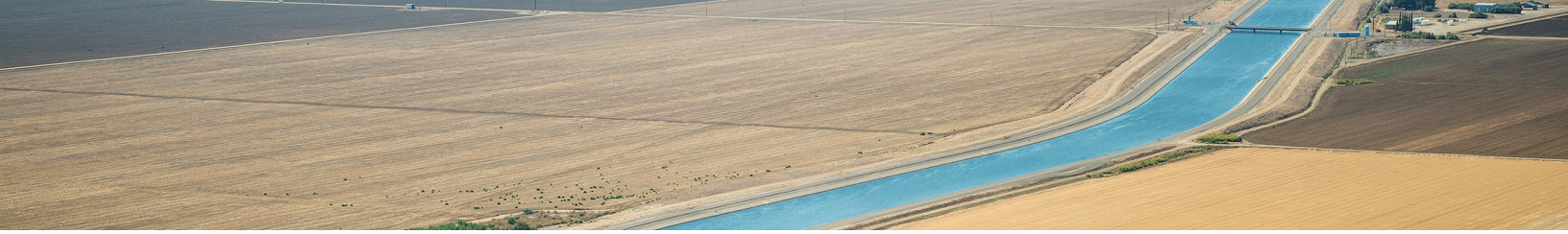
# Statewide Leaders:

## Setting the Standard for Drainage Management and Environmental Protection.

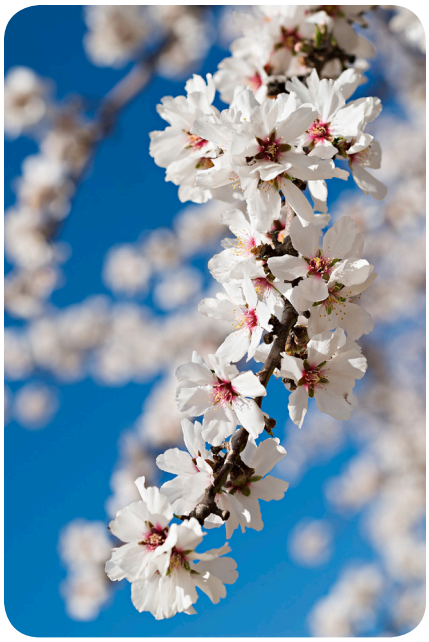
### DRAINAGE MANAGEMENT

**As one of the oldest problems facing irrigated agriculture worldwide, drainage management is especially important in the Westlands area due to naturally-occurring salt found in Delta waters and west side soil. Without proper drainage and disposal, this saline water can impact the root zones and germination of plants, preventing crop growth and reducing yields. Westlands' salinity and drainage concerns are complicated by soil structure in areas where dense clay layers of varying depth and thickness restrict natural drainage. This causes an accumulation of unused irrigation water above the clay layers, resulting in a near-surface water table.**

- Over the years, Westlands farmers have become highly proficient at implementing water and soil testing for data and solutions related to ground salinity. We have developed expertise in sustainable methods for managing the salt load from irrigation drainage, including innovative cultivation techniques – sometimes called "precision agriculture" – that keep farms operating at peak water-efficiency and cut dust pollution. Local farmers have also mastered field elevation, slope (grade), and topography assessment techniques which also impacts drainage.
- Westlands farmers have also prioritized the nexus between water efficiency and crop-shifting. Other than permanent crops such as trees and orchards, which cannot be easily fallowed, farmers are using scientific data and technology to better pinpoint when, where and how much to irrigate, and are concentrating water instead on less water dependent crops.
- Westlands is a leader in water conservation; transitioning to drip irrigation; using cover crops and no-tillage for better soil health and reduced water usage; employing GPS and possibly drones to pinpoint inefficiencies in irrigation; and funding plant science where genetic engineering could help crops withstand drought.
- To address drainage issues, Westlands employs intense irrigation management techniques restricting deep percolation to the absolute minimum needed to maintain a salt balance and choosing a crop rotation and cultural management regime to minimize the required percolation. Salinity is managed with a unique and advanced management of salinity testing, seed germination, infiltration and crop selection.
- Since 1985, Westlands has studied a number of available or emerging drainage technologies, at a cost of over $8 million, including land application, evaporation and solar ponds, biological selenium removal, a deep injection well, cogeneration, agro forestry, and upper zone pumping. Advanced water management techniques implemented by Westlands growers have reduced deep percolation below the crops' root zone and lessened the immediate impacts of the lack of artificial drainage.



- To help meet state and federal requirements, Westlands Water District supports restoring 8,000 acres of wetland habitat in the Delta.
- When approved by Congress, a 2015 settlement between the United States Department of Justice and Westlands Water District will end a decades-long dispute over the federal government's obligation to provide drainage for Central Valley farmers receiving water from the San Luis Unit of the Central Valley Project (CVP). The agreement provides in part that Westlands Water District will take full responsibility for managing drainage in the District by implementing comprehensive drainage solutions to preserve the soil and reducing the volume of drain water, resulting in positive environmental outcomes. Under the agreement, Westlands will compensate landowners within the District affected by historical drainage issues, saving government and taxpayer resources.



- The San Joaquin Valley region is home to an abundance of natural resources, including numerous fish and animals. Endangered fish species in the Delta are protected; however, implementation of those protections have significantly curtailed water supply.
- With other public water agencies that depend on water supplies pumped through the Delta, Westlands purchased approximately 3,500 acres of land in the Delta and restored approximately 2,000 acres to tidal marshland habitat to benefit native fish species that either inhabit the Delta or rely upon the Delta for part of their life cycle.
- Westlands has also participated in other initiatives, such as funding California game wardens, to help the Department of Fish and Game address poaching and other violations of the fish and game code that affect at-risk species.

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