

A Case Study: Adapting Water Allocation Systems in California's Sacramento Valley

April 25, 2019



NCWA
Northern California Water Association

Sacramento Valley

A truly unique and exceptional place!



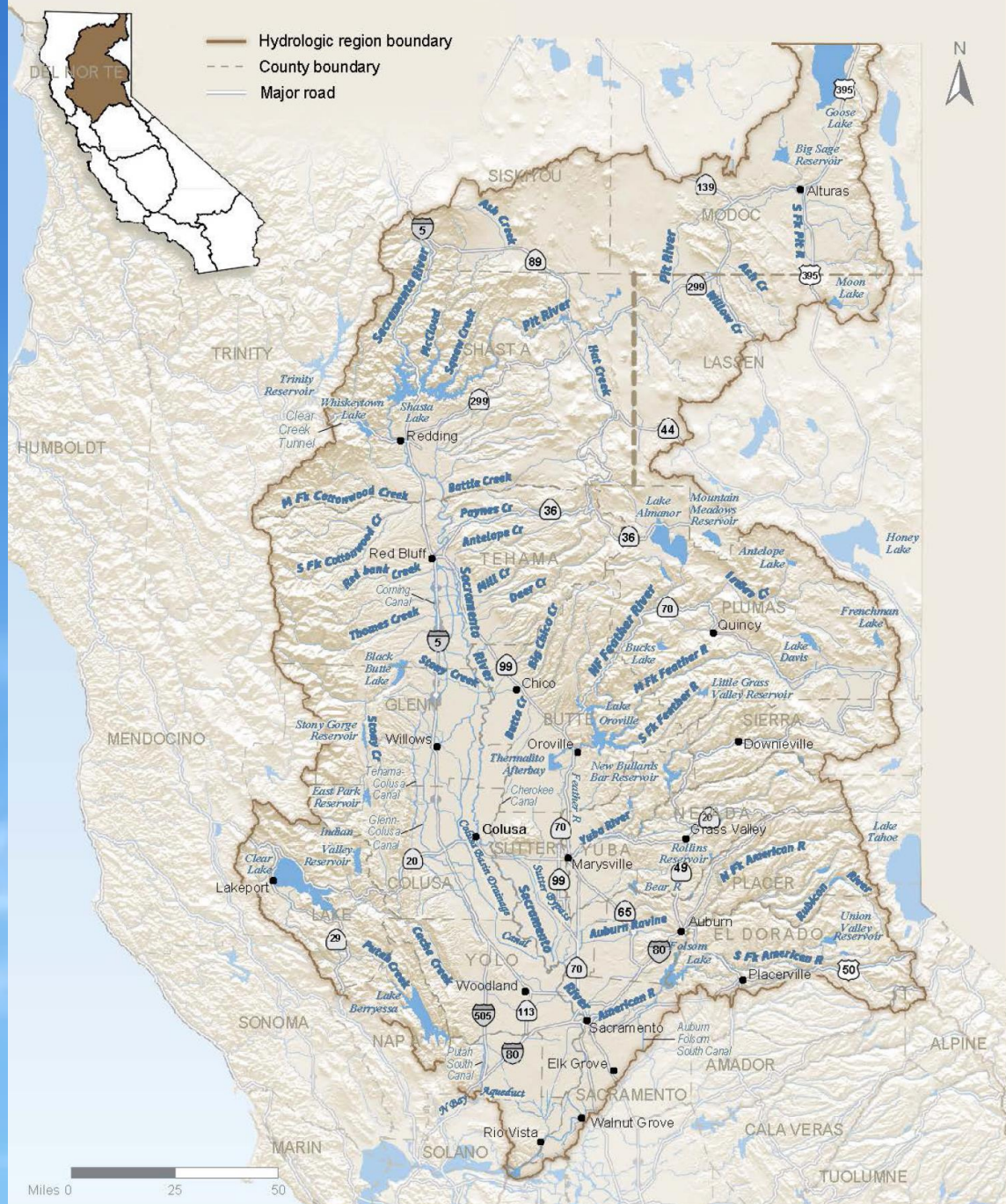
Valle de Sacramento

Un lugar verdaderamente único y excepcional!





Sacramento Valley





Sacramento Valley

Two million acres of **family farms** that provide the economic engine for the region through the production of rice, trees, and various row crops that serve as a working landscape and pastoral setting and provide valuable habitat for waterfowl along the Pacific Flyway.



Sacramento Valley



Habitat for 50% of
the *threatened*
and endangered
species in
California,
including the
winter-run and
spring-run salmon,
steelhead and
many other fish
species.

Sacramento Valley

Seven National Wildlife Refuges, more than fifty state Wildlife Areas and other privately managed wetlands that support the annual migration of waterfowl, geese and shore birds in the Pacific Flyway. These seasonal and permanent wetlands provide 65% of the North American Waterfowl Management Plan objectives;



Sacramento Valley

The small towns and rural communities that form the backbone of the region, as well as the **State Capital** that serves as the center of government for the State of California.



Sacramento Valley Headwaters

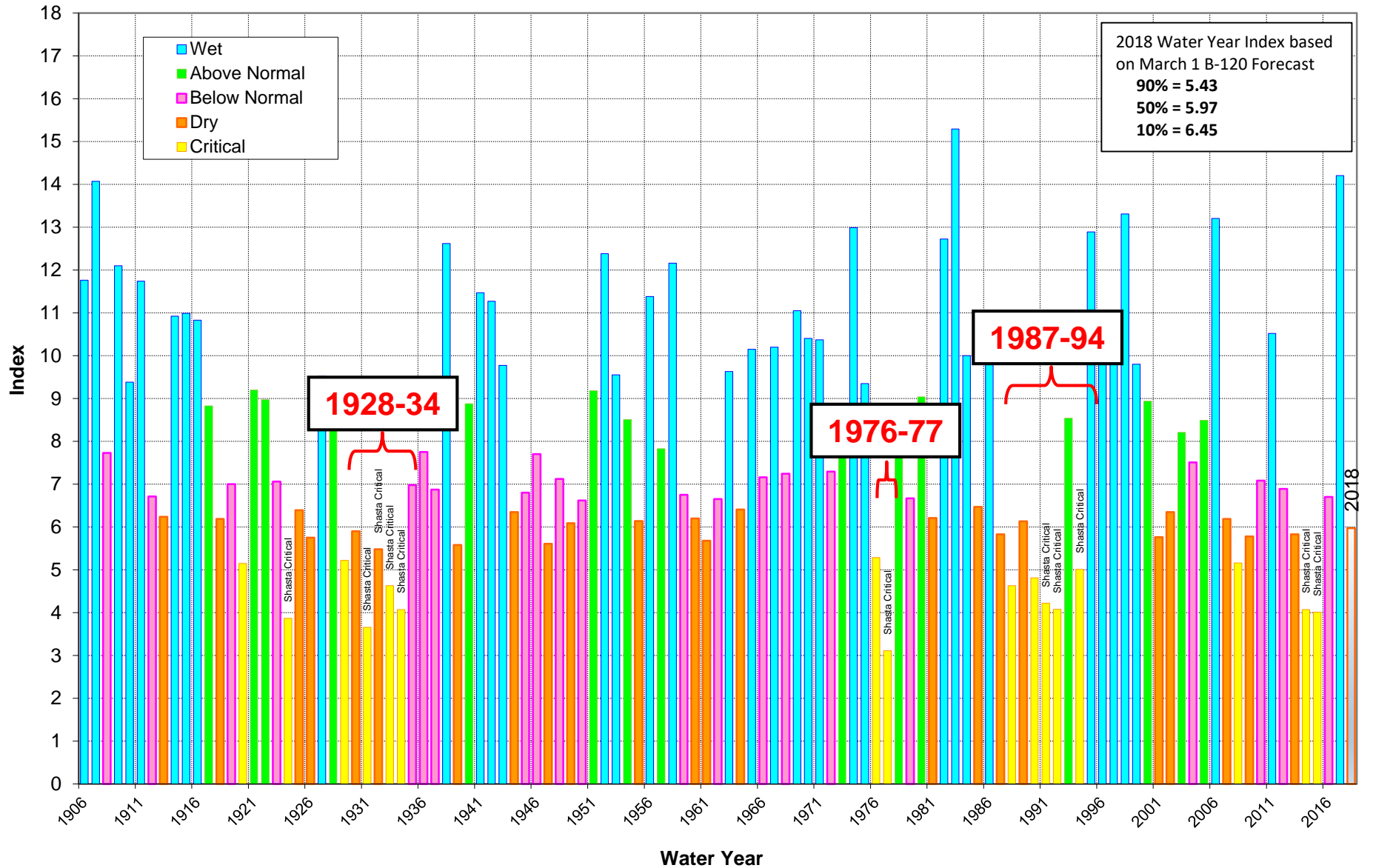
**The forests, meadows and canyons
in the **watersheds** of the
Sierra Nevada and Coast Range.**



Sacramento Valley Water Year Type Index (40-30-30)

1906 - 2017

Based on Observed Unimpaired Runoff



Water Rights in the Sacramento Valley

💧 Surface Water (7000+...)

- Riparian Water Rights
- Pre-1914 Water Rights
- State Water Board Permits and Licenses
- Central Valley Project Contracts
- State Water Project Contracts



💧 Groundwater (8,000+...landowners)

- Overlying
- Appropriative



Accounting for every drop. Water management in the Sacramento Valley.

In the Sacramento Valley, a highly efficient "flow-through" system allows water to move from mountains to ocean. Water resources managers work with the Valley's unique topography, geology and hydrology to gather, use and reuse this precious resource.

This system is the heart of the Valley's healthy ecosystem, diverse economy and rich recreational opportunities.

Rice is grown on dense clay soil which prevents seepage and ensures water is available for re-use downstream.



The water not used in one district is a source of water for others downstream.

This flow-through system works well. Natural vegetation, birds, fish, crops and people require a portion. The rest flows to the delta.

Information compiled by
Northern California Water Association and
California Rice Commission.

Facebook.com/SacValleyCA

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The Sacramento River and its tributaries are the prime sources for this system. They also gather water from irrigation and wetlands to reuse downstream.

Active management of the Sacramento Valley's flow-through system ensures that the water we need and the benefits we enjoy will continue to be available.

Dando cuentas por cada gota.

Manejo del agua en el Valle de Sacramento.

En el Valle de Sacramento, un sistema de "flujo continuo" altamente eficiente permite que el agua fluya de la montaña al mar. Los administradores de los recursos de agua trabajan con la singular topografía, geología e hidrología del valle para recolectar, usar y volver a usar este valioso recurso.

Este sistema es el corazón del saludable ecosistema, la economía diversa y las múltiples oportunidades recreativas del Valle.

El arroz se cultiva en una densa tierra gredosa, lo cual evita la filtración y garantiza que el agua esté disponible río abajo.

El agua que no se utiliza en un distrito es una fuente de agua para otros río abajo.

Este sistema de "flujo continuo" funciona bien. La vegetación natural, los pájaros, los peces, los cultivos y la gente requieren una parte. El resto fluye al delta.

Dando cuentas por cada gota.

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El Río Sacramento y sus tributarios son las fuentes principales para este sistema. Ellos también recogen agua de irrigación y de zonas pantanosas para volverla a utilizar río abajo.

Un manejo activo del sistema de "flujo continuo" del Valle de Sacramento asegura que el agua que necesitamos y los beneficios que gozamos continuarán disponibles.



f /SacValleyCA

Re-imagining our Water System

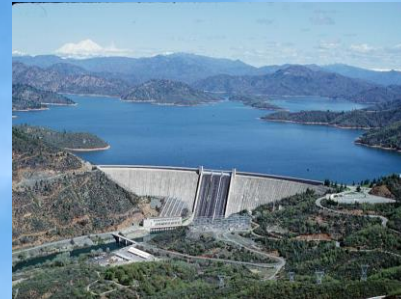


Managing Water in the Sacramento Valley for Multiple Benefits

Salmon and steelhead rearing and spawning



Hydropower generation



Agricultural and M&I water supplies



Pacific Flyway migratory bird habitat and refuge deliveries



Recreation



Water Rights System Worked in 2014-15

Planning for a Dry Year in the North State

Water suppliers throughout the North State have planned for dry years in California like 2015.

2015 Reduction in Sacramento Valley Water Supplies (in %)

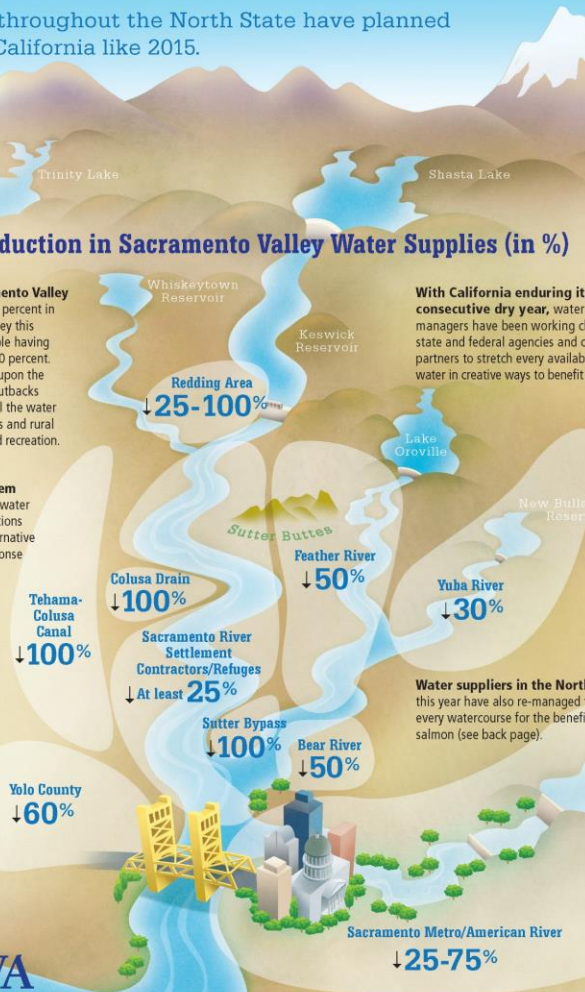
Water supplies in the Sacramento Valley have been reduced more than 25 percent in every part of the Sacramento Valley this year—with many areas and people having their surface supplies reduced 100 percent. The severity of the cuts depends upon the water rights or contract. These cutbacks will have a negative impact on all the water uses in the region, including cities and rural communities, farms, fish, birds and recreation.

California's water right system works—in a dry year like 2015, water suppliers have planned for reductions and they are able to develop alternative water management plans in response to the lack of surface water.

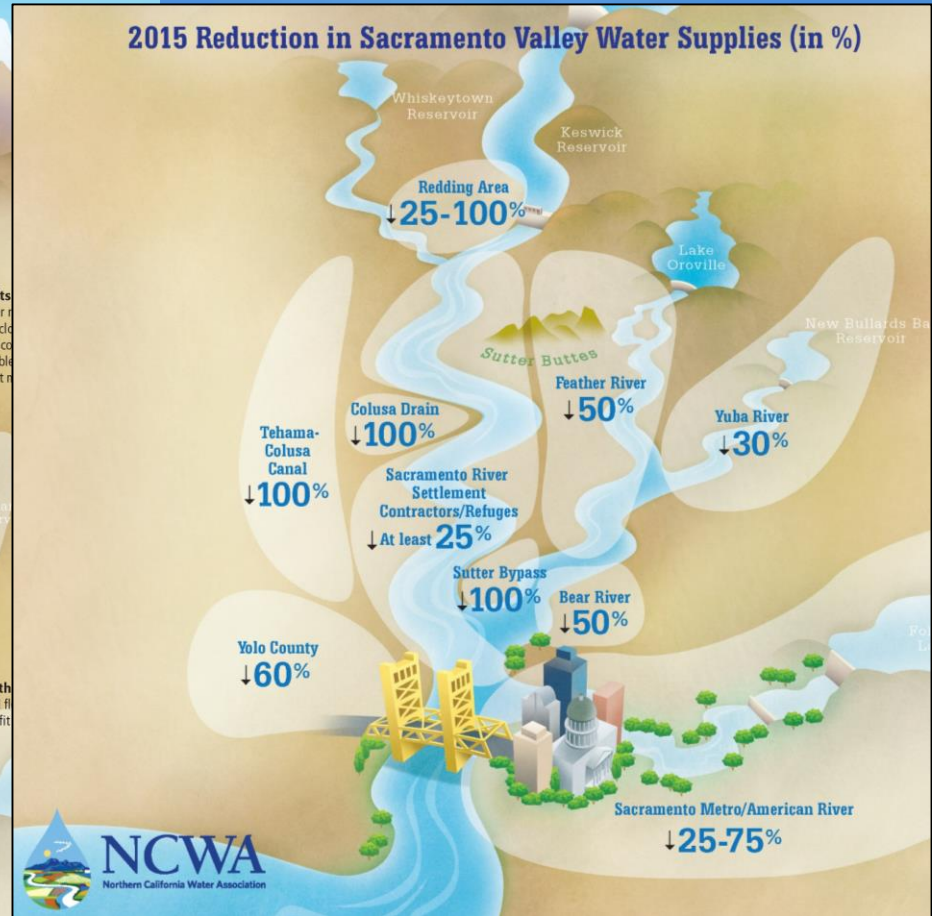
Water rights and contracts are the foundation for water operations throughout California. The orderly implementation of the water rights system provides economic and environmental stability to address the current dry year challenges and prepare for future droughts.

With California enduring its consecutive dry year, water managers have been working with state and federal agencies and partners to stretch every available drop of water in creative ways to benefit the region.

Water suppliers in the North this year have also re-managed every watercourse for the benefit of salmon (see back page).



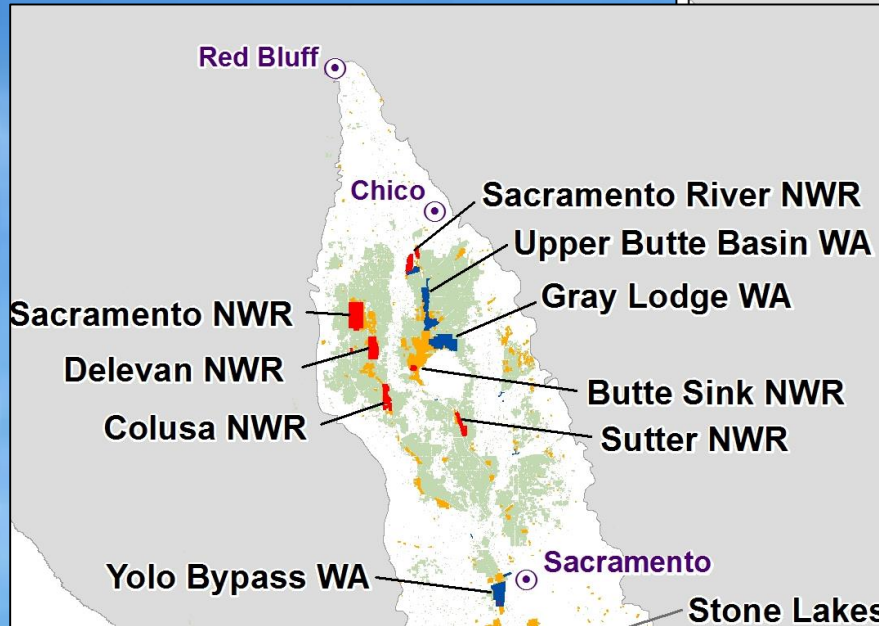
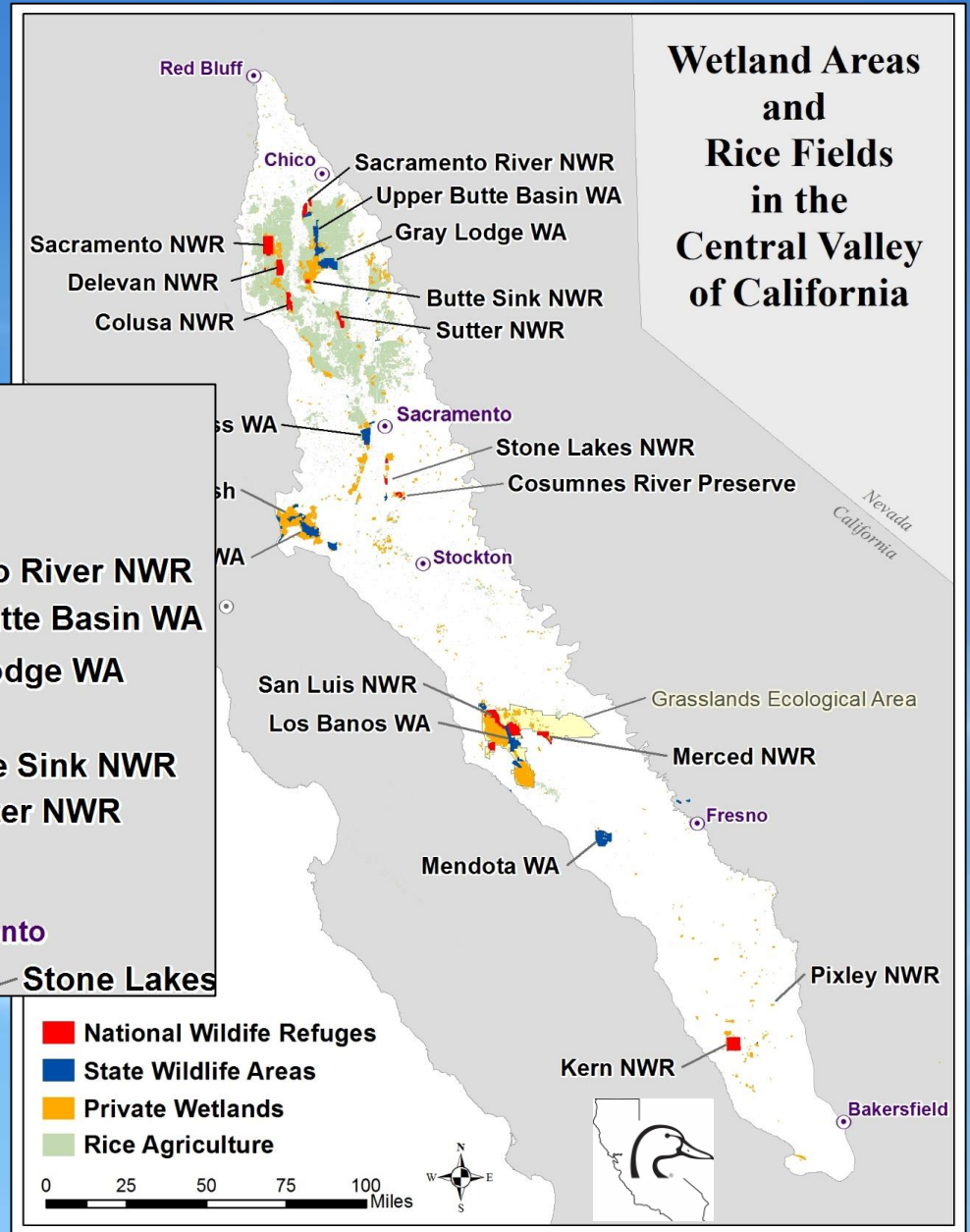
2015 Reduction in Sacramento Valley Water Supplies (in %)



A Water Budget for Freshwater Ecosystems

- 💧 The existing system of ecosystem protections relies heavily on constraining the exercise of water rights**
- 💧 The re-imagined water system integrates environmental water management into the water rights and water management system**

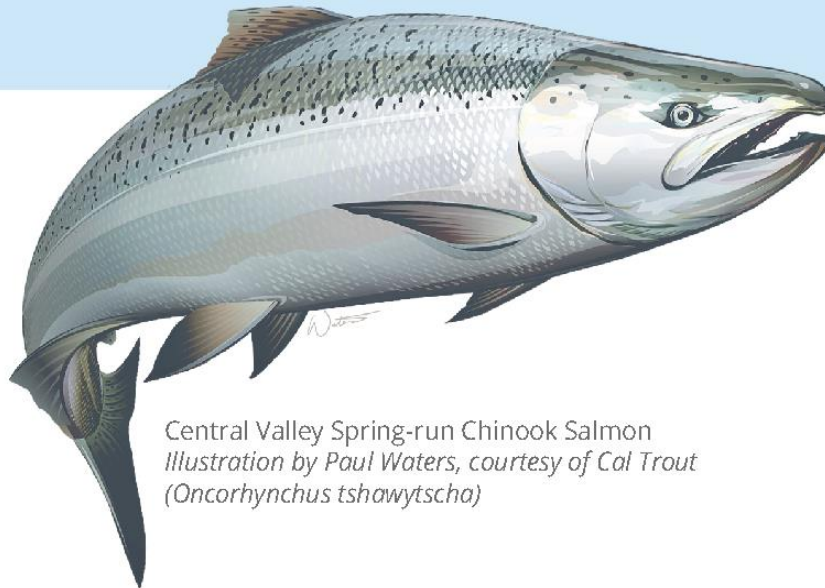
A Water Budget for Freshwater Ecosystems



A Water Budget for Freshwater Ecosystems

Sacramento Valley Salmon Recovery Program

Local water management entities, conservation organizations and state and federal fisheries and water management agencies in 2014 joined together to form the Sacramento Valley Salmon Recovery Program, a collaborative partnership to complete projects and improve science to promote recovery of salmon and other species of fish in the region. These actions are implementing both the National Marine Fisheries Service's Recovery Plan for the Sacramento River and the California Natural Resources Agency's Sacramento Valley Salmon Resiliency Strategy.



Central Valley Spring-run Chinook Salmon
Illustration by Paul Waters, courtesy of Cal Trout
(*Oncorhynchus tshawytscha*)

A Water Budget for Freshwater Ecosystems

Sacramento Valley Salmon Recovery Program

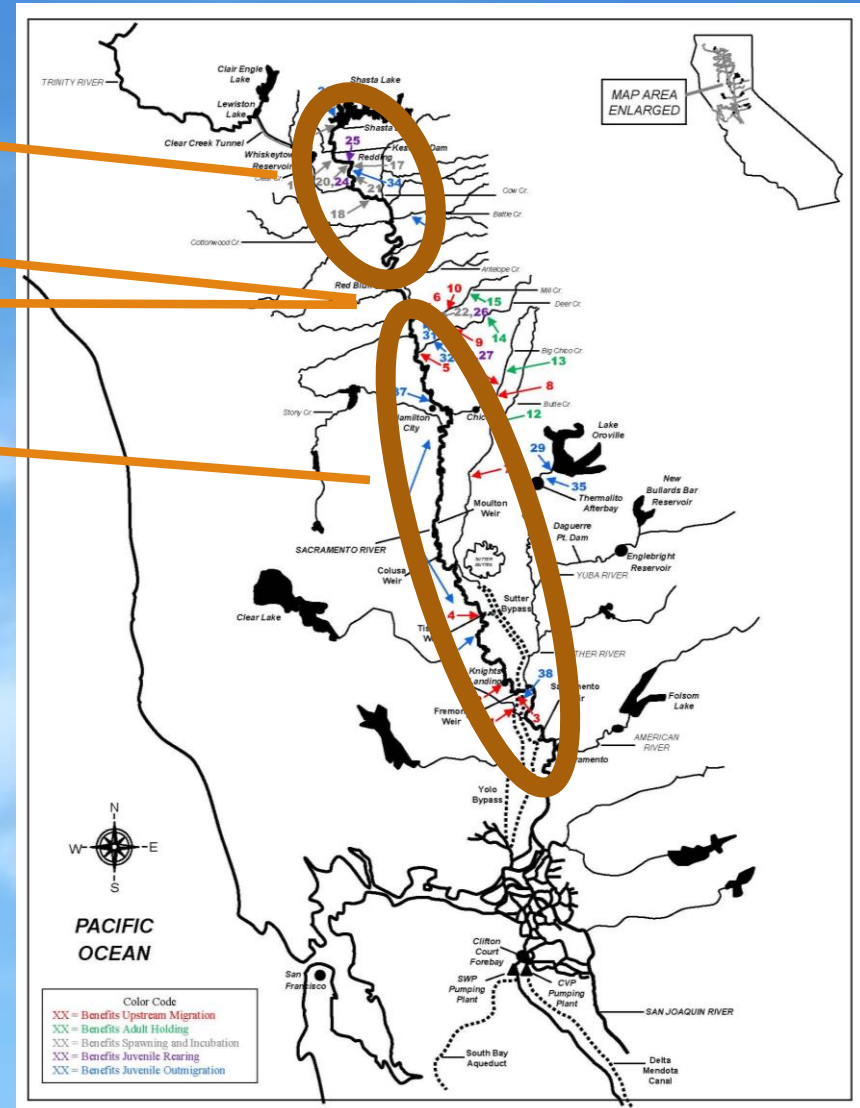
👉 Upper River

👉 In-River

👉 Floodplains

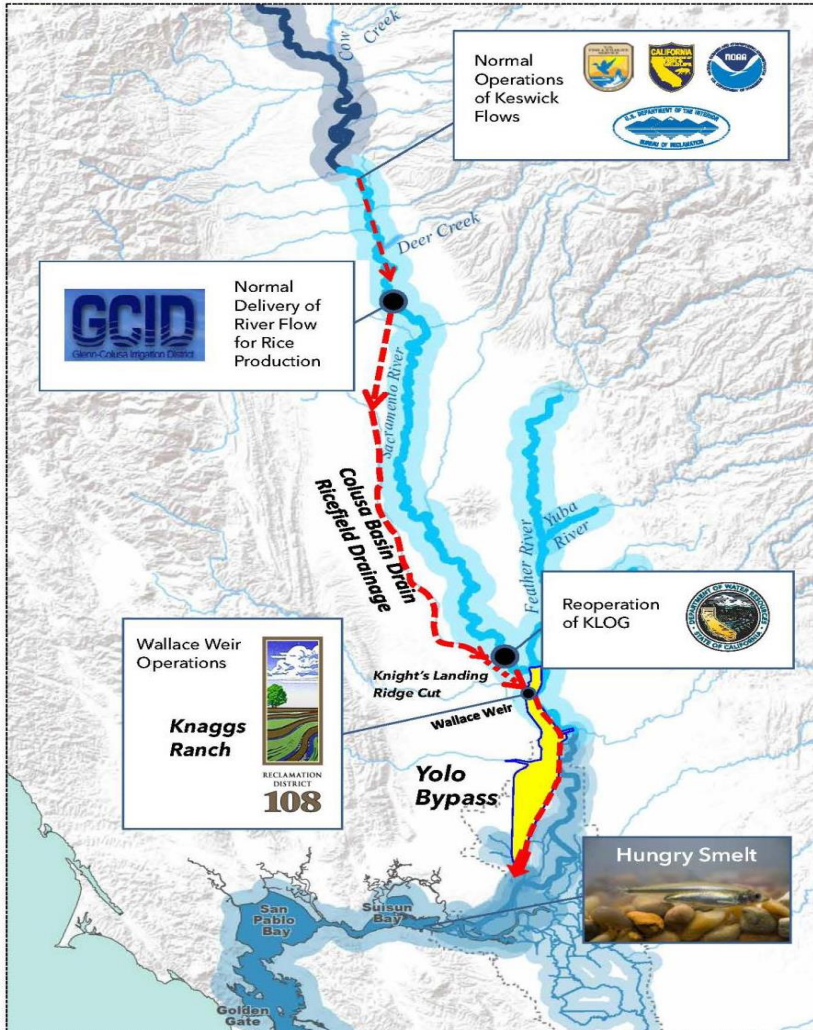


Photo: CA Trout



A Water Budget for Freshwater Ecosystems

Delta Smelt Food Web Flow Action – Fall 2018



A Water Budget for Freshwater Ecosystems

Reactivating our Floodplains



The Sacramento Valley is fertile ground for developing a new path forward for holistic water management that incorporates best available science and practical know-how of farm and refuge managers to reactivate the floodplain.

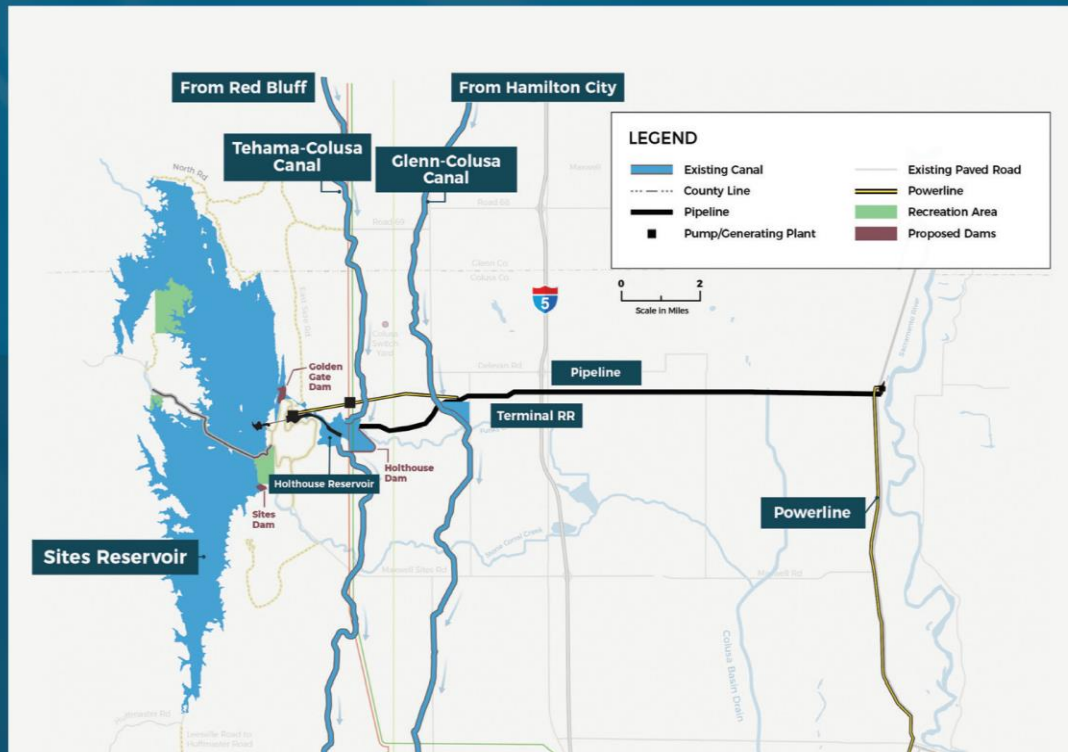
A Water Budget for Freshwater Ecosystems



SITES RESERVOIR

Increasing Dry Year Supplies

Sites Reservoir is unique in many ways, carefully balancing the needs of both people and the environment

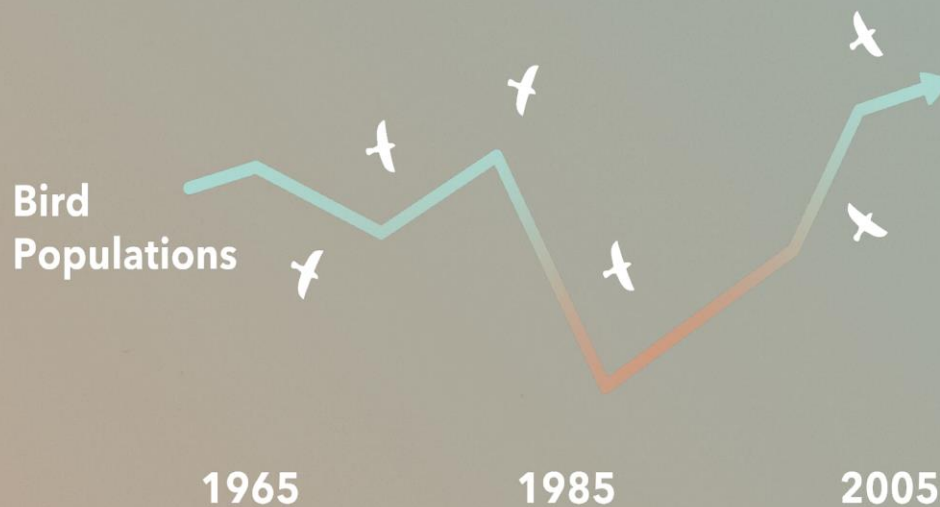


A Water Budget for Freshwater Ecosystems



A proven approach

Successes in the Sacramento Valley



By flooding farm fields and historic wetlands with just a few inches of water, a safe haven for wild birds was created. Today, hundreds of thousands of waterfowl return to Northern California as part of the Pacific Flyway, the environmental success story of our generation.

A Water Budget for Freshwater Ecosystems

A proven approach

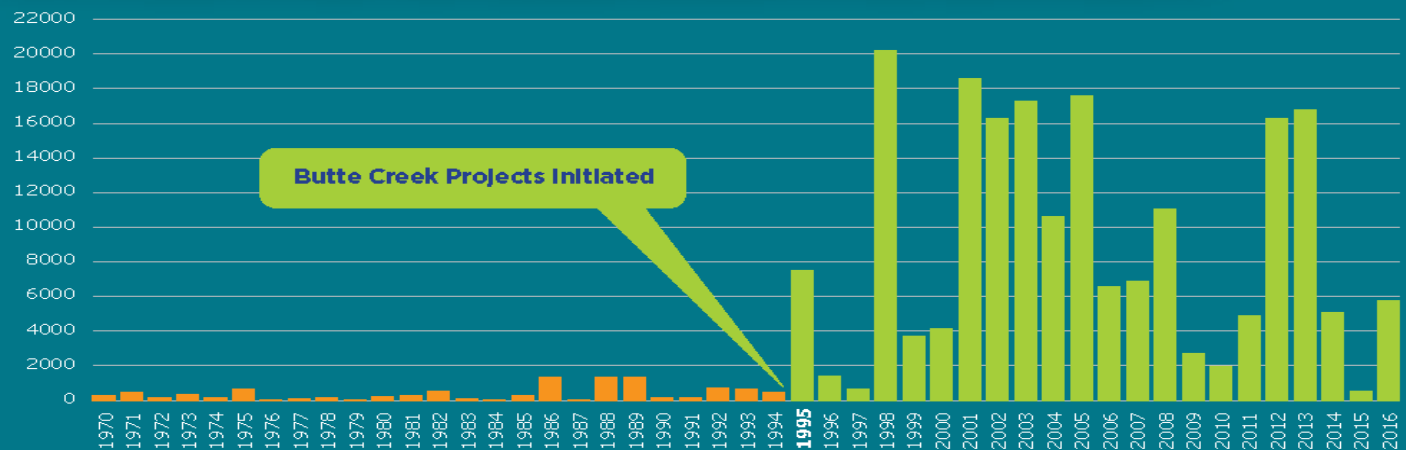
Successes in the Sacramento Valley

A few decades ago, only a few hundred fish returned to Butte Creek to spawn each year. Today, that number has jumped to more than 10,000. The reason? Butte Creek water has been combined with land and sun to provide a safe and bountiful place for fish to thrive.



Photo: CA Trout

BUTTE CREEK SPRING-RUN CHINOOK SALMON POPULATION ESTIMATES



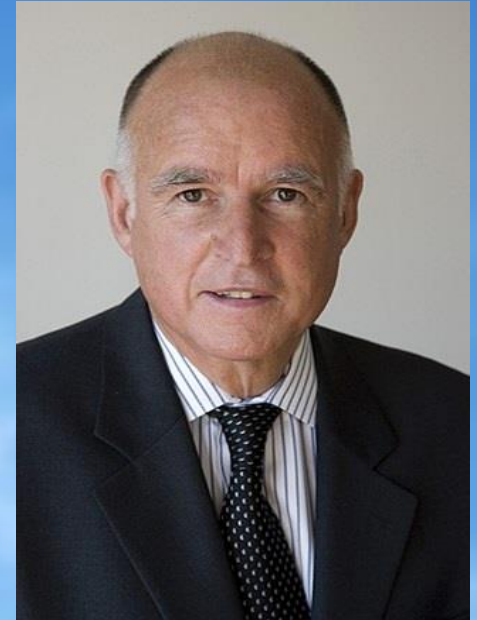
Water Transfers



The transition from the existing system of environmental protections to water budgets for freshwater ecosystems is best achieved by voluntary agreements as part of a comprehensive plan.

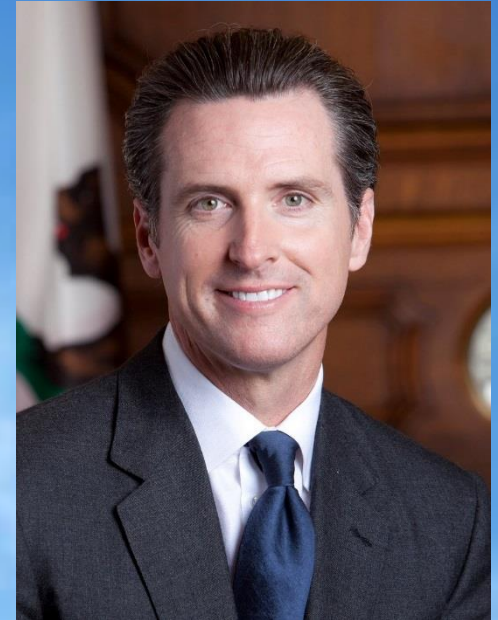
Governor Jerry Brown

State entities will encourage negotiated agreements among interested parties to implement flow and non-flow actions to meet regulatory standards and support all beneficial uses of water.



Governor Gavin Newsom

Our first task, our collective effort, must be to cross the finish line on real agreements to save the Sacramento-San Joaquin Bay-Delta. We must get this done for the resilience of our mighty rivers, for the stability of our agricultural sector, and for the millions and millions of people that depend on this water every day.





The New Way Forward

A global model

The Sacramento River Basin is participating in a new collaboration featuring science-based programs balancing human and wildlife needs while setting the course for 15 years of collaboration and commitment by local, regional, state and federal agencies. This is possible **only** through voluntary agreements, and offers a variety of benefits:



Positively impacts entire lifecycle of native fish from spawning grounds to San Francisco Bay



Recharges groundwater supplies



Safe, bountiful habitat for waterfowl and shorebirds



Improves timely flow and temperature schedules to benefit fish and wildlife



Produces billions of water bugs to feed endangered fish



Maintains flood control measures



Adds water to key points along the entire river system



Enhances reservoir storage for critical times

Voluntary Agreement Portfolio

- 💧 *Additional instream and out-of-stream flows*
- 💧 *Habitat Enhancements*
- 💧 *Endowed Funding*
- 💧 *Collaboration and Regional Governance*
- 💧 *Robust and Structured Science Program*
- 💧 *Integration of Rivers*

Voluntary Agreements

Water, Land & Sunlight: A Bountiful Life.

The combination of water, land and sunlight has proven throughout time to be the equation for proper life support and healthy population numbers for all species. California's valley floor is a perfect testament to what is possible when all three work in harmony.





El Valle de Sacramento

Como una huella dactilar humana, el Valle de Sacramento en California es verdaderamente único. A la vanguardia en sostenibilidad económica, es también un lugar **excepcional** para vivir, trabajar y educar a los hijos. El Valle de Sacramento reúne un mosaico mundialmente famoso de abundancia natural: tierras de cultivo productivas, refugios naturales y zonas pantanosas controladas, ciudades y comunidades rurales y ríos serpenteantes que apoyan y alimentan pesquerías y hábitats naturales. Por medio de una administración **eficiente** de los recursos de agua de la región, el Valle de Sacramento continuará generando lo que es **esencial** para un futuro exitoso y próspero para California. Alimentación y sustento de los campos, hábitats para peces y vida salvaje, recreación y una calidad especial de vida – el Valle de Sacramento es el hogar para todo esto, y más...



The Sacramento Valley

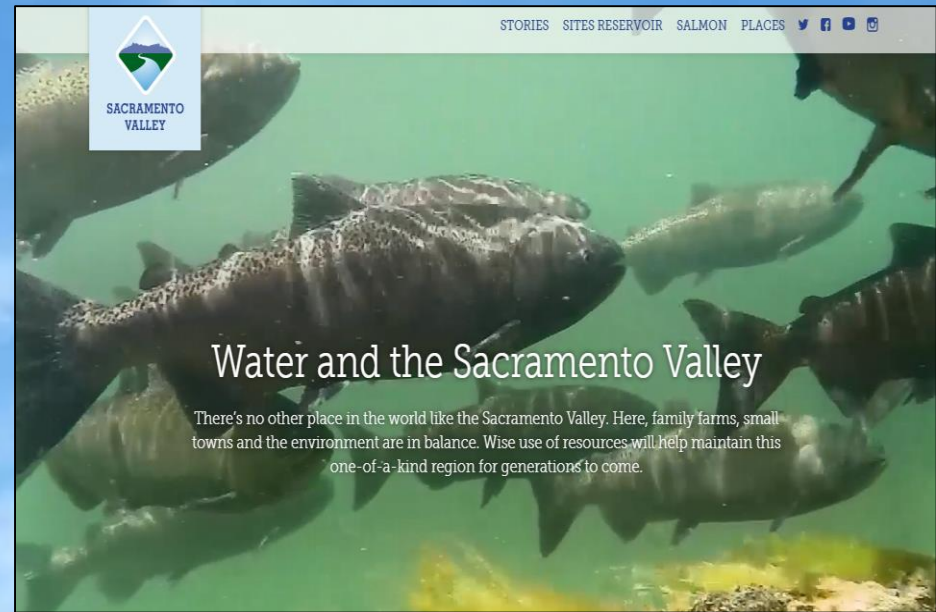
Like a human fingerprint, California's Sacramento Valley is truly unique. On the leading edge of ecological and economical sustainability, it's also an **exceptional** place to live, work and raise a family. The Sacramento Valley joins together a world renowned mosaic of natural abundance: productive farmlands, wildlife refuges and managed wetlands, cities and rural communities, and meandering rivers that support and feed fisheries and natural habitats. Through **efficient** management of the region's water resources, the Sacramento Valley will continue to provide what's **essential** to California's future success and prosperity. Nourishment and sustenance from the fields, habitats for fish and wildlife, recreation and a special quality of life—the Sacramento Valley is home to all of this, and more...



Voices from the Valley

norcalwater.org

sacramentovalley.org





Miles Hermann 07