Managing
Kings River Water Resources
Mixing the Old with the New

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Kings River Conservation District
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Kings River Conservation District
Overview

- Formed in 1951 by special act
- A leading resource management agency for the Kings River region

Water  Power  Environmental Stewardship
Pine Flat Power Plant

- 165 MW power plant
- 1,000,000 a.f. reservoir
- Operating since 1984
- Located at the base of Pine Flat Dam
- Reliable, low-cost power to the State Water Project
- 420 million kilowatt hours of average annual energy production

Kings River Watershed
Snowy Sierra Crest
Bench Lake
10,000 feet

Roaring River Falls
The Kings River watershed boasts one of the largest and most complex water storage and conveyance systems in the World.
Cobbles Weir

Fresno Weir
Fresno and Consolidated Headgates
Consolidated Canal Headgate

People’s Weir
Below Highway 99, Kingsburg
Island Weir
Controlling Flows to the North Fork and James Bypass

Army Weir
Controlling Flows to the South Fork and Tulare Lake bed
Flood Project

- Maintain approximately 140 miles of levees.
- Activities include levee repairs, levee improvement and channel maintenance.
- During flood events, staff conduct 24-hour patrols of the system
  - 4,750 cfs North Fork
  - 3,200 cfs South Fork
  - 50/50 split once each fork is at capacity

Flood Project

- Year round maintenance
- Brush control
- Channel clearing
- Weed control
Fisheries Management Program

- Electrofishing survey
- Raising fry at the Incubator for supplemental stocking
- Habitat enhancement projects

Managing Groundwater through conjunctive use
Basin Characteristics

- Kings Groundwater Basin
  - 976,000 acres
  - 93 MAF of storage to 1,000 ft (2003 Bulletin 118)

- Tulare Groundwater Basin
  - 524,000 acres
  - 12 MAF of storage to 300 ft (DWR 1995)
Groundwater Conditions

- Regional Supply Characteristics: closed system, conjunctive use basin.
- 93 million acre feet of storage to a depth of 1,000 feet
- Average annual overdraft (1963 to 2009) approx. 120 TAF.
- Largest GW depression located near Raisin City, beyond the Kings River place of use.

Change in Storage in Kings Basin
1964 to 2009

Water Year

Kings River Basin
Groundwater Flow Patterns
Waldron Water Banking Facility
Fresno Irrigation District and City of Clovis
Case Study
CID Recharge Program

Consolidated ID
Recharge Ponds
Consolidated ID network of canals

Stroud Pond
Consolidated Irrigation District, Near Selma
California Statewide Groundwater Elevation Monitoring Program (CASGEM)

- Kings River Conservation District approved as “Monitoring Entity” for both basins
- Kings Basin: ~90 wells selected
- Tulare Lake Basin: ~30 wells selected
Existing Groundwater Conditions
Groundwater Elevations

Source: California Groundwater Update 2013

Rate of Surface Subsidence
2007 - 2011

InSAR-Derived Ground Deformation (JPL):
Red -15 cm/yr
Blue 0 cm/yr
Rate of Surface Subsidence
May 2015 to September 2016

Kings Basin Integrated Regional Water Management
Case Study: Kings Basin IRWM Planning Area

History of Management in Silos and Inadequate Coordination
Kings Basin IRWM Plan Goals

- Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
- Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
- Improve and protect water quality
- Provide additional flood protection
- Protect and enhance aquatic ecosystems & wildlife habitat

Diversity of Water Authority Planning Participation

**INTERESTED PARTIES**
- Bakman Water Company
- Biola Community Services District
- California Native Plant Society, Sequoia Chapter
- California State University, Fresno
- City of Kingsburg
- City of San Joaquin
- Community Water Center
- County of Kings
- Crescent Canal Company
- Cufer Public Utilities District
- East Orosi Community Services District
- Easton Community Services District
- El Rio Reyes Conservation Trust
- Fresno County Farm Bureau
- Hardwick Water Company
- James Irrigation District
- Kings River Conservancy
- Kings River Water Association
- Laguna Irrigation District
- Latham Community Service District
- Liberty Canal Company
- Liberty Water District
- London Community Services District
- Madera County Water District
- Mid Valley Water District
- Orange Cove Irrigation District
- Orosi Public Utilities District
- Oak City Water District
- Reed Ditch Company
- Riverdale Irrigation District
- Riverdale Public Utility District
- Sanger Environmental Fund
- Self Help Enterprises
- Sierra Club, Tehipite Chapter
- Sierra Resource Conservation District
- Suitiza Community Services District
- Teranova Ranch, Inc.
- Tulare Basin Wildlife Partners
- UC Cooperative Extension - Fresno

**OTHER PARTICIPATION**
- CA Department of Fish & Game
- CA Department of Water Resources
- Center for Collaborative Policy
- Fresno Audubon Society
- Kings River Fisheries Program
- Regional Water Quality Control Board
- Sierra Nevada Research Institute (CNRM)
- State Water Resources Control Board
Successes in Regional Planning

• Regular meetings over time have encouraged uncommon dialog & forged partnerships between diverse groups that otherwise wouldn’t exist
• Regional water resources planning & education tools that extend beyond local jurisdictions
• ~$55 million in State and private grant funding leveraged to complete over $88 million in planning and implementation projects

• Over 100 planned projects with more than 100,000 AF of recharge and conservation benefits
Collaborative Approaches to Solving Regional Issues

COLLABORATIVE PROJECTS

• DAC Drinking water & waste water projects
• Setback levees & sloughs restoration (flood control, habitat creation and in-lieu recharge)
• On-farm and dedicated recharge/banking facilities
• Ag water use efficiency & urban water conservation projects
• Coordinated Basin-level Monitoring (monitoring Groundwater elevations, quality, subsidence; future conditions modeling)
• Community outreach & education
• Integrated Groundwater and Surface-water Model
• Disadvantaged Communities (DACs) Outreach Pilot Study
Jameson Pond Recharge Expansion Project
- Sponsor: Fresno Irrigation District, collaboration with Fresno & Clovis
- Grant: $2,416,865  Project Cost: $4,409,698
- Expansion of existing 40-acre recharge/banking pond to 100-acres
- Estimated annual average recharge 4,000+ acre-feet per year

Traver Groundwater Recharge & Banking Project
- Sponsor: Alta Irrigation District, collaboration with local small communities
- Grant/Project cost: $2,368,805
- 47-acre facility, extraction wells, monitoring wells, SCADA
- 2,000 acre-feet / year banked for later surface-water transfer to DACs
Residential Water Meter Installation Project Phase I

- Sponsor: City of Fresno
- Grant: $1,107,000  Project Cost: $10,705,352
- Installed 10,000 of planned 110,000 residential water meters
- Estimated to conserve up to 8,500 acre-feet ground/surface water per year

North Tulare County Surface Water Treatment

- Sponsors: Alta ID, County of Tulare, surrounding small communities
- Effort seeking to develop a long-term solution to address drinking water and water supply needs of the communities within the Northern part of the County of Tulare (Cutler, East Orosi, Monson, Orosi Seville, Strahan and Yettem)
SGMA Implementation

Tulare Lake Subbasin GSA Formation Efforts
Kings Subbasin GSA Formation Efforts

The Old versus the New

Changes in Water Management
• More regionalized
• New partnerships
  – Cities, counties, DACs
• Leadership change

Challenges in Water Management
• New water management paradigm
• Fracturing of water community
• Limited resources
Questions?