



Integrated Regional Water Management: Kings Basin Water Authority

By Cristel Tufenkjian

Introduction

State of California policy (California Senate Bill 1672, passed in 2002) encourages local land and water use planning entities to work collaboratively within a region, to establish common water resource management goals and objectives, and to develop a regional planning framework that integrates land, water and habitat projects called Integrated Regional Water Management (IRWM). In California's 2009 Water Plan Update, the first of thirteen objectives is to expand integrated regional water management. (Bulletin 160-09). The State believes that regional partnerships can efficiently solve water management problems and has offered special grant funding to support IRWM efforts, including \$500 million from Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, to fund competitive grants for projects consistent with an adopted IRWM plan; \$1 billion from Proposition 84, the Safe Drinking Water, Water Quality, and Supply, Flood Control, River and Coastal Protection Bond Act of 2006, for IRWM Planning and Implementation, and \$300 million from Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act of 2006, for IRWM stormwater flood management. In response, a number of agencies and organizations in the Central San Joaquin Valley have been working together over the last several years to create a coalition of water agencies, cities, counties, and environmental interests in the Kings Basin to deal with the most pressing water issues in the region, namely groundwater depletion, water supply reliability, and water quality.

Background

Historically, management of the Kings Basin water resources has been limited to independent operations by overlying local water agencies and individual users. The basin encompasses nearly two dozen local public agencies (water districts, cities, and counties etc.) and private mutual water companies, which were each managing their shared groundwater resources separately. This approach exacerbated groundwater overdraft and constrained the scope of potential solutions, as each water supplier only managed within its district boundaries and with its individual resources.

In 2001, four water agencies in the Basin, the Kings River Conservation District, Alta Irrigation District, Consolidated Irrigation District and Fresno Irrigation District, formed a Basin Advisory Panel with the purpose of working together to manage existing supplies and developing new supplies. In 2004, the Basin Advisory Panel solicited wider stakeholder participation. Outreach was initiated to the cities, counties, and environmental groups. To create a better understanding of why stakeholder participation was important, water district representatives shared data and groundwater contour maps to explain that the movement of groundwater throughout the Basin

made it a shared resource. This data made it visible that actions of one district potentially affected other water suppliers of other districts within the basin.

Through these outreach efforts, the group expanded and formed the Upper Kings Basin Water Forum (Water Forum). The Water Forum's purpose was to increase communication and collaboration to create regional solutions for water resources management. This marked the first time that all of the various stakeholders in the region had come together to work on developing a long-term, regional plan to address water issues for the Kings Basin. Water district representatives were able to leverage established relationships with local fishing groups and communities to initiate a foundation of trust amongst the newly formed group.

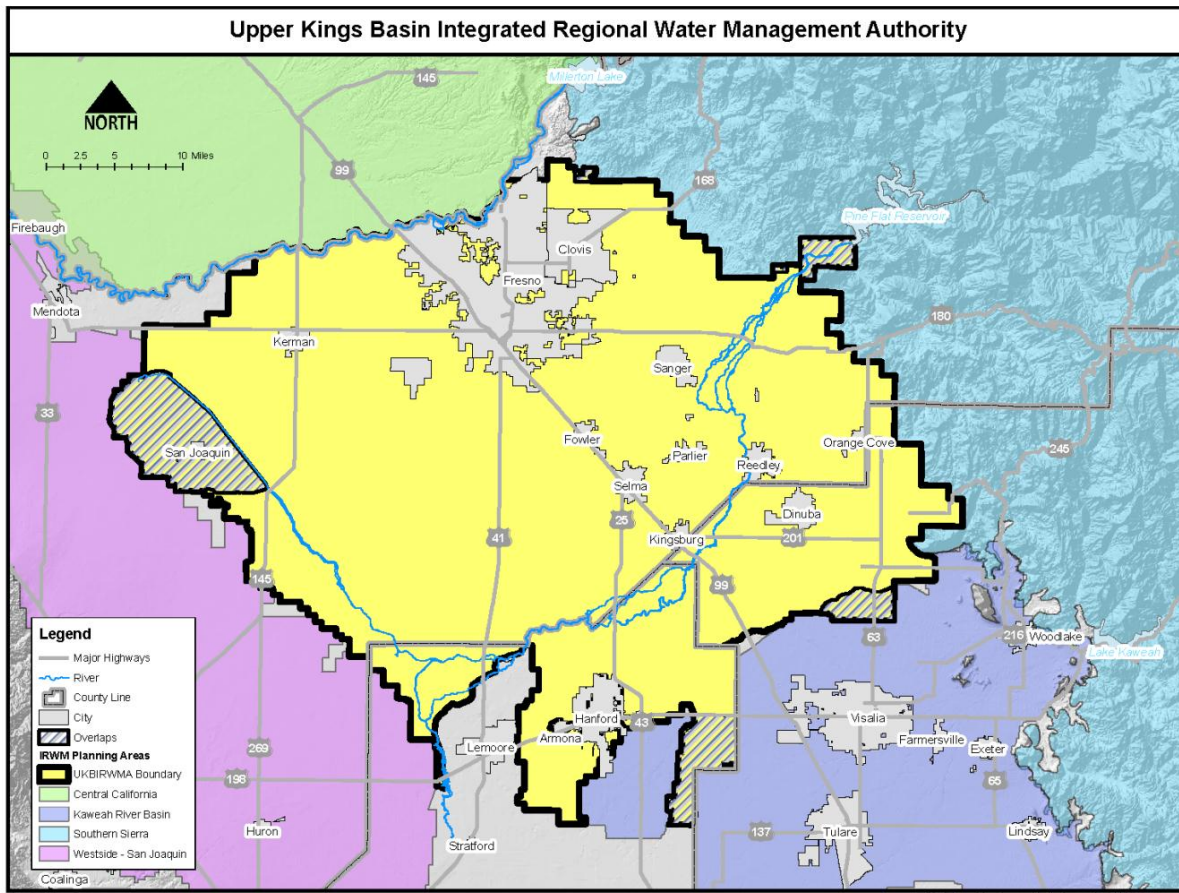


Figure 1. Kings Basin Water Authority Boundary Map

The Water Forum began to meet on a regular basis with facilitation support by the Department of Water Resources. Trust was expanded through open and transparent discussions and the sharing of resources. The Water Forum continued to gain momentum as their joint efforts in grant funding were successful. In 2009, the Water Forum members strengthened their relationship by forming the Upper Kings Basin Integrated Regional Water Management Authority (Kings Basin Water Authority).

Establishing the new governance structure was a challenge due to the multiple and diverse stakeholders. Not all of the participants had funding to contribute to a budget, but all of the participants wanted to be involved in the decision making process. It was determined that a group formed under the California Joint Powers Act provide the best legal structure to protect the

public agencies from risk and liability. To provide for full participation, the Authority Board created an Advisory Committee within the Joint Powers Agreement to allow non-public organizations a place at the table. Advisory Committee meetings are held prior to each meeting of the full Authority Board to discuss items and provide recommendations regarding virtually all actions to be considered by the Board.

On September 10, 2009, the Kings Basin Water Authority held its formation meeting with full participation by the members that overlay the California Department of Water Resources Bulletin 118 Kings groundwater sub-basin (Figure 1).

The Kings Basin Water Authority currently consists of 49 entities that have come together (Table 1 – Kings Basin Water Authority Participating Members) to engage in the planning effort. These entities are diverse, but have one common vision: A sustainable supply of the Kings River Basin's finite surface and groundwater resources through regional planning that is balanced and beneficial for environmental stewardship, overall quality of life, a sustainable economy and adequate resources for future generations.

The Kings Basin Water Authority is governed by a board of directors, which is composed of one representative from each of the 18 member agencies. Directors and alternates are appointed by each member's governing board. An advisory committee functions as the technical/working group of the Kings Basin Water Authority. Membership is made up of voting members and interested parties (Table 1).

The Committee oversees the implementation of the Kings Basin Integrated Regional Water Management Plan (IRWMP) and provides recommendations to the board of directors.

Table 1. Kings Basin Water Authority Participating Members

Voting Members

Alta Irrigation District
City of Clovis
City of Dinuba
City of Fresno
City of Kerman
City of Kingsburg
City of Parlier
City of Reedley
City of Sanger
City of Selma
County of Fresno
County of Tulare
Consolidated Irrigation District
Fresno Irrigation District
Fresno Metropolitan Flood Control District
Kings County Water District
Kings River Conservation District
Raisin City Water District

Interested Parties

Bakman Water Company
Biola Community Services District
California Native Plant Society, Sequoia Chapter
City of San Joaquin
Community Water Center
County of Kings
Crescent Canal Company
Cutler Public Utilities District
East Orosi Community Services District
El Rio Reyes Conservation Trust
Hardwick Water Company
James Irrigation District
Kings River Conservancy
Kings River Water Association
Laguna Irrigation District
Laton Community Service District
Liberty Canal Company
Liberty Water District
London Community Services District
Mid-Valley Water District
Orange Cove Irrigation District
Orosi Public Utilities District
Reed Ditch Company
Riverdale Irrigation District
Riverdale Public Utility District
Self-Help Enterprises
Sierra Club, Tehipite Chapter
Sierra Resource Conservation District
Sultana Community Services District
Terranova Ranch, Inc.
Tulare Basin Wildlife Partners

Success of the Kings Basin Water Authority has been built around strong stakeholder participation. Several work groups have been constituted by the Advisory Committee to deal with specific issues and tasks. Work Groups provide an additional opportunity for stakeholder involvement. Work groups report back to the Advisory Committee with recommendations and updates on activities. The Advisory Committee has the following work groups:

1. Groundwater Monitoring Work Group
2. Projects Work Group
3. Model Work Group
4. IRWMP Update Work Group
5. Disadvantaged Communities Work Group
6. Outreach Work Group

The Kings Basin Water Authority provides for a wide array of input and support so that regional benefits are achieved and priority issues are addressed. Water Authority participants realize that water, land use, and environmental resource issues are interrelated and of regional scope, and that both local and regional solutions are required. This ensures that responses to one issue do not result in unintended, adverse impacts on other issues or areas.

The Integrated Regional Water Management Plan

Prior to formation of the Kings Basin Water Authority, the regional stakeholders had been meeting together as a group for several years developing the IRWM Plan (IRWMP), a long-term, basin-wide, water resources management plan. Projects proposed for development in the basin-wide plan had been identified through an integrated hydrologic model of the Kings Basin. The model, developed by WRIME Inc. under contract with the Department of Water Resources, has provided a common source of information for the Kings Basin area. It is an analytical tool that represents regional groundwater and surface water flow systems and their interactions; and quantitative information on groundwater and surface water system characteristics and to evaluate alternative water management strategies.

As identified in the IRWMP, overdraft of the groundwater resource is the primary issue to be addressed in the Kings Basin. Over the past 40 years, groundwater levels in the Fresno area have dropped by 40 feet. In the Raisin City area, southwest of Fresno, they have dropped by 150 feet. This is a result of water demand exceeding the available surface and groundwater supplies as they are currently developed and managed. The continued groundwater overdraft is not sustainable and the urban growth pressure in the region, coupled with the need to sustain the agricultural economy, call for improved water resource management in the Kings Basin.

Over the last several decades, regional irrigation districts have built groundwater recharge basins to capture flood waters. Nevertheless, much more are needed. More than 10.8 million acre-feet of water has left the Kings River service area in the form of flood releases since the 1950s (Kings River Water Association flood flows data as of September 30, 2011), enough water to fill the Kings River's primary storage facility, Pine Flat Reservoir, over ten times. The Kings Basin region needs more water projects that can utilize this water for urban areas, agriculture and the environment.

The consequences of groundwater overdraft, in terms of declining water levels, increased pumping costs, and subsidence and migration of poor-quality water, are experienced to different degrees depending on the location. In the long term, groundwater overdraft could also impact economic development opportunities, cause conflicts between overlying users and result in litigation to define rights and entitlements, possibly leading to legal adjudication. The IRWMP seeks to develop regional, tangible, and economically feasible solutions to groundwater overdraft that are fair and equitable, and which anticipate and avoid potential conflicts.

Projects

The objectives of the IRWMP have been specifically crafted so that projects will achieve multiple benefits. The process for defining priorities and configuring alternatives is also intended to demonstrate preference for projects that provide regional, as compared to strictly local benefits. The objectives integrate groundwater recharge, stormwater capture, ecosystems enhancement and wastewater reclamation into the overall planning strategy.

Since the early 2000s, the Water Authority has received nearly \$29 million in state financial support for use towards planning activities and to construct projects which address groundwater, water conservation and efficiency, water quality, riparian habitat, flood corridors, and disadvantaged communities (Table 2). The projects are located throughout the basin. (Figure 2 – Project Location Map).

Table 2. Kings Basin Water Authority projects titles, descriptions, and costs

Project Title	No. of Projects	Project Description	Project Cost
Alta Irrigation District Coordinated Groundwater Storage	2	Dinuba project is a 28 acre,3-cell stormwater retention and recharge basin located within the City of Dinuba. AID’s Traver Pond project is the enlargement of an existing 5-acre recharge basin to a size of 16 acres.	\$3,200,00
Fresno Irrigation District Waldron Pond Banking Facility Expansion	1	The Waldron Pond Banking Facility is a groundwater recharge and recovery project that provides water to urban suppliers, agriculture suppliers, and facilitates the environmental benefits of improving the Kings River fishery. The project constructed 8 recovery wells, 5 monitoring wells, and 13 new recharge basins expanding the existing facility to 270 aggregate acres of recharge area.	\$10,544,787
Upper Kings Basin IRWMP Plan	1	Initial development of the Upper Kings Basin IRWMP.	\$1,000,000
Kings Basin Integrated Groundwater Surface Water Model	1	The Kings IGSM was developed to support the planning analysis required for the Upper Kings Basin IRWMP project. It provides an analytical tool for the region that can represent the groundwater and surface water flow systems and their interactions; and can provide quantitative information on a comparative basis to help evaluate alternative conjunctive water management strategies.	\$800,000
Upper Kings Basin Water Forum Project	3	AID Traver Pond Project provides dry year supply and is a component of a surface water exchange agreement w/ Cutler & Orosi PUDs. City’s project installs 10k of a planned 110k residential water meters. FID Jameson Pond Expansion adds 60 additional acres to an existing 40-acre recharge facility.	\$14,764,375
The Fresno Irrigation District Jameson Pond Expansion Phase II The City of Fresno Residential Water Meter Phase II	2	Fresno ID’s Jameson Pond Phase II Expansion enhances water supply capacity by constructing an addition recovery well. The City’s Phase II meter project installs an additional 5k meters (of planned 110k) complete with AMR devices and software.	\$965,000
Kings River Conservancy KRCU UKBIRWMA	1	Construction of a 1/2 mile ADA trail, ADA bathroom and parking area, and rehabilitation of a 1-mile rugged foot path along the Kings River below Pine Flat Dam.	\$298,374
UKBIRWMA – Disadvantaged Communities (DAC) Outreach & Planning Pilot	1	Project seeks to map DACs and their water needs; develop mechanisms to effectively engage and integrate DACs into the IRWM planning process; develop conceptual project descriptions and cost estimates to include in the IRWMP project list; and identify/facilitate partnerships between member agencies and DACs.	\$500,000
UKBIRWMA – Groundwater Overdraft Reduction and Disadvantaged Community Water Supply Reliability Projects	5	Bakman WC’s project entails installation of 2,453 residential water meters. Consolidated ID’s project develops a 75-acre groundwater banking facility. County of Fresno Drummond Jensen project removes an unincorporated neighborhood from septic by connecting to City of Fresno. City of Clovis’ project entails expansion of its surface water treatment facility to reduce groundwater pumping. City of Fresno’s project would install an additional 10k residential water meters. East Orosi CSD’s project rehabilitates two existing muni wells in a DAC to extract from a higher quality zone of the aquifer.	\$15,948,090
UKBIRWMA IRWMP Update	1	The objective of the update the 2007 Upper Kings Basin IRWMP is to: 1) Satisfy new State guidelines; 2) to include recent information; 3) Expand the focus on Disadvantaged Communities; 4) Document successes and lessons learned since the original plan was drafted; 5) Document governance and policy improvements since the original plan was drafted; 6) Improve the overall regional planning process.	\$336,850
Fancher Creek Flood Control Improvement Project	1	The Fancher Creek Detention Basin removes 682 acres from the 100-year floodplain, redirects runoff that may contain pollutants into stormwater management basins, and result in approximately 740 acre feet of additional surface water recharge per year. Once complete, the basin will have sufficient capacity to provide the 100-year control of the Fancher Creek flows.	\$4,462,173

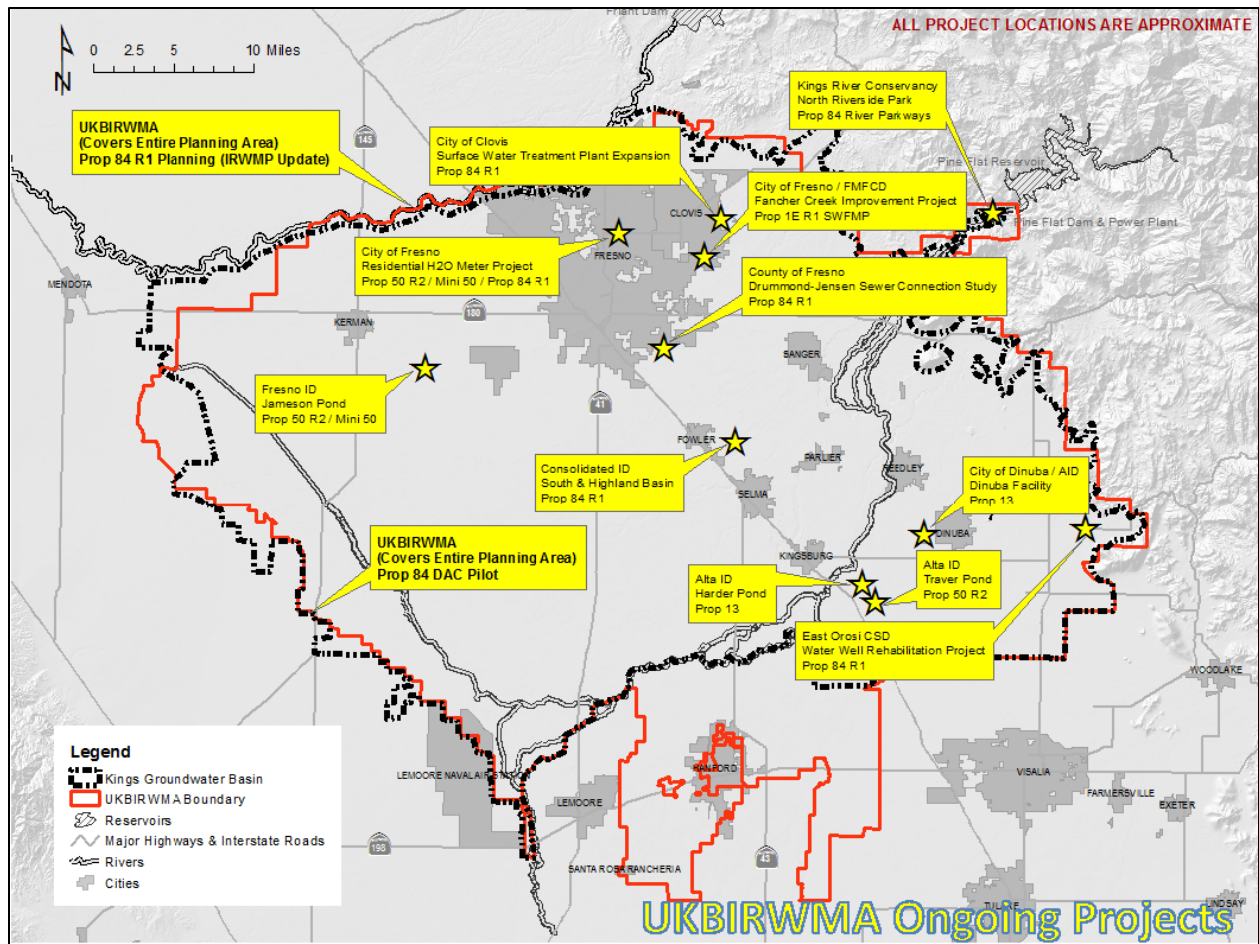


Figure 2. Kings Basin Water Authority Project Location Map

Conclusions

Integrated regional water management is a paradigm shift for water agencies in the Kings Basin region. Solutions to water issues can happen, and it starts with collaboration. Instead of water discussions focused on the conflicts of the varying interests that are vying for water for cities, farms, and fish, and the resulting stalemate, the Kings Basin Water Authority is producing results in managing the area's water resources. In addition, integrated regional planning can benefit from developing a common source of knowledge, in this case the regional hydrologic model, which not only provides important information about the current state of shared groundwater resources but also allows the authority to consider the impacts of different water management strategies.

Integrated regional water management is the future for California. It will help regions identify their particular issues and develop specific strategies to address those issues enabling them to implement actions with multiple benefits and helping them become more self-sufficient. Common goals and guiding policies are necessary to maintain unity. Through integrated regional water management, regions can access local, state, and federal resources and funding. IRWMPs can provide efficient solutions, consider other resource issues, and enjoy broad support.