

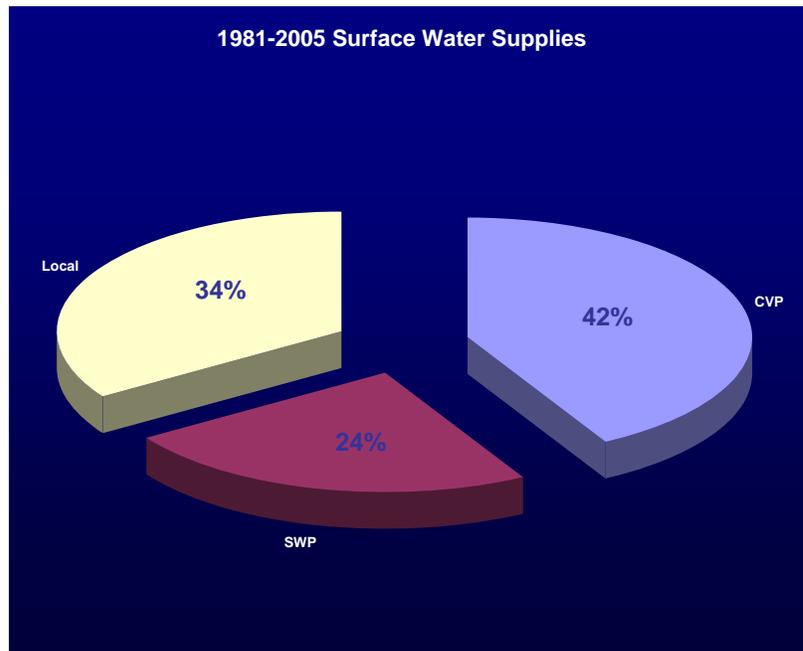
15 IRWM Plan - Reduce Delta Water Dependence

Introduction

The Poso Creek Integrated Regional Water Management Plan (IRWM Plan or Plan) was developed by eight public agencies known as the Poso Creek Regional Water Management Group (RWMG), and formally adopted in 2007. Water supply reliability, cost, and other factors continue to lead local interests to develop programs and implement projects that include conjunctive use, groundwater banking, and conservation. The 2007 Plan emphasizes water management strategies that promote better management and utilization of water supplies available to the Region. The Region relies on three sources of surface water supplies: 1) local supplies --- principally Kern River; 2) SWP supplies; and 3) CVP supplies. The relative proportions of each source used within the Region is illustrated in the following Exhibit for the 25-year period extending from 1981 through 2005.

Exhibit 15-1

Average Annual Surface Water Supplies in the Poso Creek Region, (IRWMP 2007)



While most of the CVP supplies are delivered from the Friant Division, a portion is diverted from the Sacramento-San Joaquin Delta (Delta). The following Exhibit identifies the agencies within the Region which hold contracts for the diversion of either SWP water or CVP water from the Delta.

Exhibit 15-2

Agencies with Contracts for the Diversion of Water from the Delta within the Poso Creek Region

Agency	Contractual Amount (AFY)
Cawelo Water District (SWP)	38,200
Semitropic Water Storage District (SWP)	155,000
Subtotal SWP "Table A"	192,200
Kern-Tulare Water District (CVP)	53,300
Total SWP and CVP	245,500

Over the 1981-2005 period, about one-third of the surface water supplies used within the Region was diverted from the Delta.

15.1 Reduced Dependence on Delta

Regulatory and judicial actions have adversely impacted Delta water supply reliability. The reduced reliability is well documented in the SWP Delivery Reliability Reports that are prepared by DWR. With about one-third of the Region's surface water supplies diverted from the Delta, it is no surprise that reduced reliability of Delta water supplies was a major driver in bringing the Region together to prepare the Poso Creek IRWMP. As a generalization, reliability is a measure of coincidence of supply and demand --- the better the match, the more reliable or "firm" is the supply. With the IRWMP as a guide, districts within the Region are working cooperatively to reduce dependence on "firm" deliveries from the Delta. In particular, this is being accomplished through projects --- both structural and non-structural --- which increase the Region's ability to make the best use of water supplies when they are available, whatever the source (local, SWP, or CVP). To a large extent, this means leveraging the direct recharge assets of the Region to regulate water supplies from times of surplus¹ to times of need --- this is what "water banking" is all about. This, in turn, translates to having the necessary conveyance interties to move the available supplies to available absorptive capability and to deliver previously-banked water during times of need. Both Project 1 and Project 2 fill this need.

In this regard, it is noted that implementation is underway on other projects (formulated in the context of the IRWMP) which support this same objective. In particular, listed following are selected projects and their status:

¹ In this context, "surplus" refers to the availability of water supplies over and above the concurrent irrigation demand.

Exhibit 15-3

Implementation of Relevant IRWMP Projects

IRWMP No. ¹	Project	Description	Capital Cost	Implementation Status
14	Improvements to North Interconnection between North Kern Water Storage District and Shafter-Wasco Irrigation District (includes pumps (totaling 75 cfs), motors, VFD, and traveling water screen)	Bi-directional intertie between North Kern's Calloway Canal and Shafter-Wasco's north (main) pipeline lateral.	\$500,000	Design complete; project will go out for bid upon completion of environmental compliance
19	South Interconnection between North Kern Water Storage District and Shafter-Wasco Irrigation District (includes canal turnout, traveling water screen, ...)	Intertie between North Kern's 8-5 Canal and Shafter-Wasco's South (main) pipeline lateral; allows for gravity deliveries from North Kern to Shafter-Wasco.	\$500,000	Construction commenced in December 2010, with completion anticipated in Q1 of 2011
12	Calloway Canal to Lerdo Canal Intertie (includes 400 cfs pumping plant, one-mile of 96-inch RCP, and 96-inch steel siphon crossing of Friant-Kern Canal)	Bi-directional intertie between North Kern's Calloway Canal and North Kern's Lerdo Canal (which also serves Cawelo Water District).	\$11,000,000	Construction complete January 2011
---	North Kern Turnout No. 2 from the Friant-Kern Canal (includes 400-cfs gated canal turnout structure, 78-inch RCP, and meter vault)	In combination with an existing turnout and the Calloway Canal to Lerdo Canal Intertie, this will allow enough water to be diverted from the Friant-Kern Canal (when available) to fully supply spreading ponds in North Kern and Cawelo.	\$1,200,000	Construction ongoing, with completion expected in February 2011
6	Pond-Poso Spreading Grounds (includes interbasin flow structures for over 400 acres of spreading ponds)	Improvements complete over 400 acres of spreading ponds and allow for their full utilization.	\$2,000,000	Construction substantially complete and use is being made of some of the ponds
N/A	CEQA compliance for Groundwater Banking and Exchanges within the Poso Creek Integrated Regional Water Management Plan Area	---	N/A	Negative Declaration Complete
N/A	NEPA compliance for Poso Creek Integrated Regional Water Management Plan Area Groundwater Banking and Exchanges Among and Between Friant Division, Cross Valley Contractors, and Non-Cross Valley Project Contractors	---	N/A	EA drafted; Completion expected in early 2011

¹ Reference Table ES-2 of the Executive Summary for the 2007 Poso Creek IRWMP.

15.2 Poso Creek IRWMP – 2007

Owing to its importance, *water supply reliability* is the first planning objective articulated in the 2007 Plan. References in this regard are many; however, this section highlights some of the statements in the Plan which are most relevant to reducing dependence on “firm” deliveries, whether from the Delta, or from the Friant Division of the CVP. The Executive Summary of the 2007 Plan includes the following at page ES-15,

“The findings of this study indicate that, due to reductions in availability and the uncertainty in timing of the imported supplies to the Region in the projected conditions, it will likely be even more challenging and important to absorb *wet-year* supplies... The existing conjunctive-use operation of each district can be expanded into an integrated *regional* operation by adding interconnections and promoting water supply exchanges between districts that allow for more flexibility in the Region’s water supply. The Region’s assets of federal, state, and local water supplies, dewatered groundwater storage, and significant irrigation demand make it an ideal location to regulate surface supplies conjunctively to the benefit of the agricultural-based economy of the Region and to California.”

At pages ES-19 and ES-20 (of the 2007 Plan), the following bullet points are set forth:

- A key element of water management in the Poso Creek IRWMP Region is providing conveyance capacity between districts in order to match available regulated and unregulated supplies with agricultural demands and make use of direct groundwater recharge facilities.
- Proposed modifications to the existing facilities will enhance conveyance of water between the Friant-Kern Canal and the California Aqueduct to allow for additional exchange capacity between districts that is to the benefit of the agricultural community, the environment, and economically-disadvantaged communities within the Region, as well as outside of the Region.
- Since the Region includes an operational history of groundwater banking, conjunctive use, and water exchanges between districts, the added flexibility created by enhancement of facilities in this regional area will also increase the reliability of water supplies of agencies located outside of the Region.
- The unique location and assets of the Poso Creek area with three distinct surface water supplies (State, Friant-Kern and Kern River) coupled with the very large usable groundwater basin make for an excellent regional conjunctive use project which not only benefits the local area but benefits the State.
- Major municipal water providers in both southern and northern California who participate in water banking projects in the Region are in a position to benefit from any added flexibility and reliability.

The 2007 IRWMP includes an itemized list of findings and conclusions. Items 13 through 17 are particularly relevant and reproduced below (at pages ES-5 and ES-6):

- (13) Access to local, state, and federal water supplies and conveyance facilities, which is provided by combining the assets of the districts within the Region, creates both the flexibility and the opportunity for regional water management that can realize water supply accomplishments that individual districts cannot. The key to unlocking this potential is conveyance between districts within the Region.
- (14) The ability to move water between districts within the Region is limited both physically and institutionally. Accordingly, both structural and non-structural measures were identified to address this observation.
- (15) *Non-structural measures* that have “risen to the top” include:
 - An organizational structure and environmental compliance framework that allows for moving “quickly” and taking advantage of *waters of opportunity*, i.e., water which is typically unregulated and unscheduled.
 - The necessary approvals to move the different flavors of water around within the Region as required to maximize the utility of the Region’s assets and thereby maximize water supply and reliability benefits to the Region.
 - A means of maintaining equity as between districts within the Region, in terms of water and/or dollars.
- (16) *Structural measures* involving conveyance improvements include canals, pipelines, and pumping plants.
- (17) Water supply operations studies indicate that water will be available from time to time in excess of the absorptive capability of the contracting districts. This observation creates both the potential and the need to regulate these supplies within the absorptive capability of other districts in the Region. Most of this need is projected to involve CVP-Friant supplies.

All referenced pages from the Executive Summary follow this attachment as Appendix 15-1.

15.3 Poso Creek IRWMP - Update

The Poso Creek Region has demonstrated a commitment to more effective management of available supplies which is an essential step to better manage a less reliable water supply from the Delta during critical periods. The Poso Creek RWMG intends to apply for a Round 2 Planning Grant to revise the 2007 IRWMP to conform with present guidelines. The updated Plan will continue to emphasize projects which reduce dependence on “firm” supplies from the Delta. Upon receiving a grant, the Poso Creek RWMG will revise the 2007 IRWMP within the required two-year period.

Memorandum

To: Files (073230) Appendix 15-1
From: Ron Eid
Re: Excerpts from the Poso Creek IRWMP Executive Summary

Appendix 15-1 contains copies of the pages from the Executive Summary for the Poso Creek IRWMP which are referenced in Attachment 15; namely, pages ES-5, -6, -15, -19, and -20.

data compared to the threshold for disadvantaged communities². The population approximately doubled between 1990 and 2006, which implies an average growth rate of about 5 percent per year.

- (9) The projected long-term average annual applied water demand for the Region is on the order of 1.3 million acre-feet. This includes consideration of agricultural (at 3.5 acre-feet per acre), municipal and industrial, and environmental uses.
- (10) With relatively “stable” water levels over the last 25 years; with the demand for water projected to remain about the same; and with less surface water projected for the future; groundwater levels will decline, with a corresponding increase in the use of power and energy resources, creating both an environmental and economic burden.
- (11) With a common groundwater basin shared by all uses within the Region, any decline in water levels will be felt by all uses, i.e., there will be an adverse economic effect on both irrigated agriculture and the already economically-disadvantaged communities that rely on groundwater in whole or in part. By the same token, anything that is done to mitigate declines in water levels, such as projects identified in this Plan, will benefit all uses.
- (12) The operations of each district within the RMG reflect, to a large extent, conjunctive-use operations as an individual district. There is the potential to increase the use of available surface water supplies within the Region, and thereby enhance conjunctive-use operations, by coordinating the use of each district’s water and water management assets within the Region.
- (13) Access to local, state, and federal water supplies and conveyance facilities, which is provided by combining the assets of the districts within the Region, creates both the flexibility and the opportunity for regional water management that can realize water supply accomplishments that individual districts cannot. The key to unlocking this potential is conveyance between districts within the Region.
- (14) The ability to move water between districts within the Region is presently limited both physically and institutionally. Accordingly, both structural and non-structural measures were identified to address this observation.
- (15) *Non-structural measures* that have “risen to the top” include:
 - An organizational structure and environmental compliance framework that allows for exchange, transfer, and banking approvals to be in place to take

² Reference Section 1.2.6 of Chapter 1 of this Plan.

advantage of unregulated and unscheduled water supplies that are available from time to time, often on short notice.

- The necessary approvals to move water from different sources around within the Region as required to maximize the utility of the Region's assets and thereby maximize water supply and reliability to the Region.
- A means of maintaining equity as between districts within the Region, in terms of water and/or dollars.

- (16) *Structural measures* involving conveyance improvements include canals, pipelines, and pumping plants. (Implementation projects for near-term funding proposals are listed in Table ES-7 and shown on Figure ES-14.)
- (17) Water supply operations studies indicate that water will be available from time to time in excess of the absorptive capability³ of the contracting districts. This observation creates both the potential and the need to regulate these supplies within the remaining absorptive capability of other districts in the Region. Most of this need is projected to involve CVP-Friant supplies
- (18) Most of the opportunities to increase the absorption of surface water supplies rest with the *unscheduled* supplies; *SWP Article 21 water* and *CVP-Friant Other water*. However, competition for these supplies can be expected to increase in the future as other areas of the state address similar water supply reliability issues. While the minimum “share” of these supplies can be estimated, the amount that may be available beyond the minimum is unknown, and could be significant. The average annual minimum share of these unscheduled supplies is estimated at about 35,000 acre-feet, consisting of about one-third SWP water and two-thirds CVP water.
- (19) The projected average annual system-wide availability of *Other* Friant water is about 195,000 acre-feet, and the minimum share of this supply that would be available to contracting districts within the Region is estimated at about 23,000 acre-feet. However, it is reasonable to assume that there will not be any measurable capacity to wheel this water during the months of May through August. Under this assumption, the 23,000 acre-feet at Friant Dam could be reduced to about 15,000 acre-feet canal-side, i.e., about one-third of this supply occurs after April on average, when available capacity in the Friant-Kern Canal would be a constraint.
- (20) The projected average annual system-wide availability of *Article 21* water is about 262,000 acre-feet, and the minimum share of this supply that would be

³ *Absorptive capability* refers to the capability to divert and use surface water when available, where the *use* consists of deliveries to both irrigation and deliveries to spreading.

Since California typically experiences either *wet* or *dry* years, the groundwater basin acts as a large regulating reservoir. The accumulated effect of surface water supplies diverted to the Region is reflected in the Region's groundwater levels. As shown on Figures ES-7, ES-8, and ES-9, surface water supplies to the Region have generally stabilized groundwater levels since the 1970s. It is not unreasonable to expect that this relatively balanced condition will continue if deliveries of surface water supplies remain the same as recent historical amounts. However, the Region's deliveries of surface water supplies are projected to decrease, primarily as the result of environmental pressures throughout the state, particularly in the Delta and on the San Joaquin River.

Also illustrated on Figure ES-9 is the effect of the projected 14 percent reduction in deliveries of surface water supplies on regional groundwater levels, which is one of the findings of this Plan. As pressure on surface supplies increases, it is apparent that the Region must make additional use of its groundwater basin to regulate and capture the available *wet-year* supplies. The Plan's increased conjunctive-use operation will help mitigate the projected water reliability loss to the Region. The findings of this study indicate that, due to reductions in availability and the uncertainty in timing of the imported supplies to the Region in the projected conditions, it will likely be even more challenging and important to absorb *wet-year* supplies.

The existing conjunctive-use operation of each district can be expanded into an integrated *regional* operation by adding interconnections and promoting water supply exchanges between districts that allow for more flexibility in the Region's water supply. The Region's assets of federal, state, and local water supplies, dewatered groundwater storage, and significant irrigation demand make it an ideal location to regulate surface supplies conjunctively to the benefit of the agricultural-based economy of the Region and to California.

Region's Water Supply Issue

The main driving force that initiated the formation of the RMG and will facilitate implementation of this Plan is the projected reduction in the Region's historical water supplies due to environmental and urban uses outside of the Region.

Over the years, both regulatory decisions and court decisions have impacted the availability of the Region's imported water supplies. In recent years, environmental and water quality issues in and surrounding the Sacramento-San Joaquin River Delta (Delta) have limited the ability to export water south of the Delta, which has reduced the reliability of SWP water supplies and CVP-Delta supplies available to the Region. For similar reasons, the reliability of CVP supplies from the Friant Division has been threatened for many years and will be significantly impacted under an agreement which was recently reached in settlement of long-standing litigation. Given the Region's reliance on imported water supplies to support the

irrigated agricultural economy, local measures to mitigate this loss of reliability will continue to be a high priority for the Region.

The reliability of the Kern River supplies that have been used in the Region in the past is also threatened, owing to the expiration of several long-term contracts in 2011, as well as ongoing litigation. Accordingly, all three of the principal sources of surface water supplies have experienced or will experience reduced reliability. This is the common denominator that brought the RMG together; in particular, the belief that by pooling their respective assets, they could implement measures and arrangements to regulate their collective water supplies at a regional level, and thereby mitigate the loss of reliability that has been experienced to date and that which is on the horizon.

Given that groundwater levels over the Region have been “stable” over recent history, it is clear that any reduction in historically available water supplies will translate to a decline in water levels. Accordingly, it is important for the Region to identify and implement measures which will mitigate the anticipated reduction in water supply reliability in order to maintain the economy which has built up in reliance on those supplies.

Water Resource Management Measures

The selected group of water management measures set forth herein is intended to increase the water reliability and enhance groundwater levels of the Region. The proposed measures also offer many other benefits, including reduced energy costs, increased wildlife management, and water quality protection. In particular, these measures would facilitate an increase in the Region’s capability to recharge water supplies when available, through both in-lieu and direct means.

By formulating this Plan, *regional* benefits in the Region are already being realized, as it has brought the agricultural districts together who are working towards common goals. Technical analysis of the individual district’s water supplies and operations indicate that many benefits can only be accomplished by functioning as a Region. The projected reductions which are on the horizon for the three principal sources of surface water supplies make it imperative that projects be developed to maintain a reasonable level of reliability and reduce the potential for conflict in the area.

Integrated Regional Water Management Approach to Solutions

Increasing competition for California’s water resources, principally for urban and environmental uses, is pointing toward an integrated regional water management approach to resolve water resource issues in the Region. The long-standing cooperation between RMG members exists because of their shared groundwater supplies and common interests.

- A key element of water management in the Region is providing conveyance capacity between districts in order to match available regulated and unregulated supplies with agricultural demands and make use of direct groundwater recharge facilities.

- Proposed modifications to the existing facilities will enhance conveyance of water between the Friant-Kern Canal and the California Aqueduct to allow for additional exchange capacity between districts that is to the benefit of the agricultural community, the environment, and economically-disadvantaged communities within the Region, as well as outside of the Region.
- Since the Region includes an operational history of groundwater banking, conjunctive use, and water exchanges between districts, the added flexibility created by enhancement of facilities in this regional area will also increase the reliability of water supplies of agencies located outside of the Region.
- The unique location and assets of the Region with three distinct surface water supplies (State, Friant-Kern and Kern River) coupled with the very large usable groundwater basin make for an excellent regional conjunctive use project which not only benefits the local area but benefits the State.
- Major municipal water providers in both southern and northern California who participate in water banking projects in the Region are in a position to benefit from any added flexibility and reliability.

Planning Process

The planning process includes exchanging much collaborative operational knowledge of the Region at the monthly meetings of the RMG, which are planned to continue into implementation. The resulting implementation plan is focused on meeting the Region's highest priority needs as identified by the RMG.

Operation Study Conducted for Integrated Water Management

When considered on a district-by-district basis, the surface water supplies available to the Region are not usable in their entirety because of the timing and magnitude of the occurrence of water quantities in excess of absorptive capacity. Most of the unused supply is CVP-Friant water; *Class 1* and *Class 2*, as well as *Other*, which typically occur in the wetter years. Accordingly, from a *regional* water management perspective, most important is the occurrence of unused absorptive capacity within the Region coincident with the occurrence of unused surface water supplies available to the Region. As a generalization, there is unused irrigation absorptive capacity in Semitropic and Cawelo at times when there are unused regulated supplies (primarily CVP-Friant *Class 1* and *Class 2* water). Also as a generalization, there is unused spreading absorptive capacity in North Kern and/or Cawelo at times when there are unused unregulated supplies (primarily CVP-Friant *Other* water).

Observations based on the operation study conducted present the potential for increasing the Region's absorption of available surface water supplies through implementing these non-structural and structural water management measures: