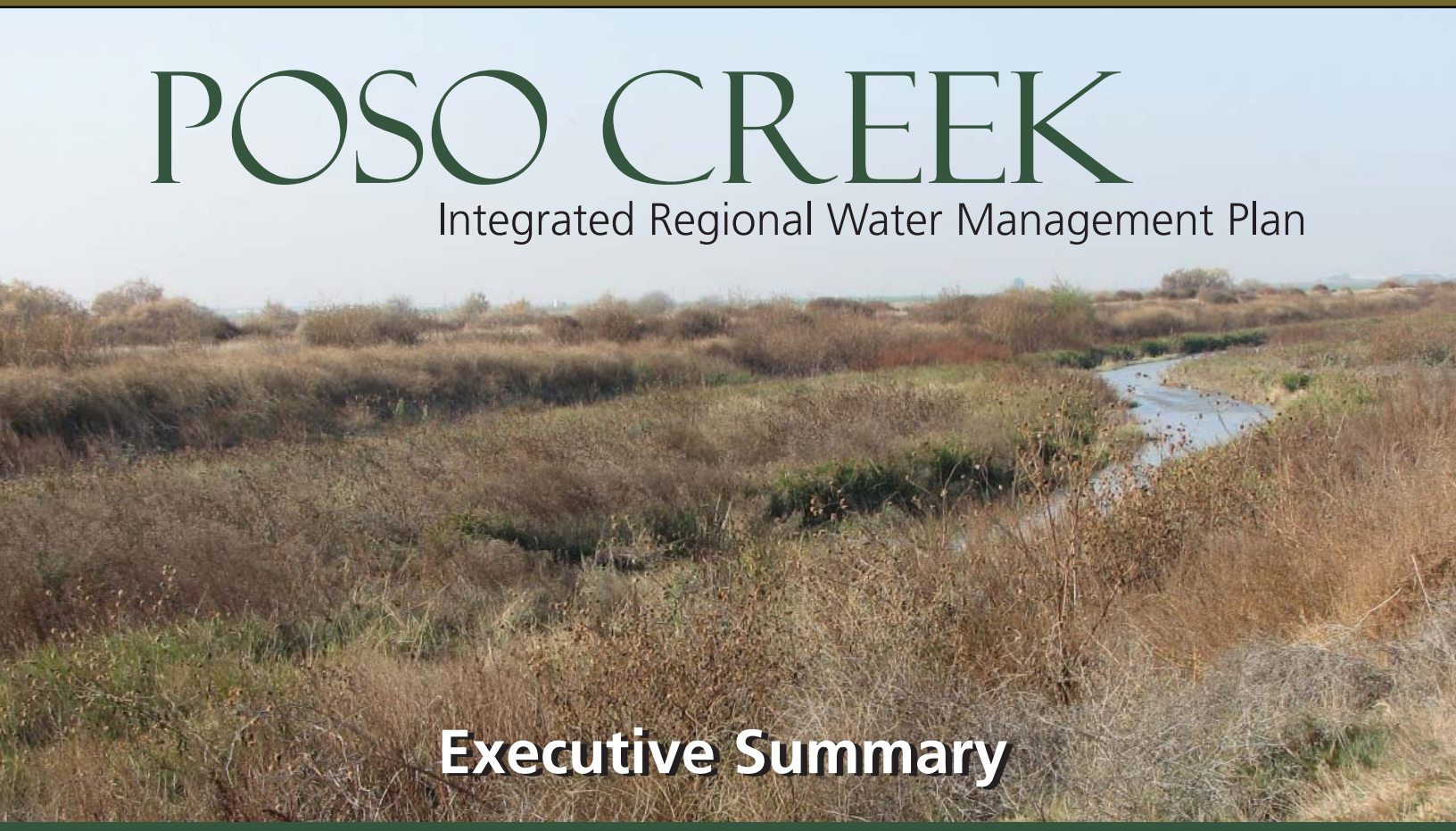
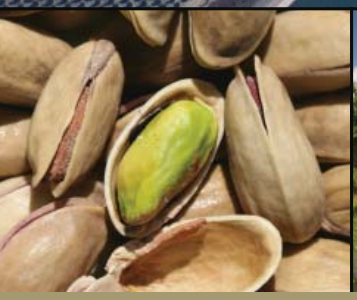
POSO CREEK

Integrated Regional Water Management Plan



Executive Summary





July 2007

Abbreviations and Acronyms

AB 255	Assembly Bill 255
AB 3030	Groundwater Management Act
Absorptive capability	Capability to divert and use surface water when available
ac-ft	acre-feet
ac-ft/day	acre-feet per day
af	acre-feet
af/y	acre-feet per year
Agency	Kern County Water Agency
AEWSD	Arvin-Edison Water Storage District
Arvin-Edison	Arvin-Edison Water Storage District
BMOs	Basin Management Objectives
BMPs	Best Management Practices
Buena Vista	Buena Vista Water Storage District
CA Water Plan	California Water Plan Update 2005
CALFED	State/federal cooperation formalized in June 1994 with the signing of a Framework Agreement by the state and federal agencies with management and regulatory responsibility in the Bay-Delta Estuary
California Water Plan	California Water Plan Update 2005
CAP water	Central Arizona Project water
Cawelo	Cawelo Water District
CEQA	California Environmental Quality Act
cfs	cubic feet per second
Consultant	GEI Consultants, Inc. Bookman-Edmonston Division
Corcoran or “E” Clay	Lacustrine diatomaceous clay unit that underlies much of the subbasin
Corps	U.S. Army Corps of Engineers
CVC	Cross Valley Canal
CVP	Central Valley Project
DEID	Delano-Earlimart Irrigation District

Delano-Earlimart	Delano-Earlimart Irrigation District
Delivery Reliability Report	The State Water Project Delivery Reliability Report 2005
Delta	Sacramento-San Joaquin River Delta
DWR	California Department of Water Resources
EIR	Environmental Impact Report
ET	Evapotranspiration
"Excess" lands	Under federal reclamation law, lands not eligible to receive federal water
FKC	Friant-Kern Canal
Friant-Kern	Friant-Kern Canal
GIS	Geographic Information System
gpm	gallons per minute
Groundwater Monitoring Committee	Semitropic Groundwater Monitoring Committee
G-W	Groundwater
ID-4	Kern County Water Agency Improvement District No. 4
IRWMP	Integrated Regional Water Management Plan
ITRC	Irrigation Training and Research Center
JPA	Joint Powers Authority
kaf	thousand acre-feet
KCWA	Kern County Water Agency
Kern-Tulare	Kern-Tulare Water District
kWh/year	kilowatt-hours per year
KNWR	Kern National Wildlife Refuge
M&I	Municipal and Industrtial
MAF	million acre-feet
MHI	Median Household Income
MOU	Memorandum of Understanding
MVA	megavolt ampere
MW	megawatt
MWD	Metropolitan Water District of Southern California

NEPA	National Environmental Policy Act
North Kern	North Kern Water Storage District
NPS	Non-Point Source
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
NWKRCD	North West Kern Resource Conservation District
PG&E	Pacific Gas and Electric
PID	Pixley Irrigation District
Poso Creek RMA	Poso Creek Regional Management Area
ppm	parts per million
Program	Semitropic Groundwater Banking Program
PWRPA	Power and Water Resources Pooling Authority
Rag Gulch	Rag Gulch Water District
RCD	Resource Conservation District
Region	Poso Creek IRWMP Region
RGRCP	Rubber Gasket Reinforced Concrete Pipe
RMA	Regional Management Area
RMG	Poso Creek Regional Management Group
RRA	Reclamation Reform Act of 1982
RWQCB	Regional Water Quality Control Board
Rosedale-Rio Bravo	Rosedale-Rio Bravo Water Storage District
SB 1672	Senate Bill 1672 - Integrated Regional Water Management Planning Act of 2002
SB 1938	Senate Bill 1938 - Groundwater Management Planning Act of 2002
SCADA	Supervisory Control and Data Acquisition
SEBAL	Surface Energy Balance Algorith for Land
Semitropic	Semitropic Water Storage District
Shafter-Wasco	Shafter-Wasco Irrigation District
SJR Restoration	San Joaquin River Restoration
SJR Settlement	San Joaquin River Settlement
SSJMUD	Southern San Joaquin Municipal Utility District
Southern San Joaquin MUD	Southern San Joaquin Municipal Utility District

SWP	State Water Project
SWRCB	State Water Resource Control Board
SWRU	Stored Water Recovery Unit
TDH	Total Design Head
TDS	Total Dissolved Solids
TMDLs	Total Maximum Daily Loads
USACE	United States Corps of Engineers
USBR	United States Bureau of Reclamation
USCID	United States Committee on Irrigation Drainage
USGS	U.S. Geological Survey
Water Bank	Semitropic Groundwater Bank
WEPS	West East Pintail Slough
WSR	Water Supply Reliability

Executive Summary

Introduction

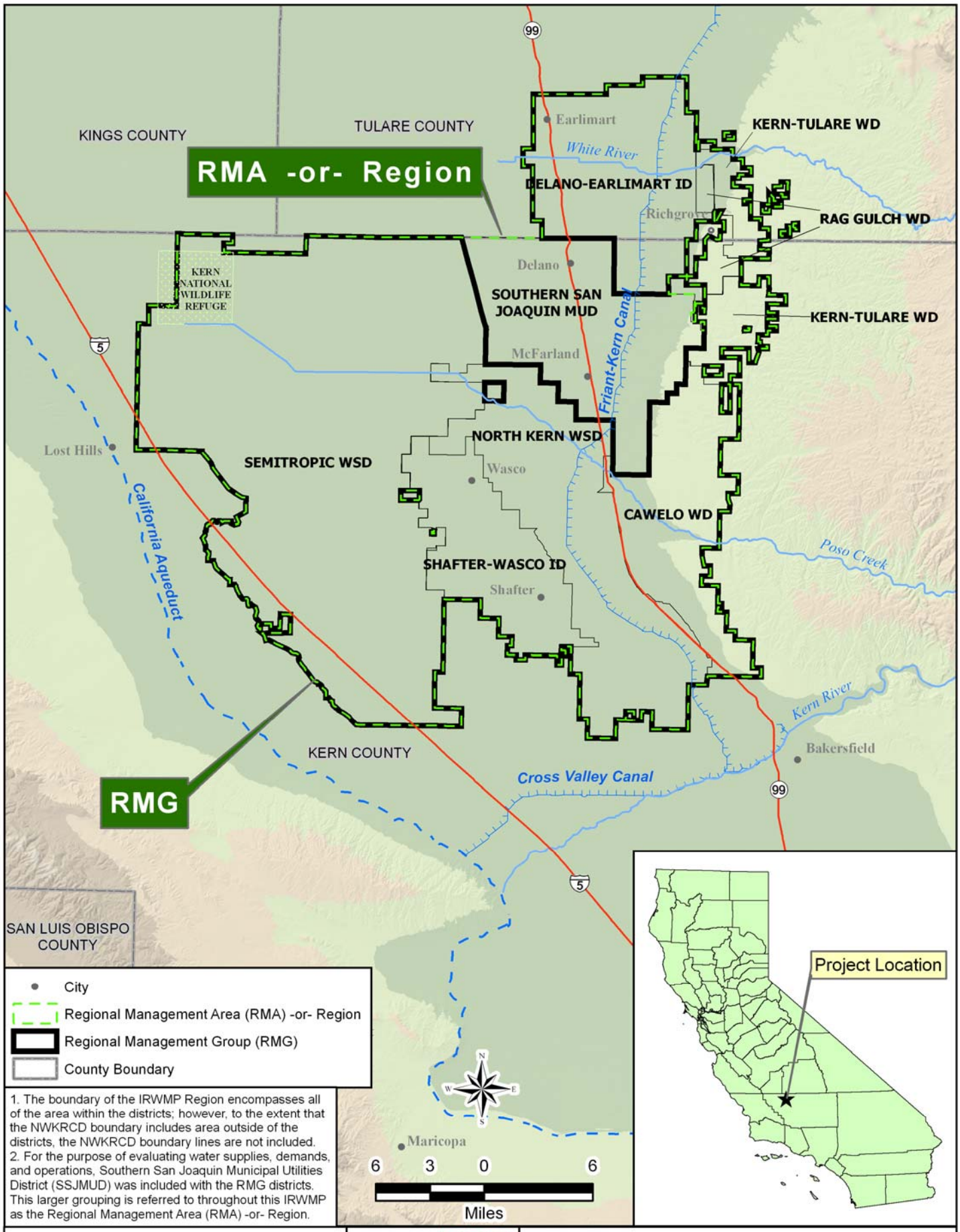
The Poso Creek Integrated Regional Water Management Plan (Poso Creek IRWMP or Plan) was formulated by eight public agencies, known as the Regional Management Group (RMG), in coordination with the Region's stakeholders, and assisted by GEI Consultants, Inc. (Bookman-Edmonston Division). Funding assistance for this effort was provided by the California Department of Water Resources (DWR) through a Proposition 50 planning grant.

The members of the RMG who formulated and ultimately adopted the Plan are listed below and shown on Figure ES-1:

- Cawelo Water District
- Delano-Earlimart Irrigation District
- Kern-Tulare Water District
- North Kern Water Storage District
- North West Kern Resource Conservation District
- Rag Gulch Water District
- Semitropic Water Storage District – Lead Agency
- Shafter-Wasco Irrigation District

These agricultural districts overlie the groundwater basin in the Tulare Lake Basin Hydrologic area located in the northerly portion of Kern County. The Poso Creek IRWMP Region (Region), which includes the area of Southern San Joaquin Municipal Water District (SSJMUD) along with the RMG members, is a fertile agricultural area with a current annual gross value of agricultural commodities estimated at $2 billion. The rich soils, climate, and irrigation water make it possible to grow predominately high-value, permanent crops. The largest value commodities – almonds, grapes, citrus, pistachios, and vegetables – are sold worldwide.

The Plan emphasizes resolving the Region's short-term and long-term water supply challenges through an integrated water resource planning approach. The Plan included development of regional water management strategies to address the Region's needs and the framework for prioritizing and implementing them. The highest priority and focus of the RMG is to improve water supplies throughout the Region. The resulting Plan integrates the individual agency assets into this framework of water management strategies for the purpose of providing a *regional* solution that also meets the individual district's water management issues and needs.



Poso Creek Integrated Regional Water Management Plan

Poso Creek Regional Management Group

GEI Consultants
Bookman-Edmonston Division

Poso Creek IRWMP Region

JUNE 2007

FIGURE ES-1

Summary of Findings and Conclusions

Findings and conclusions resulting from this planning effort are summarized in this section. Where applicable, and unless noted otherwise, projected water supplies are based on CalSim II – Study 4 for the State Water Project (SWP), and post-San Joaquin River Settlement conditions for the Friant Division of the Central Valley Project (CVP). While averages have been cited for the purpose of assessing the long-term water supply implications, it must be recognized that water demands occur in every year and these averages reflect water occurring in the *wetter* years and are not a true measure of water supply reliability.

(1) Conjunctive-use projects developed on a district-by-district basis to acquire and import surface water supplies to mitigate declining groundwater levels in the Region were generally complete by the mid to late 1970s (with some completed much earlier). In the subsequent 25 to 30 years, groundwater levels have been relatively "stable" over the Region, going up during *wet* periods and down during *dry* periods.

(2) Water demands in the Region over the next 20 to 30 years are expected to be comparable to the last 25 years, inasmuch as irrigated acreage has been relatively "stable" and that, in general, as urban demand increases, the agricultural demand will decrease (assuming that it is irrigated agricultural land that is urbanized, which has been the trend to date), with no significant net change in demand.

(3) Surface water has been a significant part of the Region's water supply, averaging about ¾ million acre-feet annually over last 25 years. The historical average use of local surface water supplies (primarily Kern River and Poso Creek) has amounted to about one-third of the total surface water supplies of the Region, with imported supplies making up the remaining two-thirds. There are three principal sources of surface water, which are listed following, along with the approximate contribution of each to the total for the Region:

- Local (Kern River and Poso Creek) 34%
- Central Valley Project 42%
- State Water Project 24%

(4) The projected long-term average annual availability of surface water supplies to the Region is on the order of 0.7 million acre-feet, which is less than the 0.75 million acre-feet which was historically diverted for use within the Region. (This estimate is based on availability at the source of supply; does not reflect consideration of any conveyance or absorptive capability limitations; is based on the minimum "share" of unregulated SWP and CVP supplies; and does not include third-party banking.)

(5) It is projected that each of the three principal sources of surface water will be reduced in the future relative to the last 25 years. Accordingly, the reduction in water supply reliability is the number one water resource management issue for the Region. The total reduction in diversion and use of these sources of supply was estimated to be on the order of 100,000 acre-feet, with about one-third of the reduction attributable to each source of supply.

- Kern River - The reliability of the Kern River supplies that have been used in the Region in the past is threatened, owing to the expiration of several long-term contracts in 2011, as well as ongoing litigation.
- State Water Project - 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[1].
- Central Valley Project - 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, which centered on restoration of the San Joaquin River below Friant Dam.

(6) The total irrigated acreage in the Region has remained fairly stable over the last 25 years, ranging from 340,000 to 375,000 acres, with an average of about 350,000 acres. These lands rely on the conjunctive use of surface water and groundwater, either directly or indirectly. To the extent that surface water supplies are short, groundwater is used to satisfy irrigation water requirements, inasmuch as these lands largely overlie useable groundwater.

(7) The acreage planted to permanent crops has been increasing, with over 60 percent presently planted to nuts, grapes, and citrus. Twenty-five years ago, permanent plantings amounted to about 40 percent of the irrigated acreage. Presently, it is estimated that the Region produces at least $2 billion annually in agricultural commodities.

(8) Presently, about 120,000 people reside within the Region and rely exclusively on pumped groundwater for their water needs. These are primarily located within the communities of Delano, Wasco, Shafter, McFarland, Earlimart, Richgrove, and Lost Hills, which are *economically-disadvantaged* based on 2000 census tract

[1] In April 2007, during the preparation of this Plan, a state court issued a Decision which ordered DWR to obtain a California ESA permit by June 2007, or cease pumping at the Banks Pumping Plant; in May, a federal court found the federal biological opinions to be deficient; and in June, DWR shut down the Banks Pumping Plant for an indefinite period owing to the *take* of Delta Smelt.

data compared to the threshold for disadvantaged communities[2]. 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 capability[3] 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.

available to contracting districts within the Region is estimated at about 12,000 acre-feet (based on CalSim II *Study 4* for 2005 conditions).

(21) When considered on a district-by-district basis, it is projected that, on average over the long term, about 21,000 acre-feet of CVP-Friant water will be in excess of the absorptive capability of the contracting districts within the Region[4]. It is further estimated that about two-thirds of this amount could be absorbed within the Region with the appropriate agreements and institutional and regulatory approvals, with about one-half going directly to an irrigation demand and the remainder to spreading.

(22) Strategies to mitigate projected reductions in the Region's surface water supplies include the following:

- Maximize use of available surface water supplies through the use of existing absorptive capability by coordinating mismatches between supply and demand within the Region, i.e., matching supply that exceeds demand in one district with demand that exceeds supply in another district. This applies to both irrigation absorptive capability as well as spreading absorptive capability.
- Evaluate feasibility of developing additional absorptive capability if the available surface water supplies cannot be substantially regulated through the use of existing absorptive capacity.
- Consider development of third-party water-banking arrangements that bring more water into the Region than the Region is obligated to return (such as is the case with an *unbalanced* banking program) and/or bring dollars into the Region that can be used to help purchase *waters of opportunity*.
- Support improving water supply reliability from the Delta.
- Support implementation of the *water management goal* of the San Joaquin River Settlement.
- Support the restoration of lost capacity in the Friant-Kern Canal as well as expanded capacity, in order to maximize the use of contract supplies.

(23) Experience has shown that water conveyance and distribution facilities, in addition to the purposes for which they were designed, have been used in ways that were not contemplated when they were designed and constructed. In other words, the accomplishments or benefits have typically far exceeded that which was originally estimated. While we are used to seeing a contingency applied to

[4] Based solely on each district's absorptive capability, i.e., without entering into arrangements with other agencies.

project costs, experience suggests that it may be appropriate to apply a contingency to benefits as well.

(24) Due to the overwhelming need to address water supply issues within the Region, the RMG prioritized water management strategies into two groups; (1) **highest priority strategies considered for implementation;** and (2) **strategies considered for project integration**. As Projects are implemented to meet the highest priorities for the Region, secondary benefits that each project may provide will be integrated into the *regional* solution. These benefits may include, flood control, ecosystem restoration, environmental and habitat protection and improvement, reduction in use of power and energy, water quality improvements, subsidence mitigation, and many others.

(25) Individual water agencies have been encouraged and incentivized (through eligibility requirements for grant funds) to work together to address water resource management issues on a regional level. In order for this to be effective, some of the institutional and regulatory constraints that have acted as disincentives to working together and realizing truly regional water resource management must be addressed.

(26) While the estimated capital cost to implement all of the proposed water management measures is on the order of $250 million (at 2007 price levels), it is noted that the costs are not strictly additive and that significant benefits can be achieved with initial expenditures which are far less than this total amount. (The estimated cost to implement projects proposed for the near-term funding opportunities is $65 million, as shown in Table ES-7.)

(27) In addition to local monies, financing of non-structural as well as structural measures is expected to include grants, loans, and possibly revenue from development of third-party banking programs.

(28) Most of the proposed non-structural and structural projects identified in the planning process are ready for implementation and some are even under construction. Therefore, most of the proposed structural projects were categorized as *Tier 1* projects, which means they are ready for implementation and contain phases that can be completed within three years.

(29) The RMG has worked very effectively together during the IRWMP process over the last two years and has already realized benefits from that process. Owing to this experience, the manageable size of the RMG, and their common goals, they are well positioned to continue with project implementation.

Overview

Poso Creek IRWMP Region's Assets - Water supplies, Conveyance, and Groundwater Storage

The RMG and related districts throughout Kern County are shown on Figure ES-2. The related districts, of which some are stakeholders, share a common interest in managing the surface water and groundwater resources of the Region. The RMG member districts have operated portions of the groundwater basin conjunctively with available surface water supplies for decades. The present utilization of water supplies in the Region is predominantly for irrigated agriculture.

As a generalization, all of the lands in the Region are underlain by useable groundwater. Accordingly, to the extent that surface water supplies are inadequate to meet irrigation water requirements, groundwater is used to make up the shortfall. Groundwater is replenished through both *direct* and *indirect* means, where *direct* refers to water spreading in constructed ponds or natural channels, and *indirect* refers to surface water deliveries in lieu of pumping groundwater.

Locally occurring water supplies in the Region are supplemented with water imported by the State of California through its State Water Project (SWP) and by the Federal government through the U.S. Bureau of Reclamation's Central Valley Project (CVP), as shown on Figure ES-3. Accordingly, the managed resources in the Region include water supplies from:

- State Water Project via the California Aqueduct
- Central Valley Project via the California Aqueduct
- Central Valley Project via the Friant-Kern Canal
- Kern River
- Poso Creek and other minor streams
- Common groundwater basin

The agriculture-based economy of the Region depends on an adequate water supply from these sources. For the purposes of this Plan, historical averages are based on the 25-year period extending from 1981 through 2005, unless otherwise noted. For the Region, the historical average use of local surface water supplies has amounted to about one-third of the total surface water supplies of the Region, with imported supplies making up the remaining two-thirds, as shown on Figure ES-4.

The Region is located at the crossroads of the California Aqueduct, Friant-Kern Canal, and the Kern River, as shown on Figures ES-5 and ES-6. The potential for increased conjunctive use of surface water and groundwater supplies is a valuable asset to the Region.

Poso Creek Integrated Regional Water Management Plan

Poso Creek Regional Management Group

GEI Consultants
Bookman-Edmonston Division

Regional Stakeholders and Related Districts

June 2007

Figure ES-2

- City
- River, Creek, etc.
- State Hwy
- Interstate
- Canal, Aqueduct, etc
- Kern River
- Kern County Recharge Facilities
- County Boundary
- ANTELOPE VALLEY-EAST KERN W.A.
- Kern National Wildlife Refuge
- ARVIN-EDISON WSD
- BELRIDGE WSD
- BERRENDA MESA
- BERRENDA MESA WD
- BUENA VISTA WSD
- CAWELO WD
- CITY OF TEHACHAPI WSA
- DELANO EARLIMART ID
- DEVILS DEN WD
- GOLDEN HILLS CSD
- HENRY MILLER WD
- IMPROVEMENT DISTRICT 4
- KEENE WD
- KERN DELTA WD
- KERN WATER BANK
- KERN-TULARE WD
- LEBEC COUNTY WD
- LOST HILLS WD
- MCALISTER RANCH ID
- NORTH KERN WSD
- OLCESE WATER DISTRICT
- PIONEER CENTRAL
- PIONEER NORTH
- PIONEER SOUTH
- QUAIL VALLEY WD
- RAG GULCH WD
- ROSEDALE RANCH ID
- ROSEDALE-RIO BRAVO WSD
- SEMITROPIC WSD
- SHAFTER WASCO ID
- SOUTHERN SAN JOAQUIN MUD
- STALLION SPRINGS CSD
- TEHACHAPI-CUMMINGS CO WD
- TEJON-CASTAC WD
- WEST KERN WD
- WHEELER RIDGE-MARICOPA WSD

6 3 0 6
Miles

SOURCE: Water agency boundaries, Kern National Wildlife Refuge boundary, Kern County Recharge Facilities, and alignments of canals, aqueducts, etc. from Kern County Water Agency, 2006; except Antelope Valley-East Kern WA from USBR, 2006 and SWRU East-West Conveyance from GEI Inc, 2006.

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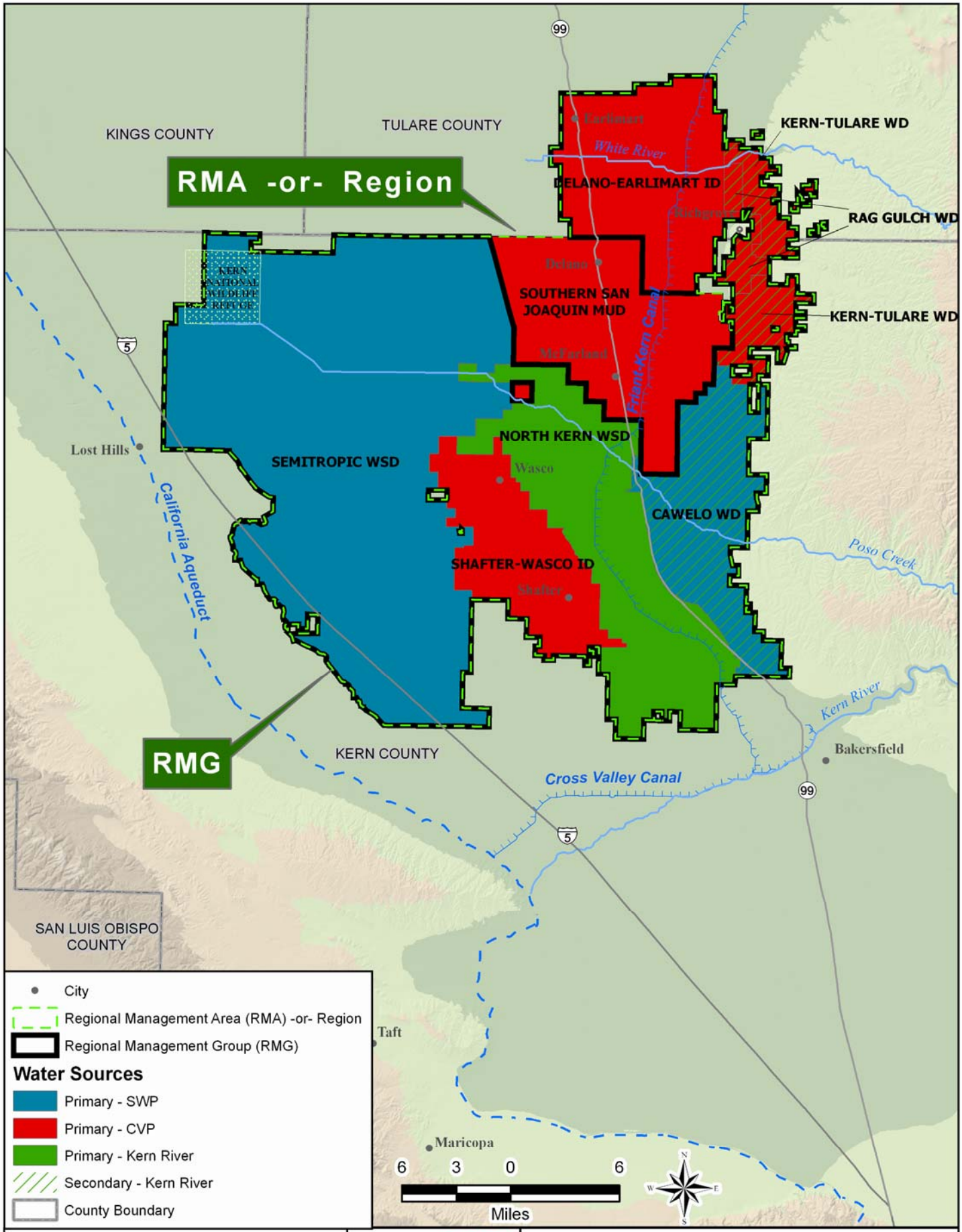

Poso Creek Integrated Regional Water Management Plan

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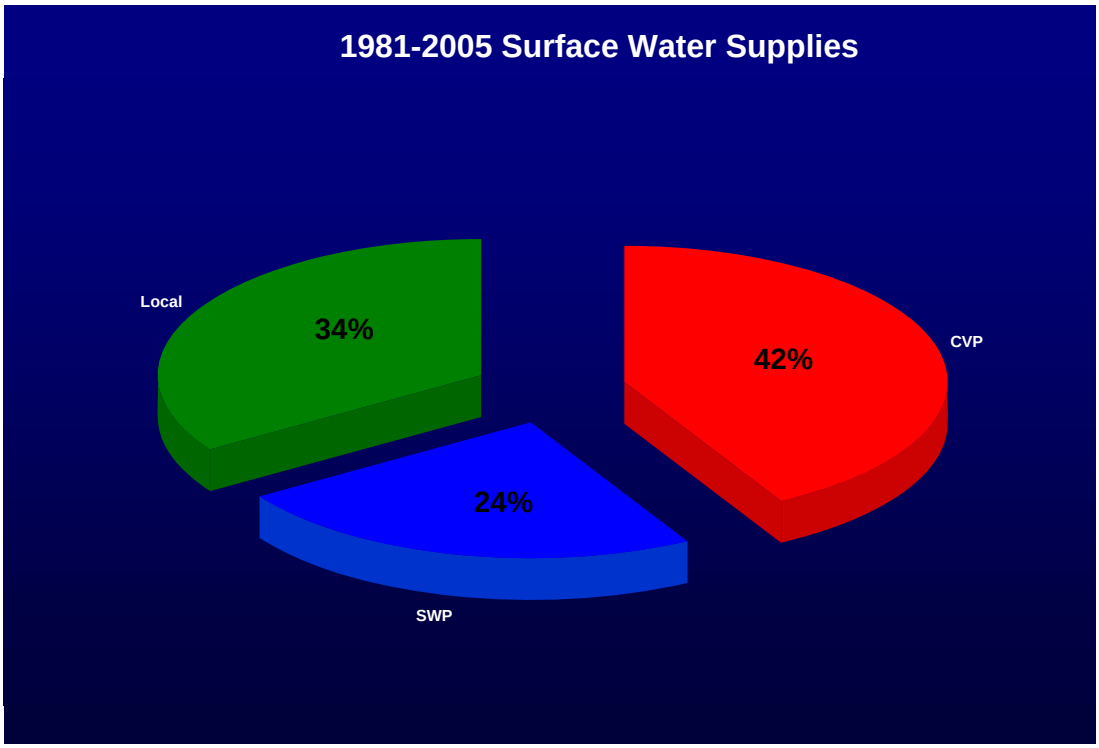
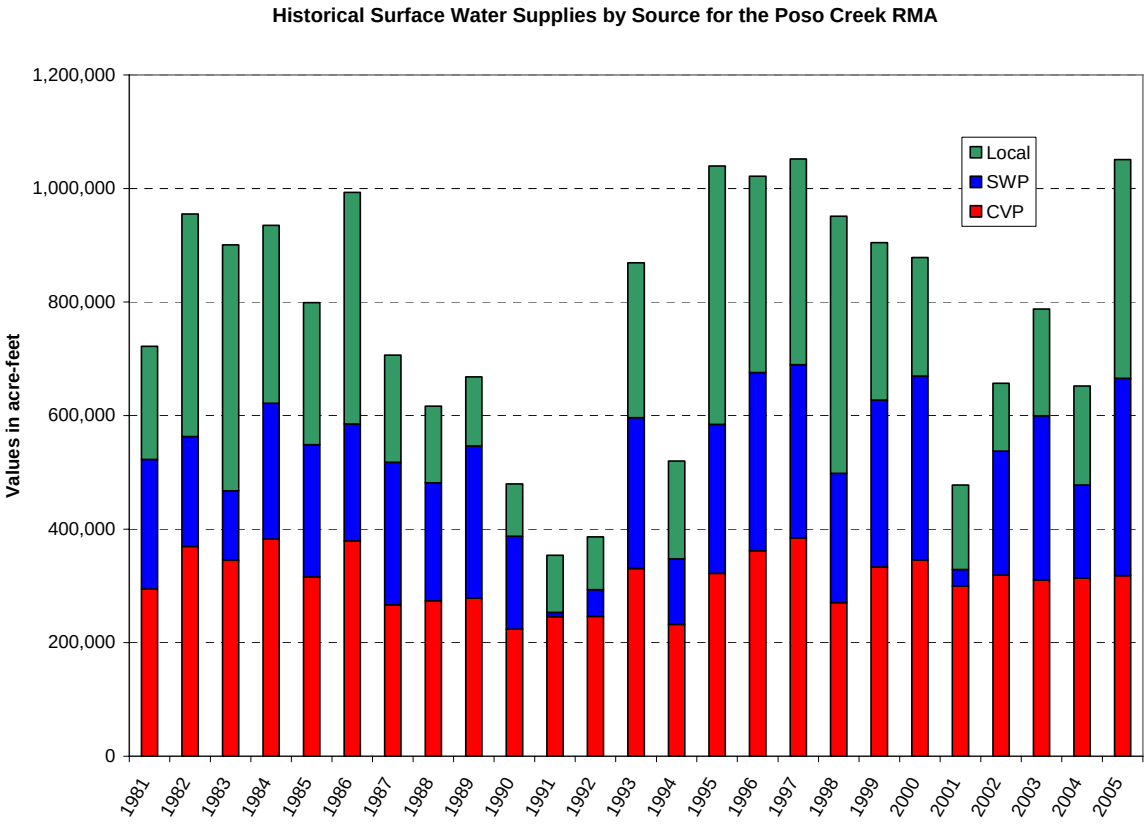
Sources of Surface Water Supply of the Districts within the Region

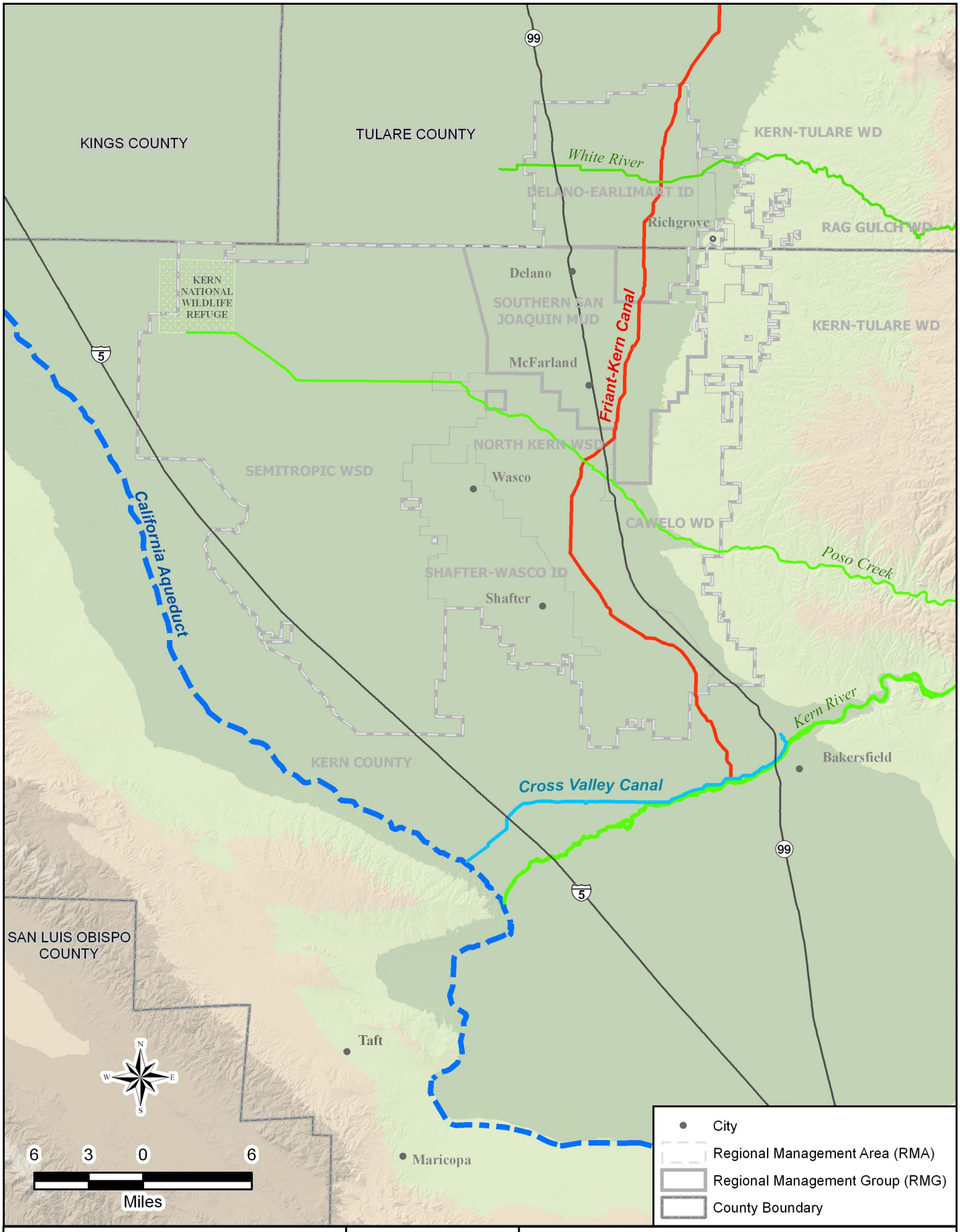
JUNE 2007

FIGURE ES-3

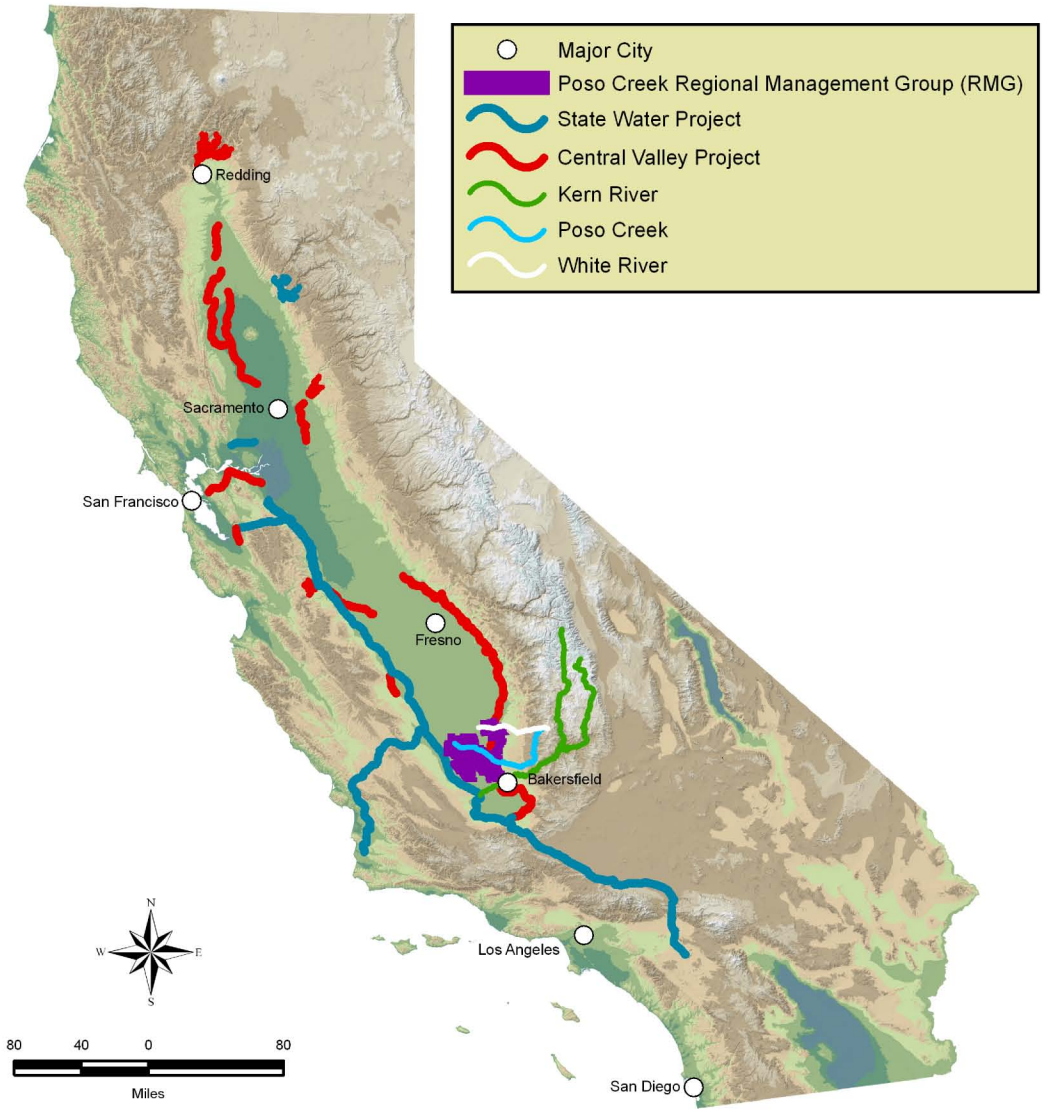




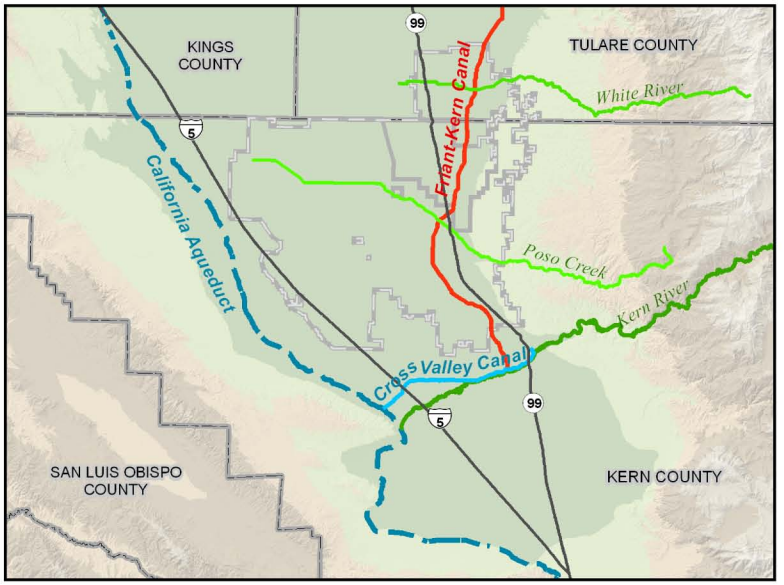
Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Historical Surface Water Supplies by Source for the Poso Creek RMA
Poso Creek Regional Management Group		June 2007 Figure ES-4

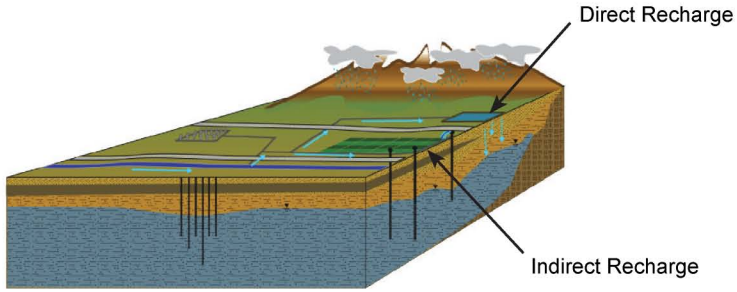


Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Geographic Relationship of Water Conveyance Features
Poso Creek Regional Management Group	JUNE 2007	FIGURE ES-5



The proximity of the Regional Management Group to the California Aqueduct, Friant-Kern Canal, Kern River, Poso Creek and groundwater banking facilities, combined with large conveyance and absorptive capacity, provides an ideal setting for expanded conjunctive use operations.

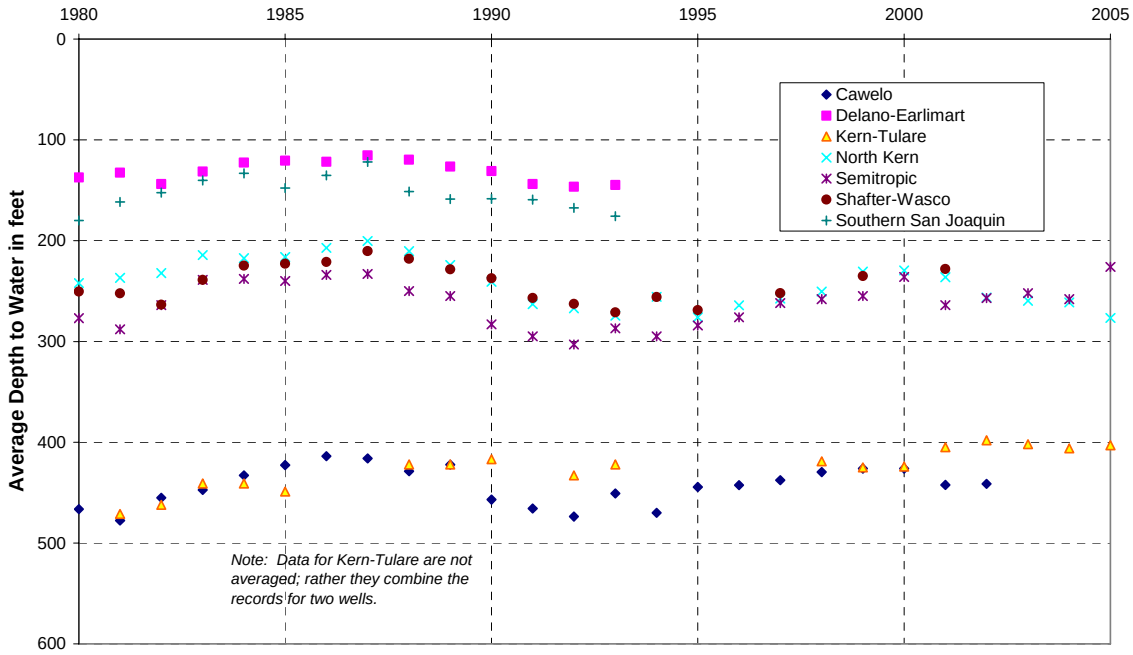




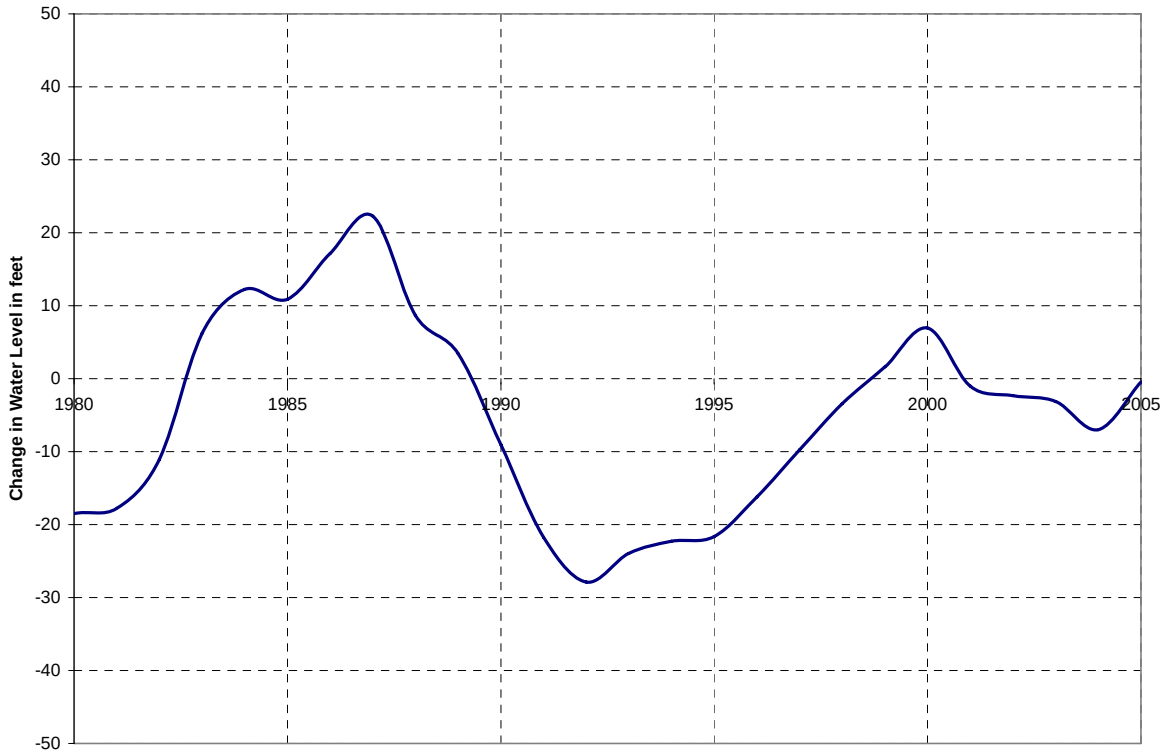
The Region has large conjunctive use operations and significant groundwater storage capacity.

Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Water Supply, Conveyance and Groundwater Storage
Poso Creek Regional Management Group	JUNE 2007	FIGURE ES-6

Average Depth to Water



Cumulative Average Annual Change in Regional Water Levels



Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Average Depth to Water and Cumulative Average Annual Change in Regional Water Levels
Poso Creek Regional Management Group		June 2007 — Figure ES-7

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.

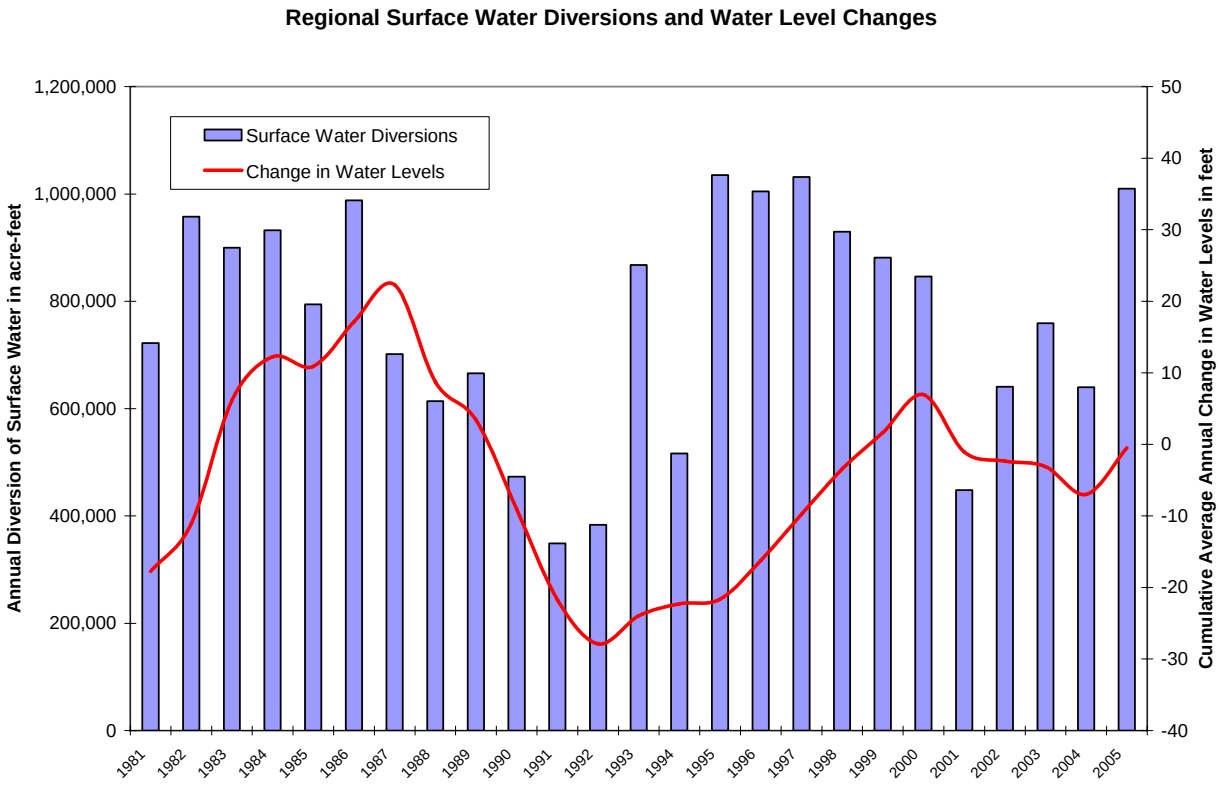
Also illustrated on Figure ES-9 is the effect of the projected 14 percent reduction in deliveries of surface water supplies on regional groundwater levels, which is one of the findings of this Plan. As pressure on surface supplies increases, it is apparent that the Region must make additional use of 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.

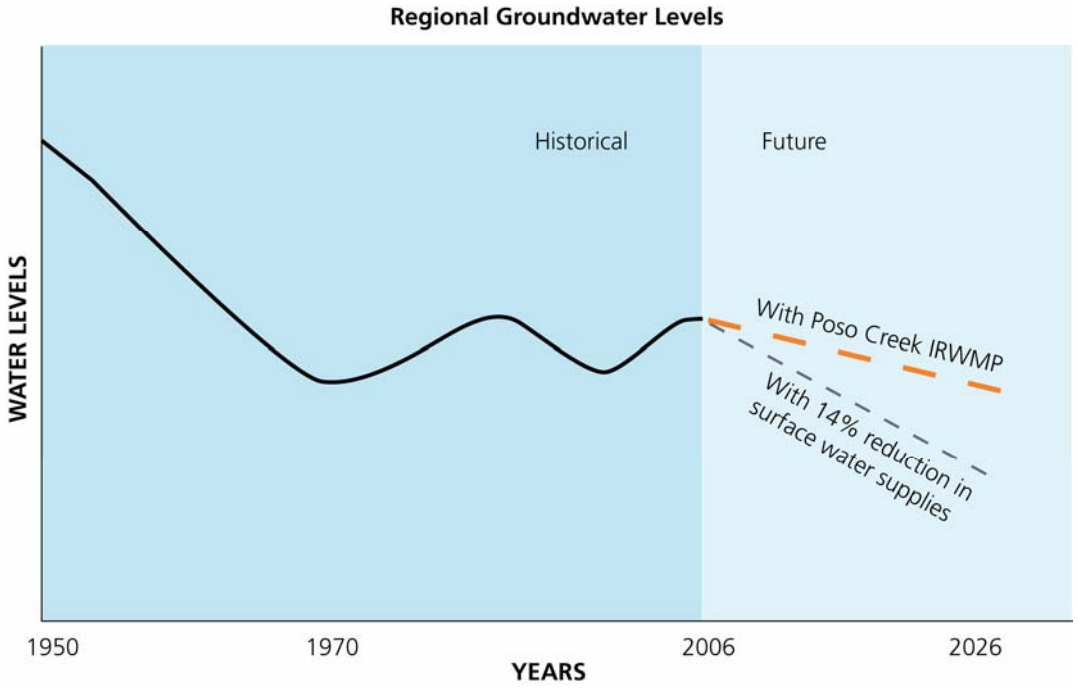
Over the years, both regulatory decisions and court decisions have impacted the availability of the Region's imported water supplies. In recent years, environmental and water quality issues in and surrounding the Sacramento-San Joaquin River Delta (Delta) have limited the ability to export water south 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



Poso Creek Integrated Regional Water Management Plan		GEI Consultants Bookman-Edmonston Division	Regional Surface Water Diversions and Water Level Changes
Poso Creek Regional Management Group			June 2007 Figure ES-8

The Largest Water Supply Challenges Facing the Region

- Water Reliability
- Water Cost
- Water Quality



Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Historical and Projected Groundwater Levels for the RMA
Poso Creek Regional Management Group		June 2007 — Figure ES-9

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:

Table ES-1 Operational Objectives Related to Water Management Strategies

	Planning Objectives	Operational Objectives		Regional Management Group's Proposed Water Management Strategies to Implement	Groundwater Management *	Water Supply Reliability *	Conjunctive Management of Surface Water and Groundwater	Water Transfer/Exchanges	Water Quality Protection and Improvement *
No.	**General**	**Description**	**Quantitative and Qualitative**	**Water Management Measures to Implement (Listed by priority within each objective)**	**Highest Priority Water Management Strategies for Region**				
1	Water Supply Reliability	Enhance Water Supply Reliability of surface supplies (SWP-CA Aqueduct, CVP-Friant, CVP-CA Aqueduct, Kern River, and Poso Creek) equal to or greater than Historical utilization in order to maintain Region's water balance	**Surface Water Supply Utilization within Poso Creek Region (including SSJMUD)** **Historical** Utilization = 740,000 ac-ft/yr **Projected** Utilization = 14 percent loss; 104,000 ac-ft/yr **Projected with IRWMP** = Utilization objective is to maintain or increase up to **Historical**	1) Implement non-structural projects that involve Water Exchanges and Groundwater Banking agreements between RMG members; including CEQA/NEPA documents 2) Modify conveyance systems between districts with available supply to districts with under utilized In-Lieu Service Areas and Direct Recharge Capacity 3) Increase return conveyance from groundwater banking for drought protection 4) Expand Direct Recharge 5) Increase operational flexibility 6) Implement Third-Party Banking programs 7) Expand In-Lieu Service Areas	✓	✓	✓	✓	
2	Groundwater Levels	Maintain groundwater levels at economically viable pumping lifts	**Historical** = Levels in balance (Water Supply Accomplishments) **Projected** = Levels will decrease **Projected Utilization with IRWMP** = Maintain or increase groundwater levels up to **Historical**	1) Implement GW Banking Projects within the Region and Third-Party Banking Projects 2) Expand conjunctive management of surface and groundwater supplies within Region 3) Update and implement the RMG's GW Management Plans 4) Continue involvement in Regional Monitoring Committee	✓	✓	✓	✓	✓
3	Groundwater Quality	Protect quality of groundwater and enhance where practical	**Historical** = The water quality standards and operational agreements that are needed for returning stored groundwater to CA Aqueduct and Friant-Kern Canal have not been in place **Projected** = Need agreements in place **Projected with IRWMP =** Initiate agreements to be in place	1) Implement institutional agreements that address water quality issues in returning water to the CA Aqueduct and the Friant-Kern Canal 2) Consider conveyance modifications that enhance water quality exchanges	✓	✓	✓	✓	✓
4	Water Supply Costs	Maintain water supply costs at a level commensurate with the continued viability of the agricultural economy which has developed in the Poso Creek IRWMP Region	**Historical** = District's have pumped groundwater to make up difference in supplies to meet demands **Projected** = District's pumping cost will increase due to imbalance in water supply/demands and resulting increased lifts **Projected with IRWMP** = Districts will reduce pumping lifts to Historical condition or better	1) Secure grant funding to help offset capital cost needed for maintaining water supply costs at a viable level 2) Implement water management actions identified in each District's Groundwater Water Management Plan 3) Support Districts water supply pricing policy	✓	✓	✓	✓	
5	Monitoring	Enhance monitoring activities to meet groundwater levels and water quality goals	**Historical** = Water is of good quality within the Region **Projected** = Water will be of good quality for the Region **Projected with IRWMP =** Water quality for the Region is expected to remain good; potential changes in quality will be evaluated	1) Participate in Regional Groundwater Committee 2) Support water quality monitoring for returning water to the CA Aqueduct and/or the Friant-Kern Canal 3) Evaluate exchanges and banking effects on water quality	✓	✓	✓	✓	✓
6	Environmental Resources	Maintain and/or enhance environmental resources within and outside of the Poso Creek IRWMP Region	Environmental resources will be enhanced as an integrated water management strategy; environmental enhancement projects will be constructed synergistically with water supply reliability efforts in this IRWMP	1) Support conjunctive management of water supplies related to SJR Restoration Flows 2) Support conveyance improvements, structural and operational, that help Districts in the RMG implement SJR Settlement 3) Support construction of wildlife enhancement components listed in Project No. 26 in conjunction with Semitropic's new groundwater banking area	✓	✓	✓	✓	✓
7	Flood Control	Enhance flood control in the Poso Creek IRWMP Region	Flood control will be enhanced as an integrated water management strategy; the flood control project component of this IRWMP is a long-term project not ready for implementation	1) Evaluate conjunctive management of connecting Friant-Kern Canal to proposed Flood Control Structure on Poso Creek 2) Contribute In-Kind Services to evaluate pipeline connection		✓		✓	

*Pursuant to CWC Sections 79562.5 and 79564, these water management strategies must be considered to meet the minimum IRWMP Standards. **Desalination was considered not applicable to the Poso Creek IRWMP.

- Local agreements and institutional approvals respecting movement of water between districts within the Region.
- Conveyance improvements to link the source of supply to the location of the unused absorptive capacity.
- Development of new absorptive capacity.

Planning Objectives, Strategies, and Water Management Measures

The RMG and stakeholders are implementing non-structural and structural water resource management measures that support the Region's Planning Objectives and consider the State of California's state-wide priorities and the California Water Plan Update 2005 Resource Management Strategies.

The seven Planning Objectives which were identified for the Region are listed here, whereas, the more detailed operational objectives developed by the RMG during the plan formulation are included in Table ES-1 and contained in Table 8-2 of this Plan:

1) Maintain and improve water supply reliability;

2) Maintain groundwater levels at economically viable pumping lifts;

3) Protect the quality of groundwater and enhance where practical;

4) Maintain water supply costs at a level commensurate with the continued viability of the agricultural economy which has developed in the area;

5) Enhance monitoring activities to meet groundwater level and water quality goals;

6) Maintain and/or enhance environmental resources within and outside of the study area; and

7) Enhance flood control in the study area.

The RMG, with input from the stakeholders, has considered all of the Water Management Strategies listed in Table A-1 of the DWR's IRWMP Grant Program Guidelines, as listed below. Most of these water management strategies are already practiced in this Region to some extent, as discussed in Chapter 6 of this Plan. Due to the overwhelming need to address water supply issues within the Region, the RMG prioritized water management strategies into the following two groups:

Highest Priority Strategies Considered for Project Implementation

- Groundwater management
- Water supply reliability
- Conjunctive management of surface water and groundwater
- Water transfers and exchanges
- Water quality protection and improvement

Strategies Considered for Project Integration

- Ecosystem restoration
- Environmental and habitat protection and improvement
- Flood management
- Imported water
- Land use planning
- NPS pollution control
- Recreation and public access
- Storm water capture and management
- Surface storage
- Water conservation
- Water recycling
- Water and wastewater treatment
- Watershed planning
- Wetlands enhancement and creation

The process which was used by the RMG to formulate and prioritize projects for implementation is presented in Chapter 8, while Chapter 9 presents the proposed non-structural and structural water management measures.

Plan Formulation and Regional Benefits

In anticipation of developing proposals for funding opportunities, the RMG prioritized projects for implementation as shown in Table ES-2. The RMG used the planning objectives and operational objectives as a means to help formulate regional implementation priorities for the Plan (as shown in Table ES-2). These implementation priorities were assigned in conjunction with the technical analysis of the water supply, demand, and operations of the Region, the regional priorities, and the integration of strategies.

As part of the Plan formulation process, the RMG organized the water management measures into groupings called "bundles". The bundles were formed based on how the identified project components (both structural and non-structural measures) were projected to support the Region's highest priorities. The resulting bundles of projects are shown on Figures ES-10, ES-11, ES-12, and ES-13 with a corresponding estimated cost to implement each project shown in Tables ES-3, ES-4, ES-5, and ES-6. A description of each bundle and the benefits to implementing these water management measures is contained in Chapter 9 of this Plan. Accordingly, the RMG applied a combination of technical and operational knowledge in their approach to select a group of highest priority projects for implementing the Plan's strategies. The RMG was also concerned with maintaining a regional equity when applying for funding assistance.

Table ES-2 Project Pre-Screening and Ranking

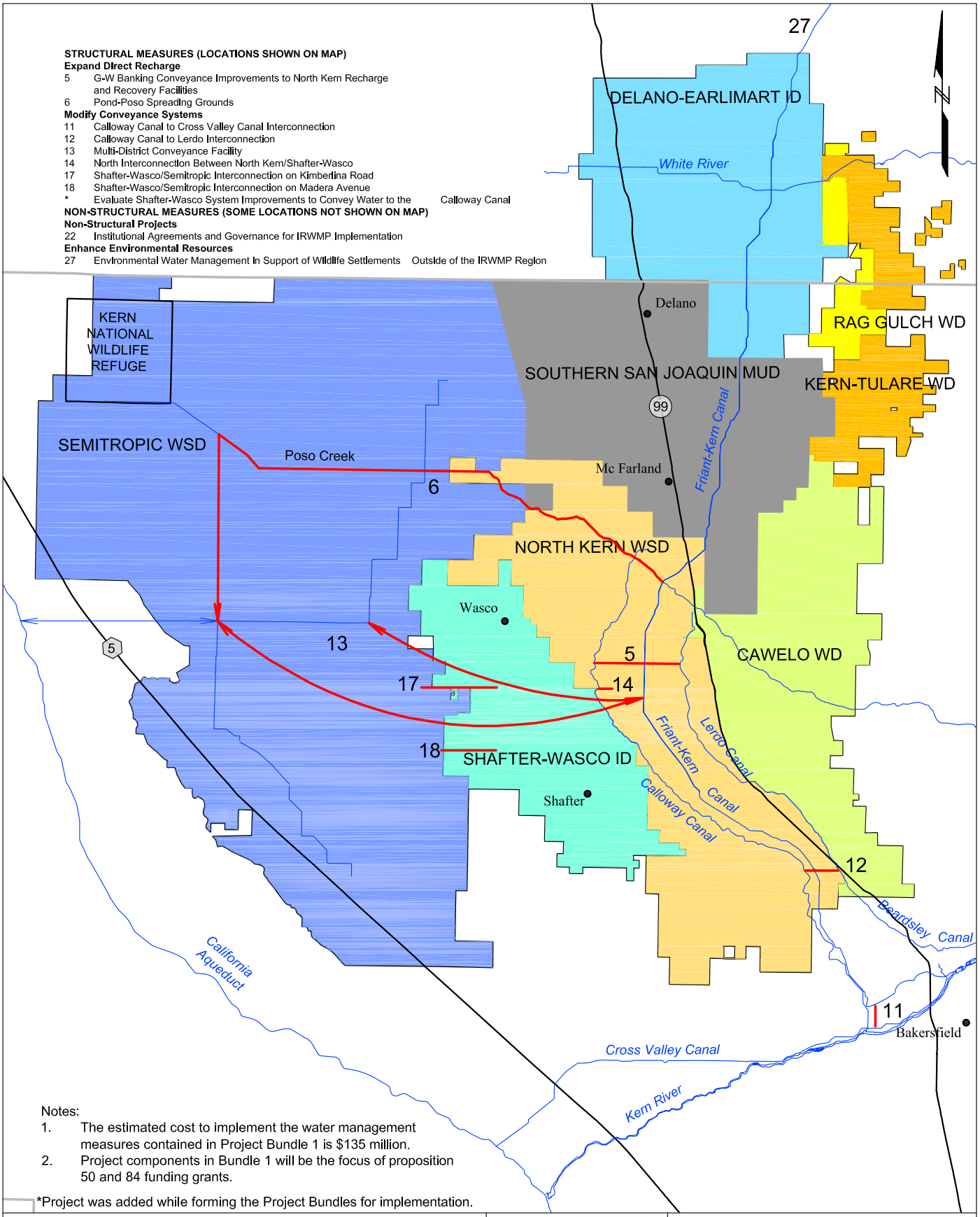
Project ID / Location on Map[1]	Project Name	Project Acceptable	Meets Planning Objectives	Project Integrates Goals and Multiple Objectives[2]	Ready for Implementation	Project Screening[3] Tier 1, 2 and Deferred	Project Priority for Implementation Proposals [4] 1,2,3 and n/a
Structural Projects to Increase Water Supply Reliability							
Expand In-Lieu Service Areas							
1	Connect Friant-Kern Canal Turnout to Cawelo's North System	Yes	Yes	Water Supply Reliability Groundwater Levels Operation flexibility	**CEQA not completed;** Ready for construction by 2008.	Tier 1	2
2	Ninth Avenue Pipeline	Yes	Yes	Water Supply Reliability Groundwater Levels Operation flexibility	**CEQA not completed;** Ready for construction by 2009.	Tier 1	2
3a	Stored Water Recovery Unit (SWRU) In-Lieu Service Areas	Yes	Yes	Water Supply Reliability Groundwater Levels Operation flexibility	**CEQA completed**; Design will be completed by 2008; Project R/W have not been acquired; Phase 2 ready for construction in 2008.	Tier 1	2
3b	Expand P-1030 In-Lieu Service Area	Yes	Yes	Water Supply Reliability Groundwater Levels Operation flexibility	**CEQA completed**; Project R/W have not been acquired; Ready for construction by 2008	Tier 1	2
3c	P-565 New In-Lieu Service Area	Yes	Yes	Water Supply Reliability Groundwater Levels Operation flexibility	**CEQA completed**; Final design completed; Ready for construction in 2007; Part of the R/W has been acquired.	Tier 1	2
Expand Direct Recharge							
4	G-W Banking North of DEID with Pixley ID	Yes	Yes	Water Supply Reliability Groundwater Levels Operation flexibility	**CEQA not completed;** Feasibility study started in 2007.	Tier 1	3
5	G-W Banking Conveyance Improvements to North Kern Recharge and Recovery Facilities	Yes	Yes	Water Supply Reliability Groundwater Levels Operation Flexibility Enhance Exchanges	**CEQA not completed;** Currently in the Design phase; Ready for construction by 2009.	Tier 1	1
6	Pond Poso Spreading Grounds	Yes	Yes	Water Supply Reliability GW Levels	**CEQA completed**; Construction started in 2007; Phases to be completed in 2008-2009.	Tier 1	1
7	Rag Gulch G-W Banking Project	Yes	Yes	Water Supply Reliability GW Levels	**CEQA not completed;** Feasibility study completed in 2006; Construction of project is not planned in near-term.	Deferred	n/a
8	White River G-W Banking for DEID	Yes	Yes	Water Supply Reliability GW Levels	**CEQA not completed;** Feasibility study started in 2007.	Tier 1	3
9	White River G-W Banking in Rag Gulch	Yes	Yes	Water Supply Reliability GW Levels	**CEQA not completed;** Feasibility study completed in 2007.	Deferred	n/a
Modify Conveyance Systems to enhance exchanges and delivery of supplies to in-lieu and direct absorptive capacity							
10	Calloway Canal Improvements	Yes	Yes	Water Supply Reliability Operational flexibility Water Conservation Energy Savings	**CEQA completed**; Project R/W have been acquired; Project in Design phase.	Tier 1	2
11	Calloway Canal to Cross Valley Canal Interconnection	Yes	Yes	Water Supply Reliability Operational flexibility Water Conservation Energy Savings	**CEQA completed**; Project R/W partly acquired; Project in Design phase.	Tier 1	1
12	Calloway Canal to Lerdo Interconnection	Yes	Yes	Water Supply Reliability Operational flexibility Water Conservation Energy Savings	**CEQA completed**; Project R/W have been acquired; Project in Design phase.	Tier 1	1
13	Multi-District Conveyance Facility	Yes	Yes	Water Supply Reliability Operational flexibility Water Conservation Energy Savings	**CEQA not completed;** Depending on alternative, ready for construction in 2008.	Tier 1	1
14	North Inter-connection between North Kern/Shafter-Wasco	Yes	Yes	Water Supply Reliability Operational flexibility	**CEQA completed;** Construction started in 2007.	Tier 1	1
15	Pilot Arsenic Treatment Plant	Yes	Yes	Water Supply Reliability Groundwater Levels Water Quality Dry and critical year capacity. Water needs outside of Region.	**CEQA completed**; Planning study completed; Conceptual design completed; Ready for construction in 2008.	Tier 1	3
16	Reverse Flow in the Friant-Kern Canal	Yes	Yes	Water Supply Reliability Operational flexibility Enhances Exchanges Enhances GW Levels	**CEQA needed for the two phases**: Intertie and flow structure improvements; Ready for construction: Interie in 2008 and structure improvements by 2009.	Tier 1	2
17	Shafter-Wasco/Semitropic Interconnection on Kimberlina Road	Yes	Yes	Water Supply Reliability Operational flexibility Enhances Exchanges Enhances GW Levels	**CEQA not completed;** Project R/W have not been acquired; Preliminary design completed; Ready for construction in 2008.	Tier 1	1
18	Shafter-Wasco/Semitropic Interconnection on Madera Avenue	Yes	Yes	Water Supply Reliability Operational flexibility Enhances Exchanges Enhances GW Levels	**CEQA not completed;** Project R/W have not been acquired; Preliminary design completed; Ready for construction in 2008.	Tier 1	1
19	South Inter-connection between North Kern/Shafter-Wasco	Yes	Yes	Water Supply Reliability Operational flexibility Enhances Exchanges Enhances GW Levels	**CEQA not completed;** Project R/W have not been acquired; Preliminary design completed; Ready for construction in 2008.	Tier 1	2
Non-Structural Projects							
20	Energy Usage	Yes	Yes	Water Supply Costs	This proposed measure is to evaluate opportunities as part of implementation of structural projects. Currently, Semitropic operates an energy program.	Tier 2	3
21	Joint Powers Authority	Yes	Yes	Reduce Potential Conflict Governance	This proposed measure is intended to help implement structural projects.	Tier 1	2
22	Institutional Agreements and Governance for IRWMP Implementation	Yes	Yes	Reduce Potential Conflict Governance	Remaining CEQA needs for implementation of projects is part of this Non-Structural project.	Tier 1	1
23	G-W Banking for Parties Outside of Poso Creek IRWMP Region	Yes	Yes	Water Supply Reliability Operational flexibility Enhances Exchanges Enhances GW Levels	**CEQA completed for Semitropic's 1.65 MAF Banking Program**; CEQA not completed for North Kern operating a G-W Bank for parties outside of Poso Creek IRWMP Region.	Tier 1	2
24	Optimize the Region's Pumping Lifts	Yes	Yes	Groundwater Levels	Conceptual planning phase. May be implamented in the long-term.	Tier 2	3
25	Enhance Groundwater Monitoring and/or Modeling	Yes	Yes	Monitoring Reduce Potential Conflict	This proposed measure is in support of on-going activities.	Tier 1	2
Enhance Environmental Resources							
26	Wildlife Improvement Projects in IRWMP Region	Yes	Yes	Wildlife Enhancement	Proposed projects to be integrated in conjunction with structural project 3a.	Tier 1	2
27	Environmental Water Management in Support of Wildlife Settlements Outside of IRWMP Region	Yes	Yes	Wildlife Enhancement Reduce Potential Conflict	Proposed measures are in support of water management actions in this Region that are in response to actions outside of this Region.	Tier 1	1
Enhance Flood Control							
28	Enhance Flood Control in the IRWMP Region with a Pipeline Connecting Friant-Kern Canal to Future Flood Structure on Poso Creek	Yes	Yes	Water Supply Costs Water Supply Reliability Flood Control	**CEQA not completed;** Currently in Planning phase.	Tier 2	3
Assist Economically Disadvantaged Communities							
29	Enhance Water Supply and Treatment Facilities	Yes	Yes	Water Supply Costs Water Supply Reliability	Proposed project descriptions to be included in IRWMP.	Tier 2	2

[1] Location of proposed project as shown in Figure ES-10 through ES-13.

[2] Multiple objectives include enhancing water supply reliability, groundwater levels, operation flexibility, reducing pumping cost, and supporting integration of other objectives.

[3] Level of readiness for implementation;
Tier 1 indicates project is ready for implementation within three years;
Tier 2 incidates project is not ready for implementation within 4-6 years;
Deferred indicates the project does not meet the pre-screening criteria, does not support plan integration and objectives, and/or will not be ready for implementation within 6 years.

[4] The Regional Management Group set Project Priorities for implementation as 1,2,3 and n/a to indicate the bundle of projects that can best meet the Regional priorities. A portion of Bundle 1 will be submitted as Proposition 50 and 84 Implementation Grant Proposals. Other funding opportunities, including local funding, will be pursued for Bundles 1,2 and 3.



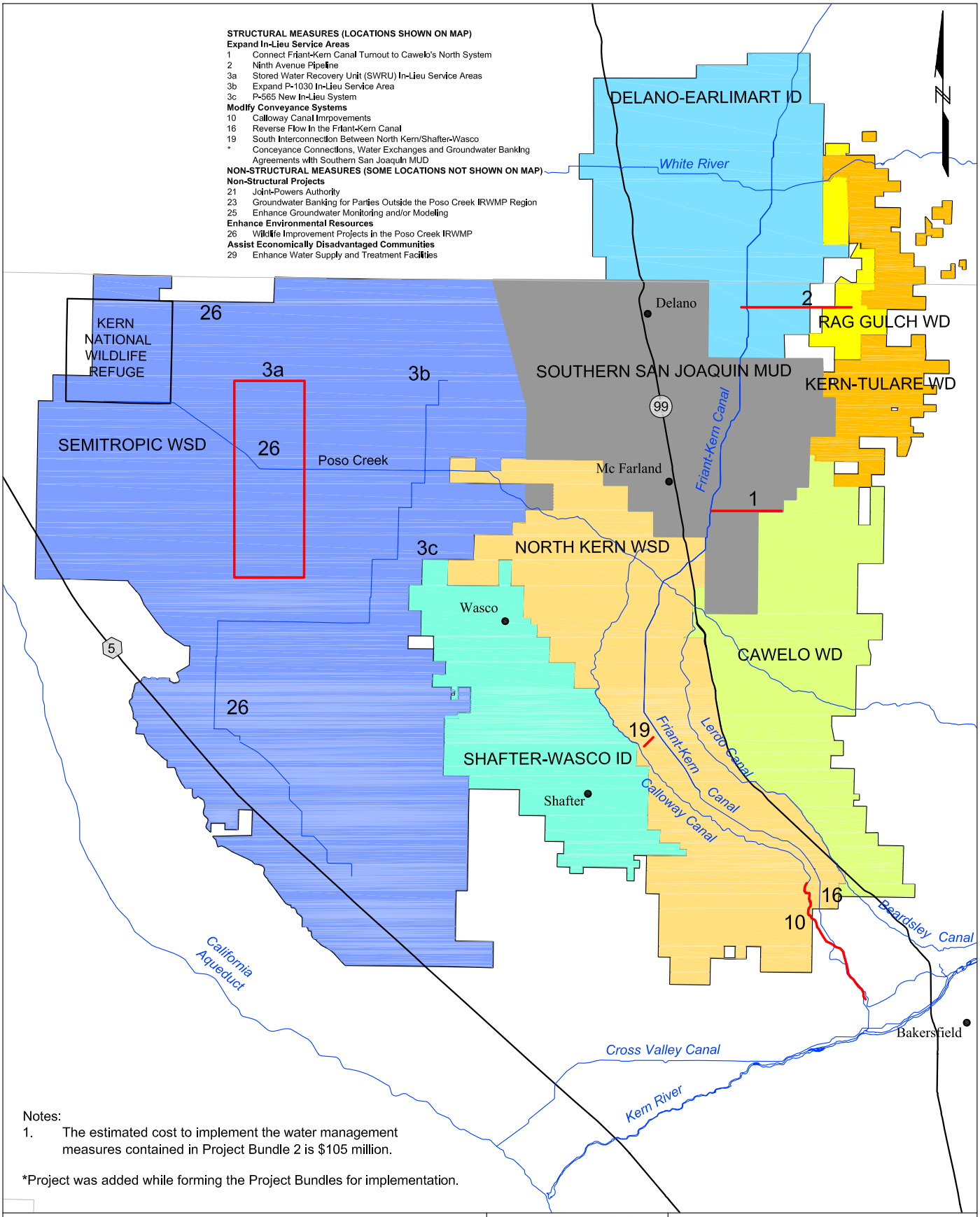
Notes:
1. The estimated cost to implement the water management measures contained in Project Bundle 1 is $135 million.
2. Project components in Bundle 1 will be the focus of proposition 50 and 84 funding grants.

*Project was added while forming the Project Bundles for implementation.

Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Bundle 1 Project Locations
Poso Creek Regional Management Group		June 2007 Figure ES-10

Table ES-3 Implementation Plan Project Bundle 1

Project ID / Location on Map[1]	Project Name	Project Sponsors	Ready for Implementation	Estimated Cost
Structural Projects to Increase Water Supply Reliability				
Expand Direct Recharge				
5	G-W Banking Conveyance Improvements to North Kern Recharge and Recovery Facilities	North Kern WSD Delano-Earlimart ID Kern-Tulare and Rag Gulch IRWMP Participants	**CEQA not completed;** Currently in the Design phase; Ready for construction by 2009.	$17.5 million
6	Pond Poso Spreading Grounds	Semitropic WSD	**CEQA completed**; Construction started in 2007; Phases to be completed in 2008-2009.	$12 million
Modify Conveyance Systems to enhance exchanges and delivery of supplies to in-lieu and direct absorptive capacity				
11	Calloway Canal to Cross Valley Canal Interconnection	North Kern WSD Cawelo WD IRWMP Participants	**CEQA completed**; Project R/W partly acquired; Project in Design phase.	Canal Alternative: $11.3M Pipeline Alternative: $17.3M
12	Calloway Canal to Lerdo Interconnection	North Kern WSD Cawelo WD IRWMP Participants	**CEQA completed**; Project R/W have been acquired; Project in Design phase.	$21.8M (500 cfs design estimate)
13	Multi-District Conveyance Facility	Semitropic WSD Shafter-Wasco ID IRWMP Participants	**CEQA not completed;** Depending on alternative, ready for construction in 2008.	$55M to $85M depending on alternative chosen; Some project components overlap with other IRWMP projects
14	North Inter-connection between North Kern/Shafter-Wasco	North Kern WSD Shafter-Wasco ID IRWMP Participants	**CEQA completed;** Construction started in 2007.	$1.14 million
17	Shafter-Wasco/Semitropic Interconnection on Kimberlina Road	Shafter-Wasco ID Semitropic WSD IRWMP Participants	**CEQA not completed;** Project R/W have not been acquired; Preliminary design completed; Ready for construction in 2008.	$12.2 million
18	Shafter-Wasco/Semitropic Interconnection on Madera Avenue	Shafter-Wasco ID Semitropic WSD IRWMP Participants	**CEQA not completed;** Project R/W have not been acquired; Preliminary design completed; Ready for construction in 2008.	4.8 million
*	Evaluate Shafter-Wasco System Improvements to Convey Water to the Calloway Canal	Shafter-Wasco ID IRWMP Participants	**CEQA not completed;** Project R/W have not been acquired.	Not estimated
Non-Structural Projects				
22	Institutional Agreements and Governance for IRWMP Implementation	IRWMP Participants	Remaining CEQA needs for implementation of projects is part of this Non-Structural project.	Cost will vary depending on the level of effort put into each task
Enhance Environmental Resources				
27	Environmental Water Management in Support of Wildlife Settlements Outside of IRWMP Region	Delano-Earlimart ID Shafter-Wasco ID IRWMP Participants	Proposed measures are in support of water management actions in this Region that are in response to actions outside of this Region.	The costs of this project is uncertain; this project is in response to loss of historical supplies from outside this Region.
[1] Location of proposed project as shown in Figure ES-10			Total	~ 135 million
* Project was added while forming the Project bundles for implementation.				



Notes:

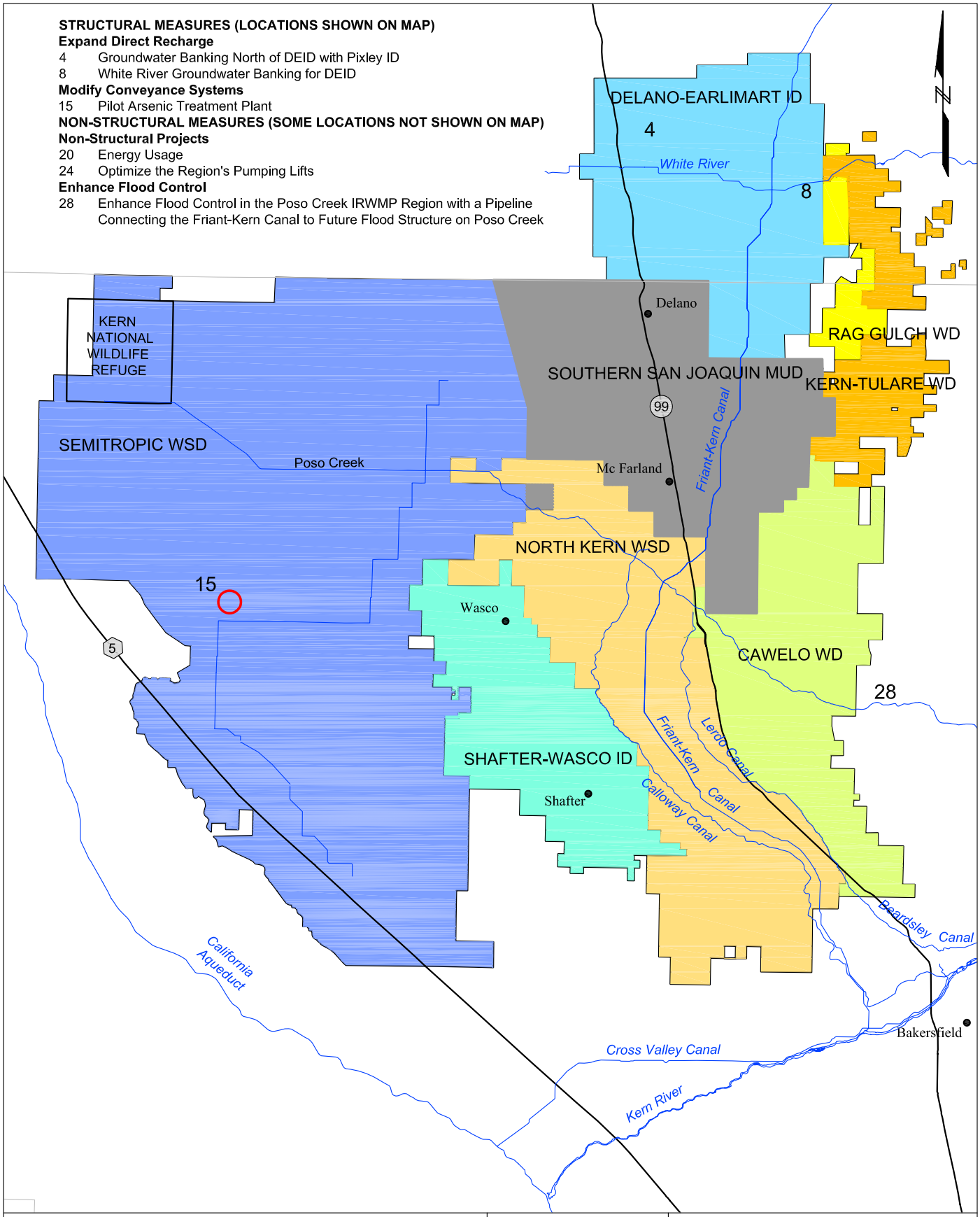
1. The estimated cost to implement the water management measures contained in Project Bundle 2 is $105 million.

*Project was added while forming the Project Bundles for implementation.

Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Bundle 2 Project Locations
Poso Creek Regional Management Group		June 2007 Figure ES-11

Table ES-4 Implementation Plan Project Bundle 2

Project ID / Location on Map[1]	Project Name	Project Sponsors	Ready for Implementation	Estimated Cost
Structural Projects to Increase Water Supply Reliability				
Expand In-Lieu Service Areas				
1	Connect Friant-Kern Canal Turnout to Cawelo's North System	Cawelo WD Kern-Tulare WD	**CEQA not completed;** Ready for construction by 2008.	$4.3 million
2	Ninth Avenue Pipeline	Kern-Tulare WD Rag Gulch WD	**CEQA not completed;** Ready for construction by 2009.	$8 million
3a	Stored Water Recovery Unit (SWRU) In-Lieu Service Areas	Semitropic WSD	**CEQA completed**; Design will be completed by 2008; Project R/W have not been acquired; Phase 2 ready for construction in 2008.	System X = $14 millon System Y = $10.2 million System Z = $17.9 million
3b	Expand P-1030 In-Lieu Service Area	Semitropic WSD	**CEQA completed**; Project R/W have not been acquired; Ready for construction by 2008	$5 million
3c	P-565 New In-Lieu Service Area	Semitropic WSD	**CEQA completed**; Final design completed; Ready for construction in 2007; Part of the R/W has been acquired.	$15 million
Modify Conveyance Systems to enhance exchanges and delivery of supplies to in-lieu and direct absorptive capacity				
10	Calloway Canal Improvements	North Kern WSD Cawelo WD	**CEQA completed**; Project R/W have been acquired; Project in Design phase.	$29.9M
16	Reverse Flow in the Friant-Kern Canal	IRWMP Participants	**CEQA needed for the two phases**: Intertie and flow structure improvements; Ready for construction: Interie in 2008 and structure improvements by 2009.	> $1 million
19	South Inter-connection between North Kern/Shafter-Wasco	North Kern WSD Shafter-Wasco ID	**CEQA not completed;** Project R/W have not been acquired; Preliminary design completed; Ready for construction in 2008.	$600,000
*	Conveyance Connections, Water Exchanges and Groundwater Banking Agreements with Southern San Joaquin MUD	SSJMUD IRWMP Participants	**CEQA not completed;** Project R/W have not been acquired.	Not estimated
Non-Structural Projects				
21	Joint Powers Authority	IRWMP Participants	This proposed measure is intended to help implement structural projects.	Not estimated
23	G-W Banking for Parties Outside of Poso Creek IRWMP Region	IRWMP Participants	**CEQA completed for Semitropic's 1.65 MAF Banking Program**; CEQA not completed for North Kern operating a G-W Bank for parties outside of Poso Creek IRWMP Region.	~ $1 million
25	Enhance Groundwater Monitoring and/or Modeling	IRWMP Participants	This proposed measure is in support of on-going activities.	Not estimated
Enhance Environmental Resources				
26	Wildlife Improvement Projects in IRWMP Region	North West Kern RCD Semitropic WSD	Proposed projects to be integrated in conjunction with structural project 3a.	To be dertermined
Assist Economically Disadvantaged Communities				
29	Enhance Water Supply and Treatment Facilities	IRWMP Participants	Proposed project descriptions to be included in IRWMP.	To be dertermined
[1] Location of proposed project as shown in Figure ES-11			Total	~105 million
* Project was added while forming the Project bundles for implementation.				

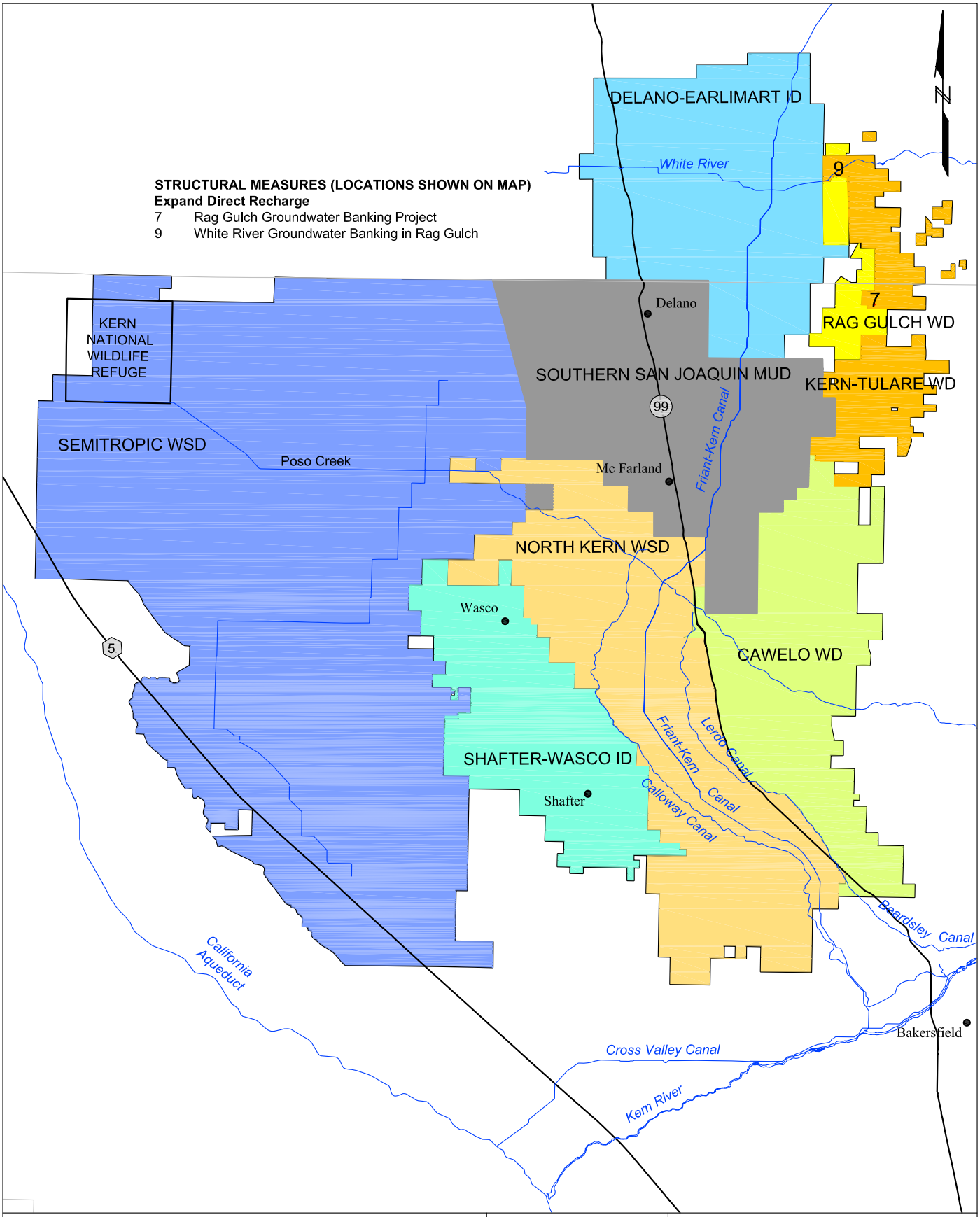


Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Bundle 3 Project Locations
Poso Creek Regional Management Group		June 2007 Figure ES-12

Table ES-5 Implementation Plan Project Bundle 3

Project ID / Location on Map[1]	Project Name	Project Sponsors	Ready for Implementation	Estimated Cost
Structural Projects to Increase Water Supply Reliability				
Expand Direct Recharge				
4	G-W Banking North of DEID with Pixley ID	Delano-Earlimart ID	**CEQA not completed;** Feasibility study started in 2007.	To be dertermined
8	White River G-W Banking for DEID	Delano-Earlimart ID	**CEQA not completed;** Feasibility study started in 2007.	To be dertermined
Modify Conveyance Systems to enhance exchanges and delivery of supplies to in-lieu and direct absorptive capacity				
15	Pilot Arsenic Treatment Plant	Semitropic WSD	**CEQA completed**; Planning study completed; Conceptual design completed; Ready for construction in 2008.	$20.5 million
Non-Structural Projects				
20	Energy Usage	Semitropic WSD	This proposed measure is to evaluate opportunities as part of implementation of structural projects. Currently, Semitropic operates an energy program.	Not estimated
24	Optimize the Region's Pumping Lifts	IRWMP Participants	Conceptual planning phase. May be implamented in the long-term.	Not estimated
Enhance Flood Control				
28	Enhance Flood Control in the IRWMP Region with a Pipeline Connecting Friant-Kern Canal to Future Flood Structure on Poso Creek	Kern County Water Agency	**CEQA not completed;** Currently in Planning phase.	Not estimated

[1] Location of proposed project as shown in Figure ES-12



Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Bundle Deferred Project Locations
Poso Creek Regional Management Group		June 2007 Figure ES-13

Table ES-6 Implementation Plan - Project Bundle Deferred

Project ID / Location on Map[1]	Project Name	Project Sponsors	Ready for Implementation	Estimated Cost
Structural Projects to Increase Water Supply Reliability				
Expand Direct Recharge				
7	Rag Gulch G-W Banking Project	Kern-Tulare WD	CEQA not completed; Feasibility study completed in 2006; Construction of project is not planned in near-term.	$2 million
9	White River G-W Banking in Rag Gulch	Rag Gulch WD	CEQA not completed; Feasibility study completed in 2007.	$2.3 million
				Total Cost ~ 4.5 million

[1] Location of proposed project as shown on Figure ES-13

Implementation Projects for Near Term Funding Proposals

The projects that are proposed for near-term funding opportunities are shown on Figure ES-14 and listed in Table ES-7. The estimated cost to implement these projects is in the order of $65 million, however, as the projects proceed through design, the RMG will consider implementing only some of the project components of Project No. 5, thus, reducing the cost to implement the whole group of projects. In addition, the RMG expects to implement components of these projects in phases as funding opportunities are secured to match local contributions.

Implementation of the proposed Plan water management measures will result in multiple benefits to the Region, as listed.

- Improved water supply reliability.
- Added flexibility in operations, allowing for more exchanges and banking arrangements.
- Improved *wet-year* and *dry-year* water management.
- Reduced groundwater pumping lifts for growers.
- Improved water supply reliability and groundwater levels for economically-disadvantaged communities.

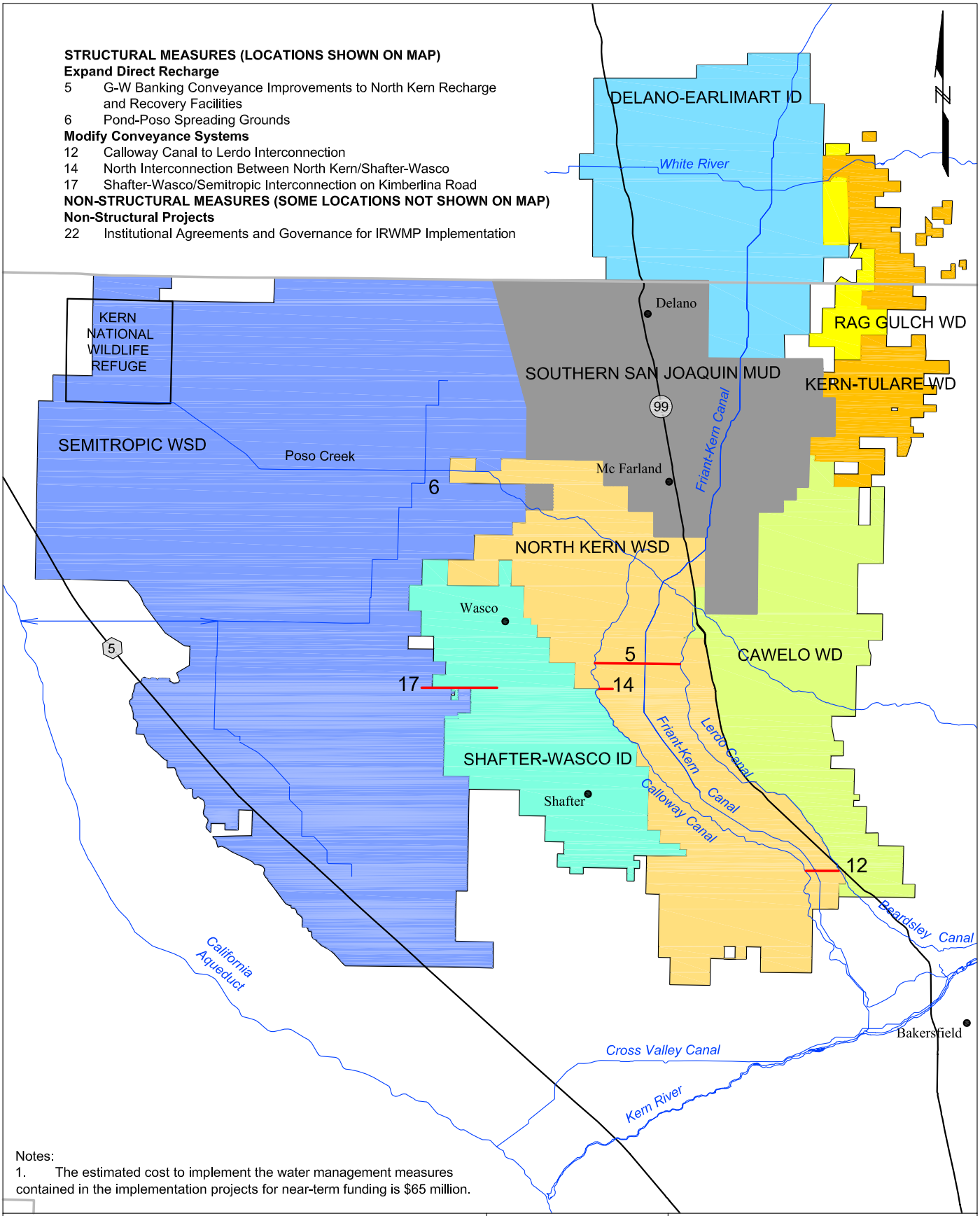
Program benefit expected for each RMG district, regional benefits, and operational objectives are discussed in Chapter 9 of this Plan.

Implementation Plan - Technical Merit

This Plan has an operational objective to recover the projected loss to surface supplies as compared to historical supplies by implementing non-structural and structural components of the Plan. The projected loss to surface supplies is based on technical analysis of the surface supplies and operational changes imposed on the Region.

Financial Plan for Implementation

It is anticipated that implementation funding will be some combination of local monies and grant programs. Local funding would include construction of facilities included in the Plan and in-kind services. Individual members of the RMG have completed numerous capital improvement projects and have formed many agreements for operation of such facilities. With regard to grant programs, Proposition 50 (Round 2) and Proposition 84 implementation grants have been identified by the RMG as the near-term grant funding opportunities. The RMG will also explore third-party banking programs as a source of revenue, i.e., involving banking partners who are from outside of the Region.



Notes:
1. The estimated cost to implement the water management measures contained in the implementation projects for near-term funding is $65 million.

Poso Creek Integrated Regional Water Management Plan	GEI Consultants Bookman-Edmonston Division	Implementation Project Locations for Near-Term Funding Proposals
Poso Creek Regional Management Group		July 2007 Figure ES-14

Table ES-7 Implementation Projects for Near-Term Funding Proposals

Project ID / Location on Map[1]	Project Name	Project Sponsors	Ready for Implementation	Estimated Cost
Structural Projects to Increase Water Supply Reliability				
Expand Direct Recharge				
5	G-W Banking Conveyance Improvements to North Kern Recharge and Recovery Facilities	North Kern WSD Delano-Earlimart ID Kern-Tulare and Rag Gulch IRWMP Participants	**CEQA not completed;** Currently in the Design phase; Ready for construction by 2009.	$17.5 million
6	Pond Poso Spreading Grounds	Semitropic WSD	**CEQA completed**; Construction started in 2007; Phases to be completed in 2008-2009.	$12 million
Modify Conveyance Systems to enhance exchanges and delivery of supplies to in-lieu and direct absorptive capacity				
12	Calloway Canal to Lerdo Interconnection	North Kern WSD Cawelo WD IRWMP Participants	**CEQA completed**; Project R/W have been acquired; Project in Design phase.	$21.8M (500 cfs design estimate)
14	North Inter-connection between North Kern/Shafter-Wasco	North Kern WSD Shafter-Wasco ID IRWMP Participants	**CEQA completed;** Construction started in 2007.	$1.14 million
17	Shafter-Wasco/Semitropic Interconnection on Kimberlina Road	Shafter-Wasco ID Semitropic WSD IRWMP Participants	**CEQA not completed;** Project R/W have not been acquired; Preliminary design completed; Ready for construction in 2008.	$12.2 million
Non-Structural Projects				
22	Institutional Agreements and Governance for IRWMP Implementation	IRWMP Participants	Remaining CEQA needs for implementation of projects is part of this Non-Structural project.	~ $500,000
[1] Location of proposed project as shown on Figure ES-14			Total	~ 65 million

How Will the IRWMP be Implemented?

Implementation responsibilities include the following activities:

- The RMG and other interested parties/stakeholders will continue to participate in the regularly scheduled monthly meetings as the Plan is implemented.
- Semitropic will continue to act as the lead agency for the RMG as the Plan is implemented.
- Participation in a Joint Powers Authority, formed in the context of the Proposition 84 funding area, is anticipated.
- Coordination of the RMG with state and federal agencies.
- Communication with other entities outside the Region.
- Work with the appropriate local, state, and federal agencies to prepare and complete necessary environmental documents as identified in the implementation projects for near-term funding proposals.
- Pursue opportunities to fund the projects and overall program consistent with the Plan.

Implementation Projects Schedule

An implementation schedule is projected for each of the selected implementation projects for near term funding proposals, as shown on Figure ES-15. Implementation schedules for the remaining projects contained in Bundles 1, 2, 3, and Deferred are not shown in the Plan since they are not anticipated to be the focus of near- term funding proposals. Implementation schedules that will be included in proposals for each funding opportunity will be detailed versions of the schedules shown in this Plan. Inasmuch as the RMG and stakeholders are already implementing some of these projects, it is anticipated that these would be applied as *in-kind* funding match in future proposals.

Figure ES-15 Implementation Project Schedules for Near-Term Funding Proposals

Project No. 5 — **G-W Banking Conveyance Improvements to North Kern Recharge and Recovery Facilities**

	2007				2008				2009				2010				Notes
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
CEQA/NEPA Compliance																	1
Project Design and Bidding																	2
Acquisition of Land/Right-of-Way																	
Acquisition of Permits																	
Construction																	
Monitoring																	
Performance Measures																	

[1] Project CEQA has not been completed

[2] Project currently in the Design phase

Project No. 6 — **Pond Poso Spreading Grounds**

	2007				2008				2009				2010				Notes
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
CEQA/NEPA Compliance-**Completed**																	1
Project Design and Bidding																	
Acquisition of Land/Right-of-Way-**Completed**																	
Acquisition of Permits																	
Construction																	2
Monitoring																	
Performance Measures																	

[1] Project CEQA has been completed

[2] Construction started in 2007 amd phases will be completed in 2008 and 2009

[3] Schedule described above is for the first phases being built, later phases will be built in 2008 and 2009

Project No. 12 — **Calloway Canal to Lerdo Interconnection**

	2007				2008				2009				2010				Notes
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
CEQA/NEPA Compliance - Completed																	1
Project Design and Bidding																	
Acquisition of Land/Right-of-Way																	
Acquisition of Permits																	
Construction																	2
Monitoring																	
Performance Measures																	

[1] Overall Project CEQA has been completed

[2] Construction started in 2007

Project No. 14 — **North Inter-connection between North Kern/Shafter-Wasco**

	2007				2008				2009				2010				Notes
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
CEQA/NEPA Compliance - Completed																	1
Project Design and Bidding																	2
Acquisition of Land/Right-of-Way																	3
Acquisition of Permits																	
Construction																	4
Monitoring																	
Performance Measures																	

[1] Overall Project CEQA has been completed

[2] Preliminary design completed

[3] Have not acquired all R/W, but cooperating with landowners

[4] Ready for construction by 2009

Project No. 17 — **Shafter-Wasco/Semitropic Interconnection on Kimberlina Road**

	2007				2008				2009				2010				Notes
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
CEQA/NEPA Compliance																	1
Project Design and Bidding																	2
Acquisition of Land/Right-of-Way																	3
Acquisition of Permits																	
Construction																	
Monitoring																	
Performance Measures																	

[1] Overall Project CEQA has not been completed

[2] Preliminary design completed

[3] Project R/W have not been acquired

Figure ES-15 Implementation Project Schedules for Near-Term Funding Proposals

Project No. 22 **Institutional Agreements and Governance for IRWMP Implementation**

	2007				2008				2009				2010				Notes
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	
Programmatic CEQA/NEPA for Water Exchange/Banking Between RMG Districts																	
Groundwater Banking Agreements Between Semitropic and/or North Kern and other RMG Districts																	
Exchange Agreements Between DEID and Shafter-Wasco (CVP-Friant) and RMG Districts																	
Exchange Agreements Between KT & RG (CVP-Delta) and RMG Districts																	
Prepare Water Quality Pump-in Criteria for Friant-Kern Canal and the California Aqueduct																	
Complete Adoption of all the RMG's Updated Groundwater Management Plans.																	
Complete CEQA documents for structural projects # 5 and #17																	

Title:
Implementing the Poso Creek Integrated Regional Water Management Plan

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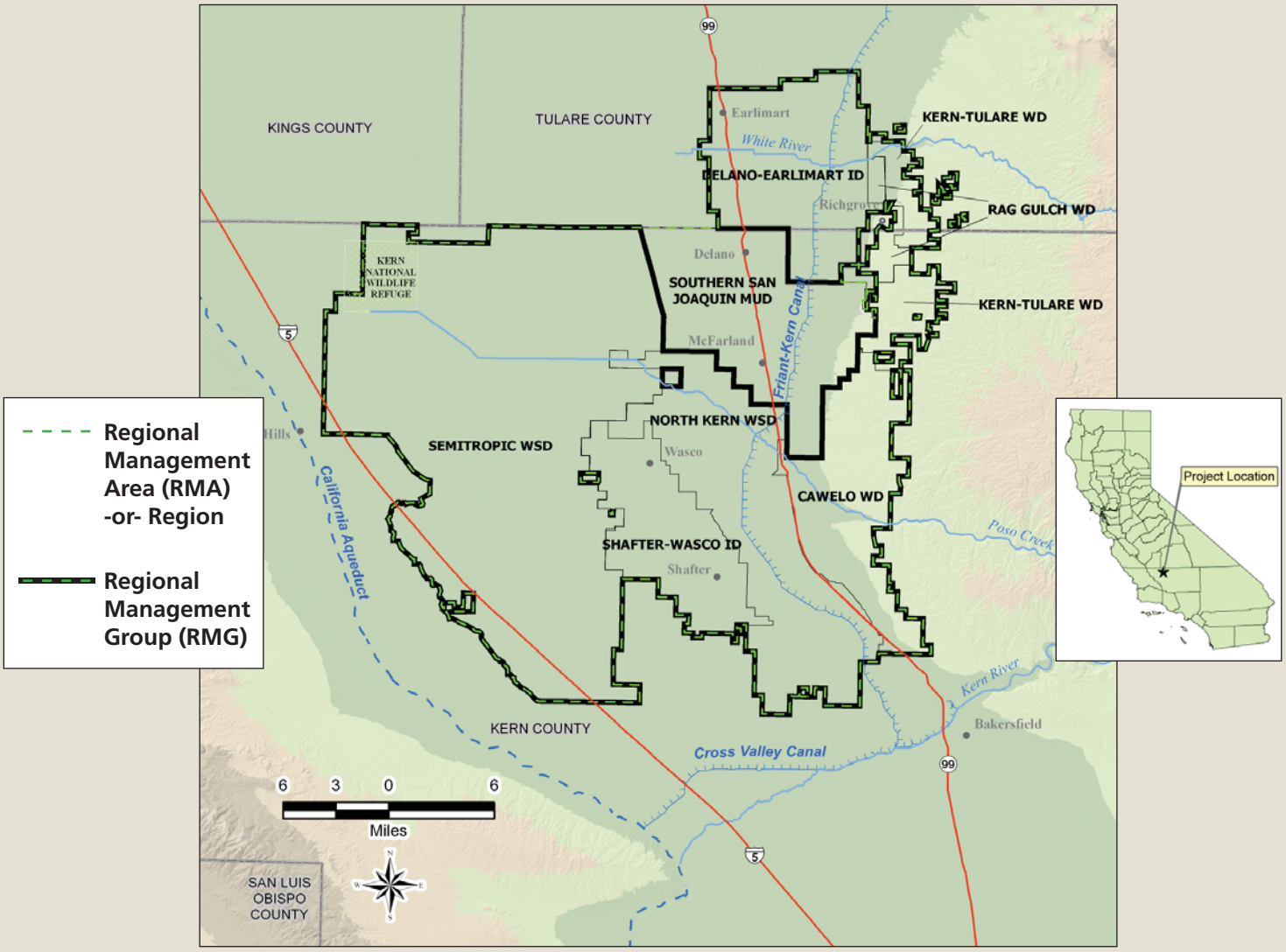

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