
Integrated Regional Water Management Plan for the San Joaquin Valley of California

Executive Summary	iii
1.0 Introduction	1
1.1 Integrated Regional Water Management Planning Regions	3
1.2 Integrated Regional Water Management Planning Legislation and Funding.....	3
1.2.1 Senate Bill 1672 (2002).....	5
1.2.2 Proposition 50 (2002)	5
1.2.3 Proposition 1E (2006)	5
1.2.4 Proposition 84 (2006)	5
1.2.5 Proposition 1 (2014)	5
2.0 Integrated Regional Water Management Planning in the San Joaquin Valley	7
2.1 The San Joaquin River Hydrologic Basin Integrated Regional Water Management Plans	8
2.1.1 East Contra Costa County	8
2.1.2 Westside San Joaquin (San Joaquin River Basin portion).....	9
2.1.3 Madera	11
2.1.4 Yosemite-Mariposa	13
2.1.5 Merced	13
2.1.6 Tuolumne-Stanislaus	14
2.1.7 East Stanislaus	15
2.1.8 Eastern San Joaquin.....	16
2.1.9 Mokelumne-Amador-Calaveras (MAC)	17
2.1.10 Summary of Other IRWM Areas with Portions in the San Joaquin River Region	18
2.2 Tulare Lake Hydrologic Basin IIRWMPs (Tulare/Kern funding area)	18
2.2.1 Westside-San Joaquin (Tulare Lake Basin portion)	19
2.2.2 Kings Basin Water Authority.....	19
2.2.3 Kaweah River	21
2.2.4 Tule River	22
2.2.5 Poso Creek	22
2.2.6 Kern County	23
2.2.7 Southern Sierra	24

3.0	Regional Group Activities	26
3.1	Tulare Lake Basin Regional Group	26
3.2	Sierra Regional Group Activities	26
4.0	Additional Water Management Actions Involving the San Joaquin Valley	27
4.1	Biological Opinions under the Endangered Species Act 2009 (BIOPS).....	27
4.2	Delta Stewardship Council 2009 (DSC)	27
4.3	Water Measurement 2009	28
4.4	California Statewide Groundwater Elevation Monitoring 2009.....	28
4.5	State Water Resources Control Board Recycled Water Policy 2009	28
4.6	Central Valley Flood Protection Plan 2009.....	29
4.7	Irrigated Lands Regulatory Program 2012 (ILRP)	29
4.8	The Right to Clean Drinking Water Act of 2012.....	30
4.9	Clean Water Action Plan 2014.....	30
4.10	Sustainable Groundwater Management Act 2014 (SGMA).....	30
4.11	California Drought Emergency Declaration 2015	31
5.0	Summary Findings	33
6.0	The Gaps	34
7.0	Recommendations for Future Management	35
8.0	Conclusion	37
9.0	References	38

Appendices

A	Acronyms
B	Framework for the Implementation of Water Management Planning Report
C	Integrated Regional Water Management Planning Funding
D	Alternatives for Institutional Development of SJV Watershed Councils

Report on an Integrated Regional Water Management Plan for the San Joaquin Valley of California

Executive Summary

Water is the primary economic driver in the San Joaquin Valley because it supports some of the most prolific agricultural production in the state and nation. However, water availability in the San Joaquin Valley, as well as California as a whole, is subject to a high degree of variability and is part of a vast interconnected system of infrastructure that was built in an attempt to alleviate this variability. The system includes numerous dams, canals, pipelines and institutional arrangements and legal requirements that assist in delivering water but must also respect competing uses for the water. New strategies and investments have been made to attempt to improve both water use efficiency and reliability in regional settings as a complementary process to larger-scale problem-solving.

A major investment has been made through California voter-approved general obligation bonds to incentivize regional water infrastructure and management solutions that improve self-sufficiency, reduce water use impacts and support environmental protection and restoration. The program, put into California water statutes in 2002, and managed by the California State Department of Water Resources (DWR), is called **Integrated Regional Water Management Planning (IRWMP)**. This planning tool, along with other water management strategies, actions and activities that have emerged, were ultimately intended to be elevated to an aggregate effort for the entire San Joaquin Valley into a Valley-wide integrated water plan. The aggregate effort was included as a goal in federal legislation (PL 111-11, Section 10101). The legislation included funding for the California Water Institute (CWI) at California State University, Fresno to prepare a report on the Valley-wide activities.

Water management in the San Joaquin Valley currently consists of historical management, which includes all of the legal and institutional tools, combined with a significant number of new, additional targeted efforts. When combined, these tools and efforts provide a fairly comprehensive program designed to manage water and the impacts of this water usage. Some of the more important changes whose relatively recent adoption and impacts on water management in the Valley are appropriate to the time frame of this report include but are not limited to:

1. The Endangered Species Act revised Biological Opinions of 2008 and 2009 for the Sacramento-San Joaquin Delta – implementation plans of 2009 and beyond impact water exports south of the Delta
2. SBX 7-1 of 2009, formation of the Delta Stewardship Council and its responsibilities for co-equal goals of Delta ecosystem sustainability and water exports
3. SBX 7-6 , 2009, CASGEM, measurement requirements of depth to groundwater elevations by designated agencies

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4. SBX 7-7, 2009, water measurement requirements for water users, including urban and agricultural users
 5. California State Water Resources Control Board, Recycled Water Policy of 2009, salt and nutrient management plans required for water users over groundwater basins
 6. Central Valley Flood Protection Plan of 2009, standards and requirements for levees, setbacks and other protection facilities
 7. California Regional Water Quality Control Board, Central Valley Region, Irrigated Lands Regulatory Program, 2012 Update, includes assessment and protection of groundwater from water and materials applied to irrigated lands
 8. AB 658 of 2012, The Right to Clean Drinking Water Act, making clean drinking water the highest priority action for California water investments
 9. The California Water Action Plan of 2014, executive branch implementation plan priorities for water management
 10. The Sustainable Groundwater Management Act of 2014, local groundwater agencies required to develop sustainability plans, prevent undesirable results

After the sum of all the new requirements and efforts described in 1-10 is calculated, the questions that remain are:

- Will changes actions and combined strategies be sufficient to meet the future water management challenges of the San Joaquin Valley?
- Do we need to further evaluate our management system and find additional technical and institutional methods to obtain the optimum balance of sources, uses, impacts and support of the natural systems that provide the water?

Almost all of the new additions are in the early stages of their implementation and need to develop further to assess their management impacts. Therefore, developing a more comprehensive strategy for the entire San Joaquin Valley remains only a goal at this time. Nonetheless, the introduction of integrated regional water management planning is an important tool that has fostered significant improvements in water management by aggregating partners in sub-regions and implementing activities that provide lasting improvements.

Nineteen IRWM regions were organized in the San Joaquin Valley under the State program and they all prepared plans in accordance with the State requirements. The number one water issue found in the assessments for the regions was the lack of water reliability, either for surface water and groundwater, or both, depending on the location of the region. They also developed project lists to address their local needs. They submitted some of their projects for grant funding and many were successful in that endeavor resulting in significant investments in water management activities throughout the San Joaquin Valley. Those efforts provide a glimpse of the value of integrating water data, conditions, facilities, goals and outcomes in terms of synergies that were not available to the individuals but collectively provided the necessary structure to achieve the regional goals. Our recommendation is to

continue this trend of integration strategies learned in the San Joaquin Valley over the years covered during this project (2010 – April 2016) where the integrated regional water management groups developed relationships, information and synergies to solve agreed-upon regional problems. The integrated regional water management agencies in the San Joaquin Valley have shown that cooperation and collaboration focused on problem-solving can provide significant benefits for all parties. Prior experience suggests the individual water management agencies may have only focused on their own needs. Many of the agencies within these regions did not engage in productive dialogue. Since the formation and implementation of the State-sponsored integrated regional water management planning program, new organizations have developed more permanent institutions, relationships and activities that have given them the capacity to address broader water resource management problems. An example of such capacity is the ability to assist in response to the recently adopted State groundwater law (2014). New groundwater management institutions are forming in the Valley but they share some of the same people as the integrated planning regions and the regions, thus providing a useful vehicle for developing and investing in projects needed to meet the goals of future groundwater management demands.

Substantial portions of the landscape, water uses and needs were not a significant part of the integration and management strategies. Specifically, the integration activities did not adequately include sufficient information from large swaths of Valley watersheds such as upper montane, rangelands and other open space. Instead the process and projects were primarily focused on the already intensely built environment, especially the systems used for agriculture and cities. In essence, most efforts have been targeted on water use or needs. The resulting lack of information and integration of management plans for water sources impedes the development of comprehensive water budgets for the regions. Without water source management and water budgets, uncertainty will likely continue and water sustainability will remain an elusive goal.

Future efforts need increased technical, legal and institutional investigation efforts on water sources and the landscapes that provide the sources. The entire watershed areas, their terrestrial and aquatic ecosystems and other critical portions of the landscape represent a gap that must be included in future organizational schemes inasmuch as the lack of clear and achievable goals with measureable outcomes for natural water uses will likely continue to add to the uncertainty of water availability for direct uses. The California Water Institute recommends augmenting integrated regional water management planning needs with integrated basin watershed planning and management that includes advanced system oversight and professional management structures that can accomplish the work of holistically assessing and managing all of the natural landscapes, the water sources and all the uses with an institutional arrangement that includes the entire watershed system.

A role model for such an institutional structure does exist in the Valley. It has most of the elements in place for systematic analysis of all the issues within the region that could be replicated for the balance of the watersheds in the San Joaquin Valley. The model is the Delta Stewardship Council (DSC), Advisory Groups and a Delta Watermaster. The DSC is developing the systematic scientific analysis of the

conditions – hydrological, ecosystem and landscape – and the resulting issues that lead to comprehensive professional management of the entire system. The Delta Watermaster coordinates the authorized water uses in concert with the water conditions and competing needs (professional oversight of water uses). These Delta-centric efforts are not only providing a new institutional framework that could inform other efforts, but the results in the Delta have a direct impact on water availability in the San Joaquin Valley. This is done principally through the DSC's charge to optimize future Sacramento-San Joaquin River Delta land and water conditions in order meet Delta ecosystem needs yet also allow water to be exported to the Valley and beyond.

In summary, the greatest challenge for the San Joaquin Valley is to determine what the Valley watershed systems can support after all the water sources, needs and uses are calculated and management strategies optimized. The San Joaquin Valley could also benefit from additional institutional mechanisms to fairly administer the findings and recommended management strategies of that assessment. A logical institutional strategy are two Watershed Councils (San Joaquin River Basin and the Tulare Basin), with comprehensive Advisory Groups and Basin Watermasters that include water source management and landscape science as well as water use management in the duties and strategies of these Watershed Councils and all the support elements. The San Joaquin Valley would then have a fully integrated water plan.

Report on an Integrated Regional Water Management Plan for the San Joaquin Valley of California

1.0 Introduction

Water is the cornerstone of success for human populations and the natural environment. People need water for their homes and businesses, especially for the largest component of the San Joaquin Valley economy, agriculture. The natural environment in the San Joaquin Valley also has many components – some requiring significant water resource availability, others requiring much less – but the ecosystems and environmental conditions represent the overall well-being of the Valley. They are barometers that, when in good condition, allow for human uses of water. Managing these complex issues, whether managing the human water uses and their impacts or managing the environment to make sure the systems can continue to provide the water and values complementary to the human environment, is the largest contemporary challenge facing the citizens of the San Joaquin Valley in the early 21st century.

A significant part of the challenge is that the competing uses (agricultural, domestic, environmental, industrial) for water all over California has forced a critical review of the uses in the San Joaquin Valley, especially of water imported from watersheds outside of the Valley. Most recently the supplies have been constrained not only by competition but natural variability of the hydrologic cycle over much of California, notably an intense, sustained drought. One result of these challenges has been a process of re-evaluation of needs and uses within the Valley as well as incentives to optimize local sources and uses. The incentive process involves improving the knowledge about the sources followed by exploration of efficiencies and organizing institutional partners to develop solutions to optimize the uses. After local optimization is exhausted the work also involves justifying and, to the extent feasible, reducing the demands for imported water, especially water that is imported and must pass through the Sacramento-San Joaquin River Delta system. The program used for these activities is known as Integrated Regional Water Management (IRWM). This report describes and summarizes the implementation of IRWM in the San Joaquin Valley from 2010 to early 2016.

The development of integrated regional water management planning was initiated when the California Legislature passed, and Governor Gray Davis signed Senate Bill 1672 in 2002. The law amended the California Water Code in Division 6, Part 2.2, Sections 10530 et seq to encourage local agencies to work cooperatively to manage their available local and imported water supplies to improve the quality, quantity, and reliability of those supplies. The formation and implementation of the regions and plans

were further supported by Proposition 50 Water Code Section 26.5, a bond initiative developed as a complement to the law. Proposition 50 was approved by California voters in November of 2002. That Bond Act contained funding for the implementation of the law.

The effort to document and foster IRWM at the regional and basin scale was commissioned by several members of the San Joaquin Valley Congressional delegation (Congressmen Cardoza, Costa and Radanovich) under the auspices of the Omnibus Public Land Management Act of 2009. That Act, in Title X, Part II Section 10101 provided for development of a water plan report on “integrated water management” for the eight counties in the San Joaquin Valley. The project was allocated funds through the legislation subject to their appropriation and inclusion in the budget for the offices of the United States Department of Interior, Bureau of Reclamation Mid-Pacific Region (Bureau). The Bureau contracted with California State University Fresno - California Water Institute (CWI) in September 2010. Over the five-year project, CWI: coordinated efforts between existing and emerging IRWM regions; shared information amongst the IRWM regions; worked to integrate the resulting IRWM regional plans (IRWMPs) into larger units (i.e. inter-regional, basin or Valley-wide); communicated using the most appropriate vehicle (i.e., conference calls, webinars, meetings, forums, conferences) and facilitated or described various water management strategies of value to the planning areas.

Not all of the proposed project funds were allocated to the Bureau. The project was completed to the extent feasible as the result of the extraordinary efforts of the Mid-Pacific Region. By using un-expended resources from other projects, the Bureau was able to provide roughly two-thirds of the original one million dollar budget. The California Water Institute gratefully acknowledges the staff of both the Fresno and Sacramento offices of the Mid-Pacific Region who provided support for the project and assisted in finding the ongoing funding.

Some of the goals and strategies for developing a successful IRWM effort in the San Joaquin Valley were originally outlined in a “framework” document financed by a grant from the California Partnership for the San Joaquin Valley (Partnership). The framework was adopted by the Partnership Board of Directors as their recommended strategy for all eight counties and 62 cities in October 2009. The *Framework for the Implementation of Water Management Planning* report is included in Appendix B.

The California Water Institute appreciates the opportunity to present this report on behalf of the San Joaquin Valley. It constitutes both a project summary and a progress report of the work because the original goal, a San Joaquin Valley Integrated Water Plan is not yet a reality. Major changes in the physical conditions of water, most notably a significant drought, concurrent with numerous rapid significant policy changes in water law and management in California have occurred over the course of this project. The impact of these changes will have an influence on a Valley-wide plan far beyond what the conditions and policies were when the project started. Nonetheless, those changes are reflected in the work presented and recommendations have been made to attain the original goals of a Valley-wide plan. This report summarizes the water management efforts in the San Joaquin Valley over the course of

this project as well as the remaining gaps and some alternative future strategies to potentially bridge these gaps.

The composite of CWI efforts during the project can be categorized into two major areas: organizational activities and/or structural activities related to IRWM and, issue-management activities that fit under the umbrella of the IRWM plans. The organizational aspects included activities and meetings that supported the formation, development, structure, financing and information management aspects of IRWM regions. The issue-based activities included water resource management strategies the IRWMs regions must consider in their planning activities such as: water supply reliability, water quality management, flood management, watershed management, environmental restoration and enhancement, disadvantaged community sustainability and climate change impacts on water management strategies.

1.1 Integrated Regional Water Management Planning Regions

In the thirteen years since Senate Bill 1672 was passed, forty-eight IRWM planning regions have formed in California and received approval (regional acceptance) from the California Department of Water Resources making them eligible to apply for grants (Figure 1, CA DWR - 2014). The project area covered the San Joaquin Valley which is comprised of two hydrologic basins or watersheds: the San Joaquin River Basin and the Tulare Basin. The Valley has nineteen approved IRWM regional plan organizations in the two basins – twelve in the San Joaquin and seven in the Tulare. Figure 1 shows the IRWM planning regions in California (DWR, 2014). Planning regions in the San Joaquin Valley will be identified and discussed in detail in Section 2.0.

1.2 Integrated Regional Water Management Planning Legislation and Funding

Funding to implement Integrated Water Management Planning has come from several sources including voter-approved propositions [Proposition 50 in 2002, Proposition 84 of 2006 (Public Resources Code Section 43), Proposition 1E in 2006, and Proposition 1 in 2014 (Water Code Division 26.7)]. Since the inception of Proposition 50 in 2002 through December 2014, the IRWM Grant Program has funded over 700 implementation projects statewide (CA DWR, 2015). Notice of Awards is included in Appendix C.

The projects eligible for grant funds went to DWR for review under a solicitation process with specific requirements that had to be met. Chief among the requirements were minimum standards for the plans themselves and a significant matching investment by the plan proponents. In most cases every list of projects proposed for submittal had a significant funding match. As a result, the total investment in IRWM projects in the regions described in this report is substantially higher than the amount summarized as the State portion.

Integrated Regional Water Management
48 IRWM Planning Regions
Updated: February 13, 2014

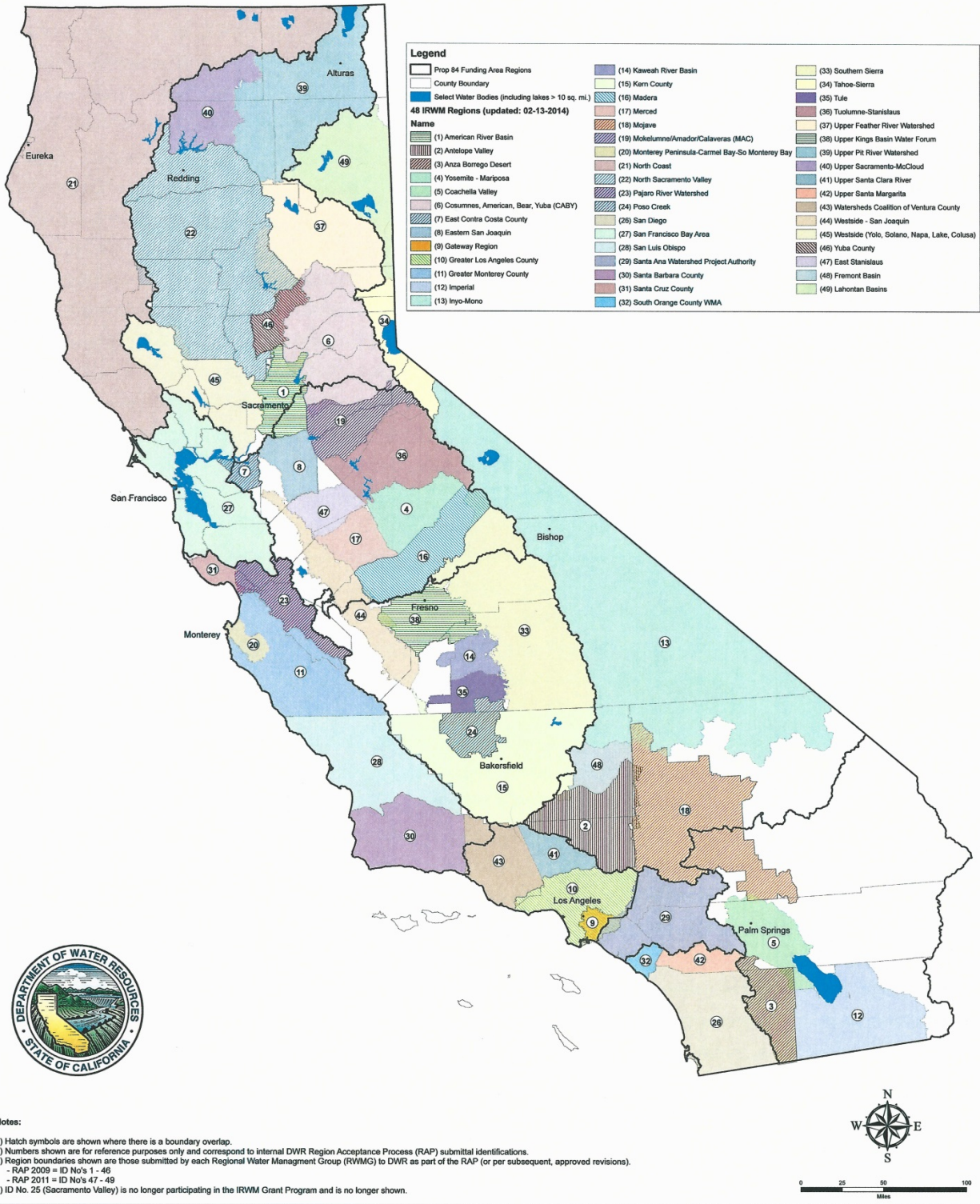


Figure 1. 48 California IRWM planning regions. (CA DWR, 2014)

1.2.1 Senate Bill 1672 (2002)

Senate Bill 1672, the **Integrated Regional Water Management Act** was passed in 2002 to encourage local agencies to work cooperatively to manage local and imported water supplies to improve quality, quantity, and reliability.

1.2.2 Proposition 50 (2002)

California voters passed the **Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002** (Proposition 50) in November 2002 providing \$500,000,000 (CWC §79560-79565). This bond initiative developed as a complement to Senate Bill 1672 to provide funding for competitive grants for projects consistent with an adopted IRWM plan. Approximately \$384 million in grant funding has been allocated for planning and implementation grants through December 2014 (CA DWR, 2015).

1.2.3 Proposition 1E (2006)

California voters passed the **Disaster Preparedness and Flood Prevention Bond Act** (Proposition 1E) in November 2006 which provides \$300,000,000 (PRC §5096.800-5096.967) for IRWM Stormwater Flood Management.

1.2.4 Proposition 84 (2006)

California voters passed the **Safe Drinking Water, Water Quality, and Supply, Flood Control, River and Coastal Protection Bond Act** (Proposition 84) in November 2006) which provides \$1,000,000,000 (PRC §75001-75130) for IRWM Planning and Implementation projects that help local public agencies meet the long term water needs of the state, including the delivery of safe drinking water and the protection of water quality and the environment. Since 2014, over \$610M has been awarded for IRWM projects throughout the State (\$30 million in planning grants; \$580 million in implementation grants) (CA DWR, 2015).

1.2.5 Proposition 1 (2014)

California voters passed the **Water Quality, Supply, and Infrastructure Improvement Act of 2014** (Proposition 1) on November 4, 2014 which provides \$510,000,000 (PRC §79700-79798) for IRWM provides funding for projects that help meet the long term water needs of the state, including:

- To assist water infrastructure systems adapt to climate change
- To provide incentives throughout each watershed to collaborate in managing the region's water resources and setting regional priorities for water infrastructure
- To improve regional water self-reliance, while reducing reliance on Sacramento-San Joaquin Delta

The 2016 Draft Integrated Regional Water Management Grant Program Guidelines are available now. Funding is available for implementation including funds designated to ensure the involvement of Disadvantaged Communities (DAC), Economically Distressed Area (EDA), or underrepresented communities within regions.

Volumes 1 and 2 of the 2016 Draft Integrated Regional Water Management Grant Program Guidelines can be accessed at http://www.water.ca.gov/irwm/grants/docs/p1Guidelines/2016Prop1IRWM_GuidelinesPublicReviewDraft.pdf

2.0 Integrated Regional Water Management Planning in the San Joaquin Valley

The San Joaquin Valley is comprised of two hydrologic basins or watersheds: the San Joaquin River Basin and the Tulare Basin. The Valley has nineteen approved IRWM regional plan organizations in the two basins (some small boundary areas from other plans in other watersheds overlap into the two basins, but are not considered significant), twelve in the San Joaquin and seven in the Tulare. Two regional plans overlap in the San Joaquin Basin and Tulare Basin. They include the Westside and the Southern Sierra. Also, two plan regions that are predominately Sacramento River Basin organizations have overlap in the upper and lower Cosumnes River, a tributary of the San Joaquin River system. These regions include the CABY (Cosumnes, American, Bear and Yuba) and American River Basin respectively. In addition, the Mokelumne-Amador-Calaveras (MAC), Tuolumne-Stanislaus and Yosemite-Mariposa are included in this report due to their watershed relationship to the San Joaquin River Basin. While these plan areas were not included in the original planning framework developed for eight Valley counties involved in the California Partnership for the San Joaquin Valley or the report enabling legislation, PL 11-111, the program integration strategies adopted by the California Department of Water Resources and added as requirements to the plans themselves included watershed management. Watershed management and the availability of special funds for larger regional cooperation among planning areas brought upper watershed plans into the scope of the overall San Joaquin River Basin process.

There are also some significant plan gaps in the Valley watersheds. Central Kings County on the Valley floor of the Tulare Basin has no coverage. Also the Diablo Range mountain and foothill area draining into the Valley between the Range peaks eastward to the Valley floor margin from the Kern County border to the southern boundary of Contra Costa County has no plan. Finally, the western Sacramento-San Joaquin Delta in San Joaquin County and the northern-most triangle of Stanislaus County are not covered. These areas are left white in the DWR map of approved plan areas (Figure 1). The lack of inclusion of these areas undoubtedly had some impact on the ability of adjacent plans to obtain some grant points and hence be competitive for funds in comparison to the more inclusive areas of the State. It appeared this was especially true for plan areas who failed to accommodate upper watershed areas that had no other representation.

Two super-regional groups also have formed in the two hydrologic basins. There is a Sierra group made up of portions of six San Joaquin River hydrologic basin upper Sierra watershed, or Sierra mountain plan areas, from the upper Cosumnes River down to the Southern Sierra plan boundary at the Kern County line. There is also a Tulare Basin Regional Group made up of seven plans in that hydrologic basin. Southern Sierra is in both super-region areas.

The integrated regional water management plans were encouraged by the State funding agencies to have some consistency in approach and implementation. The common organizational thread is for a lead agency to organize the effort followed by formation of a management group, advisory groups and

development of issue assessment. Ultimately, solutions or projects are developed to address the issues. The projects eligible for grant funds went to DWR for review under a solicitation process with specific requirements that had to be met. Chief among the requirements were minimum standards for the plans themselves and a significant matching investment by the plan proponents. In most cases every list of projects proposed for submittal had a significant funding match. As a result, the total investment in IRWM projects in the regions described in this report is substantially higher than the amount summarized as the State portion.

Governance is formalized with a legal instrument binding the partners to the strategy and implementation plans. The instruments include memoranda of understanding (MOU) or more formally, a joint powers agreement (JPA). The following regions and plans exemplify the IRWM process.

2.1 The San Joaquin River Hydrologic Basin Integrated Regional Water Management Regions and Plans

The San Joaquin River Basin encompasses all or portions of twelve regions and plans including East Contra Costa, Westside-San Joaquin, Madera, Southern Sierra, Yosemite-Mariposa, Merced, Tuolumne-Stanislaus, East Stanislaus, Mokelumne-Amador-Calaveras (MAC), Eastern San Joaquin, Cosumnes-American-Bear-Yuba (CABY) and American River Basin. The following includes a brief summary of these plans, their primary water management issues and some of the strategies and goals to improve regional conditions. For no particular reason the plans are presented in a counter-clockwise fashion starting in the northeast corner of the San Joaquin River Basin in the eastern Contra Costa County area. Three plans touching the basin are aggregated inasmuch as their incremental influence on the basin is small. These include the American River (ARB), Cosumnes-American-Bear-Yuba (CABY) and South Sierra plans.

2.1.1 East Contra Costa County

This plan area in the northwest corner of the San Joaquin River Basin covers a diverse mixture of urban and agricultural land uses and water management agencies as well as upper watershed areas from the Diablo Range that all ultimately drain to the lower San Joaquin River slightly above or at the confluence with the Sacramento River (see Figure 1, No. 7). The region also has some streams that directly flow into the combined Sacramento-San Joaquin Delta below the confluence.

The first regional plan in the area accepted for funding was prepared by Contra Costa Water District in 2005 and implementation of portions of the identified needs were funded in the initial Proposition 50 funding cycle of 2005-2006. Subsequently the IRWM law was amended (2008) and the regional acceptance process was developed. The resulting revised Eastern Contra Costa plan area was accepted in 2009. The core of the plan strategy is water supply, quality and reliability inasmuch as the area depends heavily on water extraction from the Sacramento-San Joaquin River Delta (Delta) channels, especially the Old and Middle River channels of the San Joaquin River. The quantity and quality availability of these supplies can be influenced by low San Joaquin River flows and incursions of lower

water quality water from both salt-laden tidal pulses from the western Delta and salt discharges into the lower San Joaquin River.

The plan was updated both in 2013 and 2015 to reflect new plan requirements and new information gleaned from previously approved studies. The primary implementation strategies include: active engagement on the issues surrounding quantity and quality of flows in the lower San Joaquin River where major water intake structures are located for the plan area supplies, advanced treatment of wastewaters for recycling and reuse opportunities and where feasible interconnectivity of the water systems and sources for agricultural or municipal reliability and sustainability of quantity or quality. Environmental restoration and maintenance is also a priority in the plan area especially for Delta ecosystems, tidal marsh wetlands and upper watershed restoration. The plan received additional funding for implementation of projects from Proposition 1E for flood and stormwater protection and management as well as specific planning studies and projects under Proposition 84. As a result of the new California Sustainable Groundwater Management Act (SGMA), the most recent plan revision (2015) brings some additional attention to the groundwater basins in the plan area the largest of which is the Tracy sub-basin. The region has also been recommended for an additional funding amount in a draft proposal adopted by DWR in October 2015. The grand total is over \$31.0 million USD. Since all the grant funds require local match, the total investment in the plan area has a substantially larger investment with the local improvements. The previously funded projects included five involving water supply reliability, three recycled water, two environmental, two stormwater and eight planning efforts.

The East Contra Costa County IRWM website can be accessed at <http://eccc-irwm.org/>

The *East Contra Costa County Integrated Regional Water Management Plan (Update 2015)*, can be accessed

at http://www.ecccirwm.org/Publications/ECCC%20IRWM%20Plan%20Update%20Sept2015_Complete.pdf

2.1.2 Westside San Joaquin (San Joaquin River Basin portion)

This overall IRWM region is trans-boundary between the San Joaquin River and the Tulare Basin (Figure 1, No. 44). The regional hydrologic divide between the San Joaquin River and Tulare Basin area is a depositional ridge of soils created by Panoche-Silver Creek, a Diablo Range watershed in western Fresno County. Water falling south of this ridge is within the scope of the Tulare Basin. Water falling and accumulating in the next watershed to the north, Little Panoche Creek, drains to the San Joaquin River. The common thread of the entire plan area in both the San Joaquin River and Tulare Basins is most of the water supply agencies are members of the San Luis and Delta-Mendota Water Authority (Water Authority) and recipients of water from the Delta Division or San Luis Unit of the USBR Central Valley Project (CVP). The members include the San Joaquin River Exchange Contractors, some of the most senior water rights in California. Also, some member agencies draw surface water directly from the

lower San Joaquin River including Banta-Carbona Irrigation District near Tracy to Patterson Irrigation District in Stanislaus County.

The region covers from the vicinity of the City of Tracy in the northern part of the San Joaquin River Basin to Westlands Water District and the community of Kettleman City in western Kings County in the Tulare Basin at the southern end of the region. From west to east the plan includes the area from the base of the Diablo Range foothills to the San Joaquin River and the north (James By-pass) and south forks of the Kings River. The regional plan and revisions were prepared under the auspices of the Water Authority (the plan lead agency) on behalf of the involved members. The original plan was started in 2001 with updates needed to meet the subsequent State guidelines and to apply for grants during the Proposition 50 and 84 funding cycles followed by a major update concluded in 2014. The plan has affiliations with additional partners outside the plan area such as Stratford Community Services District in west central Kings County. The following discussion is focused on the plan area within the scope of the San Joaquin River Basin.

Three issues that impact the quality of the San Joaquin River and environmental restoration are at the core of the Westside plan: 1) water supply reliability; 2) controlling discharges of runoff; and 3) irrigation return water. A key objective of the plan is to restore water supply reliability. Substantial portions of the plan area rely on Delta water supplies including both agricultural areas and cities. Some cities rely on groundwater and groundwater quality is an issue for some of the disadvantaged communities (DACs) as well as rural residents using individual wells. The issue of San Joaquin River water quality is influenced by both salty water discharges as well as surface runoff containing sediment and chemicals of concern. Finally, the area is also populated with a number of federal, state and private wetland areas that are largely dedicated to waterfowl management.

The proposed regional investments from the earliest successful grant application were geared to San Joaquin River water quality improvements. Specifically to implement plans to reduce and ultimately eliminate discharges of salt-laden irrigation return waters to the river. The drainage management efforts also had a goal of avoiding hazards to wetland and waterfowl management areas by eliminating discharges that may contain the natural element selenium. Runoff and subsurface drainage originating in and moved from the Panoche-Silver Creek watershed area is a major source of the biologically active material. Waterfowl and other avian species are especially sensitive to the impacts of environmental selenium. The Westside-San Joaquin plan area received a first round Proposition 50 grant to implement their proposed drainage management project.

The water supply issues for the region are primarily related to the availability of water from the Delta. Some portions of the plan area have no other supplies. The region has limited groundwater of suitable quality and no rights or access to any other surface water supplies except through market purchases that are surpluses offered by water agencies that attain that condition, usually most years except during droughts. Therefore a significant goal of the regional plan is to assist with efforts and strategies that

improve Delta conditions conducive to allowing Delta pumping facilities to move water south for direct use or storage. The water rights holders along the San Joaquin River are also interested in Delta reliability and improvements as well, especially the most senior rights on the river, the Exchange Contractors, because if the Delta cannot meet the commitments to them they must return to their historical source on the upper San Joaquin which then impacts water supplies for most of CVP Friant Division along the eastside of the Tulare Basin. The lower San Joaquin River water rights holders below the Exchange Contractors also are interested in Delta supplies inasmuch as their direct diversion rights are generally inadequate to meet their total needs.

Reliable Delta supplies are the number one priority for the region but the members do not have any direct management or responsibility for the Delta sources, all the issues are externalities generally beyond their control. The plan objectives have not resulted in any significant projects that can assist with reliability with one notable exception, in the last round (2015) of Proposition 84 implementation grants, the area was successful in obtaining funds for investments needed to bring recycled water from a joint project coordinated with the Eastern Stanislaus region and its communities. The North Valley Recycling Project involves developing highly treated wastewater from facilities jointly operated by eastern Stanislaus County cities and moving a portion of that water under the San Joaquin River to Westside region member Del Puerto Water District for distribution as agricultural water supplies.

Finally, the goal of removing salt and drainage water discharges from the plan watercourses has had an impact on water supplies for many wetland areas in the plan area that previously used some of those discharges for water supplies. Significant efforts have been geared toward restoration and enhancement of these wetlands and replacement of the lost supplies. While the Westside plan has such improvement as a goal, no specific projects have been funded under any of the implementation grants the plan area has received.

As previously mentioned, the plan area was successful in obtaining project funds in the first round from Proposition 50 for their drainage plan. The grant was for \$25.0 million. The Proposition 84 grant that included the wastewater recycling project added an additional \$2.7 million to the plan area.

The RWMG website for the Westside San Joaquin IRWM can be accessed at <http://www.sldmwa.org/>

The *Westside-San Joaquin Integrated Water Resources Plan (2014)*, can be accessed at http://www.sldmwa.org/Westside_San_Joaquin_2014_IWRP_Draft-July2014.pdf

2.1.3 Madera

This region covers all of Madera County (Figure 1, No. 16). It has overlap in portions of the upper San Joaquin River watershed with the South Sierra region. The overlap is managed through a mutual agreement. The region is administered by a Regional Water Management Group (RWMG) of interested agencies and parties but the lead institution is Madera County. The hydrologic areas include both the

upper and middle San Joaquin River, the Fresno and Chowchilla Rivers, and the valley floor Madera groundwater sub-basin. The area also includes the Eastside and Chowchilla By-passes, major flood control facilities adjunct to the main stem of the San Joaquin River.

The core issue for the plan area is groundwater sustainability. Groundwater conditions in both the Valley alluvial basin and the hard rock areas of the foothills and mountains are becoming less reliable both as to quantity and quality. Annual overdraft of the Valley floor groundwater basin was reported in the plan to average 250,000 acre-feet. Mountain groundwater is localized in rock fractures and decomposed granite and there are sizable communities dependent on that source including the Oakhurst area, which based on census tracts, is the third most populated area in the County after the Cities of Madera and Chowchilla with a 2010 regional population of almost 13,000. Groundwater sustainability involves surface water delivery reliability and conservation as well as extraction patterns. The only area in the County that generally meets all its needs with a surface water supply is the Columbia Canal Company, one of the Exchange Contractors that is located in the southwest portion of the County but a member of the Westside-San Joaquin region, not Madera. All other surface water delivery agencies cannot meet water total demands in most years, hence the reliance on groundwater. Recently, the western part of the county has undergone intensification of groundwater use because of land conversion from ranching and pasture to large dairies, wine grape growing and nut tree plantings. The result has been the re-appearance of land subsidence. This area of concern is also the path of the previously mentioned flood by-pass channels. The result is not only exacerbated groundwater overdraft but the potential compromise of flood capacity. Other plan issues presented include the question of ongoing institutional management of the groundwater and watershed management, especially of forested lands under the control of the U.S. Forest Service.

Plan goals and objectives keyed to the issues include the need for groundwater recharge, improved reliability of surface water supplies, conservation, new institutions to help manage groundwater and a healthy dose of water education for all of the water users in the plan area.

The region was successful in obtaining grant funds from the first round of Proposition 84. The projects included a significant effort to eradicate the phreatophyte, *Arundo donax* (giant reed or false bamboo) in two distributory stream channels, Ash Slough and Cottonwood Creek. *Arundo* is a major pest in many Valley water courses so the effort in Madera can offer an example of both the scope of needed effort and potential long-term success of eradication efforts. The grant also financed an “in-lieu” groundwater recharge project in Root Creek Water District and forest fuels reduction in the Sierra National Forest. The grant total was \$9.4 million.

The RWMG website for the Madera IRWM can be accessed at <http://www.madera-id.org/index.php/rwmg>

The *Madera Integrated Regional Management Plan (2014)*, can be accessed at <http://www.madera-id.org/images/Pdf/RWMG/Madera%20Integrated%20Regional%20Water%20-%20Final.2014.12.09.pdf>

2.1.4 Yosemite-Mariposa

This region covers Mariposa County (Figure 1, No. 4). The regional plan is one of the additions to the San Joaquin River Basin area because of the expanded plan scope that requires watershed management as a plan element. In this case, the significant nexus between the upper and lower watershed is the Merced River. The region is dominated by federal lands including Yosemite National Park, two national forests (Sierra and Stanislaus) and Bureau of Land Management areas which collectively cover 54 percent of the county lands. Private lands are generally located in the lower foothills of the county and their main uses are for ranching, rural residential and unincorporated communities. There are no cities in this region. The lead agency for the regional plan is the Mariposa County Resource Conservation District. The RWMG is made up of: the RCD, the Mariposa County Water Agency, Mariposa Public Utility District, Don Pedro Community Services District and the Upper Merced River Watershed Council. The plan was the first of its type in the region.

The issues include reliability of water supplies for local uses and forest watershed management. Many of the projects listed in the plan are for upgrades to existing water supply and wastewater management systems including in Yosemite National Park. The watershed work proposed is for fire risk reduction, ecosystem restoration and enhanced recreation. The report was completed in 2014. One project was funded for implementation in the last round of Proposition 84. The region was offered \$1.0 million for water supply improvements for the Don Pedro Community Services District.

The RWMG website for the Yosemite-Mariposa IRWM can be accessed at <http://www.mcrccd.net/Pages/IRWMP.aspx>

The Yosemite-Mariposa Integrated Regional Water Management Plan (2014) can be accessed at <http://www.mcrccd.net/Pages/IRWMPPlanDocuments.aspx>

2.1.5 Merced

This region is in eastern Merced County (Figure 1, No. 17). The region essentially covers the Merced groundwater basin from the San Joaquin River in the west to the base of the foothills on the east, the Merced River to the north and the Chowchilla River to the south. The region first organized around this area in 1997 under the auspices of Merced Irrigation District to address groundwater issues. The organization that resulted was called the Merced Area Groundwater Pool Interests (MAGPI). The group planned for groundwater improvements up until 2009 when the group was amended to encompass the broader scope of IRWM. The region received an IRWM planning grant from the state in 2012 and developed a fully-compliant IRWM plan in 2013. The RWMG retained the original MAGPI agencies but also expanded to include representation needed to cover the issues and the requirements of IRWM guidelines. Merced Irrigation District continued as the lead agency but the group expanded to include the County of Merced and the cities of Atwater, Livingston and Merced. A more inclusive regional

advisory committee provides the region with the broadest representation and oversight of the plan activities.

The core issues identified in the plan are groundwater conditions and uncontrolled flooding. The flooding and groundwater issues are somewhat related. There are several uncontrolled or partially controlled small watersheds and streams in eastern Merced County and since the surface soil conditions are predominately lacking the ability to readily percolate into groundwater, recharge is very slow or limited in geographic scope. The result is broad areas of flooded land that eventually drain into the San Joaquin River. Groundwater recharge is impeded not only by surface percolation rates but a majority of the area is also underlain by another deeper clay layer that also impedes recharge of the major aquifer used in the County that is below that layer. The flooding issue has been intensely studied and projects designed to manage the flood water. The IRWM plan is focused to bring such projects to fruition. There are also plans to assist with groundwater recharge in areas where feasible. Another plan element of note includes the promotion of water use efficiency in both agricultural and urban settings. Surface water supply reliability is also a concern inasmuch as the area is going through both federal and state processes that assess future needs for environmental goals. Specifically, the Merced River supplies are involved in both federal power re-licensing requirements such as fishery flow releases at the storage dam and at the state level there is an activity underway to determine timely surface water contributions needed to meet downstream Delta water quality objectives. The region proposes to include the activities undertaken through implementation of SGMA as part of the ongoing updates and improvements.

The Merced IRWMP was successful in obtaining grant funds from Proposition 84 in both the Round 2 and drought grant solicitations. Seven projects totaling over \$3.0 million were approved including small watershed flood control, groundwater recharge and water conservation projects.

The RWMG website for the Merced IRWM can be accessed at <http://mercedirwmp.org/>
The *Merced Integrated Regional Water Management Plan (2013)* can be accessed at http://www.water.ca.gov/irwm/grants/docs/PlanReviewProcess/Merced_IRWMP/MIRWMP%20Revised%20Final.pdf

2.1.6 Tuolumne-Stanislaus

This region covers the foothill and mountain watershed areas of the Tuolumne and Stanislaus Rivers (Figure 1, No. 36). It includes all of Tuolumne County and parts of Calaveras and Alpine County. Two-thirds of the area is federal land, either national forests or parks including Stanislaus National Forest and Yosemite National Park. The lead agency in the formation of the region and development of the plan for this area is Tuolumne Utilities District. The region was started in 2012 with a planning grant from CA DWR and the plan adopted in 2013. The plan is the first watershed plan developed for the area. The

ongoing efforts will be implemented by a regional watershed management group and a watershed advisory committee.

The watershed management issues outlined in the regional plan include water supply reliability and use efficiency. There are some water quality issues as well. Finally, specific areas have some stormwater/flood management concerns. The water supply reliability dominates the concerns because most of the water generated in the plan area is dedicated to downstream water rights holders. Ninety-eight percent of the water falling on the watersheds leaves the region. Furthermore, many of the community water delivery systems rely on contractual water from the downstream rights holder to serve their customers. Finally, the systems themselves are often gold rush era legacy delivery facilities that include unlined open ditches and flumes. Projects to convert such systems are often met with resistance because leaks recharge local hard-rock groundwater areas and the open areas provide recreation and environmental habitat. The result is the water supplies in the area are vulnerable to both re-direction to senior rights and groundwater loss with efficiency improvements to delivery systems. Nonetheless the plan goals are to improve reliability with efficiency and storage investments appropriate for the areas of the plan.

The region submitted a list of projects for funding in the Proposition 84 second round and was approved for \$3.6 million. The grant is being administered by the Tuolumne County Resource Conservation District. Some of the projects include wastewater treatment plant storage pond and sprayfield improvements, small acreage stormwater pollution prevention tools, several watershed conservation, protection and education programs and a restoration plan for Phoenix Lake.

The IRWMA website for the Tuolumne-Stanislaus IRWM can be accessed at <http://tstan-irwma.org/>
The *Tuolumne-Stanislaus Integrated Regional Water Management Plan (2013)* can be accessed at http://tstan-irwma.org/wp-content/uploads/2014/11/T-S-IRWMP_Aug2013-FINAL_9-6-13_lo-res.pdf

2.1.7 East Stanislaus

This region covers eastern Stanislaus County including portions of the lower Stanislaus, Tuolumne and San Joaquin Rivers as well as the Modesto and Turlock groundwater basins (CA DWR Bulletin 118). The western boundary is the San Joaquin River, the eastern boundary the foothills, the northern boundary the Stanislaus River and the south the Turlock Irrigation District boundary (Figure 1, No. 47). The southern boundary crosses the county line with Merced County. The East Stanislaus and Merced IRWM regions therefore overlap but they have a coordinating agreement to manage issues and projects that may result in that overlap area. The organizing entities for the East Stanislaus region include four cities: Modesto, Turlock, Ceres and Hughson. The resulting regional water management group is somewhat limited in its scope because while it perhaps represents the largest portion of the population in the plan area, significant water management agency partners have not yet joined, including Modesto, Turlock and Oakdale Irrigation Districts as well as Stanislaus County. The organizers therefore may have a

somewhat limited scope in addressing water management issues. They may have representative issues that are fairly universal but lack specific scope on issues such as agricultural water use and efficiency. The other agencies need to join the effort so as to assist with proper integration of water management strategies as the law intended. The efforts were started in 2012, the plan was developed in 2013 and then adopted by the organizing agencies in 2014.

The East Stanislaus plan does not identify any specific significant issues in the plan except for the need to fully scope the water needs and conditions of the area. The lack of data is seen as the most significant impediment to developing the necessary strategies to integrate and implement sound water management practices.

The regional plan proponents submitted projects for Proposition 84 drought round funding and received a commitment for \$5.0 million to manage wastewater in the area. The projects funded include removal of a stormwater to sewer connection in the City of Modesto wastewater system and assistance for the North Valley Recycling Project which involves using a portion of the Modesto-Turlock regional wastewater plant reclaimed water in western Stanislaus County for irrigation supply in the agricultural area of Del Puerto Water District. The same grant round funded the Westside-San Joaquin IRWM area for Del Puerto for some of the costs of its participation in the effort. These joint investments make the project inter-regional. This project is important because Del Puerto is one of the westside entities wholly reliant on Delta supplies with no allocation in some years during the 2012 to 2015 drought. The recycling project will provide a relatively drought-proof base supply for a portion of the District.

The ESRWMP website for the East Stanislaus IRWM can be accessed at <http://tstan-irwma.org/>

The *East Stanislaus Region Integrated Water Management Plan (2013)* can be accessed at <http://www.eaststanirwm.org/documents/esirwmp.pdf> and <http://www.eaststanirwm.org/documents/esirwmp-appendicies.pdf>

2.1.8 Eastern San Joaquin

This area covers the eastern portion of San Joaquin County (Figure 1, No. 8). The region includes most of San Joaquin County on the Valley floor. It is bordered on the north by Dry Creek, a tributary of the Mokelumne River, the east and south with the County line and the west with the San Joaquin River. The area watersheds include the lower Calaveras, the previously mentioned lower Mokelumne River, the main channel of the San Joaquin River and numerous small streams between the Calaveras and the Stanislaus River which is also the southern County line. The area also includes a portion of the Sacramento-San Joaquin Delta, including the Central and South Delta Water Agencies who became members in the more recent iteration of the region.

The organizing entity for the IRWM region was Northeastern San Joaquin County Groundwater Banking Authority, a JPA, which was renamed the Eastern San Joaquin County Groundwater Banking Authority

(ESJCGBA) and became the ongoing regional management agency. The first regional plan was developed under the original group in 2007, then updated under the newer organization in 2013 with plan adoption in 2014. As indicated by the name of the Authority, a significant focus of the plan area is groundwater issues and management but all areas of IRWM are included in the plan scope including significant inter-regional cooperation and efforts, especially with the upper watershed regions.

As noted, one of the core issues described in this plan area is attaining sustainability in groundwater conditions. The chief goal of the plan is to improve groundwater supply reliability and quality. The plan also has goals to manage flood impacts and control stormwater. Numerous projects were outlined to meet the goals and objectives. Many involve agreements and system improvements to deliver surface water for groundwater recharge. The plan also suggests and proposes projects that invest heavily in water use efficiency for both urban and agricultural water uses. Finally, significant improvements in flood channel capacities and structures are also an important element of the plan strategies.

The regional leadership submitted projects for funding under Proposition 84, however no grant awards were made.

The ESJGBA for the Eastern San Joaquin IRWM can be accessed at <http://www.gbawater.org/IRWMP>

The *2014 Eastern San Joaquin Integrated Regional Water Management Plan Update* can be accessed at <http://www.gbawater.org/LinkClick.aspx?fileticket=Q03B-7grdQE%3d&portalid=0>

2.1.9 Mokelumne-Amador-Calaveras (MAC)

This region includes all of Amador County, the north half of Calaveras County and the western portion of Alpine County (Figure 1, No. 19). The watershed's main rivers are the upper Mokelumne, Calaveras, and Cosumnes. The area was organized in 2006 and the plan completed in the same year. The 2006 plan included a portion of northeastern San Joaquin County, however San Joaquin County agencies subsequently decided to form their own IRWM region and the MAC area retreated back to the western Amador and Calaveras County lines. Nonetheless, there is a small area of both Amador (City of Lone, Cosumnes Groundwater Sub-basin) and Calaveras County (Camanche-Valley Springs, unincorporated areas, Eastern San Joaquin Sub-basin) involved in Valley floor groundwater issues so cooperation and integration has continued between the plan areas. The lead agency for the area is the Upper Mokelumne River Watershed Joint Powers Authority which is made up of counties (Alpine, Amador, Calaveras), water utilities and major water users operating in the watershed such as the East Bay Municipal Utilities District.

The issues of concern in the MAC area are consistent with the other mountain/foothill dominated IRWM plans. Water supply reliability, aging water-related infrastructure, growth, lower priority water rights to downhill areas and federal land management, especially forests, are the major subjects of the strategies,

goals and objectives. The strategies the plan proponents agreed on included: maintaining or improving water quality, improving water supply reliability and balance, practice resource stewardship and focus on common ground among the parties and avoid conflict where feasible. The goals included: water quality improvements by managing contaminants and stormwater impacts, water supply management through developing firm supplies, improved infrastructure, conservation and drought practices, practicing resource stewardship through protection or restoration of natural resources, improve watershed health and avoid cultural resource impacts. The strategy to avoid intra-regional conflict involves prioritizing activities that are more likely to be completed in the plan time frame and to identify controversial projects and work towards common ground and solutions to the conflicts surrounding those projects.

The region submitted projects for several Proposition 84 funding rounds and received a commitment for \$2.298 million (Round 1), \$2.174 million (Round 2) and \$5.755 million (Drought round), for a total of over \$10.0 million in projects. The projects include mostly drinking water system improvements such as treatment plant upgrades (Lake Camanche), backwash reuse (Ione), leak detection and repair, and canal, pipeline and tank replacements throughout the communities in the watershed.

The JPA website for the MAC IRWM can be accessed at <http://www.umarwa.org/docs.html>

The *Mokelumne/Amador/Calaveras Integrated Regional Water Management Plan Update (2013)* can be accessed at <http://www.gbawater.org/IRWMP/2014-IRWMP-Update>

2.1.10 Summary of Other IRWM Areas with Portions in the San Joaquin River Region

Three other regional plans have portions within the San Joaquin River Basin: the South Sierra, Cosumnes American Bear and Yuba (CABY) and the American River Basin (ARB). South Sierra has the area on the south side of the upper San Joaquin River (Figure 1, No. 33) in northeastern Fresno County. CABY has a portion of the upper Cosumnes River in southern El Dorado County (Figure 1, No. 6). The ARB plan area has a portion of the lower Cosumnes River in southern Sacramento County (Figure 1, No. 1). The Cosumnes is a tributary to the Mokelumne River. One project of significance in the ARB plan area was funded by Prop. 84. The Lower Cosumnes Groundwater Recharge and Recovery project received \$2.5M for implementation. None of the other plan areas appeared to have specific projects funded in the scope of the San Joaquin River Basin. These regions are retaining the planning process and institutional structures for future eligible activities. They are also part of the larger Sierra Regional Group.

2.2 The Tulare Hydrologic Basin Integrated Regional Water Management Plans (Tulare/Kern funding area)

The Tulare Basin hydrologic region has seven plan areas. They include a significant portion of the Westside-San Joaquin region, the Kings Basin, the Kaweah River, the Tule River, and Poso Creek region;

the Kern County (Valley) region and the Southern Sierra region. As previously noted, a substantial portion of Kings County in the Tulare Lake Basin did not become part of any plan area. All the plan areas have structures similar in scope and effort to the San Joaquin River Basin regions such as lead agencies and regional management groups that include the counties, cities and water agencies in the area, with mixes and variants depending on the needed or voluntary participation. Since there are so many similarities across all such plans the specifics of these arrangements will be foregone in the following descriptions. The plan areas and the scope of their efforts are as follows.

2.2.1 Westside-San Joaquin (Tulare Basin portion)

The northwestern-most part of the Tulare Basin is in the larger Westside-San Joaquin region [(Figure 1, No. 44), see the section in the San Joaquin River Basin for more detail including a link to the plan] and shares the subsurface drainage area that was funded in the first Proposition 50 round of IRWM funds. The project goal is the same as well, to build a project that prevents poor-quality drainage water from crossing the hydrologic boundary and ultimately reaching the San Joaquin River, mostly from the Panoche-Silver Creek drainage area and the water agencies overlying that small watershed. The plan area also shares the San Luis Unit of the federal Central Valley Project which includes Westlands Water District. The San Luis Unit shares the larger area goals of Delta water supply reliability improvements. The Tulare Basin portion of the plan area also has overlap with the Kings Basin plan in the area of James and Tranquillity Irrigation Districts. Those districts share the surface water issues with the Westside plan and groundwater issues with the Kings plan. Finally, the Tulare Basin part of the area also includes disadvantaged communities such as Avenal, Firebaugh, Huron and Mendota; but also including the communities of San Joaquin and Stratford, which joined the plan inasmuch as they were seeking the best representation (The City of San Joaquin) or had no other potential representation because they were located in an area that does not have a regional plan (Stratford PUD). This portion of the plan area is also affiliated with the Tulare Basin regional group.

2.2.2 Kings Basin Water Authority

Formerly the Upper Kings Basin Water Forum, this region (Figure 1, No. 38) covers most of the Valley floor area of eastern Fresno County and portions of northern Kings and Tulare County, especially the area of Alta Irrigation District in Tulare County. The boundary on the north is the San Joaquin River, the west Fresno Slough and the North Fork Kings River, east the foothills and the south boundaries of several water agencies including the previously mentioned Alta Irrigation District. The lead agency for this plan area is the Kings River Conservation District, a legislated special district empowered to manage the water resource issues of the Kings River. The first regional plan was developed and adopted in 2007 and the updated version necessary to compete for newer bond funds was adopted in 2012. The plan area is a member of the Tulare Basin regional group.

The core issue for the Kings Basin is groundwater conditions, both quantity and quality. The area has seen sustained overdraft for numerous decades and surface water supplies have been insufficient to

match direct user demands as well as groundwater replenishment. In addition, the groundwater quality has both natural- and human-introduced materials that historically impact drinking water supplies including, but not limited to, arsenic, nitrogen and uranium. More recently, hexavalent chromium was added to the list of constituents of concern and new data is revealing the presence of that material in the groundwater basin as well.

The core groundwater issue then results in a number of IRWMP goals and objectives and the resulting projects that meet the goals and objectives. The goals for the Kings Basin include halting and reversing the overdraft, improving water supply reliability, improving water quality and providing flood protection. Flood protection goals and objectives also include integration strategies that meet the groundwater goals and objectives such as using flood water for recharge wherever feasible. The plan also has a goal of ecosystem restoration and enhancement. Specifically, the Kings River is used for a significant cold water fishery below Pine Flat dam and ongoing efforts will be made to sustain the gains this project has obtained. In addition, there are terrestrial habitats of concern in the plan area that impact land use and water management that will need to be included in future planning. An additional significant issue of the plan is a targeted effort to properly engage and solve the issues of disadvantaged communities in the plan area. A recent State-commissioned report on groundwater quality conditions in the Tulare Basin highlighted the need to more aggressively attend to the water and wastewater needs of these communities.

The Kings Basin project list reflects the goals and objectives. The region has been successful in various rounds of IRWM funding for the projects. Some of the key projects include new groundwater recharge basins in several irrigation districts, conservation projects such as installing new or additional meters in cities, special districts and other utility organizations for potable water use management and flood control investments that protect land and structures and also use the water for groundwater recharge. One particular flood management project of interest is the McMullin Farmland Recharge Project. That project is designed to take flood flows out of the North Fork Kings River and intentionally put the water on thousands of acres of farmland, including some permanent crops such as grape vines, so as to reverse groundwater overdraft in one of the areas that has seen a large decline in depth to the water table. The project received a special flood corridor grant from Proposition 1E. The total investment of the multiple rounds of IRWMP bond funding for the Kings Basin is \$19.3 million. Other bond funding specifically for flood management, including the McMullin recharge project, added another \$19.1 million in investments to meet the overall plan goals.

The JPA website for the Kings Basin IRWM can be accessed at <http://www.umarwa.org/docs.html>

The *Kings Basin Integrated Regional Water Management Plan (2012)* can be accessed at <http://www.kingsbasinauthority.org/governance/governing-documents/irwmp>

2.2.3 Kaweah River

The geographic area covered by this plan is predominately in north-central Tulare County and a small portion of eastern Kings County (Figure 1, No. 14). The northern boundary is the Kings Basin region, the eastern foothills and mountains covered by the South Sierra regional plan, the southern boundary is the Deer Creek Tule River Authority region and the western boundary is the so-called white area of no plan in central Kings County. The lead agency is the Kaweah-Delta Water Conservation District. The IRWM plan had several preceding efforts in the Kaweah area but the final State-compliant proposal was developed in 2013 and adopted in 2014. The plan had been completed sooner (2009) and conditionally compliant for the first round of Proposition 84 grant funding but the State requested a process of integration with the adjacent Deer Creek Tule River plan. Integration strategies and agreements were completed in the development of the 2013 version and the Kaweah plan was therefore unconditionally compliant and grant eligible in the recent version.

The core issue for the Kaweah River Basin is the same as other eastside San Joaquin Valley plans (Eastern San Joaquin, Merced, Madera, Kings, etc.) in that the focus is groundwater because surface water supplies have not generally been adequate to address overdraft and quality issues. In fact, the highest priority, short-term issue in the Kaweah plan area is groundwater quality because broad areas of the groundwater have challenges for drinking water. Over half of the Tulare County residents are classified as disadvantaged and many are served by individual wells or community wells that do not meet current standards. Therefore one of the plan's stated high priority implementation strategies is to convert to surface water where feasible and to use regional systems with regional management authorities because individual, small community systems would not likely be affordable for many residents in much of the plan area.

Water reliability is also an issue and a more long-term goal is to support efforts that improve Delta water supplies to the Exchange Contractors because numerous entities in the Kaweah plan area are reliant on Central Valley Project water from the Friant Division, which is inextricably linked to the availability of Delta water to the Exchange Contractors. If the Exchange Contractors do not get Delta water their superior water rights return them to the San Joaquin River supplies held behind Friant Dam and normally used by the CVP Friant Division. Reliability in the Kaweah area plan is also related to infrastructure conditions and another of their goals is to replace old and deteriorated systems. The region area is also a member of the Tulare Basin regional group.

Despite the need for integration with the Deer Creek Tule River plan, the 2009 Kaweah plan was found adequate for Round 1 and the Drought Round of Proposition 84 grant funding and awards were made for several projects including a groundwater quality investigation, several recharge basin projects, an environmental restoration project and a recycled water pipeline project as well as water conservation projects for some communities with the drought round. The total amount granted was \$4.8 million.

The Kaweah River IRWM website can be accessed at http://www.kdwcd.com/kdwcdweb_006.htm

The most recent version of the plan, *Integrated Regional Water Management Plan (2014)*, can be accessed at http://www.kdwcd.com/kdwcd_adopted_irwmp_with_corrections_2-23-15_.pdf

2.2.4 Tule River

This region is in south central Tulare County and closely related to the Kaweah River plan as mentioned in the previous discussion (Figure 1, No. 35). It is bounded on the north by the Kaweah region, on the east by the South Sierra region, on the south by the Poso Creek region and the west the same as Kaweah River, no plan in central Kings County. Also like the Kaweah region, the Tule region noses into a portion of eastern Kings County to cover related issues and water agencies. The lead agency for the plan is the Deer Creek-Tule River Authority JPA. The plan approval was similar to Kaweah with conditional approval in 2009 but final plan approval is not yet clear inasmuch as the final was submitted in November 2015.

The issues are also identical to the previously described Kaweah plan, predominately that the plan area has issues with groundwater. However, the priority is slightly different in that the Tule interests believe a significant short-term interest is land use planning because of concerns about the type of development that could exacerbate groundwater quality. All other issues, goals and objectives appear to parallel the Kaweah plan and include rural drinking water supplies, groundwater supply reliability, linkages to Delta and Friant water supplies, etc. The region is also a member of the Tulare Basin regional group.

The plan area has a preliminary list of projects but none have been submitted for grant funding.

The Tule River IRWM website can be accessed at <http://tuleirwmp.com/>

The Tule River *Integrated Regional Water Management Plan (2015)*, can be accessed at http://www.tuleirwmp.com/documents/Tule_River_IRWMP_Report.pdf

2.2.5 Poso Creek

This region is mostly in north-central Kern County but with a portion in southern Tulare County, namely a significant portion of Delano-Earlimart Irrigation District (Figure 1, No. 24). It is bounded on the north by the Tule River region, the east by the South Sierra region and the Kern County (San Joaquin Valley) region and also the south and west by the Kern County region. The lead agency for the plan is Semitropic Water Storage District. The first IRWM plan was adopted in 2007 and the plan was updated in 2014 to remain eligible for the final rounds of grant funding under Proposition 84.

The water management issues in the Poso Creek plan area are the same as the other eastside San Joaquin Valley areas over usable groundwater. Insufficient surface water availability has caused declines in groundwater levels. However, there are some subtle differences within the area. The area of Delano-

Earlimart Irrigation District has historically received more reliable amounts of surface water from the Friant system resulting in better groundwater conditions until very recently. Also, Semitropic Water Storage District has enjoyed a long standing relationship with many water entities beyond the San Joaquin Valley because they operate a groundwater banking facility that stores water for such entities. Semitropic is a customer of the State Water Project and partners with other State-project members for joint water supply goals. Therefore, the Poso Creek region has developed strategies that facilitate improved reliability both regionally and for far-flung partners. The region is unique with complex surface water relationships involving some local but infrequent small watershed supplies, CVP water from the Friant Division, State Water Project water from the California Aqueduct and water from the Kern River; all to conjunctively manage the regional groundwater. The members of the plan area each bring slightly different proportions of surface water sources to the mix and the principal issue is the inter-connectivity of the systems and recharge facilitation to optimize the use of both surface and groundwater. The highest priority for the plan is to participate effectively in assuring the continued reliability of the external sources of surface supplies, especially the Delta and Friant sources. In addition, the plan area has numerous disadvantaged communities making compliant community drinking water and wastewater systems a plan goal also. The region is a member of the Tulare Basin regional group.

The plan area has received project funding from multiple rounds of State bond funds as well as complementary funding from the federal government, principally the Bureau of Reclamation. The key investments, in order, have been; conveyance interties, groundwater banking facility additions and disadvantaged community infrastructure improvements. The most significant projects are the interties between regional water systems that can convey various water supplies to optimize their uses where they are needed such as the connection between the Cross Valley Canal and the Calloway Canal. The plan area received a total of \$9.2 million.

The Poso Creek IRWM website can be accessed
at <http://www.semitropic.com/AboutUsPosoCreekIRWM.html>

The 2014 Poso Creek Integrated Regional Water Management (IRWM) Plan Update can be accessed
at http://www.semitropic.com/pdfs/Poso%20Creek%20IRWM/PosoCreekIRWM_2014PlanUpdate_wFigs.pdf

2.2.6 Kern County (San Joaquin Valley area)

This region covers most of the San Joaquin Valley portion of Kern County including the Valley floor and contributing watersheds in the Sierra Mountains, Tehachapi Mountains and Diablo Range of the Coast Mountains (except for the Poso Creek area) and a contiguous agency in south-central Kings County known as Dudley Ridge Water District (Figure 1, No. 15). The plan was adopted in 2011 and was fully compliant with the 2012 changes in advance of the new requirements by considering climate change and watershed issues in the plan. The plan met the latter by dividing the Kern County area into sub-

regions that included specific analysis of the upper areas such as the Tehachapi and Sierra mountain areas of the County.

The common issue among the water users in the Kern plan area is dependence on external water supplies for both agricultural and urban uses. The two main external sources are State Water Project supplies delivered by the California Aqueduct and the allied Kern-County-only Cross-Valley Canal as well as the Friant Division of the Central Valley Project. Both of these projects and the main local source, the Kern River, coalesce deliveries in the vicinity of the City of Bakersfield. The goal of the supplies is not just direct use but as in many areas of the Valley, groundwater recharge. The plan area houses the Kern Water Bank, the largest water banking program in the world. The Kern Water Bank program operates approximately 30,000 acres of recharge facilities under the direction of various Kern County water entities. Whenever water is available, the annual goal for the volume of water recharged is 1.5 million acre-feet. The estimate of total storage in the Kern groundwater sub-basin is 50 million acre-feet. The system is integrated with numerous partners throughout California but chiefly water users in southern California, making the area a critical part of overall State water management infrastructure. As a result of the infrastructure investment and importance of the area, the critical concern under the area plan is future water source reliability, particularly Delta conditions and supplies because of the previous mentioned linkages between Delta supplies and availability of water from the CVP Friant Division. In addition to water supply reliability, the plan goals include efficiency investments, disadvantaged community water and wastewater infrastructure improvements (which overlaps and is coordinated with the Poso Creek group). The plan area is also a member of the Tulare Basin regional super-group.

The plan proponents developed the necessary project lists to address key goals and objectives of the plan area and were successful in several rounds of grant funding. The total investment of State bond funds is \$22.9 million to date. Some representative projects include: additional groundwater recharge facilities such as for the Kern Water Bank, interties, connections and improvements of water delivery facilities among plan entities including new lining materials for the Cross Valley Canal and water conservation projects by the City of Bakersfield and communities in the Tehachapi Mountains.

The Kern County IRWM website can be accessed at <http://www.kernirwmp.com/>

The *Kern Integrated Regional Water Management Plan 2011*, can be accessed at http://www.kernirwmp.com/documents/2011/KCWA_FinalUpdate_IRWMP_112911.pdf

2.2.7 Southern Sierra

The Southern Sierra region (Figure 1, No. 33) covers the Sierra Mountains from the crest on the east to the margin of the San Joaquin Valley floor and foothills on the west and from the San Joaquin River watershed drainage (and the Fresno County line) in Fresno County and a small piece of Madera County in the north and the Kern County line on the south. The overlap in the north is coordinated through an

MOU with the Madera region. The region is dominated by federal land ownership (76%) and includes the Sierra, Sequoia and Inyo National Forests, Kings and Sequoia National Parks and additional land under the control of the US Bureau of Land Management, especially in the foothill areas. There are no incorporated cities in the plan area and just a few special districts with water or wastewater management responsibilities. The plan proponent is the Sequoia Riverlands Trust, a conservation organization headquartered in Tulare County. The plan was completed and approved in 2014 after many years of collaborative efforts among numerous partners and agencies. The region is a member of the Tulare Basin regional group.

The plan issues resonate with any and all of the Sierra foothill/mountain plan areas. The concerns involve forest and ecosystem health, availability of water for existing or future local needs and rangeland management. The strategies involve best management practices for land stewardship, water use efficiency, developing sufficient data to construct a sustainable water budget and restoration of degraded ecosystems.

The plan area has not submitted projects to the funding agencies therefore there are no grant investments to report.

The RWMPG for the Southern Sierra IRWM can be accessed at <http://www.southernsierrarwmg.org/>

The *Southern Sierra Integrated Regional Water Management Plan (2014)*, can be accessed at http://www.southernsierrarwmg.org/uploads/7/4/7/8/74782677/southern_sierra_irwmp_final_2014-06-15.pdf

3.0 Regional Group Activities

3.1 Tulare Basin Regional Group (a super-regional effort)

The Tulare Basin Regional IRWM Coordination Group was organized in 2009 and includes all the plan areas within the Tulare Basin. The Regional Group meets monthly to address and coordinate on common issues and concerns. The group activities are memorialized through a website called the Tulare Basin Watershed Initiative. The Initiative and website are part of a corollary effort funded by the California Department of Conservation through their watershed program.

The Tulare Basin Regional IRWM Coordination Group website can be accessed at www.tularebasinwatershed.org

3.2 Sierra Regional Group Activities

This super-regional effort includes all of the IRWM groups along the Sierra Mountain Range. It follows the boundary of and includes the Sierra Nevada Conservancy. The goal is to focus on IRWM issues of common interest to all parties in the Sierra Nevada range. The core issues are water for regional needs and watershed health, especially forest health and associated ecosystems, both terrestrial and aquatic.

The Sierra Regional Group IRWM website can be accessed at www.sierrawaterworkgroup.org

4.0 Additional Water Management Actions Involving the San Joaquin Valley 2009-2015

A number of issues with water supplies and their management have been encountered in recent years. Among them is the condition of the Sacramento-San Joaquin Delta. The ecosystem of the Delta supports both local and transitory fish species that have continued to fail to meet expectations. The result has been development of additional strategies to try to better manage the conditions. While the importance of the issues in the Delta cannot be over-emphasized, water use and availability in general has come under a much higher level of scrutiny that has engendered numerous laws and policy changes in recent years due to a variety of factors, not the least of which is a significant drought. The scope of the changes range from flood management policy to major shifts in groundwater management policy in addition to more intensive conservation efforts aimed at reducing reliance on Delta water supplies. All of these new requirements are empirically imbedded in IRWM plans and their implementation. Some of the key changes are included in the following sections.

4.1 Biological Opinions under the Endangered Species Act 2008-2009 (BIOPS)

Designated species in the Delta have strongly influenced water supplies south of the Delta because water pumping patterns have to be altered to avoid “take” of the protected species, namely Delta smelt, salmon, steelhead and green sturgeon. A federal court decision directed the modifications of the opinion used by the responsible agencies to protect the Delta smelt. The revised opinion was adopted in December 2008. The National Marine Fisheries Service adopted the opinion on the other species, especially salmon, in June 2009. The greatest potential for “take” of the protected fish happens to coincide with flow conditions that are often the most optimal for pumping water south of the Delta. The impacts of these decisions include loss of water supplies that influence the reliability for a substantial portion of the San Joaquin Valley especially when the CVP pumps in Tracy cannot meet the needs for the Exchange Contractors. When the Delta cannot meet those needs, the Exchange Contractors revert to the source of their water rights, the San Joaquin River, and most of the eastern and southern San Joaquin Valley loses their ability to use that supply for irrigation, municipal use or groundwater recharge. Hence many of the San Joaquin Valley IRWM plans have listed improved supply reliability as a significant goal, however, the plan implementers can only manage local sources and have little influence on the actions related to the Delta.

4.2 Delta Stewardship Council 2009 (DSC)

In 2009 the California Legislature adopted a package of water-related bills that were signed by the Governor and became law. One part (SBx 7-1) of the package was the creation of the Delta Stewardship Council (DSC). The DSC was charged with developing a comprehensive management plan for the legal Delta area. The legislation authorized the DSC to appoint an independent science board to develop a scientific program relating to the management of the Delta which brought under one organization all of

the various agencies, studies and evaluations of the Delta so as to meet legislated co-equal goals of improving the function of the Delta ecosystem while also providing a more reliable water supply for California. The legislation also provided for a Delta Watermaster serving under the State Water Resources Control Board in order to establish an effective system of Delta watershed diversion management. The DSC, its Science Board and the Delta Watermaster provide a collective process that aggregate previous work that was independent and sometimes contradictory, especially work that was charged with determining what were the chief factors causing species and ecosystem decline in the Delta. The combination of efforts in the Delta provide a framework that could be adapted to water management issues in other areas of the State.

4.3 Water Measurement 2009

Another one of the complementary items that were adopted in the 2009 legislation that formed the Delta Stewardship Council, SBx 7-7, memorialized new conservation goals for the use of water supplies. Urban water conservation requirements were amended to require a 20 percent per capita reduction by 2020. Agricultural water users were required to prepare new plans and implement efficient water management practices. Included in those practices was the charge to the Department of Water Resources to adopt regulations on agricultural water measurement including the need to use volumetric measurement for charges for water delivered to farms. The ultimate result of the new conservation provisions were the development of updated, new and recurring urban water management plans (UWMP) and agricultural water management plans (AWMP).

4.4 California Statewide Groundwater Elevation Monitoring 2009

Another new program as the result of the 2009 legislative package was the California Statewide Groundwater Elevation Monitoring (CASGEM) system (SBx 7-6). The program requires systematic measurement of the changes in the depth to groundwater by establishing a collaborative network with local agencies that collect the data. The catch to encourage local entities to participate is that any areas that do not have local coverage are assumed by the State but then those local areas are not eligible for water grants or loans from the State (including IRWM grants).

4.5 State Water Resources Control Board Recycled Water Policy 2009

The State Water Resources Control Board (SWRCB) Recycled Water Policy was adopted in 2009. The goal of the Recycled Water Policy is – to the extent feasible – to develop and utilize recycled water in order to add to the capacity for meeting the State’s needs for reliable water supplies. The policy included mandated state goals for recycled water of 200,000 acre-feet by 2020, and an additional 300,000 acre-feet by 2030. The policy also proposed administrative improvements to expedite the recycled water permitting process. The Policy also declared that the failure to use recycled water when it is available could be interpreted as a waste and unreasonable use under the California Constitution.

In addition to the goals of optimizing the availability and use of recycled water, the Policy has an imbedded sub-policy of significance. The sub-policy has to do with a requirement to develop salt and nutrient management plans for every groundwater basin or sub-basin in the State. This sub-policy was added based on the premise that recycled water inherently has the attribute of added salt in its use or discharge and that such discharges should not bear an unreasonable burden of controlling salt or nutrients in groundwater basins. Rather, all dischargers and groundwater users share a proportionate responsibility to manage salt and nutrients, therefore all groundwater basins need a collaborative process to develop Salt and Nutrient Management Plans (SNMP). In the Central Valley a collaborative process on salt management had already been underway since 2008. The activity is called Central Valley Salinity Alternatives for Long Term Sustainability (CV-SALTS). CV-SALTS includes both surface and groundwater salt management strategy developments. The SWRCB salinity and nutrient management sub-policy adds some additional rigor, focus and time schedule goals to CV-SALTS making it an important activity to integrate into IRWM planning.

4.6 Central Valley Flood Protection Plan 2009

As a result of some precedential State court decisions placing responsibility for managing flood waters and flood management facilities on the State in certain enumerated locations and conditions, a new flood management plan was developed and adopted for the Central Valley in 2012. The plan covers the Sacramento and San Joaquin River hydrologic basins as well as a small portion of the Tulare Basin. The work impacts IRWM because many of the projects needed to meet the goals of the plans are part of the IRWM process. The implementation also impacts environmental restoration and enhancement as many project proposals involve expanding flood easements and using those areas for environmental services. This conservation program is managed by the California Department of Water Resources FloodSAFE Environmental Stewardship and Statewide Resources Office.

Significant ongoing investments will need to be made in physical infrastructure such as levee improvements, weirs and by-passes, operational decisions (timing of flood releases or flooding of easements) and permanent land use changes (inability to develop land with permanent structures, conversion from full-time agriculture to intermittent agriculture or permanent environmental habitat) to meet the goals of the plans. While the overall plan does not directly involve the Tulare Basin in the process, elements of the program will likely impact flood management there as well such as adoption of new standards for assessment, operations, maintenance and construction of physical infrastructure (including levees and drawbacks).

4.7 Irrigated Lands Regulatory Program 2012 Update (ILRP)

The Water Quality Control Board Irrigated Lands Regulatory Program (ILRP) is a water quality control effort focused on the potential impacts of agricultural water use on receiving waters primarily in the Central Valley region. In 2012, a significant modification was made to the Central Valley program and that was to include all groundwater areas within the scope of impact assessment (technical reports on

where likely groundwater impacts would occur) and monitoring requirements (groundwater quality sampling in the areas of concern) were added to the general waste discharge orders regulating such discharges. Other Regional Boards with irrigated areas in the State have developed functionally equivalent efforts. Both the technical information development and monitoring and sampling activities add significant duties to agriculture and will expand the databases on groundwater conditions exponentially. The findings on groundwater conditions and future management needs determined under these regulatory efforts will likely be imbedded in IRWM plans in the future.

4.8 The Right to Clean Drinking Water Act of 2012

This legislation (Statutes from AB 685) made a finding that everyone has a fundamental right to clean, safe and adequate drinking water. The main objective is to meet the needs of economically disadvantaged communities (DACs). The complementary activity is grant funds are allocated for this effort in the most recent water-related Bond Act, Proposition 1, which was approved in ballot measure that was passed by the voters in 2014. IRWM regions already had been working with disadvantaged communities and developed proposed project lists, including drinking water projects, to meet these needs. This new law gives these projects more emphasis and higher priority.

4.9 Clean Water Action Plan 2014

The *California Water Plan*, a quadrennial report developed by the California Department of Water Resources, generally lays out the long-term goals and implementation strategies necessary to meet the present and future water needs for all Californians. However, the recent drought and water management demands emphasized a need to crystallize certain actions and make them more visible and attractive for more immediate consideration. The 2014 Water Action Plan presented by the California Natural Resources Agency in conjunction with the California Department of Food and Agriculture and the California Environmental Protection Agency is a proposal that provides such a focus. In essence, the action plan presents most of the same themes as developed in the regional IRWM plans including: making conservation a way of life, increasing regional self-reliance, achieving the co-equal goals for the Delta, improving ecosystems, managing and preparing for droughts and various other practices that lend themselves to the goal of long-term resource sustainability. The action plan therefore aligns State actions with the regional plans but also supports the concept of cross-agency integration. Hopefully, such integration will mirror the success found in many of the regional plans.

4.10 Sustainable Groundwater Management Act 2014 (SGMA)

Of all the recent policy changes, the one that was the biggest surprise, and arguably the most dramatic, is the 2014 Sustainable Groundwater Management Act (SGMA). SGMA envelops water users in a new, more structured collective control program where heretofore they were trusted with managing the resource themselves. The users vary from large municipal drinking water systems to small individual rural water well users. The largest group of users of the resource is irrigated agriculture. Consequently,

the chief responsibility for managing the resource primarily has fallen on agriculture as well. One answer to that management responsibility in the past resulted in investments in many of the State's large-scale water transfer systems that, for a significant part, have been flummoxed in meeting groundwater needs by the previously mentioned Delta issues.

The combination of less surface water available, a significant and perhaps historical drought and significant demand changes (from annually-variable demand to constant, hardened demands for water as the result of changes in agricultural cropping patterns from annual to permanent crops such as trees and vines) created a perfect storm for exposing that the past management techniques were ill-equipped to protect the resource from potential catastrophic failure. Some localized failures have occurred during the contemporary drought and those failures were enough incentive to foster urgent changes to the management and regulatory system. Individuals managing their own rate of extraction or management plans that did not develop a water budget for users are no longer adequate. The result is a new law that still leaves control to local areas but demands a paradigm shift to force users to conform to the most fundamental rule of groundwater law which is to use only their fair or equitable share of the resource which could rise or fall based on the condition of the resource.

Recent Valley groundwater conditions reflect the acceleration of a several decades-long trend of falling water levels. This acceleration, if not arrested, will likely instigate extraction limitations necessary to avoid further catastrophic failure. The new SGMA limit is sustainable extraction which ostensibly avoids the undesirable results of over-withdrawal. The implementation of this law has just begun so some additional damages may occur before full implementation is attained and inasmuch as the overall largest groundwater extractors are agricultural users, it will have the largest proportionate impact on that industry with both additional possible damages but also future restraints. But even municipal and industrial uses will likely see significant controls on their uses unless and until locally agreed upon and State-approved sustainability levels are attained in each of the adversely impacted groundwater regions of the State. These control plans will also depend heavily on the implementation strategies of IRWM plans as a source of some of the tools to address groundwater sustainability issues.

4.11 California Drought Emergency Declaration 2015

The recent drought in California has resulted in emergency declarations by California's executive branch. The one that impacts water use the most is the requirement for all regulated drinking water systems to reduce their per capita use by 25 percent (more or less depending on their previous history of per capita use). Agriculture was not given such a specific directive primarily because the drought was limiting most Valley agricultural surface water deliveries to less than 25 percent of their normal allocations. In some cases, agricultural users received zero allocations of contracted surface water supplies. As a policy investment, the drought limitations are hoped to instill an ethic in all users that water will likely have permanent constraints in the future and many of the lessons learned and actions taken during the

drought may also be permanent. These lessons and actions will likely be institutionalized in updates to the regional IRWM plans.

Clearly all of the recent changes outlined here pose a significant challenge to water users of every category. One of the specific challenges is to keep water users informed and engaged in the processes needed to conform to the new water management environment and one of the better tools employed recently to provide that service is IRWM. Therefore, continuing to support IRWM at any and all levels of government would be a wise investment.

5.0 Summary Findings

Water management in the San Joaquin Valley has become an extremely complex undertaking that requires more cooperation and collaboration than ever before to understand how, if possible, to meet all of the current and future water needs and also to sustain the reasonable uses in perpetuity. The complexity involves water uses ranging from sustaining natural systems such as aquatic and terrestrial habitats, to a mature agricultural economy and an increasing urban population. Integrated Regional Water Management planning has emerged as a useful tool providing the opportunity to develop such collaborative networks. Many of the IRWM efforts in the San Joaquin Valley have fostered synergies among the participants that have had an immediate impact and ongoing potential to significantly improve water management.

The test for ultimate success of IRWM plans will be if the organizations that have formed can continue without the financial assistance afforded by grants from Bond monies approved by the voters in California. The next source of such funds, Proposition 1, which was approved by the voters in 2014, has significantly less funds available for investment in regional IRWM entities. However, one of the benefits of the process is that all of the plan areas developed project lists of ongoing needs that are important future investments. The lists continue to emphasize the previous lack of investment in infrastructure and the environment in California and as a result voters can be better informed about the scope of the needs. Another of the results of the recent investments poignantly add to the picture of past under-investment, many of the projects funded came from a large backlog. Less money was invested in new water infrastructure than perhaps was anticipated. However, a benefit of having the backlog was the opportunity for the areas to work together on items that were perhaps less controversial and therefore establish working relationships and processes to deal with the more complex and controversial activities needed to attain future sustainability.

As a result of the start-up and organizational growing pains of IRWM planning, one goal of the overall program that did not receive as much investment or attain significant success was the scale-up of the sub-regional entities into larger hydrologic basin entities. The Tulare Basin IRWM regions did form a larger entity and the organization provided a solid foundation for basin-wide communication but chose not to develop any basin-wide strategies, goals or objectives. The San Joaquin River Basin IRWM regions had no apparent inclination to join in any basin-wide effort despite the fact that some IRWM funds were available for such activities. However, individual IRWM regions did join together on specific joint activities and accessed some of the special regional funds. Ultimately, as noted in this report, the many changes in water management programs and requirements likely contributed to the lack of time or energy for evaluation or consideration of basin-scale management alternatives. Finally, an issue regarding the scope of the work of the regions versus the work needed to manage at the basin-scale is that the plan areas focused almost exclusively on water uses. The plans did not address management strategies needed to deal with water sources. That “gap” is discussed further in the Section 6.0 of this report.

6.0 The Gaps

Part of the purpose of this report is to develop strategies and recommendations for future water management to the California Partnership for the San Joaquin Valley (Partnership). The Partnership includes both public and private representation as appointed by the Governor and are charged with improving the social, economic and environmental fabric of the San Joaquin Valley. The Partnership has numerous high priority strategic issues and water has remained in the top five since its beginning in 2007. In 2015 water moved to the number one issue. The Partnership retained the California Water Institute to shepherd water issues for the Board members and the Board appointed a Work Group of Partnership members and affiliates to gain an understanding of the scope of Valley water issues and to work with CWI to develop a framework document to discuss the conditions and recommend a process for addressing the issues. A report was issued in 2009 (Appendix B) and the ongoing process recommended and adopted by the Partnership for future water management was integrated regional water management planning. The key leadership of the Partnership Water Work Group included County Supervisors from San Joaquin County and Kern County.

San Joaquin and Kern County have vastly different water conditions and are opposites on issues surrounding exporting water from the Delta. However, they joined together under the principle that they agreed on 95 percent of the water management solutions needed in the Valley and would not let their differences interfere with any other good work needed to improve the Valley. IRWMP had the capacity to accomplish that good work through developing common goals and objectives and implementation strategies (projects) for all areas. The leadership was clear on one other aspect in employing IRWM and that was the assessment and management efforts needed to include water sources as well as uses, especially at the basin-scale (Supervisor Ray Watson, Kern County, Framework for Water Management in the San Joaquin Valley, 2009). The water work group leadership inherently understood that in order to attain sustainability you needed a “water budget” that balanced the sources and uses for present and future needs. The current IRWM plans in the Valley are limited to water use management with a significant nod to the question of reliability of Valley sources especially of water imported from outside the two basins. The lack of a clear understanding of local and imported sources and their relative importance, leads to the “gap” in how to attain the IRWM goal of sustainability. The gap is no fault of the current IRWM program. It is a core issue throughout California. There is no current requirement to develop an assessment and management effort that links sources and uses. In order to meet the goals of the Partnership and the legislation (PL 111-11) that fostered the proposed development of Valley-wide water management strategies we offer the following recommendations as suggested changes to remedy the “gap” between the larger management goal that includes source management as well as uses and the current focus of IRWM on uses.

7.0 Recommendations for Future Management

The gaps in Valley water management, especially managing and quantifying sources to develop a Valley water budget, bring into question whether there are any contemporary activities that provide a template to achieve a more complete water accounting and management system in the San Joaquin Valley. In order to develop a truly comprehensive San Joaquin Valley Integrated Water Management Plan the issue boils down to whether there is an institutional arrangement that could address the gaps and provide a more complete suite of water management alternatives and implementation strategies. The criteria for the solution must include: 1) clear principles; 2) goals and objectives; 3) good science; 4) a defensible data collection and data management program; and 5) a clear communications and outreach strategy. The resulting implementation activities must also inspire community confidence that water is being comprehensively managed, both sources and uses. The current best fit is the Delta Stewardship Council (DSC) with its allied Delta Independent Science Board/Science Program and Delta Watermaster.

The Delta Stewardship Council, its Science Board and the Delta Watermaster were created under the comprehensive package of California water legislation adopted in 2009. The portion of the legislation on the Delta (the “Delta Reform Act of 2009”, SBX 7 1) established a Delta core policy of co-equal goals for water supply reliability (for water exports out of the Delta) and ecosystem restoration within and out of the Delta as well as promoting Delta landscape sustainability (the Delta as a place) for the geographic area known as the “legal Delta.” The functions of the three core activities include the following:

1. The Council, under the advice from the Science Board, adopts the plan for managing the Delta water and the broad landscape USES (as in landscape science or managing land for multiple objectives) to meet the co-equal policy goals as well as regulations necessary to enforce the plan.
2. The Science Board “provides oversight of the scientific research, monitoring, and assessment programs to provide the best possible unbiased scientific information to inform water and environmental decision-making in the Delta.”
3. The Delta Watermaster administers the water rights and the resulting water diversions within the Delta.

The only activity not covered by the Delta legislation is the Delta does not have a true upper watershed source area within the scope of the geographic area. All water that moves through the Delta comes from watersheds beyond its legal boundaries.

Our recommendation is to mirror the structure of the Delta Stewardship Council but alter the mission, policies, goals and objectives to reflect the need to manage entire hydrologic basin functions, water sources, uses and landscape management practices necessary to develop and protect the water supplies and their beneficial uses. These uses would include, but would not be limited to, agricultural, municipal, industrial, terrestrial and aquatic ecosystems. Each of the two major hydrologic basins in the San

Joaquin Valley – the San Joaquin River Basin and Tulare Basin – would then have a Watershed Council, a Watershed Landscape Science and Management Advisory Committee and a Basin Watermaster. The Watershed Council would adopt a comprehensive Watershed Plan, the Watershed Landscape Science and Management Board would coordinate the research, monitoring and assessment of the watershed lands and develop implementation recommendations to be included in the Watershed Plan and the Basin Watermaster would honor and administer water rights and beneficial uses of water in the basin and its associated lands.

Possible institutional design and construction alternatives of the Watershed Council, Advisory Committees and Basin Watermaster are provided in more detail in Appendix D. The recent adoption of the Sustainable Groundwater Management Act makes the role of the watermaster in basin water rights administration of particular importance. The Basin Watermaster would work with any existing River Watermasters charged with administering the implementation of surface water rights to advise and coordinate the actions of the River Watermasters or overlying water distribution agencies to assure groundwater basins receive their commensurate natural recharge during the distribution and use of surface water. The process would involve using annual unimpeded flow calculations and the historic geographic distribution of those unimpeded flows over the pre-development landscape to determine how much would have naturally recharged the groundwater. These contributions would then be used to help ascertain the correlative rights and extraction rates for overlying lands managed under the scope of future groundwater basin sustainability plans.

The recommendation for Watershed Councils would likely require special legislation to implement the organization of the two basin watersheds and their advisory boards much as what was done to establish the Delta Stewardship Council. Basin Watermasters could ostensibly be created under existing water code provisions (Sections 4000 to 4407) but legislation would perhaps provide more clarity in their duties and authorities. In order to implement the concept of a San Joaquin Valley Integrated Water Management Plan as envisioned in PL 111-11 the legislation would also need to provide for a coordination process between the three watershed organizations covering the Valley. The coordination would include interaction between the Delta Stewardship Council, the San Joaquin River Basin Watershed Council and the Tulare Basin Watershed Council as well as similar coordination between the three watermasters to administer the water rights and beneficial use enforcement including “waste and unreasonable use” provisions of the California Water Code (Section 100) and the California Constitution.

8.0 Conclusion

Water management in the San Joaquin Valley, and California as a whole, needs a careful review to determine if the existing institutions can adequately deal with both the physical conditions of water (availability, needs and uses) and the administration of evolving new policies and legal frameworks. One of the newer frameworks that has had some success in addressing regional water needs and uses is Integrated Regional Water Management Planning. However, after multiple years of implementing this water management process, it appears additional institutional mechanisms may need to be employed to cover significant gaps in overall water management, especially water sources and new requirements for groundwater management. However, “integrated regional water management” will likely remain an important part of any larger, more comprehensive strategy, inasmuch as it has been very successful in forming agency collaborations that have added important water management strategies and developed efficient projects that need implementation. The recommended larger strategy of watershed management adds not only source water management but landscape science to the institutional arrangements. The only question is whether, after all the recent new water laws and policy changes, does there remain any appetite for additional change? Ultimately the question may not be if further changes will occur, but when, as no current capability exists to address the gaps and needs identified in this report.

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APPENDIX A

Acronyms

Appendix A

List of Acronyms

AF	acre-foot (1 AF/ac = 1-ft depth of water) = 325,853 gallons
AF/yr	acre-foot/year
ARB	American River Basin
AWMP	Agricultural Water Management Plan
BiOp1	a Biological Opinion issued by the U.S. Fish and Wildlife Service regarding the impact of SWP and CVP operations in the Delta on the Delta Smelt and other listed fish species
BiOp2	a Biological Opinion issued by the National Marine Fisheries Service regarding the impact of the SWP and CVP operations in the Delta on salmonoid species
BMPs	Best Management Practices
CABY	Cosumnes-American-Bear-Yuba
CASGEM	California Statewide Groundwater Elevation Monitoring
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CII	commercial, industrial and institutional
CIMIS	California Irrigation Management Information System
CIWQS	California Integrated Water Quality System
CNRA	California National Resources Agency
CR	required leaching ratio
CSU	California State University
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act of 1992
CVRWQCB	Central Valley Regional Water Quality Control Board
CV-SALTS	Central Valley Salinity Alternatives for Long-term Sustainability Initiative
CWA	Federal Clean Water Act of 1972
CWC	California Water Code
CWI	California Water Institute
CWP	California Water Plan
DAC	Disadvantaged Community
Delta	Sacramento-San Joaquin River Delta
DFW	California Department of Fish and Wildlife
DMC	Delta-Mendota Canal
DOI	Department of the Interior
DSC	Delta Stewardship Council
DWR	Department of Water Resources
EDA	Economically Distressed Area
EPA	Environmental Protection Agency
ESA	Endangered Species Act

EWMP	Efficient water Management Practices
GAMA	Groundwater Ambient Monitoring and Assessment
GMP	Groundwater Management Plan
gpm	gallons per minute
ILRP	Irrigated Lands Regulatory Program
IRP	Integrated Resources Plan
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
JPA	Joint Powers Authority
M&I	municipal and industrial water users
MAC	Mokelumne-Amador-Calaveras
MAF	million acre-feet; also million acre-feet per year depending on context
MAGPI	Merced Area Groundwater Pool Interests
MCL	Maximum Contaminant Level
MOU	Memorandum of Understanding
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
Partnership	California Partnership for the San Joaquin Valley
ppm	parts per million
psi	pounds per square inch (pressure)
RAC	Regional Advisory Committee
RCD	Resource Conservation District
RMG	Regional Management Group
RWVG	Regional Water Management Group
RWQCB	Regional Water Quality Control Board
SGMA	Sustainable Groundwater Management Act
SJRRP	San Joaquin River Restoration Program
SJV	San Joaquin Valley
SNMP	Salt and Nutrient Management Plan
SWP	State Water Project
SWFM	Stormwater Flood Management
SWRCB	State Water Resources Control Board
TDS	Total dissolved solids
TMDL	Total maximum daily load
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USFS	United State Forest Service
USFWS	United States Fish and Wildlife Service
UWMP	Urban Water Management Plan
WQCP	Water Quality Control Plan
WWD	Westlands Water District

APPENDIX B

Framework for the Implementation of Water Management Planning

The complete report, including appendices, can be accessed at Publications www.californiawater.org



California Partnership for the
San Joaquin Valley

**Framework
For the Implementation
Of
Water Management Planning**

Prepared by
**California Water Institute
6014 N. Cedar Avenue
Fresno, CA 93710**

Adopted October 22, 2009

Executive Summary

The California Partnership for the San Joaquin Valley commissioned a “Water Work Group” and the California Water Institute (CWI) at California State University, Fresno to develop a “framework” for long-term San Joaquin Valley water management. The effort is critical to identify the Valley water needs and determine water management solutions for a fifty-year planning horizon. The following is the framework summary findings:

1. *The California Water Code and the California Department of Water Resources have outlined a process for analyzing local long-term water needs and developing comprehensive water management solutions. The process involves creating “integrated regional water management plans” (IRWMP). The entire San Joaquin Valley should embrace this concept and adapt it further for its own purposes.*
2. *The IRWMP process has three basic components:*
 - a. *An assessment of conditions and water use preceding a fifty-year planning time frame;*
 - b. *An estimate (water budget) of water needs for the next fifty years; and*
 - c. *A solutions process that analyzes every reasonable water management technique to meet various alternate futures as the technique becomes available.*
3. *Significant amounts of information and integration will be required to develop and implement regional, inter-regional, basin-wide and Valley-wide plans. Information gathering and dissemination tools that outline core information needs for all participants at every level will be important. The report offers an example for consideration.*
4. *The IRWMP process is a deliberative, long-term approach that will take time to develop and implement. Water crises and conflicts will continue to arise in the intervening years and may override the long-term effort. The Valley must recognize the importance of these events and be prepared to respond to them accordingly in a timely manner. An “action team” response approach to address such events would be useful. By example, a Partnership action team will continue to work on the Sacramento-San Joaquin Delta water export and State-wide drought crisis.*
5. *Two examples of how “integrated” assessment, planning and management solutions can work together are included within this report. They include solutions for groundwater recharge improvement that integrates land and water use and a rural water system assessment and solution strategy. Both of these water-related issues are rapidly approaching crisis level. Many good recharge soils are getting separated from surface water supplies. Access to Valley groundwater becomes more important should the lack of surface water supplies become more widespread. Rural water system operations that rely on groundwater are then faced with dwindling supplies and water quality issues and very often the local operators do not have the financial capacity to resolve the problems. Postponing resolution of these issues is not an effective option.*
6. *The Partnership must engage all its members to make water an ongoing “high priority” if the Valley is to prosper and meet the commitments to its citizens. Water cannot be created. Its distribution is naturally uneven and cannot be moved without significant social, environmental and economic cost. What we have must be treated with respect.*



California Partnership for the
San Joaquin Valley

November 16, 2009

TO: California Partnership for the San Joaquin Valley members and partners
Public officials and citizens of the Valley

FROM: Supervisor Ray Watson, Partnership Water Policy Work Group Convener

RE: Transmittal of San Joaquin Valley Integrated Regional Water Management Plan
Framework

The California Water Institute, Partnership Water Policy Working Group and Water Plan Advisory Committee are pleased to provide this San Joaquin Valley Integrated Regional Water Management Plan Framework as a template to advance collaborative water management planning. The framework was adopted unanimously by the California Partnership for the San Joaquin Valley Board of Directors on October 22, 2009. A copy of the Partnership resolution follows this letter.

Water is the lifeblood of California's economy that ranks among the most productive in the world. Our lifeblood is maintained by a fragile balance. Nature determines where and when precipitation occurs in our state, yet most needs for water occur at different places and times than provided by nature. This fundamental reality requires the careful management and protection of our water resources.

The recently approved seminal water policy legislation in Sacramento and the comprehensive water bond proposal for consideration by voters in 2010 have affirmed the high priority of water as a foundation for California's sustainable economy in the 21st Century.

It is critical for San Joaquin Valley cities, counties and local water agencies to join in the crafting of a state wide water management strategy that assures we will have water where and when it is needed. This strategy must be committed to several components:

- Necessary infrastructure to capture, control, store and move water.
- Employ best management practices to ensure that conservation, recycling and desalination represent the maximum yet realistic portion of water supplies.
- Ensure safety and quality of water supplies.
- Protect and restore water associated ecosystems while preventing damaging floods.

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- Equitable responsibility among beneficiaries for funding these costly elements of a successful water management strategy.
- Develop priorities with a commitment to complete the entire strategy within reasonable and necessary time frames.
- All stakeholders must benefit.

The San Joaquin Valley is a microcosm of all of the water issues facing our state. The Partnership Water Policy Working Group objective is to assist with the preparation of an Integrated Regional Water Management Plan that encompasses the eight county political boundaries and hundreds of public entities within the San Joaquin Valley that either manage or are impacted by water policies, so that our plan can be integrated into the state wide plan. Our plan will ultimately include an accounting of water sources and uses, and project them into the future. This analysis will help us determine what infrastructure and management practices are needed to sustain California's lifeblood and economy.

The San Joaquin River - Sacramento River Delta supplies 25% of the water for 25 million people in the state, and is therefore a critical element in the state's water management strategies. An important role of the Partnership is to ensure that the ecological and economic interests of the Delta are protected and that the needs of some stakeholders are not satisfied to the detriment of others. All stakeholder interests must be addressed and improved as a part of the plan.

The issues of water management are highly complex, involving technical, economic, social and political interests. The California Water Institute, Partnership Water Policy Working Group and Water Plan Advisory Committee have invested countless hours over the last two years working on these issues. We owe a big thank you to all of these individuals and their respective agencies for their commitment to the future of our state.

We believe the work done to date represents a new level of cooperation and mutual support among the eight counties in the San Joaquin Valley. The adopted template is intended to assist with the hard work that lies ahead to organize and integrate water management strategies throughout the Valley into a system that works for all.

Sincerely,



Ray Watson
Kern County 4th District Supervisor
Water Policy Working Group Convener

PAGE 2 OF 2



**A RESOLUTION OF THE CALIFORNIA PARTNERSHIP FOR THE SAN
JOAQUIN VALLEY IN SUPPORT OF THE PARTNERSHIP-SPONSORED
INTEGRATED REGIONAL WATER MANAGEMENT PLAN FRAMEWORK**

1. **WHEREAS** the California Partnership for the San Joaquin Valley ("Partnership") was established by Executive Order S-22-06 to focus attention on one of the most vital, yet challenged regions of the State and implement changes that would improve the economic well-being of the Valley and the quality of life of its residents. The Partnership has crafted a Strategic Action Proposal that will achieve those goals and has been charged by Governor Schwarzenegger to implement that Strategic Action Proposal; and
2. **WHEREAS** the growing population and expanding economy of the San Joaquin Valley require an adequate water supply of sufficient quality that is reliable for all sectors, including the environment. Current water supplies may be vulnerable to sudden disruption and reoccurring droughts. Groundwater supplies have been drawn down faster than they have been replenished; and current infrastructure is insufficient to address water storage and conveyance needs anticipated under current and future demand patterns and protecting the fragile Sacramento-San Joaquin Delta ecosystem. Each of these challenges must be addressed; and
3. **WHEREAS** the Strategic Action Proposal's recommendations for Water Quality, Supply and Reliability focus on; a) developing an Integrated Regional Water Management Plan for the San Joaquin Valley that incorporates inter-regional cooperation between the San Joaquin and Tulare hydrologic regions; b) incorporating major levee enhancements in the Sacramento-San Joaquin Delta and San Joaquin Valley to safeguard and enhance regional water quality and water supply as well as provide for flood control; c) augmenting surface water and groundwater banking programs and recycled water projects; d) improving water quality and expanding inland saline water management; e) expanding environmental restoration and conservation strategies; and f) expanding agricultural and urban water use and energy efficiency programs; and
4. **WHEREAS** implementation of the Water Supply, Quality and Reliability recommendations require development of a convergence of interest among the eight counties of the San Joaquin Valley; and
5. **WHEREAS** this resolution takes no position on an isolated conveyance (peripheral canal) around and/or through the Sacramento-San Joaquin Delta; and

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6. **WHEREAS** a major goal of the Partnership is to build bridges of understanding and shared vision between interests and regions of the San Joaquin Valley and California that meld together to provide for the economic well being and quality of life for all its citizens; and

7. **WHEREAS** the Partnership Water Policy Working Group has been engaged in a structured, collaborative dialogue since September 2007 to bring the interests and regions together to develop a shared vision for reliable water supply for all the San Joaquin Valley that protects water quality and reliability; and

8. **WHEREAS** the California Water Institute and Water Plan Advisory Committee have been engaged in a 2-year collaborative process to prepare a San Joaquin Valley Integrated Regional Water Management Plan Framework that effectively addresses the key elements contained in the Partnership Strategic Plan.

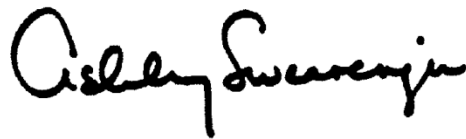
NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the California Partnership for the San Joaquin Valley unanimously supports the Integrated Regional Water Management Plan Framework and encourages local, State and Federal resource agencies, as well as Central Valley Cities, Counties, and the public to embrace and implement concepts that address current and future sources, uses and management of water, including;

- a) Necessary infrastructure to capture, control, store and move water consistent with the law and water rights.
- b) Employment of best management practices to ensure that conservation, recycling, reuse, groundwater reclamation and desalination represent the maximum yet realistic portion of water supplies.
- c) Ensuring the safety and quality of current and future water supplies.
- d) Protection and restoration of aquatic ecosystems.
- e) Preventing and minimizing damaging floods.
- f) Encouraging regional self sufficiency for water supplies.
- g) Equitable responsibility among beneficiaries for funding the elements of a successful water management strategy, and
- h) Developing priorities with a commitment to complete the long-range strategy within reasonable timeframes.

PASSED, APPROVED, and ADOPTED this October 22, 2009, by the Board of Directors of the California Partnership for the San Joaquin Valley.



Fritz Grupe, Deputy Chair



Ashley Swearengin, Deputy Chair

Table of Contents

Executive Summary	2
Transmittal Letter	3
Resolution of Adoption	5
1.0 Introduction.....	8
2.0 Background.....	8
2.1 California Partnership for San Joaquin Valley.....	8
2.2 Water Quality and Supply Reliability Water Work Group.....	9
2.3 What is the Framework?	10
3.0 The Valley Water Plan Framework	11
3.1 The Assessment Process	12
3.2 The Assessment Tool	13
3.3 The Water Budget.....	14
3.4 The Solutions Matrix	15
3.5 Water Crisis Response	16
3.6 Implementation.....	16
4.0 Conclusions and Recommendations.....	16
5.0 References	17
Acknowledgements	18
Appendix 1 - A Summary Report by the California Water Institute	21
Appendix 2 – CA Dept. of Water Resources Water Source and Use Charts.....	49
Appendix 3 - List of Figures and Tables	56
Appendix 4 - List of Attachments.....	74

1.0 Introduction

Water is the lifeblood of the San Joaquin Valley. In the past fifteen years the competing uses for water have resulted in redirection of surface water supplies away from the Valley and have intensified the use of Valley groundwater. The Valley's challenge is to become much more creative to deal with the natural cycles of drought and excess as well as the permanent and temporary losses. The importance of water will require a more thorough evaluation of our assets and needs, and our stewardship of local supplies. The California Partnership for the San Joaquin Valley (Partnership) recognized the need for an assessment of our water environment and commissioned a "water work group" consisting of a Partnership "convener" (Supervisor Ray Watson of Kern County), the California Water Institute at CSU Fresno and a "water policy working group" (key Valley interests) to develop a framework for analyzing the Valley water issues, water inventory, future water needs and to develop a potential menu of water management solutions. The following report presents that framework.

2.0 Background

2.1 California Partnership for the San Joaquin Valley

The San Joaquin Valley is comprised of portions of the 8 counties of Kern, Tulare, Kings, Fresno, Madera, Merced, Stanislaus and San Joaquin (Figure 1), with 62 cities and more than 3.4 million residents, and has a long history of contributions to the success of California. Although it is recognized worldwide as an agricultural powerhouse and is one of the fastest growing regions in the nation, it is also one of the most challenged in comparison to the rest of the state and nation.

Governor Arnold Schwarzenegger established the California Partnership for the San Joaquin Valley (Partnership) by Executive Order in June 2005 in an unprecedented effort to focus attention on the needs of the region. As the Governor stated in the Executive Order, "The strength of California is tied to the economic success of the San Joaquin Valley." Through the year 2030, the growth rate of the region is projected to be 65% higher than the state average. How effectively the region accommodates the growth will be an important determination of California's future.

The Strategic Action Plan - "*The San Joaquin Valley: California's 21st Century Opportunity*" - sets forth overall strategies and specific actions with accompanying indicators to measure progress. It builds on the existing strengths and addresses current challenges to achieve a Prosperous Economy, Quality Environment and Social Equity, the "3E's" of sustainable growth. It embraces and enhances the assets that define the region, such as the San Joaquin River and Highway 99, as leading strategies to attract investment. It recognizes the Valley's heritage of agriculture as the foundation for economic growth and forges new frontiers for prosperity by identifying five key industry clusters for development: (1) agribusiness including food processing, agricultural technology, and biotechnology; (2) manufacturing; (3) supply chain management and logistics; (4) health and medical care; (5) renewable energy.

The detailed reports and recommendations are integrated into six major initiatives with associated indicators that will be tracked annually:

- 1) Grow a Diversified, Globally-Competitive Economy Supported by a Highly-Skilled Workforce
- 2) Create a Model K-12 Public Education System
- 3) Implement an Integrated Framework for Sustainable Growth

- 4) Build a 21st Century Transportation Mobility System
- 5) Attain Clean Air Standards
- 6) Develop High-Quality Health and Human Services

The Strategic Action Plan calls for a sustained public-private partnership over the next decade to mobilize the essential government and civic leadership to achieve measureable results. The Strategic Plan and organizational structure were approved by the Governor and funded by the Legislature for an initial term of two years with the intent that State legislation would then be enacted to ensure commitment and continuity for the full decade. The overall goals of the Partnership, linkages and inter-relationships are symbolized by the following graphic:



2.2 Water Quality, Supply and Reliability Water Work Group

The growing population and expanding economy of the San Joaquin Valley require an adequate water supply of sufficient quality and reliability for all sectors as well as for the environment. The current supply is inadequate for the future and there is significant annual groundwater overdraft that must be reversed. In addition, the San Joaquin River is a valuable natural asset that needs to be restored and protected while developing additional water supplies. Solutions must embrace efficient water use practices, construction of additional facilities for both surface and groundwater storage and reusing waste water.

Prior to the establishment of the California Partnership, the Valley Congressional delegation members initiated the development of the San Joaquin Valley “Regional Water Plan” and enlisted the services of the California Water Institute (CWI) at California State University, Fresno to facilitate the planning effort. The California Partnership determined that the two water planning efforts were congruent and that the public interest would be best served if the two efforts merged. Four resource management strategies were identified as a foundation for the Regional Water Plan. More strategies could be added as needed later. The four strategies identified were: (1) Water Supply, (2) Water Quality, (3) Flood Control, and (4) Environmental Enhancement. The Regional Water Plan is to be coordinated with state and federal planning agency efforts currently underway during the planning horizon. The result was the commissioning of the Partnership “Water Work Group” which was charged with developing a “framework” for delivering a comprehensive water management plan for the Valley.

The California Partnership Strategic Plan recommended six specific water-related actions that form the foundation elements for the subject Valley “Water Management Plan”. The actions follow:

1. Develop and implement a “San Joaquin Valley” water management planning process
2. Incorporate major levee enhancements in the Sacramento-San Joaquin Delta and San Joaquin Valley to safeguard regional water quality and water supply as well as provide for flood control
3. Augment surface and groundwater banking programs and recycled water projects in the San Joaquin Valley
4. Improve water quality and expand salinity management infrastructure development
5. Promote environmental restoration
6. Expand agricultural and urban water use efficiency and energy efficiency programs

2.3 What is the “Framework”?

The Partnership selected the California Water Institute (CWI) to deliver the analysis of what would be necessary to develop a fully mature “San Joaquin Valley Water Management Plan” and to serve as staff and technical advisors to the Water Work Group. The Water Work Group convener selected by the Partnership, Supervisor Ray Watson of Kern County, also sought input on the Valley’s current water events menu which assisted in an “outline of activities” (Appendix 3) for the Group and the CWI, by identifying some of the core issues and a strategy that he believed would serve as a model process to move the eight Partnership counties forward together in water management solutions. Two dominant events prevailed in crafting the strategy. The first was a series of legal rulings that resulted in a Delta water delivery crisis; the second was an unfolding drought. The result was the development of a process that is likely to be replicated in the longer-term planning efforts. The process involves the implementation of a careful and deliberative analysis of assets and liabilities for the development of a “water management plan” for the Valley, and the other is an adaptive strategy to deal with crisis issues that invariably arise in either the physical water world or as a matter of policy.

The result of the above was the following “framework” report which encompasses both the fundamental outline of how to proceed (including a draft Valley Water Management Plan “report” outline, Attachment 1) to develop the information needed for various levels of water management planning (regional, inter-regional, hydrologic basin, Valley) as well as the use of the aforementioned adaptive strategies to move more critical water management (such as groundwater banking and rural water systems) and policy issues (for example, Delta conveyance and Delta ecosystem management) forward as they arise from the crucible of conflict or scarcity.

3.0 The Valley Water Plan Framework

3.1 The Assessment Process

The recommended assessment process involves organizing and conducting a careful and deliberative activity of analyzing the water environment assets and liabilities for every area of the San Joaquin Valley. The analysis must include the condition of the entire water environment including but not limited to: (1) surface and groundwater, (2) flood control and flood management, (3) water quality and (4) understanding the water needs of the ecosystems in the Valley. The organizational tool proposed to be used for that assessment is the “**integrated regional water management planning**” (IRWMP) activity now imbedded in the California Department of Water Resources, “California Water Plan” (an every-five-year-interval water assessment and planning process). Not only does the State “Water Plan” host this effort (it is also in the statute) but the recent California voter-approved water and environmental “Bond” issues have linked the availability of grant funds to the integrated planning process. Whether a city, county, local water entity or special environmental interest gets any State Bond grant funds is now dependent on whether they are a part of an IRWMP.

What is “integrated regional water management planning” and why should the Partnership embrace it as the organizational and assessment tool for addressing water issues in the San Joaquin Valley? Integrated regional water management plans are “bottom-up” collaborations that are locally-driven by common interest and geography. Many are based on shared sources of water for supplies; others are based on natural watersheds. These efforts offer the opportunity for local entities that heretofore were either dependent on others for water sources or management or, even if totally independent, to interact in a way that potentially is synergistic. The potential outcome of all parties working together is likely to be more enduring management solutions.

An example of these collaborative efforts can involve cities and agricultural water agencies that withdraw water from the same groundwater aquifer. Until recently, it has been relatively uncommon for two such different agencies to work together to manage the same groundwater body optimally. An IRWMP provides a better vehicle for doing so. Sometimes the interactions are at first contradictory or competitive. However, ultimately the opportunities to work out such issues are far more palatable than fighting in an arena (court-mandated adjudication of shared groundwater in the above example) that could be detrimental to both parties. The process also brings together new partners and issues that cut across other subjects in the Partnership “circle of goals” (page 7). For example, energy and land use are critical components of any successful water planning effort. Energy pumps/moves water and land use determines where and how much water is used or disabused (water quality impacts). They are therefore integral discussion, assessment, quantification and solution activities for any water planning effort.

The Water Work Group, through the CWI, has been actively participating and assisting in the development of IRWMP groups up and down the Valley on behalf of the Partnership. This activity is documented in a CWI supplementary report in Appendix 1. Much of the Valley is now covered by IRWMP’s. Several started before the commissioning of the Partnership itself. They formed under earlier guidance from the California Department of Water Resources which is still adapting the process. ***The difference is that the first IRWMP’s began with a focus of analysis that most quickly resulted in building “projects” (many of which are undoubtedly needed). The newer version of the IRWMP process demands a broader assessment and more diverse participation. That diversity and added complexity demands a clear process map so as to allow the analysis of water conditions and needs to move forward more sensibly. The proposed Valley process is a further adaption of the various preceding activities.***

The Water Work Group believes that presenting a simplified process that involves using a core menu of tools will bring consistency and reliability and hence greater success in coordinating the IRWMP groups in the Valley. The goal is to

present an outline that anyone using or involved with water can adapt to develop the necessary basic information that will plug into the IRWMP plan. The process is also scalable; the tools can be used successively for larger geographic integration activities. In fact, a major goal of the proposed core assessment activities is to elevate the local groups into the next steps of the process, integrated, inter-regional plans and then the Valley-wide plan. Inter-regional plans give the partner collaboratives within a geographic area an opportunity to work at the next level of synergy. An example of this is the San Joaquin River Basin, from the headwaters to the Delta confluence with the Sacramento River. Some problems with water sources, water management or the environment may require larger areas of participation that could bring more solutions and resources to apply to the water management issues associated within that hydrologic area. After building the area-wide collaborations, a Valley-wide plan can address even larger internal and external issues that determine the whole Valley's success in its water management goals.

The key to success in the planning process is to find issues of common interest to work on first. Such a problem-solving exercise will allow for the future resolution of the more difficult issues. Nonetheless, as mentioned previously, certain crises may demand a different level of attention that prevails over the deliberative process. The Partnership must remain cognizant of those circumstances and the Water Work Group will propose an ongoing mechanism for meeting those challenges such as has been employed during the recent Delta environment and drought crises.

The four core components of the proposed Valley process are:

- 1. The organizational activity and a preliminary assessment tool – involves the logical partners and institutional formation of local IRWMP's. The formation activity occasionally involves partners who have not necessarily had the best relationships before or possibly no relationship at all; therefore, initial formation is often a third-party, facilitated process. The assessment tool includes the initial inventory of water environment issues, assets and liabilities with stakeholders and partners. The process is as inclusive and as broad as possible so that the optimum opportunities for sustainability and integration can be realized.***
- 2. The budget tool – the total water environment budget is calculated for current reasonable uses of water and for various futures (the Work Group recommends 50 years) so as to assist with developing a "potential solutions" matrix to meet or decide how to deal with water budget issues.***
- 3. The solutions matrix – IRWMP groups will develop water management tools to match the current and future needs for water with the options available for meeting those needs. The solutions tool must also include a technical, institutional and financial capacity assessment for the various proposed alternative water needs and use conditions.***
- 4. The Partnership water crisis response – a deliberative process assists in the development of longer-term sustainability strategies, however, the water environment is increasingly faced with crisis events that call for extraordinary measures and actions. The process envisioned here is to institutionalize an "action team" response of the Partnership membership that can attempt to find solutions and policy convergence on crisis issues within competing interests of the Valley. The process involves gathering the appropriate parties in a collegial atmosphere where quick, rational assessments and recommendations can be developed to prevent, mitigate or solve such crises or join larger efforts to deal with the water management issues.***

The Water Work Group believes that every area in the Valley needs to become part of an IRWMP and follow the above process for development of a "Water Management Plan" for their designated area. Where there is a reluctance on the part of potential local or regional responsible partners, the Work Group recommends the Counties act as the agent

(with all due deliberation on the costs and impacts of such decisions) for areas without coverage in an IRWMP so there are absolutely no gaps in Valley coverage. Such coverage is critical in addressing the Bond funding mechanisms mentioned previously; both the California Legislature and the administrative funding agencies have made it clear that State support will go to areas with complete coverage and the higher level inter-regional plans. The Work Group also believes that participating in a local IRWMP implies additional participation in the Basin-wide and Valley-wide IRWMP process using the same organizational and analytical tools, adapted as necessary to the conditions and limitations of each level of participation. The following are the suggested core tools that should be common to all parties participating in the Valley water management planning processes. The tools are not completely definitive or conclusive, they are meant to serve as starting points. The goal is to develop a process that is transferrable. The tools are meant to assist all water users to participate meaningfully in the process by telescoping down to the bare essentials the data needed to understand a region, basin and the Valley’s water conditions and needs.

3.2 The Assessment Tool

The assessment tool involves documenting the types of water use in the geographic area of a jurisdiction within an IRWMP at the beginning of its efforts. The water-using activities fall into the three main categories in the following:

1. Urban and Rural Domestic, Industrial and Commercial Water Use Activities

	<i>Acres of Land</i>	<i>Gallons per Day*</i>	<i>Acre-feet per Year</i>
Urban and Rural Domestic Use and Current Supplies a. <i>Precipitation</i> b. <i>Surface Water</i> c. <i>Groundwater</i>			
Industrial Use a. <i>Surface Water</i> b. <i>Groundwater</i>			
Commercial Use a. <i>Precipitation</i> b. <i>Surface Water</i> c. <i>Groundwater</i>			

2. Agricultural Water Use

	<i>Acres of Land</i>	<i>Acre-feet per Acre</i>	<i>Acre-feet per Year</i>
Agricultural Use a. <i>Precipitation</i> b. <i>Surface water</i> c. <i>Groundwater</i>			

*Domestic and commercial use have a constant demand that impacts water use, all other uses tend to be seasonal.

3. Environmental Use

	<i>Acres of Land</i>	<i>Acre-feet per Acre</i>	<i>Acre-feet per Year</i>
Terrestrial and Aquatic Ecosystem Uses a. <i>Precipitation</i>			

<i>b. Surface Water</i>			
<i>c. Groundwater</i>			

The assessment tool and the subsequent budget tool are summary presentations based on the more comprehensive “existing conditions” analysis used by the California Department of Water Resources. **Every participant in the ongoing efforts will be encouraged to use the Department’s analytic tool which is included in the Appendix (2) and made a part of this report.**

3.3 The Water Budget

With a basic understanding of the current uses of water in a circumscribed area, the next tool involves projecting the probable changes and future needs. The use patterns assume high-quality water will be required in all cases because the dominant uses are human consumption and agricultural crops which both require substantially low total salt levels. The projection also assumes principles will be established that outline what goals the area has for future land use patterns. The principles may include items such as not giving up any further agricultural land so that agriculture remains as a significant economic driver in the Valley. An alternate strategy would include converting as much land as possible to housing and industrial development so as to fundamentally change the economy of an area or areas so a higher-income economic condition can be attained. A third alternate, or principle of future land use, is to convert as much land as possible back to natural environments and make an area’s economy based on eco-tourism and hunting. Each of these alternates then needs a re-calculation of the water budget.

Future Needs Matrix

	<i>2015</i>	<i>2030</i>	<i>2045</i>	<i>2060</i>
<i>Domestic, Urban, Commercial and Industrial Needs, Gallons per Day* and Acre-feet per Year Based on Estimated Population</i>				
<i>Agricultural Uses Based on Estimated Crop Acreage Acre-feet per Year</i>				
<i>Environmental Needs Based on Terrestrial and Aquatic Ecosystems Areas Acre-feet per Year</i>				

*Domestic and commercial use have a constant demand that impacts water use, all other uses tend to be seasonal.

3.4 The Solutions Matrix

Water supply with the necessary quality appears to be the over-riding issue in the San Joaquin Valley. Flood protection, while important, is already a somewhat separate activity under the auspices of the separate “Bond” issue, “Proposition 1E”. Therefore, the Water Work Group believes the focus of a core solutions strategy has to be water supply and quality for the budgeted uses. Local versions of the solutions matrix can add the flood protection element. Flood management is important in the solutions process because better utilization of wet year supplies will be an important element of the water budget.

The solutions involve not only the water budget under various alternative futures but also whether there is water available to meet the various alternates. Impacts from natural events such as long-term climate change reducing snow pack could significantly reduce water availability. If the water needs of some alternates cannot be met at each level of analysis, local, basin and Valley, then new additional future land management alternates will have to be constructed and the water availability will dictate that structure. The following matrix is a simplified version of the California DWR version in the proposed Water Plan 2009. Each of the alternate land management and budget tool uses will require an analysis of the potential solutions to meet the future needs. The utility of the process is the potential clear emergence of certainty of need that can then be used for leveraging the type of solutions that rise above the local capabilities to regional and state-wide levels.

Solutions Matrix - Opportunities in Acre-feet

Activity	Water Use		
	Agriculture	Domestic, Industrial, Commercial	Environment
Connectivity <i>a. Existing</i> <i>b. New Conveyance to Link Surface and Groundwater Improvements</i> <i>c. Transfers</i>			
Groundwater <i>a. Existing</i> <i>b. Improved Availability through Recharge; Direct or In Lieu</i>			
Surface Water <i>a. Existing</i> <i>b. Future re-allocation (SJR)</i> <i>c. Local Storage Increases</i> <i>d. Statewide Storage Increases</i>			
Wastewater Recycling and Other Sources such as Desalination <i>a. Existing Re-visited</i>			

<i>b. Future</i>			
<i>Efficiency – Conservation</i> <i>a. Agricultural</i> <i>b. Urban</i> <i>c. Environmental</i>			
<i>Flood Water – Enhanced Recovery of:</i> <i>a. River/Stream Flows</i> <i>b. Urban Storm water</i> <i>c. Agricultural Storm water</i>			

3.5 Water Crisis Response

The IRWMP assessment and solutions process is a long-term project that should be used at every level of planning: local, inter-regional and Valley-wide. However, it is clear from the efforts of the Water Work Group that water crises will undoubtedly occur and a response capability will remain a clear need for the foreseeable future. Three particular issues were brought to the forefront during the Partnership efforts. The first was the Delta estuary biological crash and hence, south-of-the-Delta water delivery instability, along with a drought; the second was the potential economic failure and poor quality services in small rural communities due to the high cost of operating and maintaining local water infrastructure and the third was drought-related loss of surface water supplies was accelerating the use of Valley groundwater. Our groundwater basins are now showing significant signs of stress (Figure 6). Groundwater is also receiving renewed attention as potentially needing State-wide regulation (Legislative Analyst’s Office report, October 2008). The result of these findings was the efforts by the Work Group, Tulare County and CWI to develop tools and strategies to cope with these issues. The primary tool is an “action team” approach and the Work Group recommends the Partnership formally recognize the need to continue to convene in such a manner to address such crises. These future activities will have to be convened based on the premise that if the issue is important enough to the Valley, the principals involved will find a way to convene the needed sessions.

3.6 The Implementation Strategy

The Water Work Group recommends the Partnership adopt a “Resolution” encouraging all Partnership members, cities, counties, the water use and stakeholder communities continue to work to either join or continue in an IRWMP at the local level, the inter-regional level and the Valley-wide efforts. The Resolution should also encourage all water managers to participate in the refining and adoption of commonly-accepted assessment, water budget, and solutions processes for the local collaborative areas, inter-regional connectivity and the Valley.

4.0 Conclusions and Recommendations

The Water Work Group believes that water will continue to be a critical resource issue blocking the San Joaquin Valley’s path to prosperity and success. The Group has embraced the State IRWMP process and its components as a potential tool to fully evaluate Valley water needs and alternatives and recommends adapting it as needed to best serve the Valley. Many IRWMP efforts have already begun but the meshing of the efforts into the inter-regional plans will take considerable encouragement and coordination. The Work Group is interested in an evaluation process that

helps organize the water management planning efforts. Without a proper needs assessment, water budget and solutions that start with self-sufficiency, the State and the nation will be hard pressed to provide support and resources to any proposed physical (construction) solutions. The Water Work Group recommends the Partnership invite all parties who are part of the water environment to become part of the process at every level: regional, inter-regional, basin and Valley-wide.

5.0 References

1. California Water Plan – 2005 and 2009 (draft) updates, California Department of Water Resources
2. Page and Leblanc – U.S. Geological Survey, 1972, 1986
3. California Department of Finance – Population and Demographics, 2008
4. California Regional Economies Project
5. California Soil Resources Laboratory – UC Davis
6. Fresno, Madera, Merced, Kern, Kings, San Joaquin, Stanislaus, Tulare 2007 Agricultural Commissioners’ Crop Reports for 2007
7. County of Fresno, COG Blueprint – 2008 (Draft)
8. California Regional Water Quality Control Board – TMDL’s, ILRP, Salinity Plans
9. USBR – ROD – San Luis Drainage Plan
10. California Legislative Analyst’s Office – Report on Water Issues, October 2008

ACKNOWLEDGEMENTS

This report was approved by the Board of Directors of the California Partnership for the San Joaquin Valley at a meeting held in Fresno, California, on October 22, 2009. The participants and preparers fully understand the difficulty of finding consensus on a matter as significant as water in the San Joaquin Valley, therefore we gratefully acknowledge the effort and commitment of the Board of Directors of the Partnership to come together on the issues of common concern and allow the resolution of the agreed upon issues to lead us to the solutions on the more difficult ones. The 2009 Board of Directors of the Partnership includes:

Secretary Mike Chrisman	California Resources Agency	Partnership Chair
Fritz Grupe	The Grupe Company	Partnership Deputy Chair
Ashley Swearengin	Mayor of Fresno	Partnership Deputy Chair
Secretary Linda Adams	CA Environmental Protection Agency	
Secretary Fred Aguiar	CA State and Consumer Services Agency	
Secretary Kim Belshe	CA Health and Human Services Agency	
Secretary Dale Bonner	CA Business, Transportation and Housing Agency	
Acting Secretary Doug Hoffner	CA Labor and Workforce Development Agency	
Secretary A. G. Kawamura	CA Department of Food and Agriculture	
Secretary Glen Thomas	CA Office of the Secretary for Education	
James A Aleru	James A Aleru, CPA/ABV, CVA	
Lee Andersen	San Joaquin Valley County Superintendents of Schools Consortium	
Frank Bigelow	Madera County Board of Supervisors	
Andrew Chesley	Central Valley Councils of Government	
Sid Craighead	Avenal City Council	
DeeDee D'Adamo	California Air Resources Board	
Frank Gornick	Central Valley Higher Education Consortium	
Coke Hallowell	San Joaquin River Parkway and Conservation Trust	
Corwin Harper	Hospital Council of Northern and Central California	
Barry Hibbard	California Economic Strategy Panel	
Farrell Jackson	Mayor of Oakdale	

Partnership Board, cont'd

Sunne McPeak	California Emerging Technology Fund
Luisa Medina	Central California Legal Services
Michael Navarro	Lionakis Beaumont Design Group
Mike Nelson	Merced County Board of Supervisors
Leroy Ornellas	San Joaquin County Board of Supervisors
Richard Ortega	Tulare City Council
Pete Parra	California Workforce Investment Board
David Quackenbush	Central Valley Health Network
Jeff Rowe	Central California Workforce Collaborative
Fred Ruiz	Ruiz Foods
Lorraine Salazar	Sal's Mexican Restaurant
Paul Saldana	Central California Economic Development Corporation
Gene Voiland	Area Energy LLC [Retired]
Ray Watson	Kern County Board of Supervisors
Peter Weber	Federal Interagency Task Force

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- Fritz Grupe – Co-chair and Partnership Board member
- Gene Voiland – Co-chair and Partnership Board member
- Alan Atry – Mayor of Fresno, Partnership Board member 2008
- DeeDee D’Adamo – Senior Policy Analyst, Congressman Cardoza – Partnership Board member
- Supervisor Leroy Ornellas, San Joaquin County – Partnership Board member
- Sunne McPeak – Partnership Board member
- Gary Podesto – Former Mayor, City of Stockton – Partnership Board member 2008

The San Joaquin Valley Integrated Water Management Plan Advisory Committee (federal effort initiated by the Valley Congressional Delegation):

- Paul Betancourt – Fresno County Farm Bureau, Fresno
- Paul Boyer – Self-Help Enterprises, Visalia, reviewer and commenter

Steve Chedester – San Joaquin River Exchange Contractors Authority, Los Banos
Tim Fisher – Great Valley Center, Modesto
Kevin Kaufman – Stockton East Water District, Stockton, reviewer and commenter
Melinda Marks – San Joaquin River Conservancy, Fresno, reviewer and commenter
Frances Mizuno – San Luis and Delta-Mendota Water Authority, Tracy
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Sarge Green and Jim Tischer

Project Directors and Co-authors

APPENDIX C

IRWM Funding

Proposition 50

Implementation Grant Rounds 1 and 2 Table and Map – August 2010

Planning Grant Awards (2005-2006) Table – August 2010

Proposition 50 IRWM Implementation Grant Amount Distributions (CA DWR, 2015)

Prop 1E

**Grant Awards - Rounds 1 and 2 Proposition 1E Stormwater Flood Management Grant
Program (2011 - 2013)**

Proposition 84

Final Awards Drought Grant Solicitation October 30, 2014

**Summary of Prop 84 IRWM Grant Programs Awards by Appropriation with
Targets Noted**

Proposition 84 IRWM Implementation Grant Distribution (CA DWR, 2015)



Proposition 50 IRWM Planning Grant Awards (2005-2006)

Applicant	Plan Type* (IRWM/ICWM)	DWR Awards	SWRCB Awards
Round 1			
Amador Water Agency	IRWM	\$145,500	
California State Coastal Conservancy	IRWM	\$451,230	
County of Humboldt	IRWM	\$500,000	
El Dorado Irrigation District	IRWM	\$500,000	
Glenn-Colusa Irrigation District	IRWM	\$499,940	
Kings River Conservation District	IRWM	\$500,000	
Los Angeles, City of	IRWM	\$500,000	
Madera County	IRWM	\$500,000	
Mattole Restoration Council	ICWM		\$246,772
Mendocino County Resource Conservation District	ICWM	\$264,748	
Mendocino County Water Agency	ICWM	\$196,000	
Monterey Peninsula Water Management District	IRWM/ICWM	\$496,957	
Natural Heritage Institute	IRWM	\$500,000	
Newport Beach, City of	IRWM	\$487,000	
Newport Beach, City of	ICWM		\$397,500
Northeastern San Joaquin County GW Banking Authority	IRWM	\$498,468	
Northern California Joint Exercise of Powers	IRWM	\$499,980	
Regents of the University of California, The	ICWM		\$499,874
Regional Water Authority	IRWM	\$500,000	
San Benito County Water District	IRWM	\$500,000	
San Bernardino Valley Municipal Water District	IRWM	\$498,560	
San Jacinto River Watershed Council, The	IRWM	\$500,000	
San Luis Obispo County FC and WCD	IRWM	\$500,000	
Santa Monica Bay Restoration Authority	ICWM	\$500,000	
Semitropic Water Storage District	IRWM	\$499,435	
Tomales Bay Watershed Council Foundation	ICWM		\$459,900
Trinidad, City of	ICWM		\$500,000
Ventura Countywide Integrated Regional Water Mgmt.	IRWM	\$220,000	
Water Resources Association of Yolo County	IRWM	\$500,000	
Watershed Conservation Authority	IRWM	\$500,000	
Western Municipal Water District	IRWM	\$495,000	
Yuba County Water Agency	IRWM	\$499,640	
Zone 7 Water Agency	IRWM	\$387,000	
Sub-Total:		\$12,639,458	\$2,104,046
Total:		\$14,743,504	

*Plan Types include Integrated Regional Water Management (IRWM) and Integrated Coastal Water Management (ICWM)

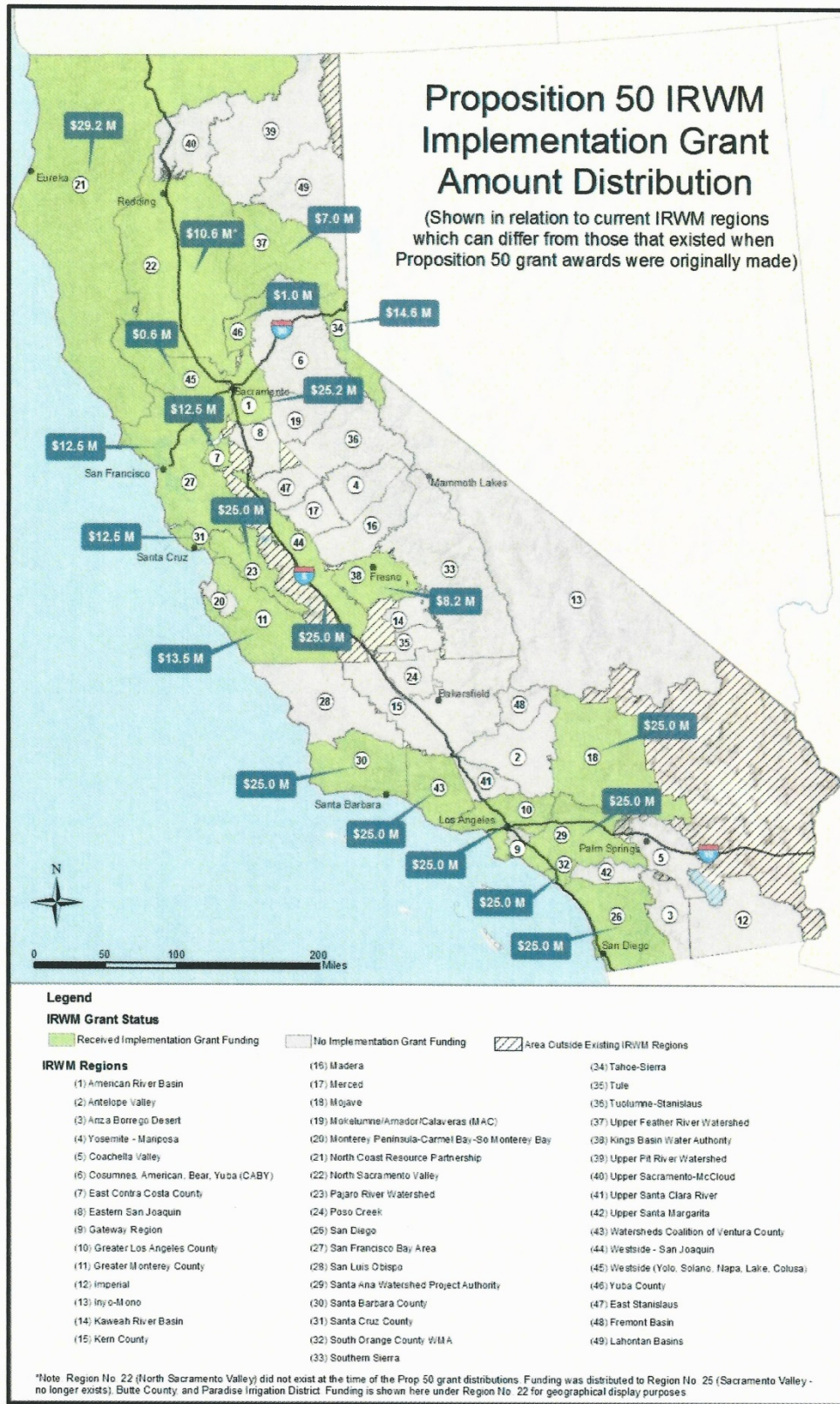


Proposition 50 IRWM Round 1 & 2 Implementation Grant Awards (2005-2006)

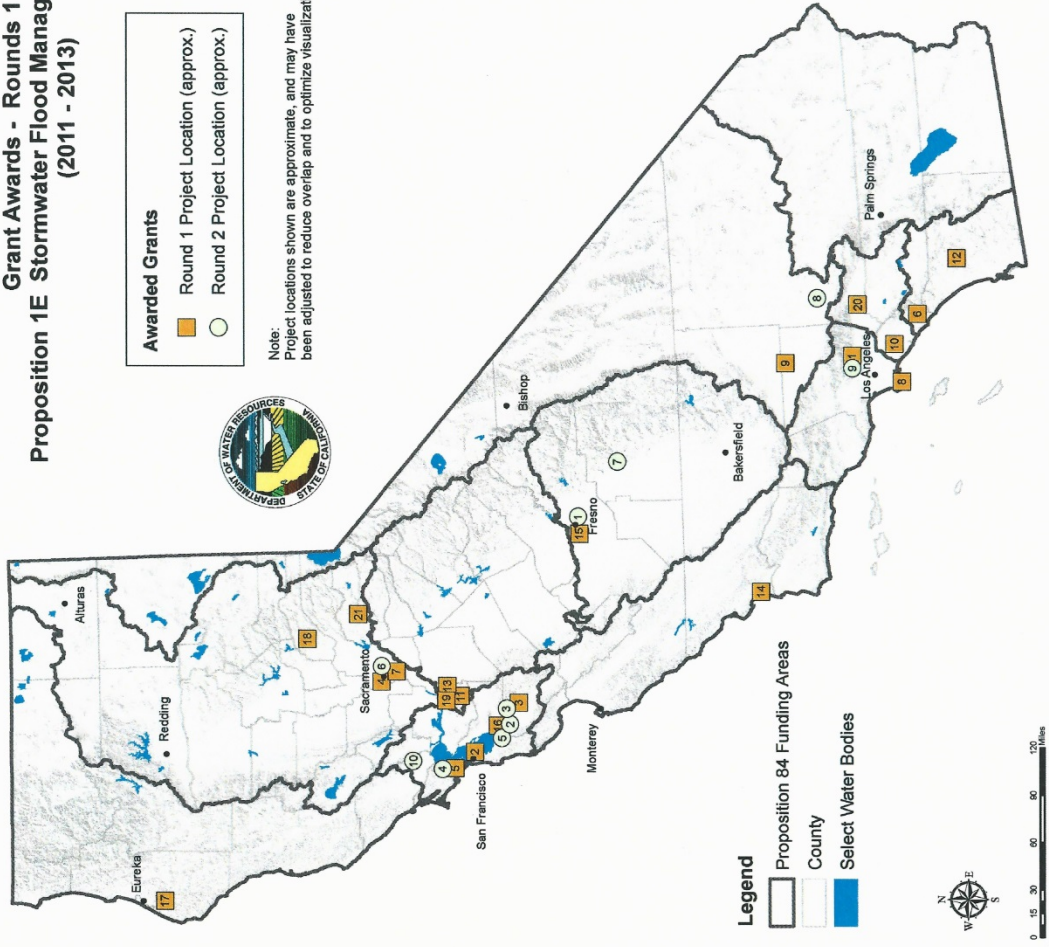
Applicant	DWR Awards	SWRCB Awards
Round 1		
County of Humboldt*	\$160,000	\$24,831,579
Pajaro Valley Water Management Agency	\$25,000,000	
Regional Water Authority	\$25,000,000	
Watersheds Coalition of Ventura County		\$25,000,000
County of Orange		\$25,000,000
Los Angeles County Flood Control District	\$25,000,000	
San Luis and Delta Mendota Water Authority	\$25,000,000	
Santa Ana Watershed Project Authority		\$25,000,000
Tahoe Resource Conservation District		\$12,500,000
Contra Costa Water District		\$12,500,000
County of Plumas	\$7,000,000	
Bay Area Clean Water Agencies	\$12,500,000	
Monterey County Water Resources Agency		\$12,500,000
Northern California Joint Exercise of Powers**	\$12,500,000	
Mojave Water Agency	\$25,000,000	
Community Foundation of Santa Cruz County		\$12,500,000
Sub-Total:	\$157,160,000	\$149,831,579
Round 1 Total:	\$306,991,579	
Round 2		
County of Humboldt	\$2,079,598	
Kings River Conservation District		\$6,064,375
San Diego County Water Authority	\$25,000,000	
Santa Barbara County Water Agency		\$25,000,000
Sub-Total:	\$27,079,598	\$31,064,375
Round 2 Total:	\$58,143,973	
Grand Total:	\$365,135,552	

* Contract split between County of Humboldt (\$24,831,579) and Siskiyou Resource Conservation District (\$160,000)

** Contract split between NCWA (\$9,610,200) and Butte County (\$2,889,800)



Grant Awards - Rounds 1 and 2 Proposition 1E Stormwater Flood Management Grant Program (2011 - 2013)



Awarded Grants

- Round 1 Project Location (approx.)
- Round 2 Project Location (approx.)

Note:
Project locations shown are approximate, and may have been adjusted to reduce overlap and to optimize visualization.



ID	Grantee	Total Proposal Cost		Grant Award
		Round 1	Round 2	
1	Los Angeles County Flood Control District	\$40,000,000		\$20,000,000
2	San Francisco Public Utilities Commission	\$86,398,000		\$24,147,000
3	Santa Clara Valley Water District	\$50,000,000		\$25,000,000
4	City of Sacramento	\$13,109,359		\$6,210,151
5	Main County Flood Control and Water Conservation District	\$15,322,000		\$7,861,000
6	Santa Margarita Water District	\$14,009,085		\$5,000,000
7	Sacramento Area Flood Control Agency	\$1,953,546		\$876,773
8	City of Rancho Palms Verdes	\$18,929,455		\$9,464,727
9	City of Palmdale	\$13,483,322		\$6,500,000
10	County of Orange	\$31,954,200		\$19,877,100
11	Central Coast Flood Control & Water Conservation District	\$14,079,000		\$2,000,000
12	City of Eureka	\$20,888,100		\$14,900,000
13	Central Coast Water District	\$20,000,000		\$10,000,000
14	San Luis Obispo County Flood Control & Water Conservation District	\$5,647,359		\$2,787,000
15	Fresno Metropolitan Flood Control District	\$4,482,173		\$2,231,086
16	San Francisco State University	\$16,700,000		\$6,000,000
17	City of Fontana	\$6,801,764		\$3,384,652
18	American Rivers	\$1,020,000		\$510,000
19	City of Antioch	\$5,994,800		\$2,997,300
20	City of Fontana	\$19,600,000		\$9,850,000
21	Georgetown Divide Resource Conservation District	\$1,761,400		\$280,000
Totals:		\$416,723,373		\$177,876,789

Round 2			
1	Fresno Metropolitan Flood Control District	\$13,782,021	\$6,891,010
2	East Bay Municipal Utility District	\$19,225,125	\$5,000,000
3	Santa Clara Valley Water District	\$61,866,630	\$30,000,000
4	Town of San Anselmo	\$17,441,000	\$8,720,500
5	City of East Palo Alto	\$1,527,508	\$667,853
6	Sacramento Area Flood Control Agency	\$3,819,820	\$1,508,910
7	Kaweah Delta Water Conservation District	\$6,219,712	\$3,108,856
8	San Bernardino County Flood Control District	\$10,508,969	\$5,254,480
9	Los Angeles County Flood Control District	\$79,757,951	\$28,377,332
10	Sonoma County Water Agency	\$4,135,000	\$1,891,822
Totals:		\$238,282,426	\$91,822,863

Final Awards
Proposition 84 – IRWM 2014 Drought Grant Solicitation
October 30, 2014

Funding Area/IRWM Region	Grantee	Grant Award
Tulare Lake Funding Area		
Kern County	Buena Vista Water Storage District	\$11,921,079
Kaweah River Basin	Kaweah Delta Water Conservation District	\$241,818
		\$12,162,897
San Joaquin River Funding Area		
Merced	Merced Irrigation District	\$2,900,252
Mokelumne/ Amador/ Calaveras	Upper Mokelumne River Watershed Authority	\$5,755,504
Tuolumne-Stanislous	Tuolumne Stanislaus Integrated Regional Water Management Authority	\$8,131,619
Consumnes American Bear Yuba	^a Nevada Irrigation District	\$492,051
Westside-San Joaquin	San Luis and Delta Mendota Water Authority	\$2,742,915
		\$20,022,341
Central Coast Funding Area		
San Luis Obispo	San Luis Obispo County Flood Control and Water Conservation District	\$6,323,610
Pajaro River Watershed	Pajaro Valley Water Management Agency	\$6,362,875
Santa Barbara Countywide	Santa Barbara County Water Agency	\$2,124,564
		\$14,811,049
Sacramento River Funding Area		
Upper Sacramento-McCloud	City of Mt. Shasta	\$4,289,300
American River Basin	Regional Water Authority	\$9,765,000
Westside (Yolo, Solano, Napa, Lake, Colusa)	Yolo County Flood Control and water Conservation District	\$7,000,829
Consumnes American Bear Yuba	^a Nevada Irrigation District	\$5,692,146
Upper Pit River Watershed	North Cal-Neva Resource Conservation and Development Council, Inc.	\$1,148,976
North Sacramento Valley Group	Shasta County Department of Public Works	\$2,492,557
		\$30,388,808
North Coast Funding Area		
North Coast	County of Humboldt	\$8,700,000
		\$8,700,000
San Francisco Bay Area Funding Area		
San Francisco Bay Area	Association of Bay Area Governments	\$32,178,423
		\$32,178,423
San Diego Funding Area		
Santa Ana Watershed Project Authority	^a Santa Ana Watershed Project Authority	\$1,103,110
South Orange County Watershed Management Area	County of Orange	\$1,500,000
San Diego	San Diego County Water Authority	\$15,074,938
		\$17,678,048
Santa Ana Funding Area		
Santa Ana Watershed Project Authority	^a Santa Ana Watershed Project Authority	\$11,757,000
		\$11,757,000
Los Angeles-Ventura Funding Area		
Watersheds Coalition of Ventura County	County of Ventura	\$8,354,015
Greater Los Angeles County	Los Angeles County Flood Control District	\$27,261,414
Upper Santa Clara River	Castaic Lake Water Agency	\$16,744,039
Gateway Region	Gateway IRWM Authority	\$3,941,966
		\$56,301,434
Lahontan Funding Area		
Antelope Valley	Los Angeles County Waterworks District No. 40	\$1,666,244
Mojave	^a Mojave Water Agency	\$2,922,000
		\$4,588,244
Colorado River Basin Funding Area		
Mojave	^a Mojave Water Agency	\$7,254,364
Coachella Valley	Indio Water Authority	\$5,270,636
		\$12,525,000
GRAND TOTAL		\$221,113,244

^a Proposal spans multiple funding areas.

Summary of Prop 84 IRWM Grant Program Awards - By Appropriation with Targets Noted

SBx2-1

Funding Area	Planning Grants				Implementation Grants				Other DAC Actions			
	Round 1		Round 2		Totals for Planning Grant Program		Round 1		Pilot Projects	Tulare Study		
	Total Award	DAC Amt	DAC %	DAC Amt	DAC %	Total Award	DAC Amt	DAC %	Total Award	Total Award		
North Coast	\$ 1,000,000	\$ 780,000	78%	\$ -	\$ -	\$ 1,000,000	\$ 780,000	78%	\$ 8,221,061	\$ 110,000	\$ 500,000	\$ -
San Francisco Bay	\$ 875,620	\$ 88,064	10%	\$ 259,118	\$ 43,617	\$ 1,134,737	\$ 131,681	12%	\$ 9,415,103	\$ 230,000	\$ 9,185,103	\$ -
Central Coast	\$ 4,579,252	\$ 588,301	13%	\$ 1,293,494	\$ 76,488	\$ 5,872,746	\$ 664,789	11%	\$ 11,025,264	\$ 752,428	\$ 362,856	\$ -
LA-Ventura	\$ 2,424,613	\$ 92,925	4%	\$ 954,256	\$ 16,667	\$ 3,378,869	\$ 109,592	3%	\$ 29,855,006	\$ 1,781,454	\$ 2,033,479	\$ -
Santa Ana	\$ 1,000,000	\$ 100,000	10%	\$ -	\$ -	\$ 1,000,000	\$ 100,000	10%	\$ 422,222	\$ 422,222	\$ -	\$ -
San Diego	\$ 1,457,416	\$ 59,845	4%	\$ 777,050	\$ 174,880	\$ 2,234,466	\$ 234,725	11%	\$ 3,001,000	\$ 485,000	\$ 2,443,500	\$ -
Sacramento	\$ 4,088,439	\$ 397,834	10%	\$ 1,282,763	\$ 126,760	\$ 5,371,202	\$ 524,594	10%	\$ 17,332,463	\$ 2,754,497	\$ 2,892,201	\$ -
San Joaquin	\$ 2,674,188	\$ 134,411	5%	\$ 2,203,197	\$ 395,863	\$ 4,877,385	\$ 530,294	11%	\$ 9,673,270	\$ 1,594,869	\$ 232,574	\$ -
Tulare Lake	\$ 236,890	\$ 27,899	12%	\$ 717,807	\$ 101,157	\$ 954,697	\$ 129,056	14%	\$ 4,952,866	\$ 792,234	\$ 1,868,110	\$ 2,000,000
Lahontan	\$ 710,534	\$ 106,002	15%	\$ 1,465,364	\$ 334,154	\$ 2,175,898	\$ 440,156	20%	\$ 4,512,000	\$ 393,880	\$ 2,221,418	\$ -
Colorado River	\$ 2,000,000	\$ 316,140	16%	\$ -	\$ -	\$ 2,000,000	\$ 316,140	16%	\$ 1,589,744	\$ 564,103	\$ 1,025,641	\$ -
Totals	\$ 21,046,952	\$ 2,691,421	13%	\$ 8,953,048	\$ 1,269,606	\$ 30,000,000	\$ 3,961,027	13%	\$ 99,999,999	\$ 12,190,687	\$ 22,374,882	\$ 2,000,000
Funding Targets							\$ 3,900,000		\$ 10,000,000		\$ 20,000,000	

SB 855

Funding Area	Implementation Grants				Implementation Grants			
	Round 1		Round 2		Round 2		2014 Drought*	
	Total Award	DAC Amt	DAC %	Total Award	DAC Amt	DAC %	Total Award	
North Coast	\$ -	\$ -	-	\$ 5,386,000	\$ 1,445,221	27%	\$ 8,700,000	
San Francisco Bay	\$ 22,453,469	\$ 655,000	3%	\$ 20,430,000	\$ 700,000	3%	\$ 32,178,423	
Central Coast	\$ 6,515,732	\$ 1,517,311	23%	\$ 7,569,000	\$ -	-	\$ 14,811,049	
LA-Ventura	\$ 20,186,593	\$ 1,968,546	10%	\$ 43,902,909	\$ -	-	\$ 4,535,834	
Santa Ana	\$ 12,237,782	\$ -	-	\$ 8,333,500	\$ 1,930,000	23%	\$ 6,791,810	
San Diego	\$ 9,382,780	\$ -	-	\$ 7,995,423	\$ -	-	\$ 5,255,612	
Sacramento	\$ -	\$ -	-	\$ 6,311,442	\$ 1,937,751	31%	\$ 30,388,808	
San Joaquin	\$ 3,934,483	\$ 470,557	12%	\$ 7,663,579	\$ 1,768,064	23%	\$ 1,721,343	
Tulare Lake	\$ 1,640,134	\$ 1,482,240	9%	\$ 16,745,898	\$ 7,122,522	43%	\$ 12,162,897	
Lahontan	\$ 5,400,000	\$ -	-	\$ 1,500,000	\$ -	-	\$ 1,500,000	
Colorado River	\$ 8,410,256	\$ 3,000,000	36%	\$ 5,240,000	\$ 2,603,000	50%	\$ 12,525,000	
Totals	\$ 104,922,249	\$ 9,093,654	9%	\$ 131,077,751	\$ 17,506,558	13%	\$ 19,804,599	
Funding Target				\$ 15,906,346			\$ 221,113,244	

SB 104

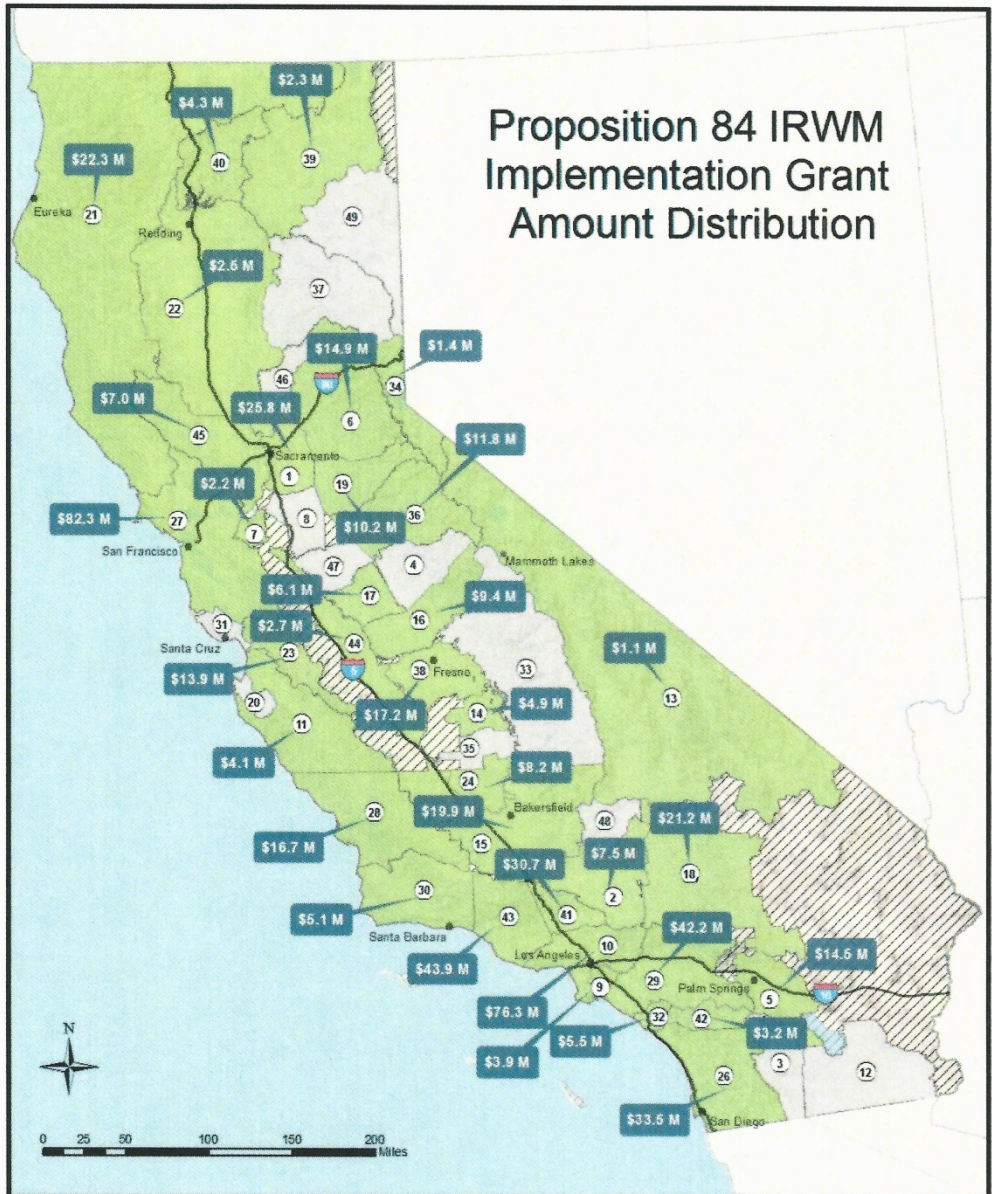
* DWR was obligated to award another \$15,906,346 for DAC projects in Round 2 to meet the statewide SB 855 10% target of \$25 million.

*No DAC requirement with Drought Solicitation

**Department of Water Resources, Division of IRWM, Financial Assistance Branch
Summary, by Funding Area, of Grant Awards, plus Funding Area Remaining Balances**

Funding Area	Awards to Date as of 10/30/14											Remaining	
	Round 1					Round 2					2014 Drought Implementation Total Awards	Balance for Future Round	% of Region
	Bond Allocation	% of Regional	Bond Cost 3.5%	Program Delivery	Available for Grants	Planning Regional Funds	Implementation Total Awards	Planning Regional Funds	Implementation Total Awards	Implementation Total Awards			
North Coast	\$ 37,000,000	4%	\$ 1,295,000	\$ 1,850,000	\$ 33,855,000	\$ 500,000	\$8,221,061	\$ -	\$5,386,000	\$ 8,700,000	\$ 11,047,939	33%	
San Francisco Bay	\$ 138,000,000	15%	\$ 4,830,000	\$ 6,900,000	\$ 126,270,000	\$ 454,342	\$31,868,592	\$ 33,209	\$20,430,000	\$ 32,178,423	\$ 41,305,435	33%	
Central Coast	\$ 52,000,000	6%	\$ 1,820,000	\$ 2,600,000	\$ 47,580,000	\$ 2,185,445	\$17,540,996	\$ 536,494	\$7,569,000	\$ 14,811,049	\$ 4,937,016	10%	
Los Angeles sub-region	\$ 215,000,000	24%	\$ 7,525,000	\$ 10,750,000	\$ 196,725,000	\$ 1,316,488	\$50,041,599	\$ 587,381	\$48,438,743	\$ 54,301,434	\$ 40,039,355	20%	
Santa Ana sub-region	\$ 114,000,000	13%	\$ 3,990,000	\$ 5,700,000	\$ 104,310,000	\$ 500,000	\$12,660,004	\$ -	\$15,125,310	\$ 11,757,000	\$ 64,267,886	62%	
San Diego sub-region	\$ 91,000,000	10%	\$ 3,185,000	\$ 4,550,000	\$ 83,265,000	\$ 728,708	\$12,383,780	\$ 388,525	\$13,251,035	\$ 17,678,048	\$ 38,834,904	47%	
Sacramento River	\$ 73,000,000	8%	\$ 2,555,000	\$ 3,650,000	\$ 66,795,000	\$ 1,991,627	\$17,332,463	\$ 641,382	\$6,311,442	\$ 30,388,808	\$ 10,129,278	15%	
San Joaquin River	\$ 57,000,000	6%	\$ 1,995,000	\$ 2,850,000	\$ 52,155,000	\$ 1,373,155	\$13,607,753	\$ 1,092,391	\$9,384,922	\$ 20,022,341	\$ 6,674,438	13%	
Tulare/Kern (Tulare Lake)	\$ 60,000,000	7%	\$ 2,100,000	\$ 3,000,000	\$ 54,900,000	\$ 118,445	\$21,354,000	\$ 464,461	\$16,745,898	\$ 12,162,897	\$ 4,054,299	7%	
North/South Lahontan	\$ 27,000,000	3%	\$ 945,000	\$ 1,350,000	\$ 24,705,000	\$ 355,267	\$9,912,000	\$ 732,682	\$3,000,000	\$ 4,588,244	\$ 6,116,807	25%	
Colorado River Basin	\$ 36,000,000	4%	\$ 1,260,000	\$ 1,800,000	\$ 32,940,000	\$ 1,000,000	\$10,000,000	\$ -	\$5,240,000	\$ 12,525,000	\$ 4,175,000	13%	
TOTALS	\$ 900,000,000	100%	\$ 31,500,000	\$ 45,000,000	\$ 823,500,000	\$ 10,523,476	\$204,922,248	\$ 4,476,524	\$150,882,350	\$ 221,113,244	\$ 231,582,158	28%	

Proposition 84 IRWM Implementation Grant Amount Distribution



Legend

- Received Implementation Grant Funding
- No Implementation Grant Funding
- Area Outside Existing IRWM Regions

IRWM Regions

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> (1) American River Basin (2) Antelope Valley (3) Anza Borrego Desert (4) Yosemite - Mariposa (5) Coachella Valley (6) Cosumnes American Bear Yuba (CABY) (7) East Contra Costa County (8) Eastern San Joaquin (9) Gateway Region (10) Greater Los Angeles County (11) Greater Monterey County (12) Imperial (13) Inyo-Mono (14) Kaweah River Basin (15) Kern County | <ul style="list-style-type: none"> (16) Madera (17) Merced (18) Mojave (19) Mokelumne/Amador/Calaveras (MAC) (20) Monterey Peninsula-Carmel Bay-So Monterey Bay (21) North Coast Resource Partnership (22) North Sacramento Valley (23) Pajaro River Watershed (24) Poso Creek (26) San Diego (27) San Francisco Bay Area (28) San Luis Obispo (29) Santa Ana Watershed Project Authority (30) Santa Barbara County (31) Santa Cruz County (32) South Orange County WMA (33) Southern Sierra | <ul style="list-style-type: none"> (34) Tahoe-Sierra (35) Tule (36) Tuolumne-Stanislaus (37) Upper Feather River Watershed (38) Kings Basin Water Authority (39) Upper Pit River Watershed (40) Upper Sacramento-McCloud (41) Upper Santa Clara River (42) Upper Santa Margarita (43) Watersheds Coalition of Ventura County (44) Westside - San Joaquin (45) Westside (Yolo Solano Hapa Lake Colusa) (46) Yuba County (47) East Stanislaus (48) Fremont Basin (49) Lahontan Basins |
|---|---|---|

*Note: Region No. 25 (Sacramento Valley) no longer exists and is incorporated into other regions

APPENDIX D

Alternatives for Institutional Development of San Joaquin Valley Watershed Councils



Appendix D

Alternatives for Institutional Development of San Joaquin Valley Watershed Councils

Introduction

Assuming the next logical institutional development for optimizing and managing the sources, rights and beneficial uses of water in the San Joaquin Valley is the formation of **Watershed Councils** and their attendant **Basin Watermasters** for the **San Joaquin River Basin** and the **Tulare Basin**, there are a number of possible constructions of the institutions. The following describes two potential core alternatives. Other alternatives may include variations on these two examples or organizations with less rigor such as agencies that are strictly collaborative and/or advisory. The examples mirror the overall structure of the Delta Stewardship Council (DSC) but offer differences in the boards, governance and support functions so as to better address the needs of the geographic scope of the proposed councils. The principal difference with the DSC design is that Watershed Councils need a focus on overall land management practices in the watershed that impact both sources and uses of water.

The Watershed Councils

The two alternative designs for the Watershed Council membership mirror the Delta Stewardship Council and the San Joaquin Valley Air Pollution Control District with a variation of the Air District Board membership model.

The Delta Stewardship Council membership was designated in the authorizing legislation. The seven members include four appointees by the Governor, one by the Senate, one by the Assembly and the seventh is the Chair of the Delta Protection Commission. Council members are required to be of diverse expertise and reflect a statewide perspective. The appointments are for fixed terms. The Chair is funded as a full-time state management position and the members are funded at one-third of a position. The members are from the geographic areas either within the Delta or impacted by the water management decisions involving the Delta.

Implementation of the Delta Stewardship Council model for a San Joaquin River Basin and the Tulare Basin Watershed Council would require special legislation with similar requirements for its membership; that is, the seven council members would have to be from the hydrologic basin geographic area and represent some unique but relevant constituency within the basin that could add sound representative decision-making to the Council. This iteration would also benefit from the DSC design that includes a

strong advisory committee process. The difference would be that a watershed advisory committee organizational structure must have not just scientists and agencies that can advise the Council on best practices, regulatory requirements and implementation strategies, but more importantly be integrated with the representatives of the predominant land uses in the basin who are actually responsible for implementing the science-based watershed management practices.

The second design would involve modeling after the San Joaquin Valley Air District. This design involves using elected representatives from the hydrologic basin and making their term on the Watershed Council coterminous with their office term. The representatives on the air district are five city council members, eight county supervisors and two science-based appointees. The air district board is rather large as a result of having eight Valley counties involved. The proposed Watershed Council could benefit from splitting the eight counties into the two watersheds and therefore cutting the representation in half and modifying the elected representatives to the broadest range of publicly elected agencies. Specifically, the Watershed Council under this arrangement could have elected representatives from two counties, two cities (one large city > 100,000, one <100,000 and two water agencies (once again one larger agency > 100,000 acres and one < 100,000 acres). The seventh Watershed Council member could be an at-large representative appointed by a majority of the other six members whose term would parallel the longest term of the other members. The seventh member could be an “expert” that understands watersheds and their functions nominated by pre-qualified institutions or elected from any other under-represented public agencies. The Watershed Councils under this arrangement would involve the following representation for each hydrologic basin:

- **San Joaquin River Basin** – eight counties: Amador, Calaveras, Madera, Mariposa, Merced, San Joaquin, Stanislaus and Tuolumne; thirty-one cities and numerous large and small public water agencies.
- **Tulare Basin** – four counties; Fresno, Kern, Kings and Tulare; thirty-six cities (within the watershed*) and numerous large and small public water agencies.

* Kern County has cities in the high desert portion of the County but they are not in the Tulare Basin. The criteria for the Watershed Councils should be that a county has most of their area (greater than 50%) within the watershed. The listed counties all meet that criteria.

The Watershed Landscape Science and Management Advisory Committees

The two alternative designs for the Watershed Council membership mirror the Delta Stewardship Council. The proposed Advisory Committee makeup would also be similar, consisting of representatives of the land managers (owners and operators) of the predominant hydrologic basin landscape types. The land-based organizations would be the core of the effort because it will be their organizations that implement the watershed landscape science and regulatory requirements. The predominant land use areas would bear the largest responsibility for watershed management and therefore be the key representatives on the core Advisory Committees. Currently the largest landholders/operators in the

two hydrologic areas include the federal government (United States Forest Service, National Parks, Bureau of Land Management) irrigated agriculture, private rangeland, urban/suburban/rural residential and oil and gas properties.

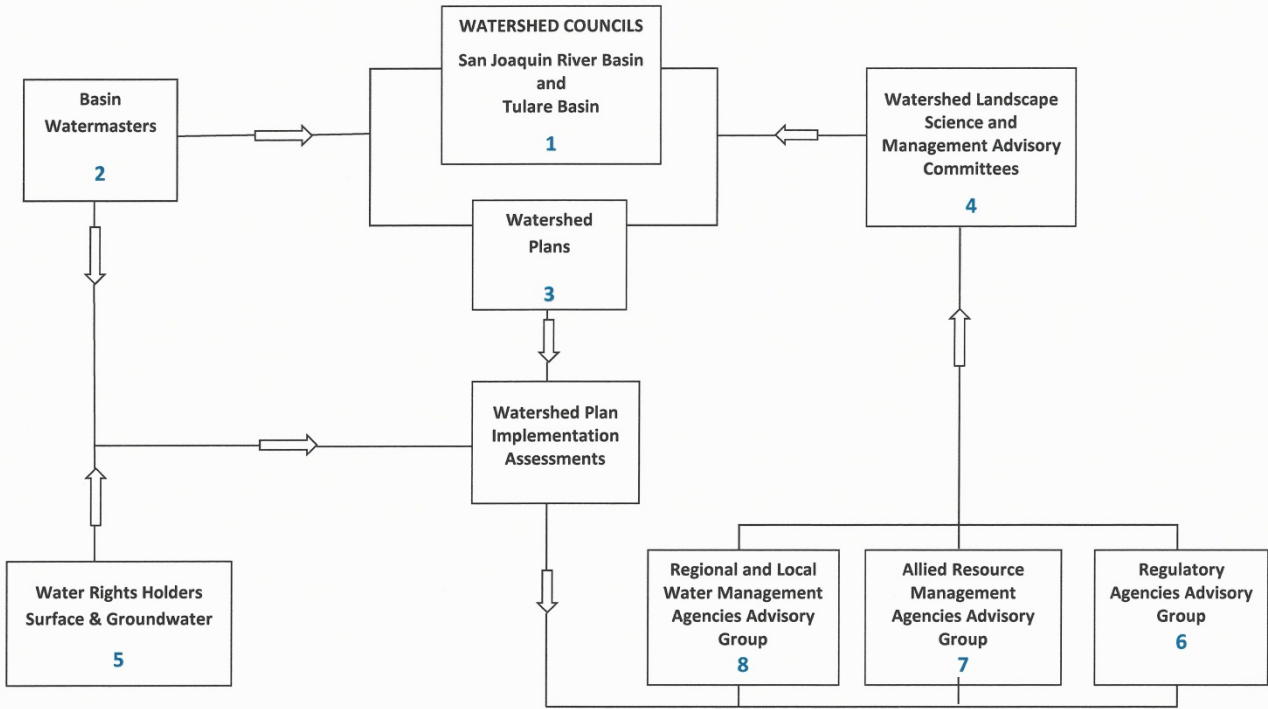
The Watershed Plan

The Watershed Plan development and implementation directives would be the same for both proposed structures. The core development would have to be managed by professional staff in conjunction with the allied Advisory Committees and Basin Watermasters. The plan would then be adopted by a Watershed Council.

The Basin Watermasters

The Basin Watermasters would be appointed by the Watershed Councils within the scope and direction of the enabling legislation unless appointed under the existing Water Code provisions (Water Code Sections 4000-4407) by the California Department of Water Resources.

A diagrammatic representation of the proposed San Joaquin Valley Watershed Councils and supporting structure is presented. A key is provided with more details about the composition and function of each entity.



Numbers correspond to key

Key to San Joaquin Valley Watershed Councils Organization Chart

1. **Watershed Councils (2, San Joaquin River Basin and Tulare Basins)** – Alternate 1; seven members all appointed under legislative directions based on landscape management expertise (alpine/montane, oak/woodland, rangeland, agriculture, urban, suburban, rural, industry) and geographical distribution. Alternate 2; seven members from elected officials appointed under legislative directions, two County Supervisors from Counties having substantial geographic coverage (>50%) in the basin/watershed, two city councilmembers, one larger city (>100,000), one smaller city (<100,000), two elected agricultural water agency representatives, one larger agency (>100,000 acres) one smaller agency (<100,000 acres); one elected official from other water-related public agencies.
2. **The Basin Watermaster** – established either by legislation or under the existing CA Water Code (Sec. 4400 et seq.). Selected by the Watershed Council. Serves at the pleasure of the Watershed Council. Honors and enforces beneficial uses and water rights including aquatic and terrestrial ecosystems; enforces constitutional waste and unreasonable use when appropriate.
3. **Watershed Plans** – one for each hydrologic basin (San Joaquin River and Tulare) – developed by Watershed Landscape Science and Management Advisory Board in consultation with the Basin Watermaster and all other water user and management advisory groups (5 to 8 on chart). Adopted by Watershed Council, enforced by Watermaster.
4. **Watershed Landscape Science and Management Advisory Committees** – thirteen representatives of the land managers (owners and operators) of the predominant hydrologic basin landscape types including but not limited to (changes after preliminary operations reveal gaps or needs):

-
- a. **The federal government** - three representatives of the their largest landscape areas: the US Forest Service, National Parks, Bureau of Land Management, Department of Defense, or Tribal Reservations and recognized tribes. Initial representation would be based on overall size of the organization's managed landscape when compared against all basin landscape uses. Subsequent representation could be agreed upon among the potential federally-allied organizations.
 - b. **Agriculture areas under private ownership** – three representatives that cover the main agricultural uses and impacts to the landscape.
 - c. **Rangeland areas that are privately owned** – two representatives that have expertise in managing this landscape to meet multiple goals.
 - d. **Cities** – two representatives, some cities individually and cities collectively cover a substantial portion of the landscape. Managing the water aspects of these areas is complex involving sources, uses and impacts.
 - e. **Counties** – two representatives of counties are necessary. While they do not own or cover much landscape area, counties have the responsibility for land use planning over the entire range of landscape areas. County land use planning agencies should therefore be involved in the advisory committee.
 - f. **Industry** – one representative – industries such as oil and gas, manufacturing, transportation, warehousing, etc. are a significant part of the landscape and have perhaps a larger distributed impact as opposed to their actual physical land area size; therefore they need to be part of the advisory committee.
5. **Water Rights Holders** – self-explanatory. The Basin Watermaster will need to work with River Watermasters and other agencies to insure the fair and equitable treatment of water rights holders, including both surface and groundwater users.
 6. **The Regulatory Agencies, advisory group** – this group includes agencies that must implement laws and rules that govern many critical water uses and impacts. They need to inform the Basin Watermaster, the Watershed Council and the Advisory Committee of their planning and enforcement activities so as to integrate the various activities into the watershed plan and its enforcement. The agencies included in this group are: the Regional Water Quality Control Board, the State Water Resources Control Board's Divisions of Water Rights and Drinking Water, the Department of Toxic Substances Control, the Department of Pesticide Regulation, the Division of Oil, Gas and Geothermal Resources, the Department of Forestry and the Division of Boating and Waterways.
 7. **Allied Resource Management Agencies, advisory group** – this group plans and implements many strategies allied to watershed health and management. They also need to work with the Basin Watermaster and the Watershed Council to advise them of their planning, implementation and enforcement activities and include their plans and needs in the Watershed Plan. The agencies in this group include the California Department of Fish and Wildlife, the US Fish and Wildlife Service, the Conservancies (Sierra Nevada and San Joaquin River), Resource Conservation Districts and upon invitation by the Council any other special districts or NGO's involved in natural resource protection and management.
 8. **Regional and Local Water Management Agencies, advisory group** – this group includes core agencies that actually store, distribute and use water and then manage the impacts of those uses and as a result are the main sources of advice for design and implementation of a Watershed Plan since they depend on the sources for their uses. This group includes the California Department of Water Resources, the US Bureau of Reclamation, the regional integrated water management planning agencies, the groundwater sustainability agencies, the irrigated lands regulatory program coalitions and the agricultural, urban and rural water agencies, districts, departments and companies.