PREPARED FOR
U.S. DEPARTMENT OF
THE INTERIOR, BUREAU
OF RECLAMATION

WaterSMART Program

American River Basin Study

LETTER PROPOSAL | JUNE 2016

PCWA

EL DORADO COUNTY WATER AGENCY

City of SACRAMENTO

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

CITY OF FOLSOM
DISTINCTIVE BY NATURE

CITY OF ROSEVILLE
CALIFORNIA

RWA
Regional Water Authority
BUILDING ALLIANCES IN NORTHERN CALIFORNIA

Section A – Project Information

TABLE OF CONTENTS

1. Title: American River Basin Study

Water managers in the American River Basin continue to experience a growing imbalance between water demands and water supply due to a variety of factors, including population growth; increased regulatory requirements; changes in Central Valley Project (CVP) operations; inadequate infrastructure; and lack of interagency planning necessary to address emerging climate change conditions, and increasingly intense and more frequent extreme events (droughts and floods).

The U.S. Department of the Interior, Bureau of Reclamation's (Reclamation) recently completed Sacramento and San Joaquin Rivers Basin Study (SSJRBS) (March 2016) forecasts the potential impacts of climate change on water supply, water quality and critical habitat within California's Central Valley. The 60,000 square mile study area for the SSJRBS encompasses all main tributaries within the Central Valley as well as the Sacramento-San Joaquin Delta (Delta), the largest estuary on the west coast of North America. The SSJRBS outlines projected impacts from climate change on various natural resources and presents portfolios of broad adaptive strategies for consideration by water agencies and other interests.

The purpose of the American River Basin Study (ARBS or Study) is to refine and update the data, tools, analyses, and adaptation strategies in the SSJRBS, and local application. Specifically, the ARBS will update the SSJRBS to reflect basin-specific, integrated water management strategies to improve regional water supply reliability within the American River Basin, while improving Reclamation's flexibility in operating Folsom Reservoir to meet flow and water quality standards and protect endangered fishery species in the Lower American River.

2. Location and Study Area

The American River is one of four major tributaries to the Sacramento River. Figure 1 shows the Study Area – ***the American River Basin*** – that is bounded by the Bear River to the north, the Cosumnes River to the south, the Sierra Nevada mountain range to the east, and the Feather and Sacramento rivers to the west. The Study Area encompasses two parts:

- American River Watershed. This watershed covers 2,140 square miles from Sacramento to the peaks of the northern Sierra Nevada mountains west of Lake Tahoe. It includes all three sub-basins of the American River: the Lower American River Sub-basin (U.S. Geological Survey hydrological unit code (HUC) 18020111), North Fork American River Sub-basin (HUC 18020128), and South Fork American River Sub-basin (HUC 18020129). Folsom Dam and Reservoir, with a capacity of 977,000 acre-feet, is located downstream from the confluence of the North and South forks of the American River and is the primary regulating reservoir for the watershed, which has an annual average flow of 2.6 million acre-feet. The Lower American River below Folsom Dam drains into the Sacramento River near downtown Sacramento. Areas

outside of the watershed that are served by Study Partners with American River water are also included in the Study Area.

- North and South Groundwater Subbasins. These two groundwater basins in the west side of the Study area are separated by the American River, and their eastern boundary represents the approximate edge of the alluvial basin, where little or no groundwater flows into or out of the groundwater basins from the Sierra Nevada basement rock. In addition to surface water from the American River, local water agencies use groundwater for their water supply needs.

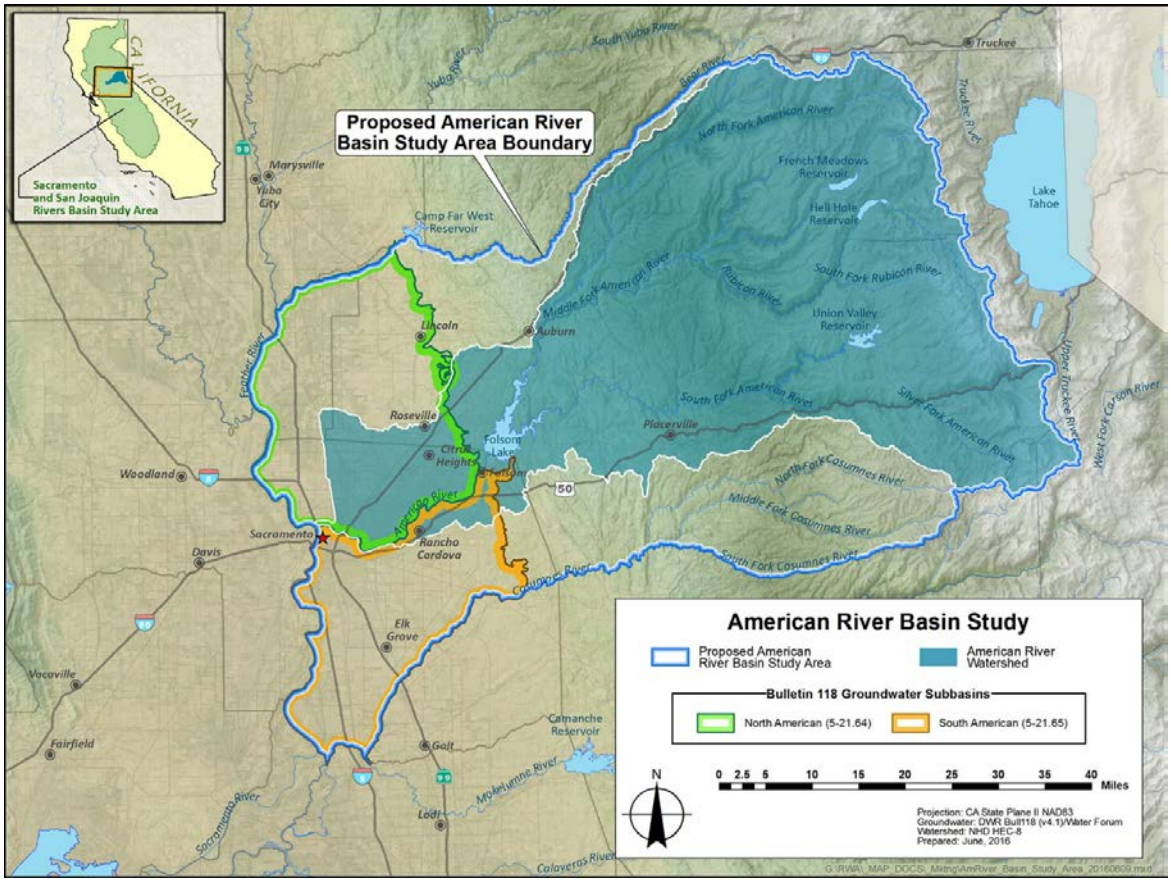

Figure 1. American River Basin Study Area Map

3. Study Cost

The total ARBS cost is estimated at $2.67 million. Study Partners are contributing over 75 percent of the total cost through direct participation plus "in-kind services" in the form of relevant, ongoing modeling and other technical work (see Appendix A for detail). Table 1 summarizes Federal and non-Federal cost shares by task.

4. Basin Study Partners

The non-Federal partners for the ARBS include: Placer County Water Agency (PCWA), El Dorado County Water Agency (EDCWA), City of Sacramento, City of Roseville, City of Folsom, and the Regional Water Authority (RWA). These Study Partners represent the major water purveyors in the American River Basin, and include CVP water contractors. RWA is a Joint Powers Authority (JPA) with the primary mission to facilitate integrated regional water management and surface and groundwater conjunctive use among its over 20 member agencies. The six non-Federal partners are committed technically and financially to the ARBS, and to transparent collaboration with Reclamation to evaluate the effects of climate change on water supply and natural resources in the Study Area and formulate integrated adaptation strategies to meet basic interests of all parties.

Table 1. Study Cost-share by Task

Tasks[1]	Partners' Share[2]	Federal Share[3]	Total Cost
Task 1 – Study Initiation	$ 31,000	$ 30,000	$ 61,000
Task 2 – Climate Change Data & Model Development	$ 1,383,000	$ 230,000	$ 1,613,000
Task 3 – Conduct Water Supply & Demand Assessment to Identify Imbalances	$ 38,000	$ 50,000	$ 88,000
Task 4 – Develop & Evaluate Adaptation Strategies	$ 516,000	$ 250,000	$ 766,000
Task 5 – Findings & Recommendations	$ 16,000	$ 30,000	$ 46,000
Task 6 – Technical Sufficiency Review	$ -	$ 20,000	$ 20,000
Task 7 – Final Report	$ 8,000	$ 20,000	$ 28,000
Task 7 – Stakeholder Outreach and Involvement	$ 23,000	$ 20,000	$ 43,000
Total American River Basin Study	$ 2,015,000	$ 650,000	$ 2,665,000

[1] Tasks described in Section D of this Letter Proposal.
[2] In-kind contribution from Placer County Water Agency, El Dorado County Water Agency, City of Sacramento, City of Roseville, City of Folsom, Regional Water Authority. See Appendix A for detail.
[3] Reclamation.

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6. Supporting Stakeholders

The ARBS is well recognized and supported by a diverse spectrum of interests within the American River Basin. Section C5 summarizes the agencies and stakeholder groups expected to participate in the ARBS process. Appendix B includes a list of existing and potential future stakeholders. Appendix C includes Letters of Support from elected officials and organizations.

Section B – Study Abstract

The ARBS will be an integrated watershed study that holistically examines water management in the American River Basin under new and evolving climate conditions, and identifies adapatation strategies for the region.

The dry lakebed of Folsom Reservoir has become symbolic of California's ongoing historic drought. In late 2015, access to water supplies in Folsom Reservoir was nearly lost due to low water levels, threatening deliveries to over one million people in the American River Basin. Severe drought conditions precipitated water right curtailments, severely reduced contract allocations, mandatory extraordinary conservation measures, and relaxed regulatory flow and quality requirements system-wide. These measures were in addition to increased regulatory requirements which further constrained Reclamation's flexibility in operating Folsom Dam to meet all authorized project purposes, stressing the already overburdened watershed. Months later in March of 2016, Reclamation operators were compelled to make flood control releases from Folsom Dam after several moderate El Niño storms. This rapid shift in hydrologic conditions led many water managers to question the adequacy of historical assumptions and regional infrastructure under the "new normal" of changing climate.

Folsom Reservoir reached a record low of 135,000 acre-feet on December 5, 2015, threatening water supplies and ecosystems of the American River Basin and systemwide.

Although drought in California remained, Folsom Reservoir made releases in 2016 to maintain flood space (March 28, 2016).

Reclamation's recently completed SSJRBS outlines major impacts from climate change on water supply, fish and wildlife protection, and flood management due to reductions in snowpack and changes in seasonal runoff. In the American River Basin, the potential effects of a changing climate have introduced significant uncertainty in long-term water supply reliability. Folsom Reservoir has a limited capacity relative to the watershed it serves, in part because seasonal snowpack is relied upon to provide a large portion of the storage necessary to regulate runoff for water supply. Changing climate conditions in the Sierra Nevada mountains threaten the volume of water stored in the snowpack and the timing of runoff entering the reservoir. Further, the superior quality of water in the American River and its close proximity to the Delta give Folsom Reservoir a critical role in CVP operations to satisfy Delta flow and quality standards and other requirements for protecting endangered fishery species.

Reclamation exercises an integral role in water management in the American River Basin by storing and conveying CVP and other contract supplies and operating Folsom Reservoir for regional and statewide natural resource protection and flood management. Local water agencies and stakeholders have a long history of collaborating with Reclamation to meet this imposing responsibility. Reclamation's last watershed planning effort – the American River Water Resources Investigation of the late 1990s – recommended regional conjunctive use to leverage the region's rich water rights and contract entitlements alongside its groundwater resources. Consistent with that premise, regional entities completed the Sacramento Water Forum Agreement in 2000, which presented a balanced approach for water supply reliability and environmental protection along the Lower American River. The 2006 American River Basin Integrated Regional Water Management Plan (American River Basin IRWMP) and subsequent 2013 Update continued the collaborative planning and implementation efforts in the region, serving as

an innovative model for the State to implement regional planning to support planned economic development, enhanced protection for salmon and steelhead species in the Lower American River, and social and recreation values unique to the region. Despite this history of successful collaboration in the basin, a need remains to integrate Federal and regional planning and to address regulatory changes and evolving climate conditions. These issues must be resolved if the competing needs for regional self-reliance, CVP delivery reliability, and endangered species protection are to be met.

Under the "new normal" of a changing climate, Study Partners are proposing the ARBS to improve the resolution of regional climate change data and to develop regionally-specific mitigation and adaptation strategies, building on those identified in the SSJRBS. The primary objectives of the ARBS are as follows:

- Address regional demand-supply imbalance and infrastructure deficiencies under the threat of climate change
- Improve regional self-reliance and collaboration for sustainable water resources management and quality of life
- Integrate regional water supply reliability with operational flexibility for Reclamation's Folsom Dam and Reservoir to help meet all authorized purposes of the CVP
- Align regional water management strategies and planning efforts with those of Reclamation

The ARBS will present a holistic examination of water management practices to address significant recent changes in conditions and regulatory requirements related to the CVP and regional water management, including Biological Opinions for endangered fishery species protection, the State's Sustainable Groundwater Management Act, and the science of climate change. The proposed ARBS will provide a unique opportunity to align the water management strategies and planning efforts of the region with those of Reclamation and the CVP, and Study Partners are dedicated to pursuing integrated water management solutions that benefit all parties.

Section C – Proposal Content

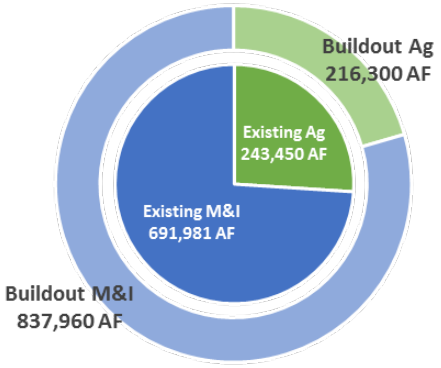
1. *The Extent and Consequences of Existing or Anticipated Imbalances in Water Supply and Demand*

The ongoing historic drought serves as an indicator of the potential future supply and demand imbalances under climate change, and highlights the need for better characterization of climate change effects and development of adaptation strategies tailored to the American River Basin.

Magnitude and Frequency of Water Shortages

Over the past several decades, local water agencies have experienced a growing imbalance between water demands and water supply availability in the American River Basin. Reclamation faces similar challenges with respect to environmental water management. Reasons for this imbalance include the following:

- Population Growth – According to the California Department of Finance's 2014 estimates, the population of the American River Basin portions of El Dorado, Placer, and Sacramento counties will rise to nearly 3 million – a 47 percent increase – by 2060. Local General Plans and water supply plans indicate that total demands will increase from 935,400 to 1,054,300 acre-feet per year, and the municipal and industrial (M&I) share of total demand will increase. Water supply reliability is even more challenging in areas without redundant water supplies or access to groundwater resources. For example, the EDCWA service area on the west slope of the Sierra Nevada foothills estimates shortages of up to 74,000 acre-feet at buildout, when considering climate change.

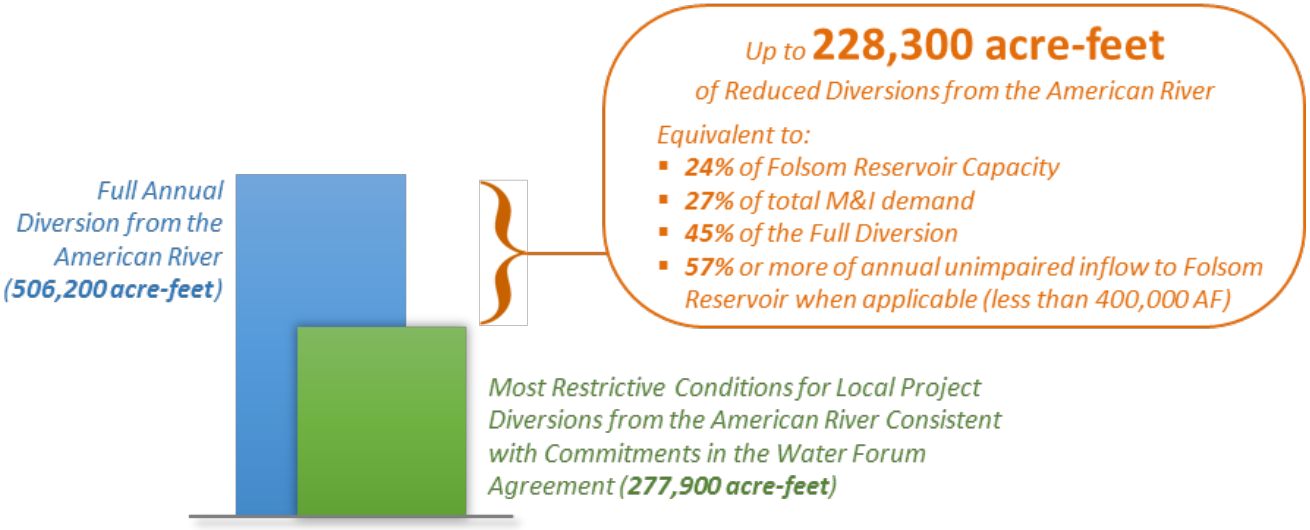


Population in the American River Basin is expected to increase by 1 million people by 2060. The estimated demands are expected to increse from about 935,00 acre-feet per year to over 1 million acre-feet per year with planned devlopment.

- Revised CVP Operations – CVP operations have changed significantly since the 1990s in response to new statutory and regulatory requirements related to fish and wildlife mitigation, water quality and other environmental-related purposes. Examples include the Central Valley Project Improvement Act (CVPIA) of 1992 (Title XXXIV, Public Law 102-575 (106 Stat 4600)) which, among many other provisions, required Reclamation to dedicate 800,000 AFY of CVP yield to environmental restoration; California State Water Resource Control Board (State Water Board) decisions requiring Reclamation to meet flow and water quality standards in the Delta; and Reasonable and Prudent Alternatives (RPAs) and other requirements in successive Biological Opinions governing operation of the CVP in coordination with the State Water Project (SWP). Revisions to CVP operations have contributed to a gradual reduction in CVP contract water allocations system-wide.

  The CVP provides the Sacramento region with a total contract entitlement of about 140,000 acre-feet for M&I use, or roughly 15 percent of the total buildout M&I demand in the American River Basin. According to the 2015 Final Environmental Impact Statement (EIS) for Coordinated Long-Term Operation of the CVP and SWP, average annual delivery within the American River Basin is estimated at approximately 113,000 acre-feet (about 80% of the total contract amount), and dry year delivery at approximately 75,000 acre-feet (53% of the contract amount). Reclamation operates Folsom Reservoir as an integrated feature of the CVP and, due to its close proximity and superior water quality, the reservoir is a "first responder" to meet Delta flow and water quality requirements prescribed by the State Water Board and the Biological Opinions and their respective RPAs.

- Water Right Curtailments and Facility Constraints – Water agencies in the American River Basin hold just over 500,000 acre-feet of American River water rights for consumptive use purposes. These water rights are either senior water rights (including pre-1914) or their priority of use in the region are protected by California water laws. Accordingly, water under these rights has historically been viewed as 100% reliable. However, in response to the current drought, the State Water Board issued curtailments on water right diversions throughout the State, including senior pre-1914 rights. All water agencies in the American River Basin with water rights were impacted by the State Water Board's actions in May through October 2014 and 2015. Further, access to CVP supplies was limited by historically low storage in Folsom Reservoir resulting from competing interests for CVP deliveries and releases for downstream flow and temperature management. Water agencies were close to losing their intake's physical ability to access water in Folsom Reservoir in 2015, even though they still had a legal right to divert water. These regulatory and physical infrastructure constraints have redefined the water supply reliability vulnerabilities of many water users. With climate change, the intensity and frequency of extreme conditions that exacerbate these constraints is likely to increase.
- Gap between Federal and Local Project Operations – The ARBS will evaluate and propose strategies for balancing between Reclamation's operations for Folsom Dam and Reservoir and the CVP, and local water agency operations, consistent with their commitments in the Water Forum Agreement. For water management planning, Reclamation assumes that local water agency diversions will continue to occur, but their actual operations will be constrained by these commitments. To bridge the gap, development of a balanced solution is required in the ARBS to support the regional conjunctive use practices. For example, the gap for PCWA represents a projected shortage of up to 34,000 acre-feet per year in its wholesale treated water service area in western Placer County.



- Climate Change – Existing imbalances in the American River Basin for both consumptive use and environmental purposes will be further exacerbated by projected climate change conditions. The SSJRBS concluded that, in general, the Sacramento and San Joaquin river basins could likely face material changes in climactic conditions including: increases in average temperatures, more variable precipitation and reduced runoff, declining snowpack with more moisture falling as rain, and increasing sea levels. With climate change, the SSJRBS estimates that CVP deliveries would be further reduced by 2 to 3 percent and the loss of habitat would be up to 33 percent by 2100. The resulting significant threats to aquatic species, especially endangered salmonids and delta smelt, would translate to further reductions in CVP deliveries and the potential extirpation of certain species. With projected loss of average Sierra Nevada snowpack of greater than 20 percent and changes to the timing of runoff, significant mitigation actions will be needed to make the region more resilient to extreme events. The specific impacts to existing imbalances in the American River Basin need to be further quantified for purposes of developing and implementing appropriate mitigation and adaptation strategies.

Nature of Imbalances

Imbalances in the American River Basin relate to both water quantity (for consumptive uses) and water quality (for the management of temperature and flows for protection of endangered fishery species). The imbalances pose water supply reliability challenge for Study Partners seeking to bridge the gap between supply and demand, and for Reclamation in operating the CVP (including Folsom Reservoir) for multiple authorized purposes consistent with a broad range of statutory and regulatory requirements. For example, temperature management must be balanced with other competing demands for consumptive uses. The imbalances between supply and demand in the American River Basin, as well as the CVP-SWP system as a whole, will be significantly amplified by changing climate conditions.

Severity of Potential Consequences of the Imbalances

The SSJRBS concluded that, in general, the Sacramento and San Joaquin river basins likely face material changes in climatic conditions including: increases in average temperatures, more variable precipitation and reduced runoff, declining snowpack with more moisture falling as rain, and increasing sea levels. The ongoing drought has exposed the vulnerabilities of surface water supplies to Folsom Reservoir operations. Climate change is expected to increase the frequency, severity, and duration of drought within the basin. With the loss of average Sierra Nevada snowpack projected as greater than 20 percent and changes to the timing of runoff, significant mitigation actions will be needed to make the region more resilient to future drought. Folsom Reservoir is already undersized for its intended and expanding purposes. The potential for Folsom Reservoir to serve as a reliable water source will only degrade further over time under climate change conditions.

The potential consequences of these imbalances, if not addressed, are significant. As described previously, the EDCWA service area estimates shortages up to 74,000 acre-feet at buildout, and PCWA projects shortages of up to 34,000 acre-feet per year. For the American River Basin as whole, projected shortages represent 12 percent of total demand and translate to lost economic development, increased risks of groundwater overdraft, and further impacts on endangered fishery species in the Lower American River. For Reclamation, the consequences include difficulty balancing the operation of Folsom Reservoir to meet multiple local, regional, and CVP-wide needs and obligations.

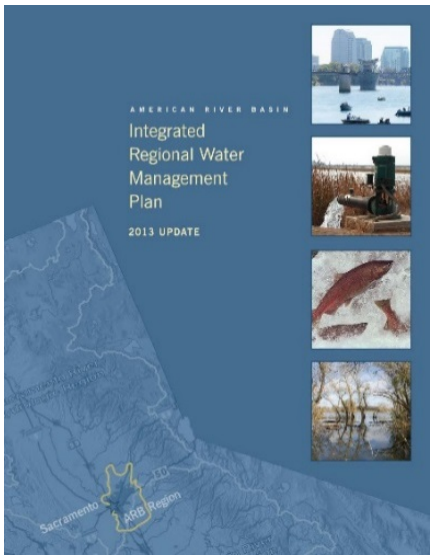
2. *Ability to Address the Elements of the Basin Study within the Study Timeline*

Study Partners are confident in their ability to address all elements of the Basin Study within 36 months of study initiation. The American River Basin has a long history of collaboration on regional planning efforts, for which formal governance and partnerships have been established. Study Partners have proposed a focused technical scope highlighting the priorities in the region to better characterize future inflows to Folsom Reservoir under climate change.

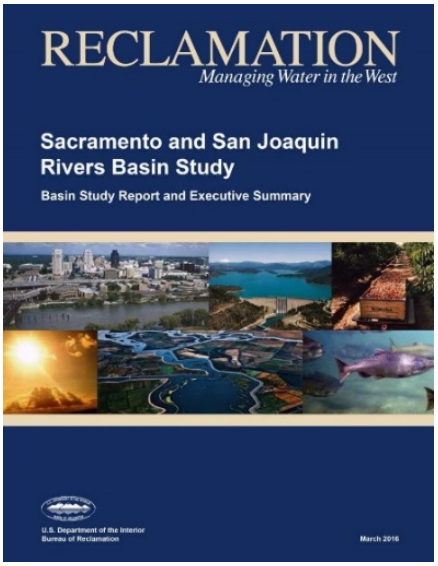
Study Partners will build on previous regional planning efforts to complete all elements of the ARBS within the 3-year study period. Study Partners' ability to complete the ARBS is enhanced by the following:

- Established Governance and Partnerships for Regional Collaboration and Planning – Management oversight and project management for the ARBS will be guided by Study Partners together with Reclamation. The ARBS will be supported by existing regional governance structures and partnerships, which were codified upon completion of the Water Forum Agreement in April 2000 and by the creation of the RWA in July 2001. Representatives of water suppliers, local governments, citizens groups, environmental organizations, and business began the Water Forum in 1993 with a goal of developing a plan to ensure reliable long-term water supplies while protecting the Lower American River. Following more than six years of analysis, professionally facilitated discussion, and negotiations, 40 diverse stakeholder groups signed the Water Forum Agreement (available online at http://www.waterforum.org/) in April 2000.

  The RWA is a JPA formed in 2001 in large part to assist local water suppliers in complying with various aspects of the Water Forum Agreement. Since 2001, the size and scope of RWA has grown significantly. Today, RWA has more than 20 water purveyor member agencies in the greater Sacramento region; several of these agencies also manage wastewater and stormwater. Other member agencies include the Sacramento Regional County Sanitation District, the Sacramento Area Flood Control Agency, and the Sacramento Municipal Utility District. This broad representation ensures a highly coordinated "one water" perspective on regional water management planning that includes potable and recycled water uses, conservation, flood and stormwater management, and water and energy demand management.



- Track Record of Successful Regional Planning – In addition to the Water Forum Agreement and the RWA, past accomplishments include preparation of the American River Basin IRWMP in 2006 and subsequent update in 2013, and completion of a System Optimization Review (SOR) in December 2012, partially funded by Reclamation and in coordination with San Juan Water District. The ability of Study Partners to individually and collectively deliver products on-time and on-budget for various efforts, and their experience managing and executing funding agreements with Reclamation, have contributed to these successes. Through these and many other efforts, the Sacramento region has become a model for integrated planning and implementation in the State of California. The resiliency of this region during the current drought provides a strong testament for successful regional planning and implementation. Currently, Reclamation has entrusted RWA through PCWA to lead and complete a Regional Drought Contingency Plan. The region's proven track record provides strong validation for the commitment and ability of RWA and Study Partners to complete the ARBS and address all required elements.



- Focused Update to the Sacramento and San Joaquin Rivers Basin Study – For SSJRBS development, EDCWA was a partner agency and PCWA provided technical support. Building upon their knowledge and experience, Study Partners have conducted a detailed scoping review to focus the ARBS on the critical refinements needed to the SSJRBS to support ongoing regional planning initiatives and support development of adaptation strategies in the American River Basin. The SSJRBS assessed potential climate change conditions, and evaluated potential impacts of climate change on water delivery, hydropower generation, water quality, flood control, recreation, and ecological resources. The SSJRBS also developed a broad set of recommended system-level adaptation strategies to reduce future risks to water and related resources. Study Partners have identified several categories of actions that may potentially apply to the American River Basin such as: improve planning tools and data, water use efficiency and demand management, increase upper watershed surface storage, optimize conjunctive management, improve CVP operations, improve regional conveyance, and improve tributary and Delta environmental flows. The ARBS will build upon these management actions and recommendations to improve regional self-reliance, through region-specific adaptation strategies for climate change.

  The ARBS will also focus on refining downscaled hydrological data at a subregional scale, and apply this refined climate change data through an improved representation of watershed facilities and operations. This work will generate refined estimates of inflow into Folsom Reservoir to facilitate evaluation of the potential effects of climate change on reservoir operations, including associated impacts on CVP operations and deliveries, regional water supply reliability, regional groundwater resources, ecosystem functions in the Lower American River, and Delta water quality.

- Implementation with a Comprehensive and Effective Plan of Study – Working with Reclamation, Study Partners will develop a Plan of Study (POS) as a critical first step in initiating the ARBS. The POS will reflect agreement on study management structure, scope and level of effort, communication and outreach needs, and information, data, and tools that can be leveraged from other related planning efforts. Study Partners will incorporate Reclamation's standardized Federal planning criteria from the *Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies* in the plan formulation process, to help unify and align regional and federal planning. Methodology and evaluation criteria will be drafted and refined with stakeholder input during ARBS development.

  Subject to further refinement, Study Partners anticipate the following key components of the ARBS:

  a. For projections of supply and demand, Study Partners will use the agency-specific Urban Water Management Plans for projected build-out demands, considering the State's conservation goals and best management practices. The current projected water supplies will be updated with information from the SSJRBS and recent regulatory actions on water rights to establish the initial comparison between supply and demand and define the Study baseline.

  b. For the impact analysis, Study Partners will leverage recent investments in analytical tools for local project operations in the upper American River Basin, and information on regional infrastructure capacity. This will form a comprehensive, basin-wide analytical framework for unifying Federal and regional planning. Refined hydrology to be developed through the ARBS will be used to assess regional and agency-specific vulnerability to climate change and the effectiveness of identified mitigation and adaptation strategies.

c. For the trade-off analysis, Study Partners will identify a range of strategies including structural improvements, operational improvements, and institutional / administrative improvements. These strategies will be formulated to achieve the identified ARBS objectives to address projected climate change impacts, improve regional self-reliance in water supply, align regional and federal water management strategies, and enhance the operational flexibility for Reclamation's Folsom Dam. Study Partners will develop evaluation criteria with stakeholder input and consistent with Federal planning guidance (effectiveness, efficiency, acceptability, and completeness).

Study Partners identified several complementary cost-share efforts that will assist in development of the ARBS. Through the above defined planning process, Study Partners are confident in their ability to execute the ARBS effectively and efficiently.

Addressing the 8 Major Resource Management Categories in the ARBS

The ARBS will update the climate change impact assessment and adaptation strategies identified in the SSJRBS for the following 8 categories of resource management issues:

1. Water Delivery and Allocation
2. Hydropower
3. Recreation
4. Fish and Wildlife Habitat
5. Endangered, Threatened, or Candidate Species
6. Water Quality
7. Flow and Water Dependent Ecological Resiliency
8. Flood Control Management

Study Partners will focus on enhancing regional-specific information and adaptation strategies that promote the mutual interests of Reclamation, Study Partners, and the American River Basin as a whole. Through the POS development, Study Partners will collaborate with Reclamation to develop a detailed scope and evaluation method for the needed updates.

3. *The Extent to which Federal Involvement is needed and the Strength of any Nexus between the Basin Study and Reclamation Project or Activity*

Reclamation is an essential Study partner because of its management of Folsom Reservoir and historical commitment to developing sustainable solutions critical to the region. Folsom Reservoir is the main project feature of Reclamation's CVP American River Division. Reclamation stores and conveys CVP contract water supplies and water right diversions to local water agencies through the Folsom Facilities. Folsom Reservoir is also integral to meeting Reclamation's obligations for management of federally-listed species in the Lower American River, and to meeting applicable Delta outflow and water quality requirements. Climate change imposes significant additional challenges in balancing Folsom Reservoir operations for all project purposes.

Reclamation Projects and Activities in the Study Area

This ARBS effort has a direct connection with Reclamation operations and activities. Folsom Dam and Reservoir, and related facilities, are the hub of the region's water supply system. Many urban agencies in the American River Basin divert water from Folsom Reservoir and the American River based upon a mix of water rights, CVP contracts, and wholesale agreements. Water supplies for the region are also diverted from the lower Sacramento River. The total contract quantity for all CVP American River Division water service contracts is 180,750 acre-feet per year (excluding East Bay Municipal Utility District). Reclamation has additional operational agreements with City of Sacramento, PCWA, and other water rights holders in this basin. Much of the surface water supply in the American River Basin is either diverted from, or is conveyed through, Folsom Reservoir.

As an integrated feature of the CVP, Folsom Reservoir also serves a critical role in managing water quality in the Sacramento-San Joaquin Delta and fisheries in the Lower American River. Folsom Reservoir has been a key asset for providing cold water releases to support survival of endangered fishery species in the Lower American River. As the nearest CVP facility to the Delta and with its superior water quality, Folsom Reservoir can provide a rapid response to Delta outflow and water quality needs.

The Sacramento metropolitan area is second only to New Orleans in terms of potential flood risks. The ongoing Joint Federal Project (JFP) – new auxiliary spillway – between Reclamation and the U.S. Army Corps of Engineers (USACE) will address flood damage reduction and dam safety risks at Folsom Dam. The JFP is the centerpiece of a comprehensive plan to provide local communities with a 200-year level of flood protection. Concurrent with JFP project construction, regional flood interests and stakeholders (including water agencies) are actively engaging USACE and Reclamation to revise the flood control operations manual for Folsom Dam to account for the new spillway and forecast-based operation to optimize flood operations considering water supply and other project purposes. The potential benefits of the revised flood control manual for improving water supply and environmental protection will be evaluated and integrated as part of the ARBS.

The Joint Federal Project will address flood damage reduction and dam safety risks at Folsom Dam.

Reclamation Technical Support of the Study

Study Partners have a strong interest in partnering with Reclamation to ensure that models used to support ongoing and future American River Basin planning initiatives incorporate Reclamation's methods and assumptions for future climate change conditions. Reclamation's Technical Service Center has tentatively agreed to support the acquisition of downscaled climatological data and development of hydrological information at a refined scale for the American River Basin. This data will be used to better understand the potential impacts of climate change in the study area and develop appropriate mitigation and adaptation strategies for the benefit of both Study Partners and Reclamation.

Through Reclamation's Regional Coordinator for Basin Studies, Study Partners have discussed the potential selection of an operations modeling platform with Reclamation's Technical Service Center staff, and confirmed a recommendation on the use of CalSim 3 to address conjunctive use and surface-groundwater interaction in the basin. Modeling for ARBS aims to build on existing products and development efforts by Reclamation and the California Department of Water Resources (CDWR). Reclamation and CDWR have invested considerable effort over the last decade in developing CalSim 3 as the next-generation system operation model for California water management. Compared to the prior model version (CalSim II), CalSim 3 provides the following unique features:

- Improved geographical resolution, allowing improved representation of water supplies from mountain and foothill watersheds and more refined water budget calculation on the valley floor
- Land use-based and production-based, demand-driven operations for surface water and groundwater management
- Embedded linkage to a finite-element based groundwater module to simulate groundwater responses to streamflows and horizontal stresses
- Enhanced simulation of local water agency operations based on local and regional planning documents (e.g., 2010 urban water management plans) and input from local agencies
- Improved model transparency and documentation

Reclamation's technical expertise with CalSim 3, in addition to their in-depth knowledge of Folsom Reservoir operations, will be a great asset to ARBS and ensure successful application of this new platform.

Issues of National Significance and Multijurisdictional Issues

With its relatively high altitude, flows in the American River Basin are dominated by wintertime rainfall runoff and winter to spring snowmelt. The SSJRBS indicates that warming trends over this century will increase flow during the period of January through March, and reduce flows thereafter in the spring. These potential climate changes are likely to have severe impacts on Reclamation's ability to operate Folsom Reservoir for its multiple purposes. Federal participation in this study is important because of the multijurisdictional issues in this study related to water supply (Reclamation), flood operations (USACE), protection of federally listed species (National Marine Fisheries Service (NMFS)), Delta water quality and Sacramento River fisheries (Reclamation, CDWR, and NMFS), and hydropower generation at Folsom and Nimbus Dams (Reclamation and Western Area Power Administration).

The Lower American River supports more than 40 species of native and nonnative fish, including naturally spawning fall-run Chinook salmon (a federal species of concern), steelhead (federally listed as a threatened species under the Endangered Species Act), and American shad.

The restoration and rehabilitation of spawning and rearing habitat for anadromous fish in the Lower American River is a high priority for Federal and State resource agencies, as authorized and directed by the CVPIA 3406(b)(13) and the CALFED Bay-Delta Authority's Ecosystem Restoration Program.

Groundwater Banking

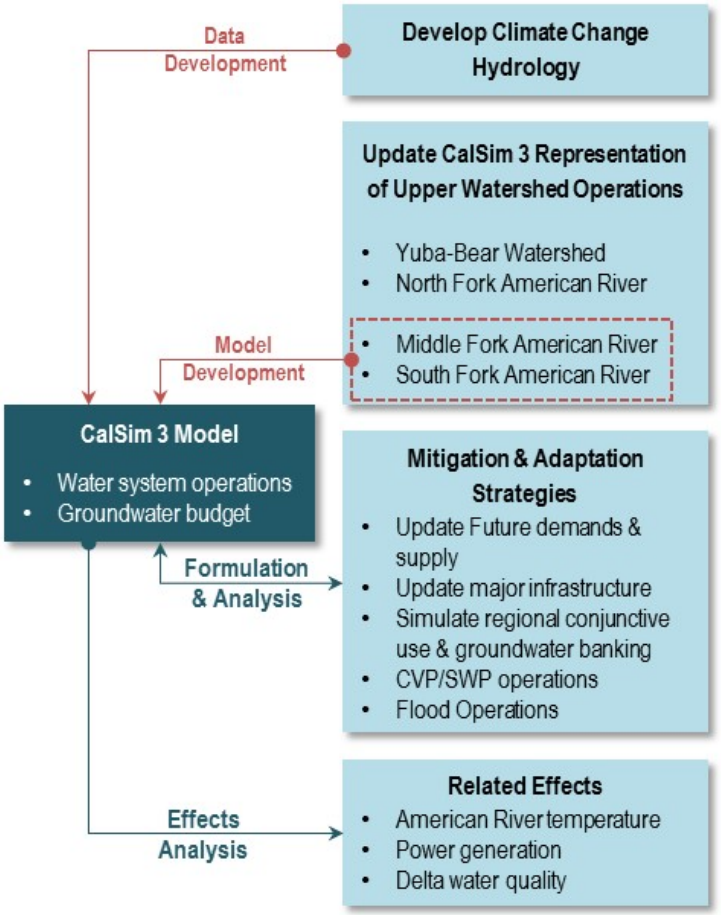
The SSJRBS identified regional conjunctive use and groundwater banking as major adaptation strategies to address climate change impacts. The ARBS will evaluate these strategies for regional application to provide both the region and Reclamation with greater flexibility in matching water sources and demand with hydrologic conditions experienced in any given water year type, particularly during droughts. While pursuing regional conjunctive use, Study Partners are interested in exploring groundwater banking options, including a potential federally-recognized groundwater bank under the CVPIA that could store wet year water on behalf of Reclamation CVP contractors. Such a groundwater bank would effectively expand CVP storage and improve operational flexibility for Reclamation and its contractors.

4. Availability and Quality of Existing Data and Models

Many water agencies in the study area divert water from the Lower American River based on a mix of water rights, CVP contracts, and wholesale agreements. Water also is diverted from the lower Sacramento River to supply this region. Surface water supplies are used conjunctively with groundwater. For planning purposes, a system operation model is required to account for the availability of surface water and groundwater to meet demands. Additionally, regional water management actions must take place within the context of broader, statewide water management operations. Further, CVP operations must be coordinated with SWP operations such that the two projects can meet both contractual obligations and in-basin needs, as prescribed in their water right permits.

For the ARBS, CalSim 3 is the proposed analytical tool to conduct integrated surface water and groundwater analyses and regional / system-wide operations, per recommendation from Reclamation's Technical Service Center. As discussed earlier, CalSim 3 is a new platform developed by Reclamation and CDWR. For this study, key model and data development activities include the following:

- Global climate model (GCM) downscaling and hydrological modeling at an appropriately refined scale to support regional planning, including obtaining downscaled GCM data and refining runoff for CalSim 3.
- Refined representation of the upper watershed of the American River (North, Middle, and South Forks) by mapping existing upper watershed models into CalSim 3.



CalSim 3, developed by Reclamation and CDWR, provides a state-of-the-art integrated platform for simulating regional and statewide water systems. It includes:

- A detailed representation of the water supply portfolio of individual water purveyors in the region
- Representation of the upper watershed (with anticipated additional refinement by the ARBS)
- Capability for full integration with the existing groundwater model for the North and South American River groundwater subbasins

Climate Change Hydrology Development

The SSJRBS used interpolated GCM outputs at a 1/16 degree resolution to perform downscaling of climate change information, and used a coarse-grid WEAP model from California Water Plan (with 500-meter elevation band intervals) to perform statistical downscaling to produce hydrology. For the ARBS, additional resolution in hydrologic information is required for regional planning purposes and for input to the upper watershed operation models. This can be cost-effectively achieved by adopting the same approach and data set used by the SSJRBS, and updating the WEAP model with additional refinements for the American River upper watershed, supported by available long-term records. This will allow for more detailed information on a narrower elevation interval, greatly improving the accuracy of runoff estimates and timing. The net result will be a more accurate picture of climate change effects on runoff from the upper watershed and inflow into Folsom Reservoir; this, in turn, will allow evaluation of the effects of climate change on the operation of the CVP, regional water supply reliability, fishery management in the Lower American River, and Delta water quality.

CalSim 3 Model Updates

CalSim 3 currently simulates water management activities in the upper watersheds of the Yuba and Bear rivers, and the American River's North, Middle, and South forks. This includes water management facilities owned and operated by Nevada Irrigation District (NID), Pacific Gas and Electric (PG&E), PCWA, Sacramento Municipal Utility District (SMUD), and El Dorado Irrigation District (EID). CalSim 3 simulation of the Yuba-Bear system is based on modeling conducted by NID for relicensing of the Yuba-Bear Hydroelectric Project (Federal Energy Regulatory Commission (FERC) Project No. 2266). Similarly, CalSim 3 simulation of PG&E facilities in the watershed is based on modeling conducted for relicensing of the Drum-Spaulding Hydroelectric Project (FERC Project No. 2310).

CalSim 3 simulations of the Middle Fork and South Fork of the American River, which encompasses the PCWA Middle Fork American River Project (FERC Project No. 2079), SMUD American River Project (FERC Project No. 2101), and EID El Dorado Project (FERC Project No. 184), are based on HEC5 modeling conducted by CDWR in the 1980s and 1990s. These representations for the Middle and South forks are outdated and should be updated for the ARBS.

Study Partners and other American River interests have conducted extensive, state-of-the-art modeling in the upper American River watershed, including of flows and temperatures in the North and South forks and tributary streams; alternatives for improving cold water pool management in Folsom Reservoir; and flow regimes and temperature plans for the Lower American River that optimize water supply reliability and resource protection. These modeling efforts were conducted in support of high-priority water resource initiatives within the basin and include: FERC re-licensing for PCWA's Middle Fork Project (MFP), FERC re-licensing for SMUD'S Upper American River Project, and PG&E'S Drum-Spaulding Project; PCWA's MFP water rights extension; and the Sacramento Water Forum's Modified Lower American River Flow Management Standard.

Under the ARBS, updates to CalSim 3 simulation of the Middle Fork and South Fork of the American River are proposed. A detailed operations model of the Middle and South forks was built on an OASIS platform similar to CalSim3 to support relicensing of PCWA's hydroelectric facilities and EDCWA's ongoing Alder Reservoir feasibility study and county-wide water management strategy development. The key task for the ARBS is to map the OASIS model into CalSim 3 to ensure a fully integrated model that includes upstream operations and the broader CVP/SWP system operation.

It is anticipated that the CalSim 3 model updates to refine upper watershed representation can be accomplished within 3 months. This will be followed by technical reviews by Reclamation and Study Partners. The updated CalSim 3 model will then be used to evaluate the performance of various adaptation strategies under climate change conditions. The updated CalSim 3 will also include the most updated baseline for the coordinated long-term operation of CVP and SWP, including identified RPAs for compliance with endangered species protection requirements set in the Biological Opinions and court determinations.

Modeling Tools Available for the American River Basin Study

- Climate Data – GCMs interpolated data (Reclamation; from SSJRBS)
- WEAP – Hydrologic data downscaling (Reclamation from SSJRBS based on CDWR California Water Plan Update; further refinements are required)
- CalSim II – Water Operations (Reclamation/CDWR)
- CalSim 3 – Water Operations (Reclamation/CDWR)
- CVP/SWP System Operation – Long-term Operation Baseline (Reclamation/CDWR)
- DSM2 – Delta Water Quality Model (CDWR)
- HEQ-Q5 – Lower American River Temperature Model (Reclamation)
- CE-QUAL-W2 – Upper American River and Folsom Lake temperature model (PCWA)
- OASIS – Upper Watershed water operations (PCWA)
- HEC-RESSIM – Flood reservoir operations (USACE)
- HEC-RAS – Flood releases (USACE)
- SacIWRM – Groundwater model for the North and South American River groundwater subbasins

5. The Level of Stakeholder Diversity and Support for the Basin Study

The ARBS enjoys broad stakeholder support reflected by endorsements from elected officials, local M&I purveyors and agricultural interests, other water management entities represented by the RWA, and environmental interests represented by the Sacramento Water Forum.

Broad Stakeholder Involvement and Support

Study Partners are committed to a transparent Study process involving ***stakeholders and diverse water interests throughout the region – M&I, agricultural, tribal, environmental, recreation, power generation, and flood management*** (see Appendix B for a current list of stakeholders). In addition to Reclamation, Study Partners are likewise committed to coordination with other Federal, state, and local agencies with relevant authorities and natural resource management responsibilities. Three Federally-recognized tribes reside within the American River Basin: the Shingle Springs Band of Miwok Indians, United Auburn Indian Community of the Auburn Rancheria, and Wilton Rancheria. There is strong support for the ARBS among this broad range of local government agencies and stakeholder interests. Letters of support for the ARBS are included in Appendix C. There is no known opposition to this study.

A Communication and Engagement Plan (C&E Plan) will be developed as part of the ARBS Plan of Study to ensure active stakeholder engagement and public communication. The ARBS will leverage existing venues and processes, such as the regular plenary meetings hosted by RWA and by the Sacramento Water Forum, and public communication and engagement opportunities established for the ongoing North American River Basin Regional Drought Contingency Plan (a separate effort partially funded by WaterSMART). The C&E Plan will be a "living document" adjustable to changing ARBS circumstances and engagement needs.

List of Letters of Support for American River Basin Study in Appendix C

Congressional Representatives

- California's 3rd District Representative: John Garamendi
- California's 4th District Representative: Tom McClintock
- California's 6th District Representative: Doris Matsui
- California's 7th District Representative: Ami Bera

Local Government and Organization (in addition to Study Partners)

- Sacramento Water Forum
- Sacramento Area Flood Control Agency

ARBS Project Meetings

The primary venue for collaborative planning will be regularly-scheduled ARBS Project Meetings. These meetings are intended to provide a transparent setting for plan development, and a flexible structure that allows stakeholders and interested parties maximum opportunity to participate to the level they are interested. All ARBS Project Meetings will be open for stakeholder and public involvement, including time reserved for public comments. Each meeting is planned to coincide with a planning deliverable or work product for discussion and review. Examples of work products include technical memoranda and descriptions of planned study methods and activities. It is anticipated that some meetings will involve planning exercises and solicit feedback on the direction of the ARBS, and that these meetings may be professionally facilitated.

In order to reach a broader audience with relevant content, key ARBS Project Meetings will be conducted both in-person and via webinar. These key meetings will include an ARBS kick-off meeting, rollout of the Draft ARBS, and presentation of the Final ARBS. Invitations to participate, in person or online, will include additional stakeholders identified by Study Partners and Reclamation, as well as interested members of the general public. Targeted invitations may be sent to representative NGOs, elected officials, regional Board members, or others, as Study Partners identify.

Other Outreach Activities

Outreach activities beyond the ARBS meetings will include:

- Email – Email distribution is an important tool in communicating with the stakeholders. The cost-share partners will utilize email communications to the stakeholder database to keep interested stakeholders informed on the process, timing of deliverables and key milestones, opportunities for collaboration, and other important announcements.
- Webinars – In order to reach a broader audience with relevant content, key ARBS meetings will also be available via webinar. Invitations to participate in-person or online will include stakeholders and members of the general public. Targeted invitations may be sent to representative NGOs, elected officials, and others identified through the ARBS meetings.
- Website Updates – The RWA website will be updated regularly to include content on ARBS development as well as materials from ARBS meetings, allowing stakeholders to track the process and see output from the meetings.
- Presentations – As requested, presentations to interested stakeholders, Board members, elected officials and staff, and other organizations may be made by Study Partners to share information and solicit feedback.

Stakeholders and members of the public will be encouraged to provide input on during study development and at ARBS Project Meetings. Key milestones for engagement include the ARBS kick-off meeting, release of the Public Draft ARBS, and presentation of the Final ARBS. The Draft ARBS will have a 30-day public comment period, and all participants will be encouraged to review and provide input.

Public Information and Notification

The ARBS process is anticipated to contain three public notifications:

1. Initiation of the ARBS development process at the ARBS kick-off meeting.
2. Completion of the Draft ARBS and launch of the 30-day public comment period. This draft will be shared at an ARBS Project Meeting (in-person and via webinar).
3. Completion of the Final ARBS. The document will be presented at an ARBS Project Meeting (in-person and via webinar).

These notifications will consist of posting content to the website, distribution to the entire stakeholder list via email, and a reminder to all ARBS Project Meeting participants and observers to inform any additional stakeholders they believe may be interested in comment on the ARBS or receiving information.

6. *The Extent to which the Proposed Study will Employ an Integrated Watershed Planning Approach*

This region has demonstrated a strong commitment to the principles of integrated watershed planning, and an ability to successfully collaborate among diverse interests consistent with two longstanding regional objectives:

- Provide a reliable and safe water supply for the region's economic health and planned development through the year 2030.
- Preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River.

These basic objectives for integrated watershed planning were established in the 2000 Water Forum Agreement and further reiterated in the 2006 American River Basin IRWMP and its subsequent update in 2013. The development of ARBS will build on this foundation and include additional considerations in upper watershed management and water supply needs to develop comprehensive mitigation and adaptation strategies for the entire American River Basin.

Sacramento Water Forum Agreement

The ARBS will analyze the impacts of climate change on regional water supply reliability and evaluate alternatives that enhance Reclamation's flexibility to balance operation of Folsom Dam and Reservoir to meet multiple authorized purposes, including water supply, fish and wildlife enhancement and mitigation, and water quality. Leveraging other concurrent efforts and input from stakeholders, the ARBS will evaluate and refine mitigation and adaptation strategies identified in the SSJRBS for specific application in the American River Basin. Such strategies may integrate ongoing and proposed regional initiatives including:

- Enhancement of regional conjunctive use and the possibility of a federally-recognized water bank
- New upstream storage and modified operations of existing facilities
- Improvement flow and temperature requirements associated with the Lower American River flow management standard
- Temperature control infrastructure improvements at Folsom Dam
- A revised flood control manual for Folsom Dam

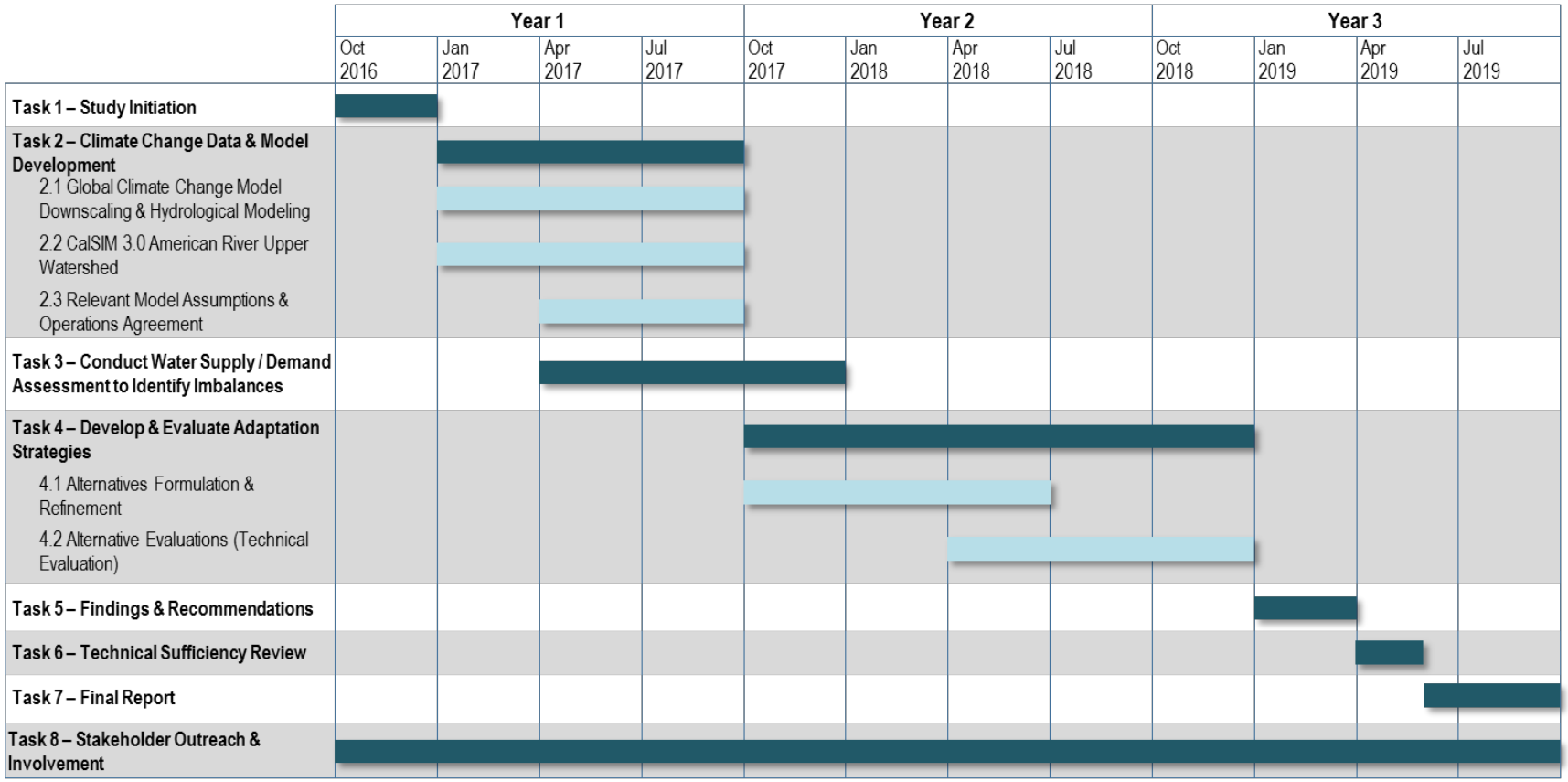
Integration of these and other potential strategies are expected to improve water supply reliability and related resources management within the American River Basin. For example, implementation of a new, regional groundwater bank or upstream storage could provide Reclamation greater flexibility for operations at Folsom Reservoir. This flexibility has the potential to improve public safety and water supply reliability, while indirectly benefitting downstream flow and temperature management for environmental purpose and incidental recreation and hydropower benefits.

Section D – Study Outline, Budget, and Schedule

Task	Description	Partners' Share[1]	Federal Share[2]	Total Cost
Task 1 – Study Initiation	- Technical Scoping and Detailed Plan of Study (POS), and Memoranda of Agreement	$ 31,000	$ 30,000	$ 61,000
Task 2 – Climate Change Data & Model Development	- Climate change data and downscaling - CalSim 3 Model development - Agreements on assumptions and operations of upstream local projects	$1,383,000	$ 230,000	$ 1,613,000
Subtask 2.1 Global Climate Change Model (GCM) Downscaling & Hydrological Modeling	- Obtain downscaled GCM data for the American River Basin from SSJRBS - Refine the SSJRBS WEAP model for American River Basin - Develop refined runoff hydrology for CalSim 3 using WEAP hydrological model, using downscaled GCM data			
Subtask 2.2 CalSim 3 American River Upper Watershed	- Update CalSim 3 Model representation of the upstream local project operations on the North, Middle, and South Forks of the American River - Update regional infrastructure representation and agency-specific water supply portfolios			
Subtask 2.3 Relevant Model Assumptions & Operations Agreement	- Obtain agreements with Reclamation on various upstream model assumptions and operations, including temperature models to be incorporated into CalSim 3			
Task 3 – Conduct Water Supply & Demand Assessment to Identify Imbalances	- Identify imbalances between existing and future water supply and demands under climate change scenarios on a regional basis	$ 38,000	$ 50,000	$ 88,000
Task 4 – Develop & Evaluate Adaptation Strategies	- Identify and evaluate adaptation strategies to address the imbalances (vulnerabilities) - Conduct an alternative analysis to evaluate and prioritize strategies	$ 516,000	$ 250,000	$ 766,000
Subtask 4.1 Alternative Formulation & Refinement	- Develop management actions for adaptation strategies and preliminary screening - Formulate and compare adaptation strategy alternatives			
Subtask 4.2 Alternative Evaluations (Technical Evaluation)	- Limited technical evaluation of management actions for adaptation strategies for preliminary screening - Alternative evaluation, refinements, and comparative analyses; each with multiple climate change scenarios - Limited secondary CVP/SWP system effects evaluation for alternatives (temperature, hydropower production, and Delta water quality)			
Task 5 – Findings & Recommendations	- Prepare a draft report summarizing the findings and recommendations, and conduct a Quality Assurance/Quality Control review	$ 16,000	$ 30,000	$ 46,000

Task	Description	Partners' Share[1]	Federal Share[2]	Total Cost
Task 6 – Technical Sufficiency Review	- Conduct Reclamation Technical Sufficiency Review on draft report, technical approach, methods, and findings	$ -	$ 20,000	$ 20,000
Task 7 – Final Report	- Develop a final report summarizing the findings of the Basin Study	$ 8,000	$ 20,000	$ 28,000
Task 8 – Stakeholder Outreach & Involvement	- Develop a Communication and Engagement Plan, and document the engagement process	$ 23,000	$ 20,000	$ 43,000
	TOTAL BASIN STUDY	$2,015,000	$ 650,000	$ 2,665,000

1 In-kind contribution from Placer County Water Agency, El Dorado County Water Agency, City of Sacramento, City of Roseville, City of Folsom, Regional Water Authority. See Appendix A for detail.
2 Reclamation.



Schedule assumes October 2016 start date.

Appendix A. American River Basin Study Summary of Regional Studies and Study Partner Cost Share

Total Study Partner cost share is $2,015,000. This amount includes the following:

- Direct participation of Study Partners in the development of the ARBS, $375,000
- Relevant ongoing studies (shown in the table below), $1,640,000

Agency	Relevant Studies	Costs
Regional Water Authority	Regional Water Reliability Study (ongoing)	$ 280,000
Placer County Water Agency	Inflow Temperature Regression Model for Folsom Lake (ongoing)	$ 96,000
	Folsom Reservoir CE-QUAL-W2 Model (ongoing)	$ 384,000
	Lake Natoma CE-QUAL W2 Model (ongoing)	$ 96,000
	Lower American River HEQ 5Q Model Update (ongoing)	$ 64,000
El Dorado County Water Agency	Alder Reservoir Feasibility Update (ongoing)	$ 300,000
	Alder Reservoir Options Development Analysis (ongoing)	$ 50,000
	Integrated Regional Watershed Management Program: River models & Water Supply Alternatives (ongoing)	$ 370,000
	TOTAL	$1,640,000

Appendix B. American River Basin Study Stakeholder List

American River Basin Study Stakeholder List

	Organization	Current Stakeholder?	Area of Interest						
			M&I	Agricultural	Tribal	Environmental	Recreation	Power Generation	Flood Management
U.S. Department of the Interior, Bureau of Reclamation		X	X	X	X	X	X	X	X
Study Partners	Placer County Water Agency[1]	X	X	X	X			X	
	El Dorado County Water Agency[2]	X	X		X			X	
	City of Sacramento[1]	X	X						
	City of Folsom[1]	X	X						
	City of Roseville[1]	X	X						X
	Regional Water Authority	X	X	X					
State and Regional Entities	U.S. Army Corps of Engineers					X			X
	California Department of Water Resources		X	X	X	X	X	X	X
	Sacramento Groundwater Authority	X	X	X					
	Sacramento Central Groundwater Authority	X	X	X					
	Western Placer Groundwater Management Group	X	X	X					
	Sacramento Water Forum – *A diverse group of over 40 business and agricultural leaders, citizen groups, environmentalists, water managers, and local governments working together in a balanced approach for water supply reliability and environmental protection for the Lower American River.*	X	X	X	X	X	X	X	X
RWA Members	California American Water	X	X						
	Carmichael Water District	X	X						
	Citrus Heights Water District	X	X						
	City of Lincoln	X	X						
	City of West Sacramento	X	X						
	City of Yuba City	X	X						
	Del Paso Manor Water District	X	X						
	Elk Grove Water District	X	X						
	El Dorado Irrigation District	X	X	X			X	X	

American River Basin Study Stakeholder List (continued)

Organization		Current Stakeholder?	Area of Interest						
			M&I	Agricultural	Tribal	Environmental	Recreation	Power Generation	Flood Management
RWA Members (continued)	Fair Oaks Water District	X	X						
	Golden State Water Company	X	X						
	Orange Vale Water Company	X	X						
	Rancho Murieta Community Service District	X	X						
	Rio Linda/Elverta Community Services District	X	X						
	Sacramento County Water Agency	X	X	X					
	Sacramento Suburban Water District	X	X						
	San Juan Water District	X	X						
	Woodland-Davis Clean Water Agency	X	X						
RWA Associate Members	Sacramento Regional County Sanitary District	X							
	Sacramento Area Flood Control Agency	X							X
	Sacramento Municipal Utility District	X						X	
Other Water Agencies / Districts	Florin County Water District		X						
	Fruitridge Vista Water Company		X						
	Natomas Central Mutual Water Company	X	X	X					
	Sutter County Water Agency		X	X					
	South Sutter Water District		X	X					
	Nevada Irrigation District		X	X			X	X	
Federally-Recognized Tribes and Special Interests	United Auburn Indian Community of the Aurburn Rancheria				X				
	Shingle Springs Band of Miwok Indians				X				
	Wilton Rancheria				X				
	Other Tribes				X				
	Business Interests	X							
	Environmental Interests	X				X			
	Agricultural and Self Supplied	X		X					

[1] Also RWA member
[2] Also RWA associate member

Appendix C. American River Basin Study Letters of Support

Appendix C includes Support Letters from:

Congressional Representatives

- Congressman John Garamendi, California's 3rd District
- Congressman Tom McClintock, California's 4th District
- Congresswoman Doris Matsui, California's 6th District
- Congressman Ami Bera, California's 7th District

Local Government and Organization (in addition to Local Partners)

- Sacramento Water Forum
- Sacramento Area Flood Control Agency

JOHN GARAMENDI
3RD DISTRICT, CALIFORNIA

ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE
EMERGING THREATS AND CAPABILITIES SUBCOMMITTEE

TRANSPORTATION AND INFRASTRUCTURE COMMITTEE
RANKING MEMBER
COAST GUARD AND MARITIME TRANSPORTATION SUBCOMMITTEE
WATER RESOURCES AND ENVIRONMENT SUBCOMMITTEE
AVIATION SUBCOMMITTEE

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June 1, 2016

Honorable Estevan López
Commissioner, Bureau of Reclamation
U.S. Department of the Interior
1849 C Street NW
Washington DC 20240-0001

Subject: Sacramento Regional Proposal, Bureau of Reclamation 2016 Basin Study Program

Dear Commissioner Lopez:

I write to convey my support of a proposal by Sacramento regional water agencies (Agencies) to update broad, system-wide analyses and strategies developed through the Bureau of Reclamation (Reclamation) Sacramento-San Joaquin Basin Study (SSJBS). The update study will apply locally to the American River watershed and adjacent groundwater basins. The Agencies were invited by Reclamation to formulate and submit the proposal in conjunction with Reclamation's 2016 Basin Study Program.

Earlier this year, I met with the water agencies from the Sacramento region where they presented a compelling vision for a secure and reliable water future. It looks to provide for a more integrated regional water supply system while benefitting both habitat and endangered fish species. This vision consists of an integrated suite of locally developed solutions along with current and potential future federal initiatives to include:

- Optimizing operations at Folsom Dam and Reservoir (Folsom) through a Modified Flow Management Standard for the Lower American River, revised flood control rules based upon forecast based operations and area wetness parameters, and improvements to existing temperature management structures;
- Developing and implementing a federally recognized groundwater bank to maximize the beneficial uses of Central Valley Project (CVP) water and other sources of surface water supply;
- Reducing consumptive demands on Folsom through alternative diversion facilities on the Sacramento River;
- Developing additional storage opportunities upstream of Folsom Reservoir that are locally operated towards matching water demand patterns of the region;
- Applying best management practices to maximize water use efficiency;

- Updating and applying a commonly accepted modeling tool for evaluating current or proposed water resource projects within the American River watershed.

As a critical next step, the Agencies propose to update the SSJBS in partnership with Reclamation to assess regional urban water supply and demands in anticipation of future changed conditions. They will also evaluate the potential for all or portions of the integrated regional vision to mitigate imbalances and address system vulnerabilities identified through the assessment process. The Agencies anticipate the completed Update Study will serve as an interagency blueprint for action and model for how government can and should work.

I appreciate the positive response you and your staff have shown thus far to this innovative, solution-oriented initiative. The full value to water supply reliability and species protection within the American River watershed cannot be realized without a long-term, mutually supportive and effective working relationship between Reclamation and local agencies and area stakeholders. In that regard, I urge you to give all due consideration to the Agencies' proposal and essential funding needs consistent with applicable rules and procedures.

Thank you for your consideration.

Sincerely,

JOHN GARAMENDI
Member of Congress

cc: Mr. Thomas Iseman, Deputy Assistant Secretary, Department of Interior
Ms. Roseann Gonzalez, Director, Office of Policy, Bureau of Reclamation
Mr. David Murillo, Regional Director, Mid-Pacific Region
Ms. Michelle Denning, Regional Planning Officer, Mid-Pacific Region
Local cost share partners EDCWA, PCWA, RWA, City of Sacramento, etc.

TOM McCLINTOCK
4TH DISTRICT, CALIFORNIA

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Congress of the United States
House of Representatives
Washington, DC 20515-0504

COMMITTEE ON
NATURAL RESOURCES
SUBCOMMITTEE ON FEDERAL LANDS
CHAIRMAN

SUBCOMMITTEE ON
WATER, POWER, AND OCEANS

COMMITTEE ON THE BUDGET

May 24, 2016

Commisioner Estevan López
Bureau of Reclamation
U.S. Department of the Interior
1849 C Street NW
Washington DC 20240-0001

Subject: Sacramento Regional Proposal, Bureau of Reclamation 2016 Basin Study Program

Dear Commissioner Lopez:

As the Bureau of Reclamation continues its work on the Sacramento-San Joaquin Basin Study, I write in support of the proposals offered by the City of Sacramento, the El Dorado County Water Agency, the Placer County Water Agency, and the Regional Water Authority.

Given California's drought, the failure to construct major surface-water storage in decades, lack of proper forest management, along with a growing population, the Sacramento region is facing unique challenges with regard to water supply and reliability.

Specifically, the Agencies' proposals include:

- Constructing additional surface storage opportunities within the Central Valley Project;

- Optimizing operations at Folsom Dam and Reservoir through a Modified Flow Management Standard for the Lower American River, revising flood-control rules based upon forecast-based operations and area wetness parameters, and improving to existing temperature management structures, reducing consumptive demands on Folsom through alternative diversion facilities on the Sacramento River;

- Developing and implementing a federally-recognized groundwater bank to maximize the beneficial uses of CVP water and other sources of surface water supply;

- Applying best management practices to maximize water supply and reliability;

- Updating and applying a commonly accepted modeling tool for evaluating current or proposed water resource projects within the American River watershed.

While the SSJBS is not a panacea, it does provide an opportunity to identify mitigation and adaptation strategies that will enhance water supply and increase water reliability, and I

respectfully request you take the Agencies' proposals into account throughout the basin study process.

Thank you for your consideration.

Sincerely,

Tom McClintock

DORIS O. MATSUI
6TH DISTRICT, CALIFORNIA

COMMITTEE ON ENERGY
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May 23, 2016

Honorable Estevan López
Commissioner
Bureau of Reclamation
U.S. Department of the Interior
1849 C Street NW
Washington DC 20240

Dear Commissioner Lopez,

I write today to express my strong support for the application submitted by Sacramento regional water agencies to update the U.S. Bureau of Reclamation (USBR) Sacramento-San Joaquin Basin Study (SSJBS) under the USBR Basin Study Program. This basin study update will help facilitate the Sacramento water agencies' plan to create a more integrated regional water supply.

The Sacramento region has been working hard to update its water system with the goal of securing a more reliable drinking water source for residents. Local water agencies believe that this is best accomplished through a combination of local and federal initiatives, anchored by a focus on conjunctive use water infrastructure and operations. These solutions include:

- Developing a federally recognized groundwater bank to conserve surface water supplies during times of drought;
- Optimizing operations at Folsom Dam and Reservoir by updating the Flow Management Standard for the Lower American River and revising the dam's operations manual to incorporate weather forecast-based operations;
- Reducing demands on Folsom Reservoir through an alternative diversion facility on the Sacramento River; and
- Applying best management practices to maximize water use efficiency.

I support a partnership between USBR and local water agencies to conduct further research on the Sacramento region's urban water supply and demand. This research is needed to accurately assess the various initiatives being proposed to improve resiliency and reliability. Sacramento area water agencies hope that the updated SSJBS will serve as an interagency roadmap for developing the region's water resources.

I appreciate your positive response to the Sacramento regional water agencies' letter of interest and I look forward to your timely review of the proposal. Thank you for your attention to this important matter.

Sincerely,

Doris Matsui

DORIS MATSUI
Member of Commerce

cc:
Mr. Thomas Iseman, Deputy Assistant Secretary, Department of Interior
Ms. Roseann Gonzalez, Director, Office of Policy, Bureau of Reclamation
Mr. David Murillo, Regional Director, Mid-Pacific Region
Ms. Michelle Denning, Regional Planning Officer, Mid-Pacific Region

AMI BERA, M.D.
7TH DISTRICT, CALIFORNIA

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June 10, 2016

The Honorable Estevan López
Commissioner, Bureau of Reclamation
U.S. Department of the Interior
1849 C Street NW
Washington DC 20240-0001

Subject: Sacramento Regional Proposal, Bureau of Reclamation 2016 Basin Study Program

Dear Commissioner Lopez:

I would like to voice my strong support for the2016 Basin Study Program proposal by a group of Sacramento regional water agencies. As part of the Bureau of Reclamation's Sacramento-San Joaquin Basin Study, the agencies have formulated a plan that would update the study's system-wide analyses and strategies for water management.

Their proposal is an important step towards a sustainable water future that secures our water supply system and benefits wildlife habitats and threatened/endangered fish species. This vision encompasses locally developed solutions and current and potential federal initiatives.

The plan put forward by the Sacramento regional water agencies would enhance the accuracy of the current modeling system, better enabling the agencies to responsibly manage flow from the Folsom Dam. It would create a Modified Flow Management Standard for the Lower American River and help manage the impact of consumption demands on the Folsom Reservoir. The plan would maximize water use efficiency by creating alternative diversion and storage facilities for Sacramento area water sources.

This proposal would also provide critical information about our regional urban water supply and give key insights regarding future demands. It would provide information about system vulnerabilities and potential ways to fix them, while highlighting ways that regional water systems can be fully integrated.

I respectfully urge that you consider this proposal and provide the funding essential to this plan. Implementation of this plan is critical if the Sacramento region is going to maintain full water reliability and species protection within the American River watershed. I am encouraged with the

positive response from you and your staff so far, and I look forward to working with you more on this matter. Should any questions arise, please contact my office at (202) 225-5716.

Thank you for your consideration.

Sincerely,

Ami Bera, M.D.
Member of Congress

June 16, 2016

Mr. David Murillo, Regional Director
Mid-Pacific Regional Office
Bureau of Reclamation
United States Department of Interior
Federal Office Building
2800 Cottage Way
Sacramento, CA 95825-1898

WATER FORUM
Sacramento City-County Office of Metropolitan Water Planning

Subject: Support for American River Basin Study Letter Proposal

Dear Director Murillo:

I am writing in support of the Sacramento regional water agencies' proposal to update Reclamation's Sacramento-San Joaquin Basin Study with more specific focus on the American River watershed and its related groundwater basins.

The Sacramento Water Forum is a diverse group of over 40 business and agricultural leaders, citizen groups, environmentalists, water managers, and local governments working together to balance two co-equal objectives:

- to provide a reliable and safe water supply for the Sacramento region's long-term growth and economic health; and
- to preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River.

Through the signing of the landmark Agreement in 2000, the Water Forum represents diverse regional interests in Sacramento, El Dorado, and Placer Counties.

Conjunctive management of water resources is an integral element of the Water Forum Agreement. While there have been measurable successes in advancing conjunctive use, there is much opportunity to identify further conjunctive use opportunities that will benefit both water supply operations and the environment.

The Water Forum hopes the Bureau of Reclamation recognizes the value of this study to the Sacramento region and to the broader Bay-Delta as a result of identifying implementable mitigation actions in response to an uncertain climate future.

Sincerely,

Tom Gohring
Executive Director

SAFCA
Sacramento
Area Flood
Control
Agency

June 21, 2016

Mr. David Murillo, Regional Director
Mid-Pacific Regional Office
U.S. Department of the Interior, Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Subject: Support American River Basin Study Proposal

Dear Director Murillo:

I am writing in support of the American River Basin Study Proposal from Sacramento Regional Water Agencies to update the recently completed Sacramento and San Joaquin Rivers Basin Study to focus on the supply-demand imbalance and adaptation strategies for this region under climate change conditions.

As the construction of the Joint Federal Project nears completion, SAFCA is working with the U.S. Army Corps of Engineers and other regional partners in revising the flood control manual for more modern and efficient operation of Folsom facilities to provide adequate flood protection to the Sacramento region with climate change considerations. The enhancement of water supply and environmental flow management is a complementary and important component for environmental protection and continued regional economic prosperity.

We recognize the importance of regional coordination and interdisciplinary collaboration and we encourage Reclamation to fund this important Basin Study to align regional strategies for climate change adaptation and for multiple water management purposes and beneficial uses. We look forward to working with Reclamation and the regional partners in this important study.

Sincerely,

Richard M. Johnson

Office 916-874-7606
Fax 916-874-8289

1007 - 7th Street, 7th Floor
Sacramento, CA 95814-3407

Appendix D. American River Basin Study Sources of Historical Data and Reports

Appendix D includes a list of historical data and reports that have been used as references for the development of the American River Basin Study Letter Proposal.

Sources of Data/Reports
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Fair Oaks Water District, 2011. 2010 Urban Water Management Plan.
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Sacramento Groundwater Authority, 2004. State of the Basin Report.
Sacramento Groundwater Authority, 2008a. Basin Management Report - 2006-2007.
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Western Placer County, 2007. Groundwater Management Plan.
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