

## 4. Implementing Projects and Programs

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### 4.1. Project Review Process

See other file

### 4.2. Coordination with Water and Land Use Agencies

See other file

### 4.3. Impact and Benefit Analysis

Integrated Regional Water Management (IRWM) Plans must discuss potential impacts and benefits of Plan implementation.

The discussion must include impacts and benefits:

- within the IRWM Region
- between regions
- those directly affecting DAC, EJ related concerns and Native American tribal communities

The MAC IRWMP partners and stakeholders recognize the importance of pursuing and integrating multiple resource management strategies to achieve the greatest and most equitable benefit for the region. The MAC region stakeholders understand that implementing the MAC Plan Update will result in regional and localized benefits and potential impacts that must be addressed as part of the IRWM planning process for the Region. This section provides an overview of potential benefits and impacts from implementation of projects or programs included in the MAC Plan Update which implement the Plan. It should be noted that inclusion of a project in the IRWM Plan indicates that it passed the screening requirements outlined in Section 4.1, but does not necessarily reflect endorsement by the Regional Participants Committee (RPC). In addition, inclusion of a project in the IRWM Plan does not commit the Regional Water Management Group or RPC member(s) to implement the project. Implementation, if undertaken, is the

responsibility of the project proponent. Prior to implementation and/or construction of any project included in this Plan, individual environmental review, compliant with the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), and any other local, state and/or federal requirements as applicable, will be completed by the project proponents.

The potential impacts and benefits that implementing the projects included in the MAC Plan Update could achieve are shown in The potential benefits and impacts summarized in Table 4-1 are described in more detail in the following sections. Additionally, the projects included in the MAC Plan Update by project type are summarized in the table included in Appendix A. For each project, potential benefits and impacts are assumed to be similar to those identified for the specific project type.

, and are described in more detail in the following sections.

Table 4-1: Potential Impacts and Benefits by Project Type

Project Type	Within the MAC Region		Interregional	
	Potential Impacts	Potential Benefits	Potential Impacts	Potential Benefits
<b>Groundwater Projects</b>				
<b>Groundwater Supply Development</b>	Water quality degradation Reduced groundwater availability and reliability	Increased groundwater storage / recharge Improved water supply reliability Improved water quality Reduced land subsidence and/or fissuring Economic benefits	Water quality degradation Reduced groundwater availability and reliability	Increased groundwater storage / recharge Improved water supply reliability Improved water quality Economic benefits
<b>Conjunctive Use</b>	Water quality degradation Reduced groundwater availability and reliability	Increased groundwater storage / recharge Improved water supply reliability Improved water quality Reduced land subsidence and/or fissuring Improved water management coordination Economic benefits	Water quality degradation Reduced groundwater availability and reliability	Increased groundwater storage / recharge Improved water supply reliability Improved water quality Reduced land subsidence and/or fissuring Improved water management coordination Economic benefits
<b>Potable Water Supply Projects</b>				
<b>Conveyance Facilities</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability	None	None
<b>Storage Facilities or Storage Operations</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water quality (through reduced groundwater pumping) Improved water supply reliability	None	Improved water quality (through reduced groundwater pumping)
<b>Treatment Facilities</b>	Energy consumption Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability Improved water quality Economic benefits	None	None
<b>Salinity Management</b>	None	Improved water quality Long-term sustainability of water supplies Economic benefits	None	Improved water quality Long-term sustainability of water supplies Economic benefits
<b>Conservation Projects</b>				
<b>Outreach and Education</b>	Reduced discharges to Mokelumne and Calaveras Rivers	Improved water supply reliability Public education and environmental awareness	Reduced discharges to Mokelumne and Calaveras Rivers	Improved water supply reliability Public education and environmental awareness
<b>Economic Incentives</b>	Reduced discharges to Mokelumne and Calaveras Rivers	Improved water supply reliability Avoided costs of imported water supply Avoided costs of water supply infrastructure Economic benefits	Reduced discharges to Mokelumne and Calaveras Rivers	Improved water supply reliability Avoided costs of imported water supply Avoided costs of water supply infrastructure Economic benefits
<b>Wastewater Projects</b>				
<b>Conveyance Facilities</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability	None	None
<b>Treatment Facilities</b>	Energy consumption Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability Improved water quality Avoided costs of imported water supply Economic benefits	None	Improved water quality
<b>Septic to Sewer Conversion</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water quality Economic benefits	None	None
<b>Recycled Water Projects</b>				
<b>Conveyance Facilities</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Improved water supply reliability Increased nutrient levels for landscape irrigation	None	Improved water supply reliability Potable water offsets

Project Type	Within the MAC Region		Interregional	
	Potential Impacts	Potential Benefits	Potential Impacts	Potential Benefits
<b>Treatment Facilities</b>	Water quality degradation Land use compatibility (rights-of-way) Disturbance of habitat and endangered species	Potable water offsets Improved water supply reliability Potable water offsets Improved water quality Economic benefits	None	Improved water supply reliability Potable water offsets Improved water quality
<b>Salinity Management</b>	None	Improved water quality Improved water supply reliability Economic benefits	None	Improved water quality Improved water supply reliability Economic benefits
<b>Urban Runoff Management Projects</b>				
<b>Stormwater Capture and Reuse / Recharge</b>	Water quality degradation	Increased groundwater storage / recharge Improved water supply reliability Reduced land subsidence and/or fissuring Avoided costs of imported water supply Economic benefits	Water quality degradation	Increased groundwater storage / recharge Improved water supply reliability Avoided costs of imported water supply Economic benefits
<b>Diversion to Sewer</b>	Disturbance of habitat and endangered species	Improved water quality Flood control enhancement Increased recycled water	None	None
<b>Pollution Prevention</b>	None	Improved water quality	None	Improved water quality
<b>Flood Management Projects</b>				
<b>Storm Drains or Channels</b>	Land use compatibility (rights-of-way) Disturbance of habitat and endangered species Increased sedimentation and erosion Economic impacts	Flood control enhancement Increased groundwater storage / recharge Avoided costs of flood damage Economic benefits	None	None
<b>Ecosystem Restoration and Protection Projects</b>				
<b>Land Conservation</b>	Economic impacts	Improved water quality Flood control enhancement Habitat protection and restoration	None	None
<b>Invasive Species Removal</b>	Disturbance of habitat and endangered species Increased sedimentation and erosion	Improved water quality Flood control enhancement Habitat protection and restoration	None	None
<b>Restoration / Revegetation</b>	Disturbance of habitat and endangered species	Improved water quality Flood control enhancement Habitat protection and restoration	None	None
<b>Water-Based Recreation Projects</b>				
<b>Reservoir Recreation</b>	Water quality degradation	Enhanced recreation and public access	None	None
<b>Parks, Access and Trails</b>	Disturbance of habitat and endangered species Increased sedimentation and erosion	Enhanced recreation and public access	None	None

### 4.3.1. Plan Implementation Benefits and Impacts

#### *Regional Impacts and Benefits*

Implementation of MAC Plan Update will lead to numerous benefits including, at a minimum:

- **A more reliable and high quality water supply.** Additional water supplies and conjunctive use lead to enhanced water supply reliability and assist with the improvement of water quality. Water quality projects ensure that existing water quality is sustained and protected. Reliable and high quality water is directly linked to economic and environmental health and well-being.
- **Cost-effective and multi-beneficial projects.** Opportunities for multi-beneficial projects, which can achieve a multitude of goals and objectives for several stakeholders rather than a single entity, provide increased value to stakeholders and the communities they serve. Integrated planning and collaboration can lead to multi-benefit projects that achieve cost savings through cost-sharing opportunities, economies of scale, resource sharing, and other mechanisms. Existing resources can be optimized, duplication of efforts avoided, and larger scale efforts developed to provide cost savings to all involved.
- **Shared experience and resources.** The completion of the MAC Plan Update and implementation of the Plan facilitates knowledge sharing and equips agencies to overcome future challenges by coordinating resources, more effectively meeting the needs of the region as a whole. In addition to direct quantitative benefits of Plan implementation, such as new or more reliable water supplies, indirect benefits are expected to result from avoiding the negative impacts of not implementing the projects.
- **Increased regional understanding.** Agencies and stakeholders are working together as a cohesive group to solve water resource problems in a consensus-based approach, resulting in a deeper understanding of the effects of each individual project on other agencies and stakeholders. This deeper understanding, in turn, reduces interagency conflicts that may prevent projects from gaining the necessary support for successful implementation.
- **Improved local understanding of water resources issues.** Through consistent and coordinated public outreach and education programs, local understanding of regional water resources issues, conflicts, and solutions will improve. Maintaining a consistent message will improve public understanding of water resource management issues and encourage the acceptance and understanding of integrated projects.

Potential impacts of implementation of the MAC Plan could include a variety of temporary construction-related impacts during project construction, including dust, noise, and traffic generation. Other impacts may include increased costs associated with water infrastructure financing. Additional impacts may be identified on a project-by-project basis during CEQA or NEPA analyses.

#### *Interregional Benefits and Impacts*

Interregional projects such as the Mokelumne Water Interregional Sustainability Evaluation (WISE) Program stand to provide benefits that extend beyond regional boundaries. The projects included in this Plan Update benefit not only the local agencies and residents of the MAC region, but multiple watersheds (Mokelumne, Cosumnes, and Calaveras River watersheds), the Delta, the East Bay Municipal Utility District (EBMUD) service area, and members of the public throughout California. Specific ways in which the projects contained in the Plan Update provide benefits beyond the MAC region include the following:

- Reduced effluent discharges (and associated pollutant loadings) into the Mokelumne and Calaveras Rivers due to increased recycled water use upstream, promoting improved water quality both in the Mokelumne and Calaveras Rivers and downstream in the Delta.
- Improved regional water supply and reliability for the East Bay, Amador County, Calaveras County and San Joaquin County, achieved through several water storage projects, will reduce pressure on the Delta to serve the region in times of significant drought. Additional wastewater reuse projects will also reduce the demand for upstream potable water, potentially increasing downstream supplies.
- Conjunctive use projects will increase water supply reliability within the region and in San Joaquin County, resulting in increased surface water supply availability in dry years and reduced pressure on the San Joaquin River as a water supply.

Most likely, though project dependent, construction-related impacts would not impact other IRWM regions, as project and program facilities would be implemented within the MAC region with temporary and local impacts, if any.

The MAC Plan Update also has the potential to benefit resources beyond local and regional water resources. Improved surface water quality will benefit the local ecosystem. Enhanced tree cover, while viewed as a habitat enhancement, may also directly benefit regional air quality through the creation of microclimates and the filtering capacity provided by trees. By optimizing water supply operations and implementing conjunctive use, additional surface water supplies may be available for hydropower generation to benefit statewide energy resources.

#### *Benefits and Impacts to DACs, EJ-Related Concerns, and Native American Tribal Communities*

Protection of the people and economy of disadvantaged communities (DACs) and Native American tribal communities in the region, and correction of environmental justice concerns are priorities for the MAC Plan Update. Environmental justice is addressed by ensuring that all stakeholders have access to the MAC planning decision-making process and that minority and/or low-income populations, such as DACs and Native American tribal communities, do not bear disproportionately high and adverse human health or environmental impacts. Working on a regional basis aids in protecting the economy of the MAC region and minimizing direct monetary impacts felt by DACs and Native American tribes in the region through the stabilization of water and wastewater utility rates. Implementation of the region's flood control projects will protect the local cities from disastrous flood damage, as was experienced in the winter and spring of 2006. Regional coordination has been and will continue to be achieved through the noticing of public meetings, to be held as needed to address public and stakeholder concerns, conducting routine reviews to ensure that DACs are not being adversely affected by project and Plan implementation, and by using grant monies receive to help offset project implementation costs.

Similar to DACs, Native American Tribes in the MAC region are encouraged to participate. Focused outreach to Native American within the MAC Region was completed as part of the Plan update. There are three federally recognized tribes within the MAC Region including:

- The Ione Band of Miwok Indians
- The Jackson Rancheria Band of Miwok Indians
- The California Valley Mikwok Tribe, generally known as the "Sheep Ranch Tribe"

Although none of the tribes is actively engaged in the planning process, through the project review process UMRWA and the RPC have sought to minimize impacts to these communities and provide for equitable benefits associated with project implementation. Impacts to DACs and Native American tribes will be

kept to a minimum, and ongoing coordination and public involvement will aid in preventing possible impacts. Construction of project facilities will create short-term environmental impacts (noise, dust, traffic disruption) at neighboring communities. A preliminary analysis of the areas affected by construction of project facilities will ensure that these construction nuisance impacts will not be borne predominantly by any minority population or low-income group.

### 4.3.2. Project / Program Impacts and Benefits

The potential benefits and impacts summarized in Table 4-1 are described in more detail in the following sections. Additionally, the projects included in the MAC Plan Update by project type are summarized in the table included in Appendix A. For each project, potential benefits and impacts are assumed to be similar to those identified for the specific project type.

#### *Benefits*

##### **Increased groundwater storage / recharge**

The Eastern San Joaquin subbasin, within the San Joaquin Valley Groundwater Basin, extends from the western corner of Calaveras County west of the cities of Stockton and Lodi. Use of groundwater for irrigation and municipal purposes has resulted in a continuous decline of available groundwater over the past 40 years. As of 1990, annual groundwater extractions in San Joaquin County had exceeded the estimated safe yield. Overdraft of the groundwater in this subbasin has created groundwater depressions in areas near Stockton and east of Lodi. Groundwater recharge could help improve the state of the subbasin. Groundwater improvement programs may include projects to:

- Enhance conjunctive management and groundwater storage
- Aquifer storage and recovery
- Stormwater capture and recharge
- Construction of new and/or rehabilitation of spreading grounds/recharge basins
- Improvement to groundwater monitoring
- Hydrogeologic investigations and groundwater modeling

##### **Improved water supply reliability**

Improving water supply reliability in the MAC Region is Policy 2, developed as part of the Regional Goals and Objectives. Projects that diversify the Region's water supply portfolio, create new supplies, improve efficiencies of existing supplies, or offset potable water supplies will improve the MAC region's water supply reliability. Projects that would achieve this benefit include:

- Water use efficiency and water conservation projects
- New water supply pipelines and/or rehabilitation/repair projects
- Water system tie-ins, interconnections, and diversion structures
- Water transfer projects
- Groundwater extraction and/or treatment projects
- Water storage and treatment projects
- Upgrading wastewater treatment facilities to produce recycled water
- Water quality protection projects

##### **Improved water quality**

Policy 1, as described in Section 3, Policies, Goals, Objectives, and Strategies, is to Maintain and Improve Water Quality. Different types of projects contribute to different types of water quality improvements. For example, groundwater recharge projects can improve groundwater quality in the overdrafted Eastern

San Joaquin groundwater subbasin, while treatment improvement projects will improve potable water quality. Projects that improve water quality include, but are not limited to:

- Stormwater projects (e.g. stormwater capture and recharge or stormwater management to reduce volume of urban runoff discharged to surface waters)
- Upgrading wastewater treatment plants
- Groundwater monitoring and assessment
- Conversion of septic systems to municipal sewers
- Conjunctive management and groundwater storage
- Sewer collection improvements
- Water treatment projects
- Ecosystem restoration and revegetation projects
- Land conservation
- Salinity management

#### **Reduced land subsidence and/or fissuring**

Land subsidence occurs when groundwater is excessively pumped from a groundwater basin; the clay layers in the aquifer settle and the ground surface in the area lowers, eventually creating a cone of depression. Projects that will reduce groundwater pumping or increase groundwater recharge will help reduce land subsidence and fissuring. These projects include:

- Enhance conjunctive management and groundwater storage
- Stormwater capture and recharge
- Construction of new and/or rehabilitation of spreading grounds/recharge basins
- Improvement to groundwater monitoring
- Hydrogeologic investigations and groundwater modeling

#### **Economic benefits**

Economic benefits can be achieved by:

- Avoiding costs of imported water supply by increasing the use of recycled water, creating new water supply sources within the region, or capturing and reusing stormwater.
- Avoiding costs of water supply infrastructure with the implementation of water conservation and water use efficiency projects.
- Avoiding flood damage costs.
- Avoiding impacts to the economy (e.g. businesses and agriculture) associated with water supply interruption.
- Increased tourism with enhanced recreational opportunities and improved water quality.
- Benefits to the regional economy associated with constructing and maintaining proposed IRWM projects.

Additionally, as previously stated, working on a regional basis aids in protecting the economy of the MAC region and minimizing direct monetary impacts felt by DACs in the region through the stabilization of water and wastewater utility rates. IRWM planning and collaboration can lead to multi-benefit projects that achieve cost savings through cost-sharing opportunities, economies of scale, resource sharing, and other mechanisms. Existing resources can be optimized, duplication of efforts avoided, and larger scale efforts developed to provide cost savings to all involved.

### **Long-term sustainability of water supplies**

Some groundwater basins throughout California contain salts and nutrient levels exceeding water quality objectives established in Water Quality Control Plans (Basin Plans). The high salt and nutrients concentrations could be from natural conditions and irrigation with surface water, groundwater, and recycled water. Salinity management is key in contributing to the long-term sustainability of groundwater supplies. Groundwater quality varies throughout the MAC region with overdraft in portions of the Eastern San Joaquin or Cosumnes Groundwater Subbasins. As new water supplies are developed, recycled water use increases, and groundwater recharge projects are implemented, the importance of salinity management will increase.

### **Public education and environmental awareness**

Many water conservation, water quality protection, and water supply projects include public education and environmental awareness components, creating multi-benefit projects or programs. Public outreach programs and components can help promote and increase water conservation, discourage illegal dumping of trash and litter in watercourses, and encourage appropriate water management practices including appropriate collection and disposal of hazardous liquid wastes and pharmaceuticals.

### **Increased nutrient levels for landscape irrigation**

Depending on the nutrients supplied by the recycled water available, increasing the use of recycled water for landscape irrigation through construction of additional conveyance facilities could significantly reduce the amount of fertilizer required for the areas irrigated.

### **Potable water offsets**

The benefits of potable water offsets will be achieved by stormwater and recycled water projects. As new non-potable water supplies are identified and the use for irrigation or other beneficial uses are implemented, surface water and groundwater in the MAC region will be freed up for other uses. The Eastern San Joaquin subbasin can be replenished as groundwater pumping is reduced and flows in the Mokelumne River and other surface water bodies in the watershed can increase as diversions are reduced. Potable water offsets are also tied to improved water supply reliability and diversification of the region's water supply portfolio. Projects that would provide potable water offsets include:

- Recycled water treatment and conveyance projects.
- Stormwater capture and reuse/recharge.
- Conversion of septic systems to centralized sewer collection systems to increase the amount of recycled water available.

### **Flood control enhancement**

Flooding is a concern for many areas within the MAC IRWM planning region. Many cities and communities are included in 100-year floodplains (of both the Mokelumne River and its tributaries), including Sutter Creek, Jackson, Ione, and Mokelumne Hill. In some cases, like in the City of Plymouth, flooding is due to an inadequate storm drainage system, unable to handle heavy storms during winter and spring seasons. The Calaveras County General Plan discusses three basic types of potential flood hazards: stream-side overbank flows, areas of flat terrain with slow surface drainage, and inundation due to structural dam failure. Flooding can occur from heavy rainfall, rapid snow melt, saturated soils, or a combination of these conditions. Also, increasing development leads to an increase in impervious surface areas and a decrease in natural vegetative cover, which reduces the detention and attenuation characteristics of the overland areas. To reduce potential property and structure damage, and economic impacts, flood control enhancement may be provided by projects that:

- Capture and divert stormwater.
- Improve levee systems (e.g. floodwalls or setback levees).
- Install pervious pavement.
- Protection and manage floodplains.
- Construct regional flood control infrastructure.

### Increased recycled water

By centralizing sewer collection systems in areas that may still be on septic, a greater volume of wastewater will be treated at the wastewater treatment facilities, creating more recycled water for beneficial uses. Increasing the amount of recycled water available for landscape, golf course, and school irrigation, industrial uses, and other uses, will lead to other benefits such as potable water offsets and increased nutrient levels for landscape, previously discussed.

### Habitat protection and restoration

Projects that contribute to habitat protection and restoration have the ability to enhance the MAC Region's ecosystems and protect endangered species. The following types of projects would provide this benefit:

- Land conservation.
- Water quality protection projects that would result in surface water quality improvement.
- Invasive species removal.
- Creation of wetlands and other habitat.
- Stormwater management and pollution prevention.
- Debris cleanup and habitat restoration.

### Enhanced recreation and public access

Reservoirs, parks, and the wilderness within the MAC Region are used by outdoor recreation enthusiasts throughout the year. Enhancing recreation and public access in the region will be achieved by projects that:

- Conserve and preserve land.
- Remove and control invasive species.
- Improve water quality.

### Impacts

Implementation of the projects described in this plan may also have quantitative and/or qualitative impacts if the MAC Plan Update and/or its component projects are not managed or implemented properly. These impacts may include increased project costs to agencies and rate payers, delayed construction and/or operation of planned facilities leading to delayed water supply and other benefits, increased negative impacts on surface water and/or groundwater quality, and more limited operational flexibility, especially in times of drought, leading to increased water rationing and associated pressure on water users and the environment.

Project-specific and environmental compliance processes completed by project proponents prior to project implementation will establish the significance of project-related impacts. Each project will comply with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act

(NEPA), if applicable. The following table presents the potential impacts that may be generated by projects included in the MAC Plan Update.

Negative impacts that could be associated with the implementation of projects and programs included in the MAC Plan Update are similar to any other water infrastructure projects. In general, there are temporary, site-specific impacts related to construction and long-term impacts associated with project operation. Site-specific construction impacts from implementing physical project facilities may include increased traffic and/or congestion, noise, biological or cultural resources, public services and utilities, and aesthetics. Operation of the projects may result in:

- Impacts to groundwater-dependent vegetation.
- Effects of recreation on raw water supplies within surface water reservoirs.
- Impacts on riparian habitat from surface water conveyance and storage operations.
- Erosion, sedimentation, and water quality impacts from flood control projects.
- Increased wastewater residuals (biosolids) generated associated with upgraded, water, recycled water, and wastewater treatment.

## 4.4. Financing Plan

The Integrated Regional Water Management (IRWM) Plan must plan for implementation and financing of identified projects and programs including potential financing for implementation. The financing discussion must include:

- List of possible funding sources for continued development of the IRWM Plan
- List of funding mechanisms for the projects and programs in the Plan
- Explanation of the certainty and longevity of funding for the Plan and projects/programs in the Plan.
- Explanation of how O&M costs for projects that implement the Plan would be covered and the certainty of the funding

Given the low density development in the MAC region, project financing has always proven to be a major obstacle, often preventing projects from proceeding to implementation. Demands on agencies' and cities' limited funds continue to increase, construction costs continue to rise, existing aging infrastructure requires upgrades to meet growing demands, and future state legislation threatens to shift substantial property tax revenues away from special districts to the state general fund. In this economic climate, agencies are challenged to balance costs associated with supply water for new growth while ensuring the highest standards of water quality and supply reliability for existing customers, protect and enhance the sensitive ecosystems within the region, and minimize costs incurred by end-users. Further, projects that benefit the environment but do not provide new water or a measurable improvement to water supply reliability and/or water quality are wholly dependent upon public assistance for implementation.

### 4.4.1. Funding Sources and Mechanisms for Planning and Implementation

MAC IRWM regional stakeholders recognize the importance of maintaining the highest standards of cost-effectiveness for the development of the MAC Plan, as well as projects and programs considered for implementation. Regional stakeholders are concerned about protecting ratepayers from increasing water and wastewater rates. Agencies within the region have explored a variety of potential funding vehicles

including the State Revolving Fund, Proposition 50, 84, and 1E, Hazard Mitigation Grant Program, and other State and Federal grant and loan programs, in addition to the sale of municipal bonds, land assessment, water rates, and other municipal revenue sources. The development of this MAC Plan Update is being funded by Prop 84, Round 1 planning grant monies. Additionally, UMRWA member agency staff contribute time and resources to completing the Plan Update, coordinating and participating on the Regional Participants Committee, and organizing stakeholder outreach efforts. The MAC region is committed to developing a useful and implementable IRWM Plan, which includes updating the Plan in the future to help ensure the Plan responds appropriately to current day conditions and issues.

Estimated costs for each IRWM plan project are shown in Appendix A, along with potential funding sources (exclusive of additional local, state or federal grant monies). It should be recognized that each implementing organization has a unique set of revenue and financing methods and sources. This IRMWP does not provide an exhaustive list of funding sources available. Many of the same funding sources and/or mechanisms would be used for continued development of the IRWM Plan and for project / program implementation. The various potential funding sources for both updating the IRWM Plan and implementing projects are listed in Table 4-2. The funding mechanisms are further described in the following sections.

**Table 4-2: Funding Sources for Development of the IRWM Plan and Implementation of Projects**

Funding Mechanisms	Continued Development of the IRWM Plan	Project / Program Implementation	Certainty & Longevity of Funding
Capacity Fees		✓	Dependent upon rate structure adopted by project proponents
User Fees		✓	Dependent upon rate structure adopted by project proponents
User Rates / Recovery		✓	Dependent upon rate structure adopted by project proponents
General or Capital Improvement Funds	✓	✓	Dependent upon budgets adopted by project proponents and participating agencies
Bonded Debt Service		✓	Dependent upon debt carried by project proponents & bond market
Local, State, or Federal Grant Programs	✓	✓	Dependent upon future local, state, and federal budgets, and success in application process

### *Capacity Fees*

Capacity fees are used by water agencies almost universally as a measure to achieve and maintain equity among its past, present and future customers. For a growing water agency, capacity fees can represent more than half of the total revenue in any given year, and as such are very important to existing as well as future customers. Capacity fees are typically charged per connection, measured in equivalent dwelling

units (“EDUs”). A single connection may encompass more than one EDU. In addition to the connection fee aspect of capacity fees, water agencies may also assess other fees, e.g., Commercial Acreage Fee (per acre) and Other Service Fee (per acre).

In some cases, if a developer builds a water pipeline or large water facility required by a water agency as a condition of development, then as partial or full payment for the water facility, a water agency may give fee credits to the developer in lieu of the developer paying fees. If the value of the water facility exceeds the amount of credits, a reimbursement agreement is typically executed authorizing payment to the developer of the remaining amount owed over a period of time which does not typically exceed a defined time period.

### *User Fees*

Monthly user fees are assessed by some water agencies where an argument can be made that new facilities directly benefit existing customers. This is especially true for water agencies that are developing conjunctive use water systems where the existing customers may have paid for the groundwater component when they paid the development fee (through the purchase of the home). The surface water and/or recycled water component is a new water supply for a water agency that is needed for conjunctive use with groundwater supplies. In many cases, income from this monthly revenue source is used to pay debt service on debt financed assets.

### *User Rates/Rate Recovery*

User rates or rate recovery pays for the operations and maintenance of a water agency or public utility’s system. Within a water agency user rate, there is a fixed cost component that covers costs that do not vary with the amount of supplied water, such as labor and overhead expenses, and a variable cost component that covers costs that are based on the amount of pumping and applied chemicals to meet the water demands of the customers and vary with the amount of supplied water, such as the electrical and chemical costs. A water agency customer pays a monthly fixed rate and a variable rate based on the metered usage. In cases in which billing is not based on a metered usage, a single monthly rate is assessed that combines the average of the fixed and variable rates.

### *General or Capital Improvement Funds*

General or capital improvement funds are monies that an agency sets aside to fund general operations and/or facility improvements, upgrades and, sometimes, development. These funds are usually part of their overall revenue stream and may or may not be project-specific.

### *Bonded Debt Service (Revenue Bonds)*

In cases in which a large facility is needed to support current services and future growth, revenue bonds are issued to pay for new capital. In this way, a large facility can be paid for by bonded debt service at the time of construction with repayment of the debt service over a 20- to 30-year timeframe. This is a preferred approach to paying for high cost facilities because it avoids the perceived over-collection of fees from past customers that go toward facilities that serve present and future customers. The downside to bonded debt is that it cannot be accomplished with capacity fees alone due to the variability and uncertainty of new development over time. A user rate is needed as a bond document covenant in the event that development fees are not adequate to make the required annual payment for the debt service.

### *Local, State, and Federal Grant Programs*

Grant programs at either the local, state, or federal level are periodically available to the region. In the past, UMRWA has applied for and received planning grant funding through the Department of Water

Resources (DWR) IRWM grant program. This 2011/2012 MAC Plan Update is being funded by Prop 84, Round 1 planning monies. Additionally, UMRWA and members of the MAC Regional Participants Committee (RPC) have applied for and obtained state and federal funding for studies and projects benefiting the region. These monies typically require that local matching funds be available. The matching requirement shows a local commitment to promoting and completing the study or project. A grant is typically administered and contracted by a single agency within the region that works directly with the state or federal granting agency. Grants typically carry relatively high administration cost because extensive grant reporting may be required, and typically only a small portion of the grant may be used to cover grant administration.

In the past, the region has actively sought external funds for development of the MAC IRWMP and implementation of regional projects and programs. Examples of past sources of funding include:

- Federal Funding (Corps, Reclamation, FEMA)
- State Funding (Proposition 13, CALFED, Proposition 50, Proposition 84)
- Local Funding (impact fees, user rates, tax assessments)

These efforts are expected to continue to fund implementation of the projects and programs developed in the MAC Plan Update.

#### 4.4.2. Support and Financing for Operation and Maintenance of Implemented Projects

Ongoing support and financing of the operation and maintenance (O&M) of projects in this Plan Update are expected to derive from many of the same sources that were identified to fund project implementation. Support and financing will likely come primarily from local sources, including user rates, fees and assessments. Since regional projects and programs often involve multiple partner agencies, the range of local sources available is broadened. The details of financing these larger, multi-partner projects are typically worked out on a project-by-project basis. Large multi-purpose projects typically adhere to standard cost accounting and cost of service principles which are typically described and codified in the agreements for ownership, and operation and maintenance of facilities is typically developed as part of a project financing package.

O&M costs of proposed implementation projects must be evaluated as the overall viability of a particular project effort is determined. Any project that is advanced for implementation consideration must include an analysis to determine ability to operate and maintain the project and project benefits. The annual fiscal impact on user rates, and the willingness of ratepayers to accept any increased cost of service as may be required for project implementation, must be included in this analysis. The need for water and the economic hardship impacts that would occur, should the new source not be available, may also be considered as part of the analysis. Any benefits derived from replacing and/or updating existing systems can also be considered.

For non-water supply projects, alternate criteria must be considered in evaluating the region's ability to provide ongoing support. For example:

- Recycled water production costs, using strict cost-of-service principles, can be considerable (including O&M costs). Cost recovery is primarily a function of an agency's ability to charge user fees for the recycled water use and the degree of treatment required for a particular application. The benefits to customers (i.e., large water users) are often factored into the water costs.

- Watershed improvement projects are designed to minimize the need for ongoing operation and maintenance expenses. Costs associated with monitoring and/or staff support to track and implement projects and studies can potentially be covered through membership contributions, grants, or by other non-profit funding vehicles not necessarily available to governmental agencies.
- Projects focused on providing water quality benefits must be designed to employ a process that allows for low-cost operation and maintenance. For example, debris build-up (and hence the need for its removal) must be a consideration in the system design.

To improve the MAC region's ability to provide ongoing support to priority projects, agencies and stakeholders in the region should work together to minimize associated O&M costs and gain savings from economies of scale.

## 4.5. Technical Analysis

To be developed

# APPENDIX A - PROJECT SUMMARY

Appendix A – Project Summary

Project Proponent	Project Name	Project Type	Project Status	Capital Cost	Present Value Cost	Primary Funding Sources
AWA	CAWP & AWS Intertie	Potable Water Supply Project – Conveyance Facilities	conceptual design	\$5,400,000	\$6,251,140	TBD
AWA	CAWP Gravity Supply Line	Potable Water Supply Project – Conveyance Facilities	design complete	\$13,500,000	\$13,589,843	PG&E, USDA Rural Services
AWA	Treated Water to Residents Using Untreated Water	Potable Water Supply Project – Conveyance Facilities	conceptual design	\$3,870,087	\$3,918,318	State Revolving Fund
AWA	Lake Camanche Wastewater Improvement Program	Wastewater Project – Conveyance and Treatment Facilities	conceptual design	\$14,000,000	\$15,789,670	SWRCB- Small County Wastewater Grant Program, State Revolving Fund and Rate/Fees
AWA	Small Diameter Pipeline Raw Water Canal to Pipe Conversion Project	Potable Water Supply Project – Conveyance Facilities	design complete	\$3,500,000	\$3,947,417	
AWA	Inter-Regional Conjunctive Use Project	Groundwater Project - Conjunctive Use	conceptual design	\$5,000,000	\$5,639,168	
AWA	AWS Regional Water Treatment Plant	Potable Water Supply Project – Treatment Facilities	in design	\$20,000,000	\$22,556,671	
AWA	Lower Amador Canal Project	Potable Water Supply Project – Conveyance Facilities	in design	\$1,500,000	\$1,736,428	Rates, Private Developers, Utility Cooperation, State, Federal and Grants
AWA	Backwash Water Reuse Project	Recycled Water Project – Conveyance Facilities	design complete			Buckhorn-rate recovery, City of Lone- local developer and AWA, Tanner- rate recovery.
AWA	CAWP Fire Storage	Potable Water Project – Conveyance and Storage Facilities	conceptual design	\$5,000,000	\$5,788,093	Not yet identified
AWA	Highway 88 Corridor Wastewater Treatment, Transportation, Disposal	Wastewater Project – Septic to Sewer	conceptual design	\$10,000,000	\$11,576,186	Not yet identified
AWA	Ione Treated Water Loop	Potable Water Supply Project – Conveyance Facilities	conceptual design	\$7,000,000	\$8,103,330	
AWA	Regional Wastewater Project	Wastewater Project – Treatment Facilities	conceptual design	\$20,000,000	\$23,152,372	
AWA	New York Ranch Reservoir Conservation and Management	Ecosystem Restoration and Protection Project – Land Conservation	pre-design	\$600,000	\$694,571	
AWA	AWA Low Pressure Flow Improvements	Potable Water Supply Project – Conveyance Facilities	conceptual design	\$500,000	\$563,917	Not identified
AWA	Lake Camanche Water Storage Tank & Transmission Main	Potable Water Supply Project – Conveyance and Storage Facilities	design complete	\$41,000,000	\$47,462,363	Rates, Private Developers, Utility Cooperation, State, Federal and Grants
AWA	Lake Camanche Water Service Replacement-Phase II	Potable Water Supply Project – Conveyance Facilities	design complete	\$1,200,000	\$1,389,142	Rates, Private Developers, Utility Cooperation, State, Federal and Grants

Project Proponent	Project Name	Project Type	Project Status	Capital Cost	Present Value Cost	Primary Funding Sources
AWA	South Shore Camanche Regional WTP	Potable Water Supply Project – Treatment and Conveyance Facilities	in design	\$31,500,000	\$35,526,757	Rates, Private Developers, and Grants
AWA	Wildwood Leachfield Replacement	Wastewater Project – Treatment	pre-design	\$2,200,000	\$2,546,761	Rates, Private Developers, Utility Cooperation, State, Federal and Grants
AWA	Bear River Reservoir Expansion Project	Potable Water Supply Project – Storage Facilities	pre-design	\$50,000,000	\$58,308,773	Rates, Private Developers, Utility Cooperation, State, Federal and Grants
UMRWA	Septic System Management Program	Wastewater Project – Treatment and Conveyance Facilities	planning	\$260,000	\$260,000	Grants
CCWD	Leak Testing and Repair Program	Potable Water Supply Project – Conveyance and Storage Facilities	in design		\$3,195,839	Grant Funds
CCWD	New Hogan Reservoir Pumping Project	Potable Water Supply Project – Conveyance Facilities and Storage Operations	pre-design	\$22,000	\$24,812	
CCWD	New Hogan Phase II Water Distribution Loop Project	Potable Water Supply Project – Conveyance Facilities	conceptual design	\$3,000,000	\$3,383,501	
CCWD	Sheep Ranch WTP Compliance Project	Potable Water Supply Project – Treatment Facilities	design complete	\$200,000	\$230,093	Grant Funding
EBMUD	CCWD-AWA-EBMUD Regional Water Treatment Plant	Potable Water Supply Project – Treatment and Conveyance Facilities	planning			Agency funding, loans, grants, user connection fees
CCWD	West Point WTP Drinking Water Compliance Project	Potable Water Supply Project – Treatment Facilities	design complete	\$600,000	\$690,278	State and Federal grants
Foothill Conservancy	East Panther Creek Restoration Project	Ecosystem Restoration and Protection Project – Restoration	design complete	\$200,000	\$231,524	CA Dept of Fish and Game, PG&E FERC project environmental enhancement funds
City of Jackson	City of Jackson Wastewater Treatment and Disposal Project	Wastewater Project – Treatment	in design	\$5,747,000	\$6,611,711	SWRCB, USDA- Rural Development