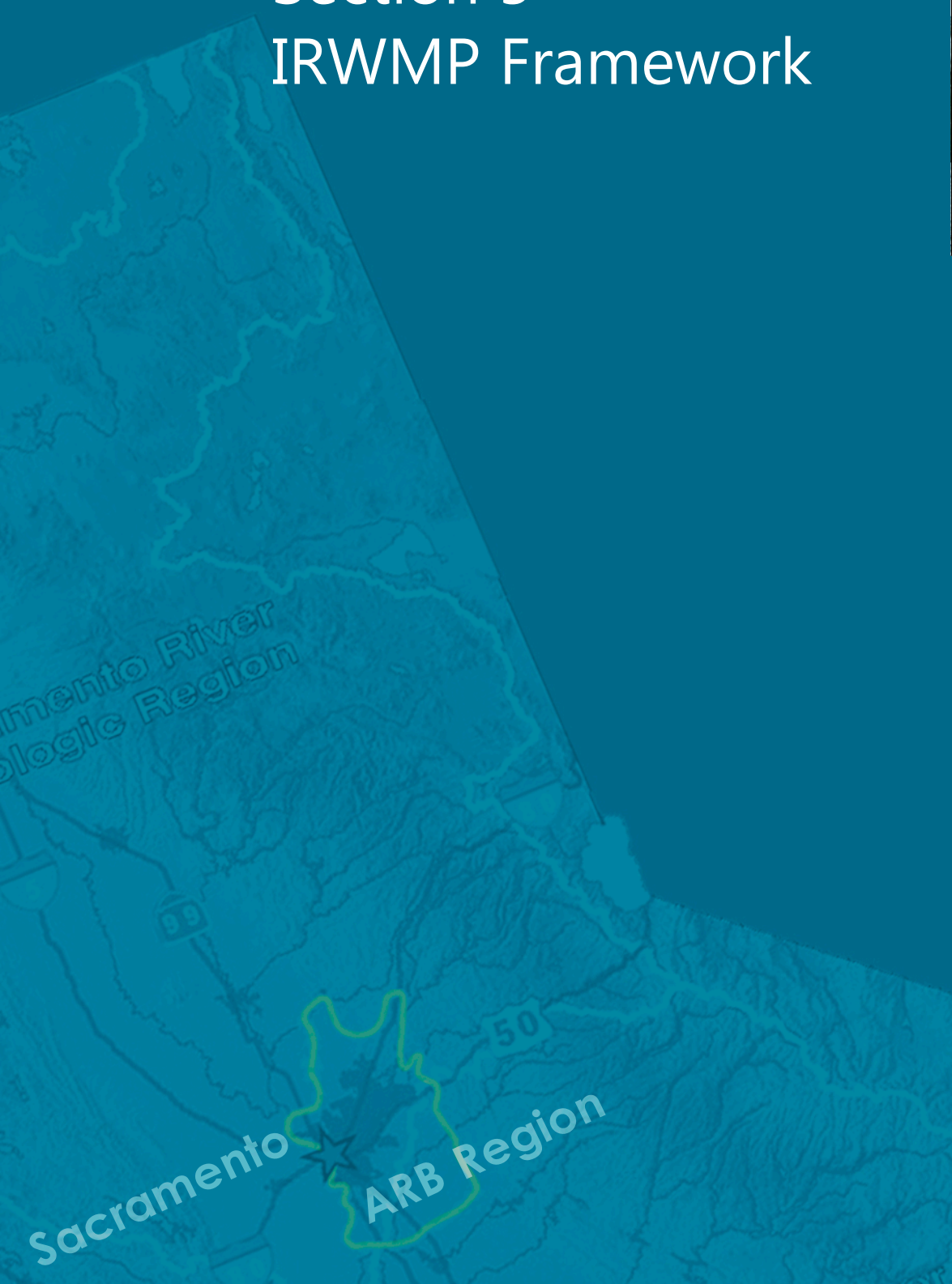


Section 5 IRWMP Framework



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Abbreviations and Acronyms

AB	Assembly Bill
AFB	Air Force Base
ARB	American River Basin
Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin River Basins
CARB	California Air Resources Board
CSSIP	Combined Sewer System Improvement Plan
CVFPP	Central Valley Flood Protection Plan
CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
CWA	Clean Water Act
CWP	California Water Plan
Delta	Sacramento-San Joaquin River Delta
DWR	California Department of Water Resources
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
Framework	ARB IRWMP Framework
GSA	groundwater sustainability agency
GSP	Groundwater Sustainability Plan
IRWM	integrated regional water management
IRWMP	Integrated Regional Water Management Plan
LID	low impact development
MGD	million gallons per day
NAB RDCP	North American Basin Regional Drought Contingency Plan
NPDES	National Pollutant Discharge Elimination System
RFMP	Regional Flood Management Plan
RMS	resource management strategy
RWA	Regional Water Authority
RWRP	Regional Water Reliability Plan
SAFCA	Sacramento Area Flood Control Agency
SB	Senate Bill
SCGA	Sacramento Central Groundwater Authority
SEA/EIR	Supplemental Environmental Assessment/Environmental Impact Report
SFPC	State Plan of Flood Control
SGA	Sacramento Groundwater Authority
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nutrient Management Plan
SPFC Planning Area	areas currently protected by facilities of the SPFC
SPFC	State Plan of Flood Control
SRCSD	Sacramento Regional County Sanitation District
SSHCP	South Sacramento Habitat Conservation Plan
SWRP	Storm Water Resource Plan
TAF	thousand acre-feet
TMDL	total maximum daily load
USACE	U.S. Army Corps of Engineers
WDR	Waste Discharge Requirement
WEP	Water Use Efficiency Program

WFA Water Forum Agreement
WWTP wastewater treatment plant

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5. IRWMP FRAMEWORK

As described in **Section 3**, this 2018 American River Basin (ARB) Integrated Regional Water Management Plan (IRWMP) Update was developed with extensive stakeholder input. Stakeholders were instrumental in identifying issues that eventually led to what the ARB Region (Region) refers to as its ARB IRWMP Framework (Framework). This section describes in more detail this resultant Framework, the core of the ARB IRWMP.

5.1. Framework Overview

A graphic depiction of the Framework is shown in **Figure 5-1**. Stakeholders were guided in the integrated planning process from higher levels (principles and vision), through strategic considerations (goals and objectives) to increasingly detailed tactical measures (strategies and projects). Elements in the Framework are further defined and described below.

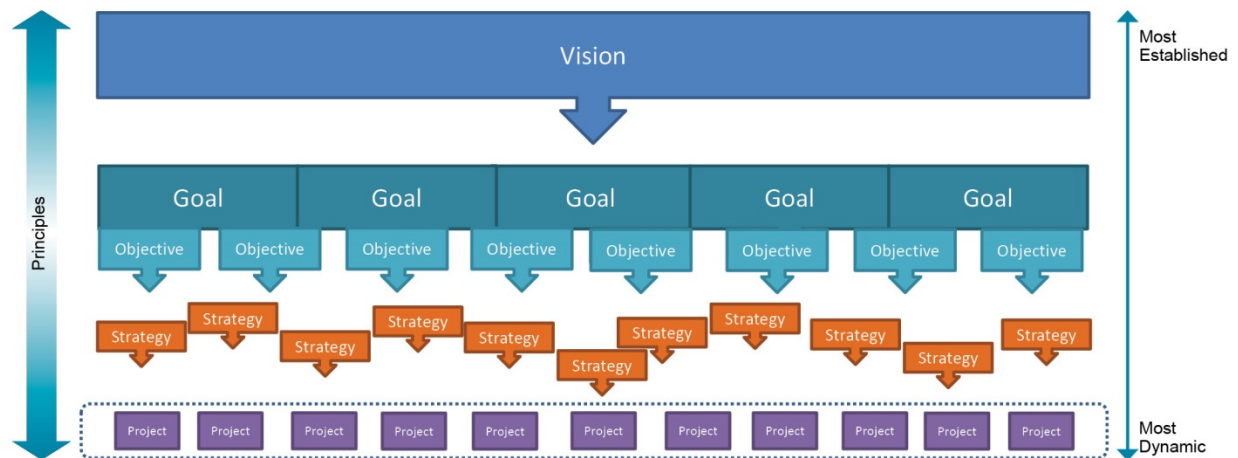


Figure 5-1. ARB IRWMP Framework

The VISION is a compelling description of the future end state (in a time horizon) of the Region that will result from proactive, strategic activities undertaken for the IRWMP. The vision is the most established and agreed upon planning concept. Instead of relying on individual and fragmented attempts to manage water, having a unifying and integrated vision with greater foresight is necessary to coordinate projects, or actions, to successfully and efficiently manage water resources. The vision is shown as a single box to demonstrate its singular and unifying nature.

GOALS represent the desired “end state” of activities and support the overall vision. Goals are meant to span the entire vision. If goals are met, the Region can reach its vision. The vision and goals provide the backbone of the entire planning process and are considered the most agreed-upon and established concepts for the Region.

PRINCIPLES are statements that articulate shared organizational values, support the vision, and serve as a basis for decision making. While not in the direct hierarchy of the Framework as shown above, the principles are foundational and provide guidance on how all stakeholders should consider future planning and implementation of programs and projects. The Framework graphic shows that our principles should permeate throughout the Framework.

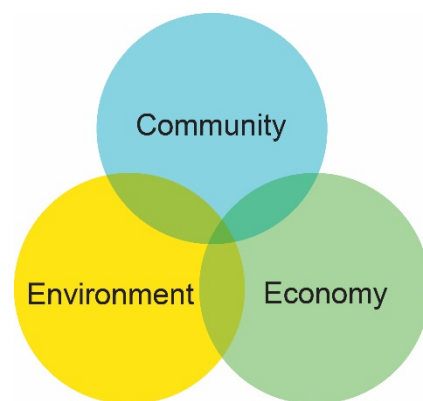
OBJECTIVES establish the intent of the Region and the IRWM planning effort, and are geared toward future action. Objectives help the Region determine if it has achieved its goals. Although they strive to be comprehensive, there is recognition that the sum of the objectives may not completely address all aspects of the Region's water management issues, and thus, gaps are shown in between each objective. However, the objectives represent the Region's current and best intent to address all of its issues. Although somewhat stable, objectives are more dynamic than the vision or goals, and it is foreseeable that objectives would be reviewed periodically in future planning updates, to continuously strive to meet the goals and vision.

STRATEGIES are general approaches or methods for achieving objectives and resolving specific issues. Strategies speak to the question "How will we go about accomplishing our objectives?" (U.S. Environmental Protection Agency [EPA] 2012). Multiple strategies may be employed to achieve an objective; likewise, a single strategy may help make progress toward multiple objectives. Whenever possible, strategies should be measurable, state a distinct target, have a timeline, and be flexible. Strategies are more dynamic than objectives and are meant to be regularly revisited and revised as necessary.

PROJECTS help the Region meet its objectives by implementing the strategies. Projects—or actions—are the most dynamic element of the Framework as they can be added or subtracted at any time. However, while there may be a variety and an extensive list of projects at various levels of readiness to proceed, implementing projects may not completely fulfill individual strategies or objectives, much less the goals or vision. It is the intent of the Region to actively support multi-benefit projects that align with the Region's larger vision.

The Framework also depicts how dynamic the Framework components should be. Those components at the top (vision, goals, and objectives) went through a lengthy process of development, and should not be modified without significant consideration. Strategies and projects are more dynamic compared to the goals, vision, and objectives, and will change more readily over time. Projects and strategies are inevitably influenced by external factors as well, such as funding availability, regulations, laws, changed regional or statewide priorities, environmental conditions, or economic conditions. In contrast, a unifying vision and comprehensive goals are intended to remain stable regardless of such external factors. The process for making changes to the Framework is described in **Section 6.6**.

The 2013 ARB IRWMP Update principles, vision, goals, objectives, and strategies were iteratively developed through a robust public and stakeholder engagement process that employed the full Governance Structure (as described in **Section 4**). The 2018 ARB IRWMP Update Framework was reviewed and revised through a series of meetings, workshops, research, and individual communications that began in spring 2017. Meeting summaries can be found on the Regional Water Authority (RWA) Web site at <http://rwah2o.org/programs/integrated-regional-water-management/american-river-basin-irwmp-2018-update/>. The remainder of this section is a summary of the content developed at these stakeholder meetings. Revisions were made to the Framework to reflect the 2016 IRWMP Standards, changing conditions in the Region, and updates of existing projects and programs implemented in the ARB as well as new ones. The Framework now addresses legislative initiatives and mandates that affect water resources, such as the Sustainable Groundwater Management Act (SGMA), California Human Right to Water Bill (Assembly Bill (AB) 685), and the Storm Water Resource Planning Act (Senate Bill (SB) 985).



5.2. Vision

The ARB IRWMP vision is:

The American River Basin Region will responsibly manage water resources to provide for the lasting health of our community, economy, and environment.

The last three components, “community, economy, and environment” specifically refer to the three pillars or the “triple bottom line” of sustainability. The concept of social equity was determined better coined as “community” in the context of the Region. Water inequality is not an identified issue in this Region, but maintaining and improving the health and vitality of our communities as well as the community stewardship of water resources are still important concerns. The vision statement also emphasizes responsible management of water into the indefinite future.

5.3. Goals

The ARB IRWMP goals support the vision, and are presented and described in **Table 5-1**.

Table 5-1. ARB IRWMP Goals

Goal	Description
Provide reliable and sustainable surface water and groundwater resources, sufficient to meet the existing and future needs of the Region.	This goal focuses on water quantity, encompassing both the supply and demand aspects of water resources. Concepts such as providing sufficient drinking water, increasing efficiency, increasing the use of recycled water, reducing demand, and developing resilient water systems are covered by this goal. It is also inclusive of water resources for human and ecosystem needs and ensuring the human right to water.
Protect and enhance the quality of surface water and groundwater.	This goal focuses on the water quality aspects of water resources, which includes management of point and nonpoint source pollution and water and wastewater treatment. Although water quantity and quality are closely linked, the two goals attempt to distinguish and highlight both concerns.
Protect and enhance the environmental resources of the watersheds within the Region.	This goal focuses on environmental resources of the watersheds, which includes consideration of vegetation, habitat, and ecosystem functions. This goal directly relates to the environment pillar of sustainability, also included in the vision statement.
Protect the people, property, and environmental resources of the Region from the impacts of flood damage.	This goal recognizes that floods pose significant natural disaster risks in the Region and that the Region needs an integrated effort to mitigate and adapt to these risks. The Region also recognizes that flood management and environmental management can be achieved in ways that complement one another.
Promote community stewardship of our Region's water resources.	This goal recognizes that we need the active participation of the community to achieve our vision. Education and increased awareness at all levels of the community, from public officials to the general public, is an integral part of implementing the ARB IRWMP.

Key:

ARB IRWMP = American River Basin Integrated Regional Water Management Plan

Region = American River Basin Region

5.4. Principles

The ARB IRWMP principles are:

- Planning for sustainability of our water resources considers all aspects of our watershed. This includes:
 - Strive for balance in environmental, economic, and social impacts and benefits in decision making and actions.
 - Recognize and promote the value of healthy watersheds and ecosystems, and underlying groundwater basins, to provide sustainable water resources.
 - Promote solutions that seek to minimize impacts to the environment.
 - Promote policies and practices that enhance natural watershed functions.

- Develop projects and programs that allow for the fair treatment of people of all races, cultures, and incomes.
- Achieving multiple benefits through further integration throughout our water resources planning. This includes:
 - Value the entirety of the water cycle and consider all forms of water as a potential resource.
 - Prioritize solutions that are integrated, addressing as many objectives, and providing as many benefits as possible.
 - Promote improved integration of land-use planning and management with water resources management.
 - Collaborate to take advantage of the benefits and synergies of water resource planning at the regional level.
 - Collaborate with other integrated regional water management (IRWM) regions.
- Employing adaptive management techniques and active monitoring to manage our water resources. This includes:
 - As needed, adapt planning processes and use the best available information, data, and tools as feasible, to address changes in a dynamic system and reflect evolving science, changing regulations, and/or program evaluation results.
 - Regularly monitor and evaluate to determine if objectives and targets are met.
 - Incorporate mitigation and adaptation measures in all aspects of planning and implementation in preparation for projected future changing climate conditions.
- Engaging a broader community as stewards of our water resources. This includes:
 - Promote transparency and open communication.
 - Build community awareness and encourage participation in stewardship of water resources.
 - Promote and educate on the value of pollution prevention and source reduction.
- Planning for hydrologic variability and uncertainty. This includes:

- Promote policies and practices that consider future climate scenarios and changing hydrologic conditions in the operations of existing and future projects.
- Incorporate the best-available data on climate change and hydrology in all aspects of planning and implementation.
- Collaborate to develop regional solutions to hydrologic variability and uncertainty.

5.5. Objectives

In revising the 2018 ARB IRWMP Update objectives, RWA and the Planning Forum considered the objectives of the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan), the water efficiency goals of the *20x2020 Water Conservation Plan* and Executive Order B-37-16, the requirements of California Water Code Section 10540(c), the strategies outlined in the AB 32 Scoping Plan developed by the California Air Resources Board (CARB), the objectives of SGMA, the California Human Right to Water Bill, and the 2016 IRWMP Standards. During the update process, objectives were categorized by the primary goal each could help achieve. Although it was recognized early on that objectives often could help meet multiple goals, the categorization was retained to facilitate stakeholder discussions.

The 2018 ARB IRWMP Update includes revisions to the 17 objectives originally identified in the 2013 plan. In addition, a new objective was developed to reflect implementation of SGMA and regional actions to sustainably manage the Region’s groundwater resources. The 18 ARB IRWMP objectives are presented and described in **Table 5-2**.

Table 5-2. ARB IRWMP Objectives

Objectives	Description
1. Meet current and future water resources needs.	This objective includes actions to maintain, replace, and construct facilities, and to implement programs and activities that are adaptive to the amount, intensity, timing, quality, and variability of runoff and recharge in order to reliably meet varied water resources needs throughout the Region.
2. Increase water use efficiency.	This objective includes actions to reduce the amount of water necessary for a given purpose and to comply with mandated efficiency targets. Water use efficiency has the potential added benefit of reduced energy consumption and ultimately reduced greenhouse gas emissions, in support of AB 32 strategies.
3. Improve ability to reliably meet water needs during dry or emergency conditions.	This objective focuses actions for greater operational flexibility in consideration of hydrologic variability and climate change (including sea level rise). It also recognizes the need to improve and adapt to conditions following extreme hydrologic events, such as prolonged droughts or flooding.
4. Increase the use of recycled water for appropriate uses.	This objective aims to encourage the expansion of recycled water use and to explore its potential benefits.

Table 5-2. ARB IRWMP Objectives (contd.)

Objectives	Description
5. Remediate contaminated groundwater and reuse it to the extent feasible.	This objective refers to cleanup initiatives of groundwater contamination plumes and investigating beneficial uses of remediated water.
6. Improve protection of beneficial uses of surface water and groundwater.	This objective addresses water quality issues and covers potential actions such as improving wastewater treatment and infrastructure, meeting discharge standards, improving stormwater runoff quality, and controlling sources of groundwater contamination.
7. Recharge and reuse stormwater and urban runoff to the extent practicable.	This objective encourages considering runoff as a potential resource and identifying locations for groundwater recharge.
8. Maintain and improve the ecosystem function of area streams and watersheds.	This objective highlights ecosystem function, recognizing that habitat restoration and related efforts may not improve the entire ecosystem function, which is also a vital component of environmental sustainability.
9. Maintain and improve habitat of area watersheds.	This objective includes actions that maintain, improve, and conserve terrestrial, riparian, and aquatic habitats, such as implementing restoration plans and mimicking pre-project hydrologic flow patterns.
10. Conserve natural riparian buffers in undeveloped portions of local watersheds and restore buffers in developed areas when possible.	This objective applies to both the environmental resources and flood goals, with the recognition that preserving remaining riparian habitat also allows for flexible flood management.
11. Increase the capacity of the flood management system to meet applicable standards for designated areas and land uses.	This objective signifies the importance of increasing the capacity of the flood system to handle extreme events, whether through increased conveyance and/or temporary storage.
12. Maintain and improve levees and other flood-related infrastructure to reduce flood risk.	This objective focuses on the need to maintain and improve levees and other flood-related infrastructure throughout the Region, actions that are often postponed even when the structures are not up to standard.
13. Maintain and restore/reconnect floodplains to provide flood storage and other benefits to reduce flood risk and increase groundwater recharge.	This objective recognizes that connecting floodplains would increase total habitat area as well as their connectivity while providing better flood protection and increasing groundwater recharge.
14. Improve management of residual flood risks.	This objective recognizes that even after all efforts to reduce the flood risk are completed, this risk of flood can never be completely eliminated. Residual risk is the exposure to loss remaining after other known risks have been countered, factored in, or eliminated.
15. Increase awareness of the need for, benefits of, and practices for maintaining sustainable water resources.	This objective covers the need to increase public and public officials' awareness of all water related issues, such as the role of a healthy ecosystem, water efficiency, flood risk, water quality, and pollution prevention. It also recognizes the role that public awareness plays in ensuring safe, clean, affordable, accessible water for every individual in the Region.
16. Improve integration of water resources planning with land-use planning.	This objective recognizes the need to collaborate with land-use planning departments to effectively manage water resources and overall sustainable development into the future. It also recognizes the need to coordinate agricultural and land use planning efforts in order to ensure long-term stewardship of agricultural lands.

Table 5-2. ARB IRWMP Objectives (contd.)

Objectives	Description
17. Increase sharing of information, studies, and reports to further advance integrated regional water management.	This objective deals with issues of lack of sharing of learned knowledge, which perpetuates the single-purpose oriented approach to water use or management. Increased data availability would also lead to better informed decision making.
18. Manage the Region’s groundwater basins sustainably.	This objective recognizes the value of the groundwater basins’ role in reliably meeting varied water resources needs throughout the Region and preventing undesirable results. In the Region, GSAs will be preparing GSPs or approved alternative plans to ensure basin sustainability.

Key:

AB = Assembly Bill

GSA = groundwater sustainability agency

GSP – groundwater sustainable plan

Region = American River Basin Region

As discussed, the objectives will help the Region evaluate if it is making progress towards achieving its goals. **Table 5-3** correlates each of the objectives with the goal – or goals – it helps meet. **Table 5-3** shows the primary goal an objective meets, distinguishing an objective’s direct-versus-indirect effects. For example, Objective 2, “increase water use efficiency” directly helps the Region meet the water resources goal. Simultaneously, increasing efficiency and using less water may have water quality benefits, if more flow can be left in the stream. However, this effect is indirect and thus not marked in **Table 5-3**. Similarly, public outreach and education has been shown to increase residential water use efficiency, which may help the Region meet the water resources goal. While important, this effect is also indirect and is excluded from **Table 5-3**. The ARB IRWMP is a unifying document, necessary because of these integrated, interlocking relationships among regional goals, objectives, and strategies (discussed in **Section 5.6**), but are not shown here for clarity.

While the objectives are numbered for reference, the objectives are not prioritized. Objectives were limited to a manageable number for this purpose. The Region believes each objective to be as important and viable as another; regional objectives are not in competition with each other. Objectives are expected to remain fairly static to guide future action. They should not play a role in encouraging a certain type of project or action over another. Objectives also influence one another, and meeting one objective will also affect the Region’s progress toward meeting another objective. An appropriate and comprehensive approach to water management should address all or most objectives simultaneously.

Table 5-3. Relationships of ARB IRWMP Objectives and Goals

Objectives	Goals				
	Provide reliable and sustainable surface water and groundwater resources, sufficient to meet the existing and future needs of the region.	Protect and enhance the quality of surface water and groundwater.	Protect and enhance the environmental resources of the watersheds within the region.	Protect the people, property, and environmental resources of the region from the impacts of flood damage.	Promote community stewardship of our region's water resources.
1. Meet current and future water resources needs.	●				
2. Increase water use efficiency.	●				
3. Improve ability to reliably meet water needs during dry or emergency conditions.	●				
4. Increase the use of recycled water for appropriate uses.	●				
5. Remediate contaminated groundwater and reuse it to the extent feasible.	●	●			
6. Improve protection of beneficial uses of surface water and groundwater.		●			
7. Recharge and reuse stormwater and urban runoff to the extent practicable.		●			
8. Maintain and improve the ecosystem function of area streams and watersheds.			●		
9. Maintain and improve habitat of area watersheds.			●		
10. Conserve natural riparian buffers in undeveloped portions of local watersheds and restore buffers in developed areas when possible.			●	●	
11. Increase the capacity of the flood management system to meet applicable standards for designated areas and land uses.				●	
12. Maintain and improve levees and other flood related infrastructure to reduce flood risk.				●	
13. Maintain and restore/reconnect floodplains to provide flood storage and other benefits to reduce flood risk and increase groundwater recharge.			●	●	
14. Improve management of residual flood risks.				●	
15. Increase awareness of the need for, benefits of, and practices for maintaining sustainable water resources.					●
16. Improve integration of water resources planning with land-use planning.					●
17. Increase sharing of information, studies, and reports to further advance integrated regional water management.					●
18. Manage the Region's groundwater basins sustainably.	●	●	●	●	

Key:

ARB IRWMP = American River Basin Integrated Regional Water Management Plan

Region = American River Basin Region

5.6. Strategies

Strategies are defined as general approaches or methods for achieving objectives and resolving specific issues. Strategies should be measurable whenever possible, state a distinct target and a deadline for when to meet that target, and are flexible. It is recognized that not all strategies are readily quantifiable, but that does not detract from the overall concept or their important role in achieving plan objectives.

Multiple strategies may be employed to achieve an objective; likewise, a single strategy may help make progress toward multiple objectives. An example of these interrelationships among goals-objectives-strategies is presented in **Figure 5-2**. For organizational purposes, the strategies are identified and grouped by their primary goal. However, stakeholders recognize that many strategies apply to numerous goals and objectives. **Table 5-5** shows a full matrix of the relationships between Region objectives and current strategies.

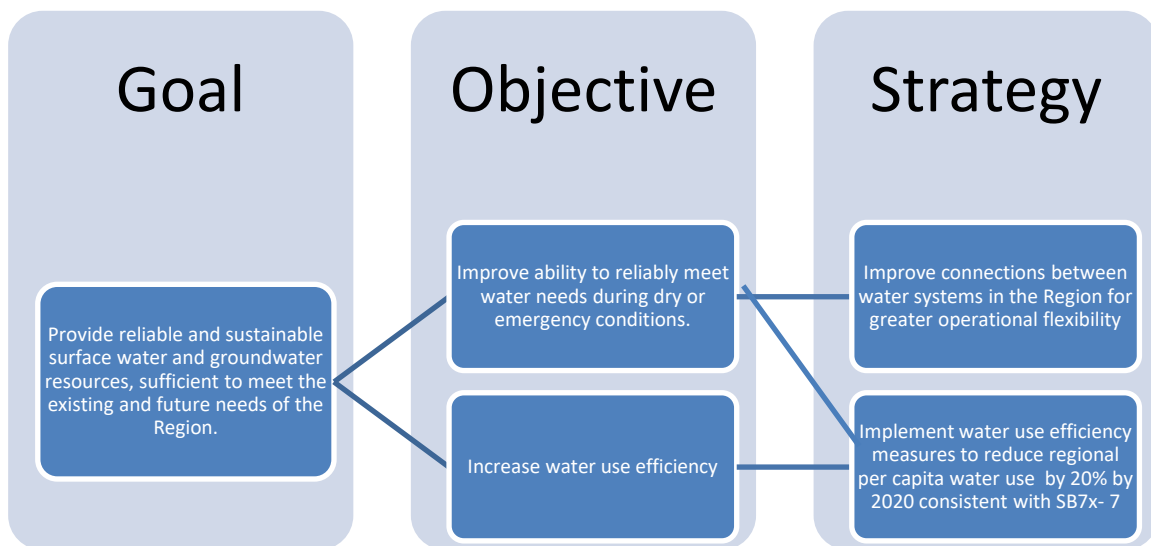


Figure 5-2. Example of Relationships Among a Goal, Objectives, and Strategies

Strategies are meant to be dynamic. A new strategy may be proposed by a stakeholder at any time. The strategy will then be discussed and vetted to all stakeholders before it may be added to the IRWMP. As projects are implemented, RWA will be responsible for tracking progress on these strategies. As the strategies are sufficiently completed or no longer serve a particular purpose, they may be removed from the IRWMP following vetting to all stakeholders.

This flexible and adaptable nature of these strategies allows the IRWMP to adapt and respond to a variety of macro-trends impacting the Region, including:

- The changing demographics of the Region

- Changes in technology
- Climate change
- Changes in state of California (state) and federal policy
- Funding uncertainty
- Aging infrastructure

While an update to goals or objectives will be more time and effort intensive, the Region can adopt a new strategy and implement it on shorter notice.

The 2013 ARB IRWMP Update included a broad range of strategies developed by stakeholders to support the Region’s vision, goals, and objectives. The 2018 ARB IRWMP Update includes both new strategies and revisions to the 2013 strategies, to reflect the current regional setting and changing environment. This comprehensive range of water management strategies represents the regional outlook and vocabulary to articulate measurable actions to connect objectives to project implementation. The strategies described herein are living and adaptive, and the Region expects to continue to add, revise, and delete strategies fluidly. The strategies summarized in **Table 5-4** represent a current “snapshot” of strategies for the Region. These strategies are further described in **Sections 5.6.1** through **5.6.5**.

Table 5-4. ARB IRWMP Strategies

WATER RESOURCE STRATEGIES
WR1. Increase surface water treatment capacity to 839 million gallons per day by 2035.
WR2. Increase groundwater production capacity to 550 MGD by 2035.
WR3. Increase distribution system water storage capacity to 525 MG by 2035.
WR4. Improve connections between water systems in the Region for greater operational flexibility.
WR5. Increase use of recycled water to 65,000 AFY by 2035.
WR6. Implement water use efficiency measures to reduce regional per capita water use by 20% by 2020 consistent with SB7x-7.
WR7. Develop and adopt GSPs or alternative GSPs by 2022.
WR8. Complete an analysis of expanded conjunctive use potential in the Region by 2022.
WR9. Increase the capture of stormwater runoff for infiltration or reuse, where feasible.
WATER QUALITY STRATEGIES
WQ1. Meet all appropriate treatment standards and discharge requirements for wastewater treatment and other point discharges.
WQ2. Meet all nonpoint discharge requirements.
WQ3. Reduce source water pollution.
WQ4. Reduce the volume, flows, and pollutant loads of stormwater runoff.
WQ5. Reduce the extent of groundwater contamination, consistent with regulatory cleanup programs.
WQ6. Increase use of remediated groundwater for beneficial uses.
WQ7. Coordinate with the CV-SALTS program to identify potential regional issues related to salt and nutrient management.
ENVIRONMENTAL RESOURCES STRATEGIES
ER1. Restore functional riparian and wetland habitat.
ER2. Conserve functional riparian and wetland habitat.
ER3. Implement local habitat and watershed conservation and restoration plans.
ER4. Improve the quality, quantity, and connectivity of habitat communities.
ER5. Actively manage the spread of invasive species.
ER6. Increase access, quality, and quantity of anadromous and native fish habitat.
ER7. Improve flow management, water quality, and temperature of area streams and rivers consistent with the Water Forum Agreement.
ER8. Improve groundwater levels to support and improve habitat.

Table 5-4. ARB IRWMP Strategies (contd.)

FLOOD MANAGEMENT STRATEGIES
FM1. Provide a 200-year level of flood protection for urban areas by 2025, where feasible.
FM2. Improve level of flood protection for levee-protected small communities and agricultural lands in the Region, where feasible.
FM3. Promote restoration and conservation of floodplain function.
FM4. Support a Folsom Dam Water Control Manual update that balances flood control, water, environmental and recreational needs. ¹
FM5. Coordinate with inter-jurisdictional, regional flood management efforts.
FM6. Coordinate flood emergency planning and response efforts.
COMMUNITY STEWARDSHIP STRATEGIES
CS1. Increase availability and access to educational material on sustainable water resources.
CS2. Identify, summarize, and discuss the potential for partnering of existing regional outreach and education programs by 2021.
CS3. Identify natural recharge areas and relay that information to relevant land-use planning agencies by 2022, encouraging the preservation of recharge areas.
CS4. Promote the use of LID methods, where appropriate.
CS5. Provide annual updates to city and county governments and other local agencies on accomplishments and continued challenges of integrated water management.
CS6. Increase engagement of community leaders (e.g., using community-based social marketing where applicable).
CS7. Increase engagement of agricultural stakeholders and private water users.

Key:

AFY = acre-feet per year
 CV-SALTS = Central Valley Salinity Alternatives for Long-Term Sustainability
 LID = low impact development
 MG = million gallons
 MGD = million gallons a day

Note:

Nonstructural improvements—Projects that are intended to reduce or eliminate susceptibility to flooding by preserving or increasing the flood-carrying capacity of floodways, and include such measures as levees, setback levees, floodproofing structures, and zoning, designating or acquiring flood prone areas. (California Water Code Section 79068(a))

Structural improvements – Projects that are intended to modify flood patterns and rely primarily on constructed components and include such measures as levees, floodwalls, and improved channels. (California Water Code Section 79068(b))

¹ Note, as of this writing, the USACE is finalizing a revised WCM that is balanced and incorporates forecast based operations.

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Table 5-5. Relationships of ARB IRWMP Strategies and Objectives

Strategies	Objectives																	
	Meet current and future water resources needs.	Increase water use efficiency.	Improve ability to reliably meet water needs during dry or emergency conditions.	Increase the use of recycled water for appropriate uses.	Remediate contaminated groundwater and reuse it to the extent feasible.	Improve protection of beneficial uses of surface water and groundwater.	Recharge and reuse stormwater and urban runoff to the extent practicable.	Maintain and improve the ecosystem function of area streams and watersheds.	Maintain and improve habitat of area watersheds.	Conserve natural riparian buffers in undeveloped portions of local watersheds and restore buffers in developed areas when possible.	Increase the capacity of the flood management system to meet applicable standards for designated areas and land uses.	Maintain and improve levees and other flood related infrastructure to reduce flood risk.	Maintain and restore/reconnect floodplains to provide flood storage and other benefits to reduce flood risk and increase groundwater recharge.	Improve management of residual flood risks.	Increase awareness of the need for, benefits of, and practices for maintaining sustainable water resources.	Improve integration of water resources planning with land-use planning.	Increase sharing of information, studies, and reports to further advance integrated regional water management.	Manage the Regions groundwater basins sustainably.
WR1. Increase surface water treatment capacity to 839 MGD by 2035	•																	
WR2. Increase groundwater production capacity to 550 MGD by 2035.	•		•															
WR3. Increase distribution system water storage capacity to 525 MG by 2035.	•	•	•															
WR4. Improve connections between water systems in the Region for greater operational flexibility.	•	•	•															
WR5. Increase use of recycled water to 65,000 AFY by 2035.	•	•	•	•														
WR6. Implement water conservation to reduce regional per capita water use by 20% by 2020 consistent with SB7x-7.	•		•															
WR7. Develop and adopt GSPs or alternative GSPs by 2022.	•		•	•	•	•	•	•				•			•			•
WR8. Complete an analysis of expanded conjunctive use potential in the Region by 2022.	•		•			•	•											•
WR9. Increase the capture of stormwater runoff for infiltration or reuse, where feasible.	•	•	•	•		•	•	•										
WQ1. Meet all appropriate treatment standards and discharge requirements for wastewater treatment.	•					•												
WQ2. Meet all nonpoint discharge requirements.	•					•												
WQ3. Reduce source water pollution.	•					•												
WQ4. Reduce the volume, flows, and pollutant loads of stormwater runoff.	•						•	•										•
WQ5. Reduce the extent of groundwater contamination, consistent with regulatory clean-up programs.	•					•												
WQ6. Increase use of remediated groundwater for beneficial uses.	•				•													•
WQ7. Coordinate with the CV-SALTS program to identify potential regional issues related to salt and nutrient management.	•					•											•	
ER1. Restore functional riparian and wetland habitat.	•					•	•	•	•									
ER2. Conserve functional riparian and wetland habitat.	•					•	•	•	•									
ER3. Implement local habitat and watershed conservation and restoration plans.	•					•	•	•	•									

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Table 5-5. Relationships of ARB IRWMP Strategies and Objectives (contd.)

Strategies	Objectives																	
	Meet current and future water resources needs.	Increase water use efficiency.	Improve ability to reliably meet water needs during dry or emergency conditions.	Increase the use of recycled water for appropriate uses.	Remediate contaminated groundwater and reuse it to the extent feasible.	Improve protection of beneficial uses of surface water and groundwater.	Recharge and reuse stormwater and urban runoff to the extent practicable.	Maintain and improve the ecosystem function of area streams and watersheds.	Maintain and improve habitat of area watersheds.	Conserve natural riparian buffers in undeveloped portions of local watersheds and restore buffers in developed areas when possible.	Increase the capacity of the flood management system to meet applicable standards for designated areas and land uses.	Maintain and improve levees and other flood related infrastructure to reduce flood risk.	Maintain and restore/reconnect floodplains to provide flood storage and other benefits to reduce flood risk and increase groundwater recharge.	Improve management of residual flood risks.	Increase awareness of the need for, benefits of, and practices for maintaining sustainable water resources.	Improve integration of water resources planning with land-use planning.	Increase sharing of information, studies, and reports to further advance integrated regional water management.	Manage the Regions groundwater basins sustainably.
ER4. Improve the quality, quantity, and connectivity of habitat communities.	•							•	•									
ER5. Actively manage the spread of invasive species.	•							•	•									
ER6. Increase access, quality, and quantity of anadromous and native fish habitat.	•							•	•									
ER7. Improve flow management, water quality, and temperature of area streams and rivers consistent with the Water Forum Agreement.	•					•		•	•									
ER8. Improve groundwater levels to support and improve habitat.	•							•	•	•								•
FM1. Provide a 200-year level of protection for urban areas by 2025, where feasible.	•									•								
FM2. Improve level of protection for levee-protected small communities and agricultural lands in the Region, where feasible.	•									•								
FM3. Promote restoration of floodplain function.	•									•	•		•			•		
FM4. Support a Folsom Dam Water Control Manual update that balances flood control, water, environmental and recreational needs.	•	•	•			•		•	•		•							
FM5. Coordinate with inter-jurisdictional, regional flood management efforts.	•									•	•	•	•		•	•		
FM6. Coordinate flood emergency planning and response efforts.	•												•					
CS1. Increase availability and access to educational material on sustainable water resources.	•													•				
CS2. Identify, summarize, and discuss the potential for partnering of existing regional outreach and education programs by 2021.	•													•				
CS3. Identify natural recharge areas and relay that information to relevant land-use planning agencies by 2022, encouraging the preservation of recharge areas.	•					•	•								•			
CS4. Promote the use of Low Impact Development (LID) methods, where appropriate.	•					•	•	•	•						•	•	•	
CS5. Provide annual updates to city and county governments and other local agencies on accomplishments and continued challenges of integrated water management.	•														•	•	•	
CS6. Increase engagement of community leaders (e.g., using community based social marketing where applicable.)	•														•		•	
CS7. Increase engagement of agricultural stakeholders and private water users.	•	•											•	•	•	•	•	

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5.6.1. ARB Water Resource Strategies

5.6.1.1. WR1. Increase Surface Water Treatment Capacity to 839 MGD by 2035

The need for increased surface water treatment capacity in the Region stems from two primary drivers: (1) the need to accommodate planned urban growth, and (2) the need to more fully implement regional conjunctive use operations for regional water supply reliability. This strategy envisions a combination of new construction, and repair and maintenance of old infrastructure. The strategy was developed through a survey of public water suppliers in the Region. Current capacity is approximately 739 million gallons per day (MGD), so the target represents an increase of about 100 MGD.

Region-wide, urban water demands in 2030 are expected to be 718² thousand acre-feet (TAF) per year (see **Section 2.9.1.2**), and the increased need for surface water treatment and delivery is a certainty. The Region in aggregate has sufficient surface water rights and contracts to meet future needs; however, overcoming legal and institutional constraints (infrastructure, place of use, perfection of rights, etc.) associated with surface water rights and contracts may preclude surface water delivery to the entire Region. In addition, California's recent historic drought illustrates potential risks to agencies' water supplies, especially paired with uncertainty in hydrologic conditions and climate variability caused by climate change. For example, in 2015 low Folsom Reservoir storage revealed significant vulnerabilities related to the ability to divert water from that location. Continued surface water deliveries are expected to be a significant source of regional water supply; however, the Region recognizes the need for adaptive management, diversification of diversion locations, and associated surface water treatment plants. In addition to serving the needs of planned growth directly, additional surface water treatment capacity is needed to more fully implement (in combination with other strategies) the regional conjunctive use program, first prescribed by the Water Forum Agreement (WFA) in 2000.

5.6.1.2. WR2. Increase Groundwater Production Capacity to 550 MGD by 2035

The need for increased groundwater production capacity in the Region stems from three primary drivers: (1) the need to accommodate planned urban growth; (2) the need to more fully implement regional conjunctive use operations for regional water supply reliability, and (3) the need to replace groundwater supplies (at alternate locations) lost to contamination. This strategy envisions new, expanded, and rehabilitated facilities. The strategy was developed through a survey of public water suppliers in the Region. Current capacity is approximately 400 MGD, so the target represents an increase of about 150 MGD.

² Due to the 2012-2016 California drought and the resulting water use efficiency measures, the projected annual water demands reported in the 2015 Urban Water Management Plans (UWMP) are expected to differ significantly from what is to be reported in the 2020 UWMPs.

Region-wide, urban water demands in 2030 are expected to be 718³ TAF per year (see **Section 2.9.1.2**), and the increased need for groundwater production is a certainty. The Region is generally underlain by robust groundwater supplies that have historically been managed and balanced by the Sacramento Groundwater Authority (SGA), Sacramento Central Groundwater Authority (SCGA), and the Western Placer County Groundwater Management Plan Partners (City of Roseville, City of Lincoln, Placer County Water Agency, Nevada Irrigation District, and California American Water) to preserve and protect these important resources. Following the adoption of SGMA in 2014, 26 GSAs have been formed to sustainably manage the three groundwater subbasins underlying the Region. Each GSA is responsible for developing and implementing their own or a joint GSP to maintain sustainable yield and prevent undesirable results in the subbasin(s) they manage.

Although both Sacramento and Placer counties have policies that require supplemental sources of supply to support “no net groundwater take” for planned growth, groundwater is expected to continue to be a significant source of regional water supply.

Additional groundwater production capacity is needed to more fully implement (in combination with other strategies) the regional conjunctive use program, as described previously. Increased implementation of conjunctive use will be critical to meeting regional water needs for both water supply and environmental water needs during shortage conditions, especially considering changes in surface water availability due to climate change. Regional groundwater recharge will be an important part of groundwater basin management, and will include a variety of stormwater and dry weather runoff capture projects, field flooding, floodplain restoration, or in lieu recycled water projects. Replacement groundwater supplies will be needed where existing groundwater production capacity is impacted by contamination from known plume migration or new sources of contamination. This strategy may also increase energy efficiency and greenhouse gas reductions through the integrated management of water, as described in CARB’s AB 32 Scoping Plan.

5.6.1.3. WR3. Increase Distribution System Water Storage Capacity to 525 MG by 2035

The water purveyors in the Region have various operational strategies and practices for using local groundwater and/or surface water supplies to meet water demands. Water delivery system needs depend on topography, water quality, and demand patterns. Many agencies make use of storage reservoirs to balance diurnal flows and variable demands while other agencies rely on groundwater production and direct delivery to meet variable demands. While increased storage is generally desirable from an operational

³ Due to the 2012-2016 California drought and the resulting water use efficiency measures, the projected annual water demands reported in the 2015 UWMPs are expected to differ significantly from what is to be reported in the 2020 UWMPs.

perspective, changes in regional electricity pricing to time-of-use rates may be a significant driver for investing in additional water storage capacity. As peak water and peak power demands roughly coincide, there will likely be increased incentives to avoid peak power rates by treating and storing water at off-peak times. Also, as water suppliers in the Region continue to expand the regional conjunctive use program and interconnect their respective systems, storage reservoirs can be valuable tools to balance line service pressures, water demands, and water quality needs. Regional stormwater runoff capture and use, floodplain restoration, or in lieu recycled water projects may also provide additional opportunities to recharge and store water in groundwater basins. Conjunctive use may also increase energy efficiency and greenhouse gas reductions through the integrated management of water, as described in CARB’s AB 32 Scoping Plan. The strategy was developed through a survey of public water suppliers in the Region. Current capacity is approximately 400 MGD, so the target represents an increase of about 125 MGD.

5.6.1.4. WR4. Improve Connections Between Water Systems in the Region for Greater Operational Flexibility

Section 2.8 describes individual water suppliers and their known system interconnections with adjoining agencies. In some cases, these connections are for direct delivery (wholesaler to retailer), but in many cases the interconnections are for emergencies. As the Region more fully implements the regional conjunctive use program, agencies will likely want to optimize their water supplies and facilities, especially with adjoining agencies so as to not overbuild capacity or duplicate facilities. Further, policies, water service contracts, or other agreements may contain timing or volumetric constraints that are more efficiently and effectively addressed by multiple agencies to more fully optimize resource use—again making increased system interconnections increasingly important. Operational flexibility also better prepares the Region for water shortages and climate change. This strategy may also increase energy efficiency and greenhouse gas reductions through the integrated management of water, as describe in CARB’s AB 32 Scoping Plan.

5.6.1.5. WR5. Increase use of Recycled Water to 65,000 AFY by 2035

Recycled water is currently used to the extent practicable in the Region, considering the current availability of Title 22 supplies. As a nearly 100 percent reliable source of supply, recycled water is expected to eventually play an important role in the Region for irrigation and industrial (process) water, and for direct and indirect groundwater augmentation. National Pollutant Discharge Elimination System (NPDES) permit requirements have become more stringent and most regional wastewater plants will produce Title 22 effluent at a minimum, in the very near future. The City of Roseville has a robust recycled water system, and Sacramento Regional County Sanitation District (SRCSD) has set a goal to produce and reuse upwards of 55 MGD of recycled water per year by 2020. Because approximately 65 percent of regional water use is outdoors (irrigation), recycled water supplies are expected to offset or replace the need for other surface

and/or groundwater sources, either directly or indirectly. Future challenges to fully using recycled water include construction of new infrastructure as well as gaining social acceptance of this alternate water resource. CARB's AB 32 Scoping Plan also specifically promotes the reuse of wastewater as a means of increasing energy efficiency and reducing greenhouse gas emissions consistent with SB7x-7.

5.6.1.6. WR6. Implement Water Use Efficiency Measures to Reduce Regional Per Capita Water Use by 20 Percent by 2020, Consistent with SB7x-7

As demonstrated by the historic drought experienced in California from 2012 through 2016, demand reduction is an integral part of water supply management responses to shortage and it will become increasingly important as water supplies become less reliable. The Water Conservation Act of 2009 (SB 7X-7) established a water conservation target of 20 percent (by urban water supply agency, per capita from a baseline reported to the California Department of Water Resources (DWR) in 2010) by the year 2020 to meet statewide water resource objectives. To track progress toward the 2020 target, water agencies were required to meet an intermediate milestone of at least a 10 percent savings in per capita water use by 2015. This interim 2015 goal was met by each urban water supplier in the Region.

After several years of historic drought, Governor Edmund G. Brown Jr. declared a drought state of emergency on January 17, 2014 and directed the California State Water Resources Control Board (State Water Board) to adopt emergency regulations. These regulations included mandates to urban water suppliers to implement drought response plans and limit outdoor irrigation and other water practices. On April 1, 2015, Governor Brown issued a series of executive orders to continue to address the state's severe drought conditions. These included Executive Order B-29-15, which mandated a 25 percent statewide reduction in potable urban water use. Urban water suppliers in the Region rose to the challenge, implementing a number of conservation measures and reducing water use by an average of 30 percent during the year the conservation mandate was in place. In 2016, Sacramento-area urban water supplier and residents continue to conserve and reduced water use by 25 percent, compared to 2013. Although the drought state of emergency was lifted in April 2017, water conservation remains a central focus in California and the Region.

Executive Order B-37-16, signed in May 2016, initiated a process to establish long-term conservation targets throughout California. The framework to implement Executive Order B-37-16 outlined a suite of actions that could be implemented under existing authorities and, where necessary, recommended additional actions that could be implemented with new or expanded authorities. The Legislature split authorities and drought planning between SB 606 and AB 1668, signed May 2018. The new legislation has no effect on SB7x-7 implementation. However, the bills do provide additional authorities and requirements

related to urban water use objectives, water use reporting, and development of new urban water use efficiency standards.

The Region and participating agencies have been proactively engaged in water conservation programs well in advance of SB7x-7 and the recent emergency regulations promulgated during the drought, both collectively through the RWA's Water Use Efficiency Program (WEP) and individually, to conserve water and manage demands. Water agencies in the Region have realized the benefits of regional coordination between agencies and across water sources to meet water conservation targets. This coordination has led to a better understanding of regional water savings potential and the resulting effects on the Region's water sources. In addition, agency responses to the drought have revealed additional opportunities for collaboration and cooperation to enhance regional reliability.

These efforts have and continue to reduce per-capita water use within the Region. Participating agencies continue to install meters to support volumetric pricing, expand recycled water programs, and reduce outdoor water use. The RWA Drought Planning Task Force was formed in May 2016 to support development of the North American Basin Regional Drought Contingency Plan (NAB RDCP). In addition, many agencies have developed individual Water Shortage Contingency Plans that define water use reduction stages during emergency conditions. In the coming years, the Region will continue to implement measures and programs to strengthen local drought resilience, eliminate water waste, and improve agricultural water use efficiency and drought planning.

The Region also recognizes that water conservation may increase energy efficiency and reduce greenhouse gas emissions, contributing the Region's and state's climate action plan goals. CARB's AB 32 Scoping Plan states that energy efficiency and water conservation strategies are "the primary mechanism to reduce water-related energy use."

5.6.1.7. WR7. Develop and Adopt GSPs or Alternative GSPs by 2022

SGMA was adopted by California lawmakers in 2014. SGMA required, by June 30, 2017, the formation of locally-controlled GSAs in groundwater basins and subbasins (basins) designated as medium or high priority by DWR. Most of the Region overlies the North American, South American, and the Cosumnes groundwater basins. The North American and South American basins are designated as high priority; the Cosumnes Subbasin is designated as medium priority. Therefore, all three basins are subject to the requirements of SGMA. As of the June 30, 2017 deadline, the entirety of the Region's groundwater subbasins are covered by GSAs.

The next step in the SGMA process is to prepare GSPs for each subbasin that will result in sustainable groundwater management as measured by six indicators within 20 years of adoption of the GSP. SGMA allows for one GSP covering an entire subbasin or a series of coordinated GSPs to manage the basin.

The Region and participating agencies recognize the importance of continued collaboration among the GSAs in the future to ensure the sustainable management of the Region's groundwater basins. The RWMG will continue to coordinate with GSAs in their development of GSPs and will consider incorporating relevant changes to the IRWMP to help in successful implementation of the GSPs, including adding specific GSP projects to the ARB IRWMP.

5.6.1.8. WR8. Complete an Analysis of Expanded Conjunctive Use Potential in the Region by 2022

To develop a balanced approach for water supply reliability and environmental protection along the lower American River, regional entities – including business and agricultural leaders, environmentalists, citizen groups, water managers, and local government – joined together as the Water Forum in 1993. Six years of planning culminated in 2000 with the completion of the WFA which prescribed a regional conjunctive use program for Folsom Lake, the lower American River, and the connected groundwater basins in Sacramento County as a means to address the region's long-term resources and environmental protection needs. Since that time, RWA, water agencies, regional stakeholders, and other organizations have been and continue to plan and execute projects, programs, and activities to foster conjunctive use throughout the Region and implement the WFA.

Recently, California's historic drought and increasing hydrologic variability have revealed greater potential risk to agencies' water supplies in the greater Sacramento region than previously assumed. The potential water supply and demand gap can only grow as climate change progresses. To address these risks head-on and explore potential opportunities, water agencies in the Region are collaborating on several planning efforts that will, among other outcomes, help in defining the conjunctive use potential of the ARB to help ensure sustainable water resources. The efforts include:

- **North American Basin Regional Drought Contingency Plan (October 2017)** – The NAB RDCP is a collaborative planning effort to explore opportunities to collaborate and cooperate to enhance regional reliability, and to increase the resiliency of the region's water resources in the face of future climate and drought conditions.
- **Regional Water Authority Regional Water Reliability Plan (ongoing)** – The RWRP is a locally-led effort to identify the most promising regional opportunities to improve water supply reliability

by evaluating opportunities for intra- and interregional transfers and exchanges, to reduce water use, to support interregional groundwater management and conjunctive use efforts, to support recycled water planning, and to use shared infrastructure and resources. The agency-level vulnerability assessments identify existing and future water supply and demand imbalances. Development of the plan included development of evaluation criteria and metrics, and identification of response actions and mitigation strategies at both the agency- and project- levels. The preliminary conjunctive use analysis indicates that using existing infrastructure, region-wide recharge could be increased by up to 63 TAF per year in wet years by offsetting groundwater use with surface water, and region-wide recovery could be increased by up to 58 TAF per year in dry years by offsetting surface water use with groundwater. The RWRP does not consider funding mechanisms to implement a conjunctive use program nor the impacts of future climate change on a conjunctive use program.

- **American River Basin Study (ongoing)** – Cost-shared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) through its WaterSMART Basin Studies Program, the ARBS is examining strategies to integrate or better coordinate local and federal water management practices, incorporating new scientific information on climate change that are specific for the ARB, and addressing significant recent changes in conditions and regulatory requirements related to the Central Valley Project (CVP) and regional water management. A significant element of the ARBS is to develop hydrology under future climate conditions, which will help better estimate future conjunctive use operations.

- **American River Basin Water Marketing Strategy Project (ongoing)** – Cost-shared by a Reclamation WaterSMART Water Marketing Grant, the ARB Water Marketing Strategy Project will focus on leveraging the potential for regional conjunctive use to further enhance existing regional market transfers through surface water reservoir reoperation and individual groundwater substitution practices. The project will evaluate the potential for water market asset development; determine the infrastructure investments needed to realize that market; and formulate an implementation plan that includes recommendations on governance, reporting and monitoring procedures. A key element of the Water Marketing Strategy Project is to evaluate funding sources available through transfers that could be a significant source of funds to implement a conjunctive use program.

Expanded implementation of conjunctive use will be critical to meeting regional water needs, especially considering changes in upstream snowpack and revised reservoir operating rules due to climate change.

Conjunctive use may also increase energy efficiency and greenhouse gas reductions through the integrated management of water, as describe in CARB’s AB 32 Scoping Plan.

5.6.1.9. WR9. Increase the Capture of Stormwater Runoff for Infiltration or Reuse, Where Feasible

Most stormwater and flood management systems are currently designed and operated to capture, channelize, and convey stormwater runoff away from high-value properties and people as rapidly as possible during and after storm events. However, stormwater can also be a resource, if it can be captured and stored. Groundwater basins often provide the most effective means of storing stormwater. Additional benefits of capturing stormwater include the following:

- Increased volume of groundwater in storage regionally for use during shortage periods.
- Attenuation of storm flows. This helps reduce flooding and associated damages to development or habitats in adjacent areas.
- Natural soil treatment processes to remove pollution. This in turn protects and improves receiving water quality and aquatic habitats.

Revising existing stormwater and flood management systems to augment groundwater infiltration will require policy, management, design, and operational modifications. Decentralizing flood management requires collaboration between water and land-use agencies, and potentially making difficult decisions to restrict or redesign development. Some examples of efforts to increase infiltration include the following:

- Decreasing impervious area.
- Increasing use of detention ponds or basins.
- Other onsite capture of stormwater using LID techniques

Stormwater capture and use projects supported through the ARB Storm Water Resource Plan (SWRP) and West Slope SWRP can help improve intersystem connections among ARB agencies. Several goals of the ARB SWRP and West Slope SWRP directly address this regional strategy.

5.6.2. ARB Water Quality Strategies

5.6.2.1. WQ1. Meet all Appropriate Treatment Standards and Discharge Requirements for Wastewater Treatment and Other Point Discharges

Wastewater treatment standards and waste discharge requirements help protect beneficial uses of receiving waters. If not properly treated, wastewater can introduce bacteria, viruses, and nutrient loads into receiving waters, among other contaminants. Excessive concentrations of contaminants can lead to negative ecological and habitat impacts, restrictions on water-based recreation, increased drinking water treatment costs, and, in extreme cases, decrease water supply availability. The Region recognizes that federal and state water quality regulations and standards will continue to change, and this strategy intends to allow for adaptation to such changes. In addition to public wastewater treatment plants (WWTP), private industrial plants must also meet discharge regulations, but are not specified in this strategy because they are not within the Region's purview.

The Clean Water Act (CWA) is implemented and enforced by the United States EPA. The EPA often delegates authority to state agencies (as is the case in California) to assist in implementation. The NPDES permitting is implemented and enforced by the Central Valley Regional Water Quality Control Board (CVRWQCB) for the Region. Within the CWA, the NPDES permit program regulates point source pollution, which is applicable to WWTPs and their effluent and some stormwater discharges. Wastewater treatment standards vary based on receiving waters, but generally secondary treatment (physical and biological treatment) is considered the minimum treatment standard. Tertiary treatment (physical and biological plus filtration) is increasingly common for inland surface water discharges or where effluent is recycled. These standards are expected to become increasingly stringent in the future, potentially including nutrient (nitrogen and phosphorous) removal.

Total maximum daily load (TMDL) is another CWA standard which applies to both point sources and non-point sources (the focus of Strategy WQ2). TMDLs are intended to reduce pollutant loading in 303(d) impaired water bodies for identified, problematic contaminants, for which other efforts or programs have not been sufficient.

Municipal separate stormwater sewer system (MS4) discharges are point discharges that are subject to TMDLs and regulated through MS4 NPDES permits. Improved capture and use of stormwater across the region supports water quality goals for appropriate treatment and discharge standards of urban runoff, including TMDL compliance. Stormwater flows to local watersheds increase pollutant loads, including bacteria, oils and greases, and metals, in local water bodies. Managing stormwater before it reaches natural water channels can reduce contamination. In particular, several key benefits for stormwater capture and use

support this IRWMP goal. For instance, reestablishing natural water drainage and treatment can reduce the velocity, and potentially the volume, of stormwater flows in watersheds. This can result in beneficial effects such as depositing solids that would otherwise reach downstream habitat. Additionally, stormwater capture and use aims to increase filtration and treatment of pollutants in runoff before reaching the Region's rivers and streams, using best management practices and LID to reduce concentrations of pollutants found in stormwater.

SB 985, enacted in November 2014, requires that agencies prepare an SWRP as a condition of receiving funds for stormwater and dry weather runoff capture projects from any bond approved by voters after January 2014. The SWRP Guidelines, developed by DWR, outline the provisions required in each SWRP. SWRPs in the Region include the ARB SWRP and West Slope SWRP. The ARB SWRP was collaboratively developed by RWA, the Valley Foothill Watershed Collaborative, Sacramento Stormwater Quality Partnership, Placer Regional Stormwater Cooperating Group, Florin Resource Conservation District, and Sacramento Area Flood Control Agency. The West Slope SWRP was led by El Dorado County Water Agency, in collaboration with County of El Dorado and the City of Placerville. The ARB SWRP, West Slope SWRP, and associated relevant projects and programs are incorporated into the 2018 ARB IRWMP Update.

5.6.2.2. WQ2. Meet all Nonpoint Discharge Requirements

Nonpoint sources of water pollution include urban (including stormwater) and agricultural runoff. While nonpoint discharges have been found to significantly impact surface water quality, they have been more difficult to regulate because discharge locations are dispersed. Common urban and agricultural nonpoint source contaminants of concern in the Region include pesticides, fertilizer (nutrients), total dissolved solids or salts, and mercury. TMDLs address both point and nonpoint source pollution in water bodies, and this program is described in Strategy WQ1.

Stormwater capture and use benefits that result from SWRP projects and programs include increased filtration and treatment of pollutants in runoff. Rainfall and snowmelt are the primary sources for nonpoint discharges. Improved treatment of stormwater directly supports goals for meeting TMDLs for nonpoint discharges that seek to protect receiving waters. Reducing pollutant loads and the total volume of stormwater that reaches watersheds can support improved watershed quality. As described in WQ1, the ARB SWRP and West Slope SWRP seek to address both nonpoint and point discharges in the Region. The ARB SWRP, West Slope SWRP, and associated relevant projects and programs are incorporated into the 2018 ARB IRWMP Update.

The state's Irrigated Lands Regulatory Program under the Waste Discharge Requirements (WDR) Program regulates discharges from irrigated agricultural lands. These discharges include irrigation runoff, flows from tile drains, and stormwater runoff. WDRs contain conditions requiring water quality monitoring and corrective actions when impairments are found. The Region is developed and urbanized, with the exception of the northwestern and southern agricultural and agricultural-residential areas. Agricultural lands offer groundwater recharge opportunities, as well as being a potentially large source of runoff. Comprehensive coordination across the Region will be necessary to accomplish the water quality and water management strategies identified in this IRWMP.

5.6.2.3. WQ3. Reduce Source Water Pollution

An effective way of managing point and nonpoint source pollution and improving surface water quality is to isolate and/or reduce sources of contamination before these contaminants enter waterways. In contrast to regulations and permits that specifically target agencies, this strategy is dependent upon the general public's behavior and links directly to the need for an increase in awareness. Source pollution reduction is similarly important for agricultural water users as well. Actions that can help reduce source water pollution include, but are not limited to:

- Reducing and controlling the application of pesticides, herbicides, and fertilizer.
- Altering the timing of application of pesticides, herbicides, and fertilizer according to irrigation times and amount, or weather.
- Managing waste/garbage appropriately so it does not enter waterways.
- Maintaining vegetation, buffer strips, water detention areas, and other LID systems between sources of pollution and surface waters to also manage metals, hydrocarbons, and temperature of runoff.

Reducing source water pollution is an integral part of overall water pollution management. The success of this strategy, among other water pollution control strategies, can be measured by monitoring improvements in surface water quality.

Stormwater capture and use projects that increase filtration and treatment in the upstream areas of the Region can support source watershed health. Buffer strips and detention basins are examples of stormwater infrastructure that can reduce both the volume and velocity of runoff containing potential pollutants that ultimately reaches source waters.

5.6.2.4. WQ4. Reduce the Volume, Flows, and Pollutant Loads of Stormwater Runoff

Historically, most stormwater runoff was (and often still is) discharged, untreated, directly into surface water bodies. This type of drainage management results in transport of pollutant loads from anthropogenic sources, as well as substantial erosion and other hydromodification impacts from the increased discharge volumes and flow rates. Retaining runoff on site through infiltration or other capture and use mechanisms can help prevent pollution and hydromodification, thereby restoring water quality benefits. Stormwater capture and reuse projects can also increase water supply, reduce flood risks, protect environmental systems, and enhance communities.

The ARB and West Slope SWRPs identify runoff capture projects that provide water quality benefits. LID and green infrastructure practices are effective tools for retaining runoff on site, as are site design measures such as use or protection of stream setbacks and buffers or planting/preservation of trees. These projects capture and retain/treat runoff, thereby minimizing stormwater discharge volumes, reducing transport of pollutants to water bodies, and protecting beneficial uses. This directly aligns with the Region's NPDES permits, which require LID implementation and focus heavily on protection of water quality and preservation of beneficial uses. In addition, the City of Sacramento's NPDES Permit requires the City to implement a Combined Sewer System Improvement Plan (CSSIP). The CSSIP update evaluated LID implementation and showed that LID can augment the benefits of capital projects to the CSS by reducing runoff volume and potentially attenuating the peak flows entering the system.

Other runoff capture projects can include diverting storm flows from the Region's rivers or tributaries, of which upstream urban runoff is a large contributor, to flood agricultural lands or other large fields for infiltration and groundwater recharge. Diverting these flows will prevent negative hydromodification and water quality impacts farther downstream and reduce downstream erosion and sedimentation, thereby supporting permit requirements for protecting beneficial uses.

5.6.2.5. WQ5. Reduce the extent of groundwater contamination, consistent with regulatory cleanup programs.

There are several locations in the Region where groundwater resources have been impacted by contamination. Some of these sources of contamination are localized, while others are of regional significance. These contamination locations are currently monitored and controlled, and are being remediated by or at the direction of state/federal government agencies. For example, the Aerojet General Corp., McClellan Air Force Base (AFB), and Mather AFB are accountable under the EPA's Superfund Program (Comprehensive Environmental Response, Compensation, and Liability Act). ARB stakeholders and project proponents need to be aware of these contamination sources and be mindful of ongoing prevention and remediation plans so as not to exacerbate existing contamination plumes. In particular, the

water supply agencies should be mindful of groundwater extraction practices that (1) change underlying groundwater elevations (which may remobilize contaminants in the vadose zone of the soil matrix), or (2) change groundwater gradients, which may induce plume migration.

5.6.2.6. WQ6. Increase use of remediated groundwater for beneficial uses.

There are several locations in the Region that have been impacted by groundwater contamination for which there are ongoing and extensive remediation efforts. Remediation efforts entail the extraction of contaminated groundwater, treatment to remove contaminants, and discharge of treated effluent. As contamination impacts the Region's underlying water supplies, it is important to put these remediated waters to beneficial use since some water agencies have had to decommission wells due to groundwater contamination. Depending upon the water quality characteristics of the treated water, remediated water can be used in a variety of ways including landscape irrigation, industrial water, or supplemental supply, in combination with other water supply sources. There are several inter-agency agreements to use remediated water (see **Section 2.9.2.1**). The Region's affected water agencies should monitor contamination, and they may have to cooperate and expand their remediated water program if further groundwater supplies are impacted. Stakeholders are working to develop a quantifiable target for this strategy for the near future.

5.6.2.7. WQ7. Coordinate with the CV-SALTS Program to Identify Potential Regional Issues Related to Salt and Nutrient Management

The CV-SALTS program is a collaborative stakeholder driven and managed program to develop sustainable salinity and nitrate management planning for the Central Valley. Salt, nutrients, (primarily nitrogen and phosphorous), and salinity management are increasingly important water quality and environmental concerns in California. While the Region naturally has lower levels of salts and nutrients compared to other areas of the state, urban and agricultural pollutants are found in the Region's impaired waters. As stated by CV-SALTS, salinity management is needed as part of near and long term sustainable water supply management (CV-SALTS 2013).

A related regulation, the State Board's 2009 Recycled Water Policy aims to address salt and salinity management issues to promote the use of recycled water. All groundwater basins were required to implement Salt and Nutrient Management Plans (SNMP) by 2014, with a possible extension if significant progress had been made by May 2014. Scientific and regulatory tools developed by CV-SALTS and these SNMPs will be incorporated into the objectives and implementation programs of each California EPA region's Basin Plan.

Given the regulatory environment and available resources described above, the Region's stakeholders identified a strategy to coordinate with CV-SALTS to help develop a SNMP for the entire CVRWQCB's

jurisdictional area. This coordination occurred through communication and collaboration with SRCSD, a member of the CV-SALTS executive committee and a leader in the CV-SALTS program. The final SNMP for the CVRWQCB consideration was completed in January 2017 and adopted by the CVRWQCB in March 2017.

On May 31, 2018, the CVRWQCB adopted the Basin Plan Amendments for the Sacramento-San Joaquin River and Tulare Lake Basins to incorporate changes related to CV-SALTS, and approved the related program documents including the staff report and policies. This basin plan amendment is the culmination of over 10 years of efforts to address protection, reduction in degradation, and restoration where feasible of surface waters (for salinity) and for groundwaters (for salinity and nitrates).

Water management agencies that were required to engage in regional salt and nutrient planning efforts per the 2009 Recycled Water Policy will be the most interested in this strategy. This includes the various GSAs in the Region that may want to consider the need for basin assessments of salt and nutrient trends in the future.

5.6.3. ARB Environmental Resources Strategies

5.6.3.1. ER1. Restore Functional Riparian and Wetland Habitat

California, and the Region in particular, have lost the vast majority of the wetlands and riparian forests that existed before the Gold Rush. Ecosystem restoration improves the condition of natural landscapes and biological communities to provide for their sustainability and for their use and enjoyment by current and future generations (DWR 2009). Functioning ecosystems are necessary to sustain natural communities.

Riparian habitats are in transitional areas between terrestrial and aquatic ecosystems and are distinguished by gradients in bio-physical conditions, ecological processes, and biota. They are areas through which surface and subsurface hydrology connect water bodies with their adjacent uplands. Riparian areas are found throughout the Region adjacent to streams, lakes, and estuarine shorelines. Wetland habitats are areas where water covers the soil, or is present either at or near the surface of the soil. Many wetlands are seasonal and may be wet only periodically. The quantity of water present and the timing of its presence in part determine the functions of a wetland and its role in the environment. Even wetlands that appear dry at times for significant parts of the year—such as vernal pools—often provide critical habitat for wildlife adapted to breeding exclusively in these areas.

Restoration of riparian and wetland habitats can provide ecosystem benefits such as water quality improvements, improved in-stream aquatic habitat, recreational opportunities, and increased groundwater recharge. Successful restoration of aquatic, riparian, and floodplain species and communities ordinarily

depends upon at least partial restoration of physical processes that are driven by water. These processes include the flooding of floodplains, the natural patterns of erosion and deposition of sediment, the balance between infiltrated water and runoff, and substantial seasonal variation in stream flow.

Numerous municipal, watershed management, and environmental organizations are active in restoration efforts throughout the Region, often in collaboration with each other (see **Section 2.6.2**). These projects and programs are often multi-benefit and include flood management and recreational components. Projects that involve riparian and wetland restoration can be found along the American River, Coon Creek, Auburn Ravine, Alder Creek, Laguna Creek (part of the Morrison Stream Group), and the Cosumnes River, among other locations. Multi-benefit projects that conserve riparian and wetland areas can also offer groundwater recharge benefits.

5.6.3.2. ER2. Conserve Functional Riparian and Wetland Habitat

While restoration involves reversing environmental damages, conservation is focused on prevention of damages and the maintenance and protection of existing habitat functions and values. As mentioned in ER1, most original riparian and wetland habitat has been lost. Conserving remaining riparian and wetland habitats in the Region is important for reversing the ongoing trend of environmental decline. Conservation can also prevent the need for more costly restoration in the future. Conservation actions can include acquiring fee title to lands or conservation easements.

While Strategies ER1 and ER2 distinguish between restoration and conservation, in practice, projects often include components of both. Agencies identify areas and habitat to conserve from future development, and initiate restoration work as needed on and along those areas. **Strategy ER1** and **Section 2.6.2** describe some agencies and organizations active in watershed management, habitat restoration, and habitat conservation efforts. Stakeholders are working to develop a quantifiable target for this strategy for the near future.

5.6.3.3. ER3. Implement Local Habitat and Watershed Conservation and Restoration Plans

Region stakeholders and other entities have established numerous local riparian and wetland habitat and watershed conservation and restoration plans (see **Section 2.6.2**). Substantial effort, funding, and local expertise has been put into developing these plans, and implementation of these local efforts is one of the most efficient ways to conserve and restore ecosystems in the Region. These plans are collaborative in nature, which is important for maintaining and improving ecosystems on a regional level. Examples of local plans include the Auburn Ravine/Coon Creek Ecosystem Restoration Plan, the Placer County Conservation Plan, the South Sacramento Habitat Conservation Plan (SSHCP), and others.

5.6.3.4. ER4. Improve the Quality, Quantity, and Connectivity of Habitat Communities

Habitats are the areas where organisms live, including the biotic and abiotic factors that affect it. Ecological communities are composed of populations of different species occupying a particular area, usually interacting with each other and their environment. Riparian and wetland habitats in the Region provide critical ecosystem functions and benefits, but have been reduced in their geographic extent and what remains has been degraded in quality. Large expanses of the Region, and the Central Valley as a whole, lack connectivity between isolated blocks of remaining natural riparian and wetland habitats that support native biodiversity. Habitat connectivity is important for maintaining biological and genetic diversity, allowing seasonal migration or migration in response to habitat losses or climatic shifts, and allowing movement of individual organisms for needed resources. Within the Region, connected riparian corridors are of particular importance. This strategy can be achieved through restoration or conservation actions, as described in **Strategies ER1 and ER2**.

5.6.3.5. ER5. Actively Manage the Spread of Invasive Species

Nonnative invasive species, which occur in every habitat type throughout the Region, strongly impact sensitive native species. Areas dominated by nonnative weeds prevent native plants from establishing, provide poor habitat quality for wildlife, and discourage recreational uses. Infestations of weed species increase hydraulic roughness during high-flow events, decrease the capacity of floodways, and adversely affect bank erosion and sedimentation processes. Invasive animal species are often able to outcompete native species and impact the food chain.

Active invasive species management can include prevention of invasive species establishment through conservation of existing habitats, regular inspections and monitoring, and eradication programs. Well-designed restoration programs subsequent to eradication are essential to preventing reestablishment of invasive species.

5.6.3.6. ER6. Increase Access, Quality, and Quantity of Anadromous and Native Fish Habitat

Anadromous fish species are those that migrate from the ocean to spawn in freshwater. In the Region, these species include Chinook and Coho salmon, steelhead, Pacific lamprey, sturgeon, striped bass, shad, and others. Other important native fish species include Sacramento sucker, Sacramento pikeminnow, sculpins (prickly and riffle), tule perch, and hardhead. Many of these species are state- and/or federally listed as threatened or endangered. They are inhibited by degraded habitat quality (water quality, temperature, and altered flow regimes), and access to substantial amounts of upstream habitat is impeded by barriers to fish passage. Salmonids provide substantial recreational and cultural value to the Region. Previous efforts to promote spawning in regional streams appear to have been helpful, especially in the American River where

spawning gravels have been placed to support in-stream spawning. Previous Cosumnes River pre-wetting was also effective in supporting connectivity that enabled anadromous fish to reach upstream gravels and spawn successfully.

This strategy can be accomplished by modifying flows, improving water quality and temperature of area streams and rivers (**Strategy ER1** as well as water quality strategies), and by removal of passage barriers, especially to upstream spawning locations. Save Auburn Ravine Salmon and Steelhead, for example, has been active and successful in forming partnerships with Placer County and Nevada Irrigation District to develop alternative migration paths for salmon around barriers. Fishery Foundation (Cosumnes Coalition Partner) worked successfully with the U.S. Fish and Wildlife Service to remove anadromous fish passage barriers at various agricultural and municipal impoundments.

5.6.3.7. ER7. Improve Flow Management, Water Quality and Temperature of Area Streams and Rivers, Consistent with the Water Forum Agreement

Sufficient in-stream flows, water quality, and temperatures are critical for maintaining aquatic habitats and species in the Region. In-stream flows are needed to protect and preserve resources, such as fish, wildlife, and recreation, in a waterway. Natural flow regimes are important factors in the health of aquatic and riparian ecosystems. Aquatic habitats and species are adapted to specific monthly, seasonal, annual, and inter-annual variabilities in flow. Sufficient flows must be available during the spring and fall months when a variety of anadromous fish are in route to the Sacramento-San Joaquin River Delta (Delta) or upstream spawning and rearing grounds.

In-stream flows also need to meet temperature and water quality standards to support aquatic habitats. Water temperature is a major influence on biological activity and growth, and governs the kinds of organisms that can live in rivers and lakes. Aquatic species have preferred temperature ranges; as temperatures get too far above or below this preferred range, the ability of species to survive or perform life cycle functions (such as spawning) declines. Temperature is also important because of its influence on water quality; dissolved oxygen, an essential water quality parameter for aquatic life, is reduced in elevated water temperatures. Pollutants and sediment concentrations are also important for aquatic life. There are many types of pollutants that can affect aquatic life, including pesticides, toxic chemicals, sediments, and nutrients.

By its nature, achieving Strategy ER7 requires collaborative and integrated resources management, and is dependent on progress in other ARB strategies, such as considering environmental flow needs in water operations (such as how dams are operated, see Strategy FM4), addressing water quality concerns (as described and addressed in water quality strategies), and addressing connectivity in areas where

groundwater overdraft drains surface water flows.. The ARB IRWMP effort will continue to bring stakeholders together to address these interdependent concerns.

Stormwater capture and use projects as part of the ARB SWRP will specifically be ranked according to their assessed benefits for reducing peak flows, improving water quality, and improving desired in-stream temperatures for local water bodies. Especially in the urbanized watersheds of the ARB, stormwater capture and use is an important contributor to improving local watershed quality and aquatic habitat. Stormwater capture and use projects in the West SWRP were ranked according to three components: 1) Surface Water Storage, 2) Watershed Management, and 3) Stormwater Management. Projects submitted to West Slope SWRP were grouped into 3 groups (A, B, or C) within one of the three components using multi-benefit metric scoring. Within the “Water Quality” benefit category, projects were evaluated on their ability to increase filtration and/or treatment of stormwater runoff, control nonpoint source pollution, and reestablish natural water drainage and treatment.

5.6.3.8. ER8. Improve Groundwater Levels to Support and Improve Habitat

Maintaining sufficiently elevated groundwater levels supports and improves habitat by providing reliable base flows for streams. It also contributes to the supply of water for springs, seeps, and wetlands or for phreatophytes and other vegetation that reduce soil erosion. This strategy can be accomplished through active groundwater management and conjunctive use (see **Section 2.9.4**), artificial recharge (see Strategy WQ4), and in-lieu recharge projects (requires increases in regional water system efficiency, as discussed for example in Strategy WR4). Stormwater capture can also increase groundwater supplies by supporting aquifer recharge, either in dedicated spreading basins or through landscape infiltration. Additionally, stormwater projects can increase groundwater supplies in-lieu if new newly captured stormwater is used to reduce groundwater pumping requirements and maintain current resources. Making such connections would move the region towards the goal of greater integrated water management, more closely linking stormwater systems with groundwater production operations.

5.6.4. ARB Flood Management Strategies

5.6.4.1. FM1. Provide a 200-Year Level of Flood Protection for Urban Areas by 2025, Where Feasible

The potential for flooding presents significant risks for many areas in California. Floods can cause substantial economic, social, and environmental damage, as well as the potential for loss of life. Several bills, including SB 5, were passed by the State Legislature in 2007 adding to and amending state flood management and land-use laws. These laws were intended to improve local land use and other planning decisions by strengthening the link between flood management and land use.

As part of the flood management legislation passed in 2007, all cities and counties within the Sacramento-San Joaquin Valley will be required to make findings related to the urban (200-year) level of flood protection before entering into a development agreement for a property, approving a discretionary permit or entitlement for any property development or use, approving a ministerial permit that would result in construction of a new residence, or approving a tentative map/parcel map for a subdivision (see California Government Code Sections 65865.5, 65962, and 66474.5). This requirement applies to urban and urbanizing areas, as defined by California Government Code Section 65007, Paragraphs (j) and (k).

After the Central Valley Flood Protection Board's adoption of the Central Valley Flood Protection Plan (CVFPP) in 2012, cities and counties within the Sacramento-San Joaquin Valley had up to 24 months to amend local general plans, and 36 months to amend local zoning ordinances to be consistent with the CVFPP. Subsequently, cities and counties were required to make findings regarding an urban level of flood protection when considering decisions about entering into a development agreement for a property, approving a discretionary permit or entitlement for any property development or use, approving a ministerial permit that would result in construction of a new residence, or approving a tentative map/parcel map for a subdivision with defined exceptions for shallow flooding or flooding from small watersheds. The CVFPP 2017 Update, completed in August 2017, refines the overall near and long-term investment needs established in the 2012 CVFPP, and includes recommendations on policies and funding to support comprehensive flood risk management actions. After 2025, for urban and urbanizing areas protected by State Plan of Flood Control (SPFC) levees, cities and counties must find that the new development is protected to at least the urban level of flood protection.

The Sacramento-San Joaquin Valley encompasses a larger geographic area than the areas currently protected by facilities of the SPFC (SPFC Planning Area). The Region includes lands in the SPFC Planning Area, outside the SPFC Planning Area (but in the Sacramento-San Joaquin Valley), and lands outside the Sacramento-San Joaquin Valley.

In support of meeting SB 5 requirements, the Sacramento Area Flood Control Agency (SAFCA) released its Final Urban Level of Flood Protection Plan and Adequate Progress Baseline Report in June 2016 and draft Comprehensive Flood Risk Reduction Program reduction in March 2017, outlining the agency's three-phase efforts to achieve at least 200-year flood protection for the Sacramento region. SAFCA is now starting its third phase to provide 500-year protection, which includes increasing conveyance downstream from Folsom Dam, investigating additional flood storage in reservoirs above Folsom, and implementing comprehensive system wide levee operations, maintenance, repair, replacement, and rehabilitation measures. In addition, the City of Sacramento developed a Comprehensive Flood Management Plan in

2016, which builds upon floodplain conservation and land use measures included in the City's general plan and floodplain management ordinance, as well as other emergency planning documents prepared by the land use agencies. Sacramento County adopted amendments to its General Plans and Zoning Codes in October 2016 to establish a 200-year flood standard of protection in urban areas. The amendments included policies to address regional agency coordination, setbacks along levees, elevation and construction standards, flood-related map data, flood emergency response, floodway management, and building design standards. In addition, Sacramento County also adopted a Floodplain Management Ordinance in January 2017.

The Folsom Dam Joint Federal Project was completed in 2017. This project was overseen by Reclamation and the U.S. Army Corps of Engineers (USACE) to construct an auxiliary spillway for Folsom Dam in order to increase the flood protection capacity to a 200-year level. The completion of this project aims at reducing floods, earthquakes, and seepage. Although the project has been completed, a Water Control Manual that allows the utilization of the new spillway capacity has yet to be finalized. Given the status of the Water Control Manual and ongoing levee improvements on the American River and other systems, Sacramento will remain susceptible to 100-year floods until the levee improvements along the American River are finalized and the Water Control Manual is completed over the next couple of months.

5.6.4.2. FM2. Improve Level of Flood Protection for Levee-Protected Small Communities and Agricultural Lands in the Region, Where Feasible

Sizable portions of the Region are devoted to agricultural land uses (see **Section 2.5**). In 2015, agricultural production in Sacramento, Placer, and El Dorado counties totaled nearly \$580 million, contributing to the local and state economies, and providing food and fiber for worldwide consumption (California Department of Food and Agriculture 2016).

The continued viability of small communities is essential to the preservation of cultural and historical continuity and important social, economic, and public services to rural-agricultural populations, agricultural enterprises, and commercial operations. However, physical conditions of the levees and other flood management facilities in the Region are varied.

This strategy recognizes that (1) small communities and rural-agricultural areas will not be required to provide urban level of flood protection (as the name implies), (2) agencies with flood management and/or land-use responsibilities in the Region will need to work together and with state and federal agencies to reduce flood risks in small communities and rural-agricultural areas, (3) there will likely be different ways to reduce these flood risks (both structural and nonstructural improvements), (4) current and future federal engineering guidance and design standards may make levee repairs cost-prohibitive, and (5) flood risk

reduction projects that can achieve multiple resource benefits will likely be preferable to single-purpose projects and may provide greater long-term value.

5.6.4.3. FM3. Promote Restoration and Conservation of Floodplain Function

Floodplain restoration is the process of recovering the natural hydrologic, geomorphic, and biological functions and resources of an area adjacent to a stream or river that experiences occasional or periodic flooding. Floodplain restoration is often accomplished by reconnecting the floodplain to the stream or river through the removal of physical or human-made barriers. Restoring floodplains includes the attenuation of flows downstream from the restored floodplain and enhancement of floodway capacities, the promotion of diverse habitats for aquatic and terrestrial species, the improvement of water quality, and the increased recharge of groundwater. Floodplains also support agricultural production, recreational opportunities, and scientific study and education. Floodplain restoration also reduces the potential for increased flood risks and damages over time associated with unwise commercial or residential development within floodplains.

In the Region, floodplains provide a broad area to spread out and temporarily store floodwaters. This attenuates flood peaks and reduces velocities and the potential for erosion. The natural and beneficial functions of floodplains should be valued and considered in future integrated water management projects and programs. Examples of ongoing floodplain restoration efforts in the Region include those in the Lower Cosumnes River Floodplain, Lower Dry Creek Floodplain, North Laguna Creek Watershed, and Cross Canal Watershed.

Across California, emerging practices are restoring riparian zone functions through floodplain inundation and recharge, which can improve flood protection and water supply resilience. Stormwater capture and use projects support improved floodplain function at both small- and large-scales. In the urbanized watersheds of the Region, linking stormwater capture and floodplain restoration can provide important localized habitat and recreational opportunities through much of the year, while also potentially contributing to flood protection during some storm events. Alternatively, regional planners can use stormwater capture and use in floodplain restoration projects for purposes of reducing contaminant loading in the restored areas, making new habitat more amenable to aquatic species.

Conservation is included here as a means of emphasizing the need to restrict development into existing, functioning floodplains.

5.6.4.4. FM4. Support a Folsom Dam Water Control Manual Update that Balances Flood Control, Water, Environmental and Recreational Needs

Folsom Dam and Reservoir is a multipurpose project (flood risk management, water supply, hydroelectricity, water quality, fish and wildlife preservation, and recreation) operated by Reclamation as part of the CVP. The USACE is responsible for prescribing operations pertaining to use of the storage allocated for flood risk management. The dam provides flood risk management benefits to the City of Sacramento and its surrounding areas by regulating runoff from approximately 1,860 square miles of drainage area.

As discussed in **Section 5.6.4.1** the Folsom Dam Joint Federal Project consisted of construction of a new auxiliary spillway, completed in October 2017. The spillway will improve the ability of Folsom Dam to manage large flood events. To fully realize the benefits of the new auxiliary spillway, the current Folsom Dam and Reservoir Water Control Manual must be updated. The draft update to the Water Control Manual and the Folsom Dam Modification Project Water Control Manual Update Draft Supplemental Environmental Assessment/Environmental Impact Report (SEA/EIR) were released in June 2017. The Draft SEA/EIR identifies two action alternatives and evaluates the effects of those alternatives on Folsom Dam and the Reservoir's authorized purposes.

The purpose of the ongoing update effort is to identify, evaluate, and recommend changes to the flood management operation rules of Folsom Dam and Reservoir that would reduce flood risk to the Sacramento area by using the new auxiliary spillway and by incorporating an improved understanding of the American River watershed upstream from Folsom Dam. The findings of the evaluation will be used to help define the dam's new flood operations plan, with the intention of meeting flood risk management objectives in a manner that conserves as much water as possible and maximizes all authorized Folsom Dam project uses to the extent practicable.

This strategy recognizes that (1) proposed alternatives identified in the SEA/EIR could have significant effects on the other authorized purposes of the project, and (2) a balanced manual update will be critical to achieving the ARB IRWMP goals. As of this writing, the USACE is finalizing a revised WCM that is balanced and incorporates forecast based operations.

5.6.4.5. FM5. Coordinate with Inter-Jurisdictional, Regional Flood Management Efforts
Developing and implementing integrated, multi-benefit projects often involves (1) a large number of local, regional, state, and federal agencies with complex and overlapping jurisdictional roles and responsibilities, inconsistent policies and regulations, and multiple management goals, and (2) a continual investment in stakeholder and public education and engagement. Projects with a flood management component often have

effects both upstream and downstream, further expanding the geographic scope of the coordination effort. Flood management functions within a single geographic area may be carried out by a combination of city and county planning and public works departments, drainage districts, water supply districts, joint powers authorities, and others. Coordinating activities within this fragmented jurisdictional landscape can be challenging and costly, particularly for local entities.

Participating agencies in the Region were involved in development of the Lower Sacramento & Delta North Regional Flood Management Plan (RFMP) effort, described in **Section 2.7**. The final RFMP, delivered to DWR in July 2014, established the flood management vision for the Region and identified regional solutions to flood management problems at a prefeasibility level. The RFMP identified 116 regional flood improvement projects and 15 conservation opportunities ready for integration with recommended single-purpose flood projects. Structural and nonstructural improvements were recommended to achieve a 200-year level of protection in urban and urbanizing areas in the Region. Some of the outcomes of this regional plan will be reflected in the ARB IRWMP projects database as well as in future updates of this plan.

Outside the geographic scope of the Lower Sacramento & North Delta RFMP effort, RWA as the RWMG, participants in the Governance Structure, and project proponents have a long history of coordinating across geographic and jurisdictional boundaries in support of effective flood management and land-use planning.

5.6.4.6. FM6. Coordinate Flood Emergency Planning and Response Efforts

Flood emergency planning and response is an element of residual risk management. It involves preparing for floods, effectively responding to flood events, and quickly recovering when flooding occurs. Often the first responders, local agencies play a key role in the management of flood emergencies in their jurisdictions. However, coordinated flood planning and operations among local agencies, cities and counties, the California Emergency Management Agency, the State-Federal Flood Operation Center, and USACE are critically important in successfully managing and fighting floods, and saving lives and properties.

California Water Code Section 9621 required that each county in the Sacramento-San Joaquin Valley collaborate with cities within its jurisdiction to develop a flood emergency plan within 24 months of the adoption of the CVFPP. In addition, to qualify for Federal Emergency Management Agency (FEMA) disaster funds, local agencies are required to prepare a Multi-Hazard Mitigation Plan, called an Emergency Action Plan, which includes planning for all potential emergencies in their jurisdictions, including flood emergencies.

This strategy recognizes that (1) without proper planning, interagency coordination during a flood emergency can be disorganized and inefficient, (2) conflicting policies amongst agencies can lead to delayed response and recovery activities, and (3) in many cases, local agencies do not have sufficient resources to effectively prepare for and respond to major floods (DWR 2012c).

5.6.5. ARB Community Stewardship Strategies

5.6.5.1. CS1. Increase Availability and Access to Educational Material on Sustainable Water Resources

Widespread awareness of the need to manage water resources sustainably is critical to develop, select, and implement effectively integrated projects and programs. Education of both citizens and natural resources managers across jurisdictional lines and differing fields will help develop a stronger common vision and goals. A common understanding provides support for and promotes sustainable, integrated projects. Availability and access to educational materials is one method that supports continued education of citizens and resource managers alike.

Educational material could be public-friendly Web sites or fliers and brochures that could be distributed. Currently, RWA's WEP, for example, maintains a user-friendly Web site on water use efficiency and also provides educational classes. Be Water Smart (<http://bewatersmart.info/>) is an award-winning public outreach- and school-education focused program sponsored by the WEP. Watershed management groups and environmental organizations often incorporate outreach and education into their programs and associated efforts. Additionally, educational material such as informational signs could be placed near a project (e.g., a trail or a well site) with an explanation of how that water-related facility is a part of the larger water and sustainability picture and how it influences each citizen. Developing materials suitable for use directly in classrooms may also be important. ARB SWRP and West Slope SWRP projects also receive credit for increasing public education related to stormwater. This may include educating residents on best practices for yard and waste disposal, providing public signs that illustrate habitat restoration projects, and providing accessible materials showing how LID changes urban runoff patterns. Currently, the RWA members are supporting the Power House Museum which will provide opportunities to the public to engage and learn about space exploration, nature and specifically water.

5.6.5.2. CS2. Identify, Summarize, and Discuss the Potential for Partnering of Existing Regional Outreach and Education Programs by 2021

Working to leverage existing regional outreach and educational programs in the Region is a strategy focused on encouraging community stewardship of water and natural resources among citizens in the Region. These efforts include those being undertaken by local and regional water entities, as well as other local, state, federal, and non-government organizations that promote outreach to disadvantaged citizens, and public

water education. This can include public events, including Earth Day and Creek Week, volunteer clean up initiatives of local waterways, classroom presentations, and regional water efficiency programs.

By cataloguing and tracking existing regional outreach and education programs in the community, the Region can find and leverage relationships between community-based organizations, the local water community, elected officials, and media organizations. For instance, through this IRWMP's Opti Web site's announcements and calendar, regional entities can communicate and collaborate on upcoming events and programs. RWA updated its Strategic Plan in late 2017 and continues to implement the Plan and adopt modifications, as needed.

Every public participation effort in the Region strengthens the relationship of the community to water resources, and builds upon existing partnerships in the Region. Regional water agencies and other organizations looking to reach out to citizens can maximize their impact and effectiveness by partnering and sharing local knowledge, expertise, and resources. The benefits of an engaged and educated community include better planning in communities, more diverse and meaningful public participation, and building better connections between people and the planet.

5.6.5.3. CS3. Identify Natural Recharge Areas and Relay that Information to Relevant Land-use Planning Agencies by 2022, Encouraging the Preservation of Recharge Areas

Protecting natural groundwater recharge areas to facilitate and promote groundwater infiltration is important to maintain and protect groundwater levels and groundwater quality. Working with willing landowners to protect identified recharge sites via conservation easements or acquisition strategies creates opportunities for multi-benefit projects that recharge groundwater and preserve habitat and agricultural lands. Detailed mapping of the eastern portion of South American Subbasin and Cosumnes Subbasin regions has been accomplished and is available to guide project selection. Various infiltration investigations have occurred in the past, and water agencies can continue to study and identify the areas with soil/ground characteristics in their respective service areas that promote infiltration. However, only agencies with land-use planning authority (cities and counties) have the ability to make land decisions with respect to zoning. This strategy specifically addresses the need for broader knowledge on the issue of regional groundwater infiltration and sets a deadline for communicating with land-use planning agencies about identified recharge areas. Efforts may continue thereafter to develop a common understanding with land-use planning agencies and to ensure the areas' protection into the future. In addition, regional participating agencies recognize the importance of regional coordination between land-use planning agencies and local GSAs to ensure that land decisions are contributing toward meeting GSP and basin sustainability goals.

5.6.5.4. CS4. Promote the Use of Low Impact Development Methods, Where Appropriate

According to the EPA, LID is “an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible” (2013). LID could involve preserving landscape features, minimizing impervious areas, and onsite capturing rainwater/stormwater for later reuse or groundwater infiltration. Effective decentralized stormwater management delays and attenuates peaks of high water flows and improves water quality. This in turn protects receiving water quality and ecosystem habitats from degradation.

A review of other regions implementing LID suggests that water managers, stormwater agencies, and land-use agencies need to work together well before attempting to implement a LID program. This strategy, therefore, intends to increase communications and to support manuals, zoning, and other regulations that would support LID. Education and support for these practices could become a part of water efficiency outreach.

In addition, many of the region’s future stormwater investments will include LID. LID strategies can help create or enhance public space while also improving water quality. In addition, implementing on-site LID strategies requires public engagement, especially with developers, neighborhoods, and businesses, which are all responsible for meeting on-site drainage requirements. Other parts of California have gone as far as to require minimum on-site retention, often through LID, in pursuit of meeting stormwater quality permits. For the Region, using well-designed LID strategies, especially in urban areas, can have multi-sector benefits for both environmental systems and public spaces.

5.6.5.5. CS5. Provide Annual Updates to City and County Governments and Other Local Agencies on Accomplishments and Continued Challenges of Integrated Water Management

The various discussions that took place in developing the Region goals, objectives, and strategies attested to the increasingly integrated nature of water and land resources as well as economics and people. The Region recognizes that water management is getting more complex and thus more discussion across traditionally separate disciplines is imperative for understanding and eventual success in integrated water resources management. Dialogue must continue and increase in frequency into the future. This strategy, therefore, delineates that city and county governments will be provided with updates of integrated water management efforts yearly. This communication will lead to greater understanding and better integration of local/regional efforts in water management.

5.6.5.6. CS6. Increase Engagement of Community Leaders (e.g., Using Community-Based Social Marketing Where Applicable)

Increasing the effectiveness of engagement to community leaders is critical to the future of the Region. Elected officials, representatives of disadvantaged communities, and the business community all have a stake in the success and overall health of the Region. By reaching out to these community leaders and inviting them to participate in the planning process and stakeholder forums, leaders and the organizations they represent can help build and sustain regional knowledge and skills, recruit for volunteer efforts, networks, and partnerships that contribute to promote the health and sustainability of natural resources.

Community-based social marketing can be described as a strategy that can help motivate communities, businesses, individuals, and institutions to foster behaviors that support sustainability. This could include reducing lawn watering, promoting safe disposal of household contaminants, or backyard composting. Social marketing retains the focus on customers that is the center of the more commonly known “commercial marketing,” but differs in that the tools and concepts promote social goals (like the triple bottom line). Actions can include but are not limited to; print and radio advertisements, e-mail distributions and online content. Engaging community leaders effectively is imperative to effectively working with the customers and communities that the Region would like to engage in these programs that promote community stewardship.

5.6.5.7. CS7. Increase Engagement of Agricultural Stakeholders and Private Water Users

The California Water Plan (CWP) defines “agricultural land stewardship” as farm and ranch landowners — the stewards of the state’s agricultural land — producing public environmental benefits in conjunction with the food and fiber they have historically provided while keeping land in private ownership. Historically, agricultural operations have been important to the economic vitality of the Region. Southern portions of Sacramento County and western Placer County have strong agricultural interests and associated private water use. However, economic markets and technological advancements have impacted agricultural markets and farming practices in the Region, leading to a steady decrease in acreage of agricultural and grazing lands. Conversion of agricultural lands to other uses may impact the Region’s ability to provide ecosystem services to the public. Agricultural landscapes may also provide flood management, water storage, carbon sequestration, and other key services. The Region recognizes the important role that agricultural land plays in integrated water management. Engaging agricultural and private water users is important to achieving the goals identified in this IRWMP.

Leveraging existing programs and communication channels can be an effective way of engaging agricultural and private water users without causing “stakeholder fatigue.” For example, SGMA requires

local GSAs to conduct a public outreach process and engage beneficial users of groundwater, including agricultural and domestic well owners. Outreach conducted by GSAs to local agricultural stakeholders and private water users can include additional information related to broader integrated water management practices. Other outreach and engagement channels may include the Irrigated Lands Regulatory Program, CV-SALTS, county Farm Bureaus, and prominent local agricultural associations and organizations. The Region will also seek opportunities to coordinate agricultural and urban water suppliers to more effectively address water management and land use planning issues.

Existing agricultural stewardship efforts in the Region include the Placer Legacy (a county-wide open space and habitat protection program), Cosumnes River Preserve, and the Sacramento Valley Conservancy. The SSHCP, completed in May 2018, is a regional approach to addressing issues related to urban development, habitat conservation, and agricultural protection. The SSHCP consolidates environmental efforts to protect and enhance wetlands (primarily vernal pools) and upland habitats to provide ecologically viable conservation areas. SSHCP was collaboratively developed by the County of Sacramento, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, SRCSD, and the Capital Southeast Connector Joint Powers Authority.

5.6.6. ARB Parking Lot Strategies

Development of the ARB IRWMP strategies was an iterative process. During the 2013 ARB IRWMP Update process, the Planning Forum members (ARB stakeholders) thought some of the proposed strategies involved important ideas and concepts, but could not be developed at that time. The reasons included lack of authority over the particular area of water management or a lack of information available to form a strategy. Additionally, some stakeholders proposed new strategies following the public review draft release of the ARB IRWMP. Developing strategies were placed in a “Parking Lot.”

All Parking Lot strategies outlined in the 2013 ARB IRWMP Update were assessed by RWA and the Planning Forum for inclusion in the 2018 ARB IRWMP Update. Some Parking Lot Strategies were incorporated into existing objectives and strategies, or fully developed into new strategies. Others were removed, because they were determined to no longer be a focus for the Region, or new regulatory requirements were implemented since the Parking Lot item was first identified. Still others were modified to reflect changed conditions or regional priorities. The 2018 ARB IRWMP Update Parking Lot Strategies are described in **Table 5.6**.

Table 5-6. ARB IRWMP Strategy “Parking Lot”

Item	Description
1. WR: Non-revenue water reduction	<p>Non-revenue water is defined by the American Water Works Association as the “distributed volume of water that is not reflected in customer billings” (2013). Non-revenue water generally falls into one of these three categories: unbilled authorized consumption (water used for firefighting, hydrant flushing, etc.), apparent losses (meter inaccuracies, data handling errors, etc.) and real losses (system leakage, storage tank overflows, etc.). SB 1420, passed in 2014, requires all urban water suppliers to submit water loss audits with their UWMPs to DWR every five years. Chaptered in October 2015, SB 555 requires all urban retail water suppliers to annually submit a completed and validated water loss audit to DWR, beginning in October 2017. As part of this process, DWR established water loss audit and validation standards. The State Water Board is currently developing water loss performance standards for urban retail water suppliers. These standards are anticipated to be finalized by January 2020. The standards will incorporate local and operational conditions to determine economically achievable water loss reduction for each urban water retail supplier.</p> <p>ARB water suppliers have been investigating strategies and practices to reduce non-revenue water associated with apparent and real losses since 2013. A strategy to evaluate the Region’s success towards meeting the state’s water loss standards, once finalized, will be explored.</p>
2. WR: Regional data management system for water supply systems	<p>The ARB water supply agencies recognize that water supply infrastructure and efficiencies can be improved region-wide only with support from adequate and consistent data collection and analyses across various entities. Such a data management system would be integral also to implementing an efficient and effective conjunctive use program. As meters are installed throughout the Region, this system would additionally help determine the effect of new rate structures on the long-term stability of the entire water supply system. As part of SGMA, local GSAs in each basin are required to develop and maintain a coordinated data management system for the basin. This data management system must be capable of storing and reporting information relevant to the development and implementation of its GSP(s) and monitoring of the basin’s sustainability. While focused on groundwater, these coordinated SGMA data management systems may serve as the basis for a future regional data management system.</p>
3. WR: Peak demand reduction	<p>Peak demand is the highest water use experienced by a water supply system, measured on an hourly, daily, monthly, or annual basis (Vickers 2001). Reducing peak demand is one way a water agency can decrease operational cost; reduce energy, chemical, and water use; and increase supply reliability. It also allows agencies to focus more on replacement and rehabilitation of aging infrastructure rather than expand or build new infrastructure, which would require future investments in operations and maintenance (O&M). The ARB water agencies may consider and develop this strategy as both O&M costs and the need to refurbish existing infrastructure increases.</p>
4. (N/A): Quantification of certain strategies	<p>The Region recognizes that quantifiable, measurable strategies are important whenever possible, so the Region can objectively measure progress during implementation. Some of the above strategies are qualitative at the time of the adoption of this IRWMP out of necessity (the strategy is not quantifiable) or out of lack of experience. In the latter case, numeric targets will be developed as experience is gained and is anticipated in the next update of strategies.</p>

Key:
 ARB = American River Basin
 DWR = California Department of Water Resources
 GSA = groundwater sustainability agency
 GSP = groundwater sustainability plan

IRWMP = Integrated Regional Water Management Plan
 O&M = operations and maintenance
 SB = Senate Bill
 SGMA = Sustainable Groundwater Management Act
 UWMP = Urban Water Management Plan

5.6.7. California Water Plan Resource Management Strategies and ARB Strategies

To assist IRWM regions meet their water-related resource management needs, the CWP outlines a diverse set of resource management strategies (RMS). An RMS is “a project, program, or policy that helps local agencies and governments manage their water and related resources” (DWR 2009). RMS are treated as tools in a tool kit—the appropriate combination of tools should be used in each region, depending on that region’s needs and circumstances.

Regional stakeholders used the CWP 2013 Update RMS to inform the collaborative development of Region specific strategies. **Table 5-7** presents RMS per topic area and its applicability to the Region for the Region’s current set of strategies. There are a few new RMS expected for the 2018 update of the CWP. They are presented at the end of **Table 5-7**.

Table 5-7. CWP Resource Management Strategies and Applicability in the Region

CWP RMS	Applicability	Description	Applicable ARB Strategies
RMS Topic: Reduce Water Demand			
Agricultural Water Use Efficiency	Applicable	Private agriculture can be found throughout the state, especially in undeveloped areas of western Placer County and southern Sacramento County. Outreach to these individuals and entities is important to encourage participation in regional planning.	Strategy CS8
Urban Water Use Efficiency	Applicable	Water conservation is an important component of demand management in the Region. RWA has a Water Efficiency Program targeting the public, and individual water suppliers implement other conservation programs, such as BMPs established by the CUWCC. State law requires decreasing urban per capita water use by 20 percent by year 2020 (see Section 2.9.1). In addition, the State Water Board is currently in the process of adopting and implementing permanent water conservation regulations for monthly reporting and permanent prohibitions of wasteful water practices.	Strategy WR6, CS1, CS2

Table 5-7. CWP Resource Management Strategies and Applicability to the Region (contd.)

CWP RMS	Applicability	Description	Applicable ARB Strategies
RMS Topic: Improve Operational Efficiency and Transfers			
Conveyance – Delta	Not Applicable	The Region is not dependent on water conveyed through the Delta. As described in Section 2.3, The Region does have a point of diversion within the legal Delta, but the Region does not rely on Delta-conveyance for its supply.	N/A
Conveyance – Regional/Local	Applicable	Numerous water agencies share water treatment and distribution infrastructure. Maintenance of old systems, construction of new capacities, and improvements in connections between water systems are important in the Region for efficiency, planned growth, and water reliability in dry years.	Strategy WR1, WR2, WR3, WR4. WR8
System Reoperation	Applicable	System operational efficiency is important for water agencies. New infrastructure will provide additional opportunities for increased operational flexibility. Folsom Dam operations are not under local or regional control, but agencies and stakeholders in the Region have actively participated in the dam’s water control manual update.	Strategies WR4, FM4
Water Transfers	Applicable	Local water transfer agreements have been signed within the Region following the WFA. For example, some agencies with access to groundwater have agreed to share portions of their dry year surface water allocation to those without groundwater supplies. The Region is currently working on developing a Water Marketing Strategy and Conjunctive Use Framework for the ARB to facilitate and expand future water transfer opportunities to provide water both within and outside the Region. In 2018, consistent with these efforts, a number of agencies in the ARB collaborated on a regional groundwater substitution transfer.	Strategy WR2, WR8

Table 5-7. CWP Resource Management Strategies and Applicability to the Region (contd.)

CWP RMS	Applicability	Description	Applicable ARB Strategies
RMS Topic: Increase Water Supply			
Conjunctive Management and Groundwater Storage	Applicable	One of the main efforts following the WFA was a regional conjunctive use program to effectively store water supplies underground for use in dry years. Conjunctive improvements continue to be constructed. The potential to use additional recycled water supplies supporting further conjunctive use will be studied in the near future. Groundwater management in the Region will be the responsibility of locally-formed GSAs. Implementation actions identified in GSPs and alternative plans may include conjunctive use and actions to increase groundwater recharge.	Strategy WR2, WR5, WQ5, WR7, WR8
Desalination	Not Applicable	The Region currently does not use, nor plan to use, desalinated water.	N/A
Precipitation Enhancement	Not Applicable	Precipitation enhancement is not performed nor is it practical within the Region. However, Sacramento Municipal Utility District has had a cloud-seeding program since 1968 in the upper watersheds of the American River. Pacific Gas and Electric Company has also had similar programs in the Sacramento River watershed. Being downstream from these areas, the Region would be affected by any benefits (increased water supply and power) and impacts from these programs.	N/A
Municipal Recycled Water	Applicable	Several water agencies currently produce and use recycled water for irrigation purposes. The Region expects increased recycled water production due to NPDES permit changes and is engaged in facilitating additional distribution system capacity for increased use regionally.	Strategy WR5, WQ7, WR9
Surface Storage – CALFED/State	Not Applicable	Shasta Lake influences Sacramento River flows as well as operation of other CVP facilities, including Folsom Dam. However, the Region does not expect CALFED projects to materially affect water supply availability or quality in the Region.	N/A
Surface Storage – Regional/Local	Applicable	Although not located within the Region, a few agencies in the Region are providing financial contributions to and participating in the Sites Project Authority. A new Sites Reservoir could favorably affect water supply availability and reliability in the Region, particularly if it could be integrated with the Region's efforts to expand conjunctive use operations.	Strategy WR8

Table 5-7. CWP Resource Management Strategies and Applicability to the Region (contd.)

CWP RMS	Applicability	Description	Applicable ARB Strategies
RMS Topic: Improve Water Quality			
Drinking Water Treatment and Distribution	Applicable	Water treatment and distribution are established practices for protecting public health. Water supply agencies have ongoing projects and programs to ensure safe and adequate drinking water.	Strategies WR1, WR2, WR3
Groundwater Remediation/ Aquifer Remediation	Applicable	Groundwater contamination plumes are a significant threat to groundwater supplies in the Region. Containing, remediating, and finding appropriate uses for remediated groundwater is an ongoing effort.	Strategies WQ5, WQ6
Matching Quality to Use	Applicable	Using recycled water and remediated water for nonpotable uses can offset traditional potable water demands. Both water sources are produced and reused in the Region.	Strategies WR5, WQ6
Pollution Prevention	Applicable	The Region recognizes the importance of managing source water pollution, especially as TMDLs and salt and nutrient management become increasingly central issues. One strategy directly addresses source pollution prevention. Stormwater agencies, such as the Sacramento Stormwater Quality Partnership, provide outreach and education to the public to encourage water quality protection. The ARB SWRP and West Slope SWRP further seek to identify potential strategies and projects for addressing stormwater pollution.	Strategy WQ3
Salt and Salinity Management	Applicable	Salt and salinity management is important for water management agencies across the Region. SRCSD is an executive committee member of the CV-SALTS program, and one ARB strategy focuses on the need to leverage this opportunity and identify regional salt and nutrient issues. SGA is planning a study of salt and nitrate trends in its groundwater basin. Recycled water producers anticipate developing salt and nutrient management plans in the near future.	Strategies WQ1, WQ2, WQ3, WQ7
Urban Stormwater Runoff Management	Applicable	Urban runoff management is important to manage local flooding and to protect water quality in receiving waters. Municipalities in the Region manage runoff and have developed SWRPs, which are incorporated as part of this IRWMP. One ARB strategy promotes LID, and another encourages runoff infiltration and reuse.	Strategies WR9, WQ4, CS4

Table 5-7. CWP Resource Management Strategies and Applicability to the Region (contd.)

CWP RMS	Applicability	Description	Applicable ARB Strategies
RMS Topic: Improve Flood Management			
Flood Management	Applicable	Significant portions of the City of Sacramento and other nearby low-lying areas or stream corridors are within FEMA-designated floodplains. Improving flood management is a priority within the Region. Current projects involve both infrastructure improvements/construction as well as conservation easements/ floodplain property acquisitions. SAFCA is working on a three-phase effort to achieve at least 200-year level of flood protection in the Sacramento region. Six ARB strategies address regional flood concerns.	Strategies FM1, FM2, FM3, FM4, FM5, FM6
RMS Topic: Proactive Resources Stewardship			
Agricultural Lands Stewardship	Applicable	Open/agricultural land conservation is important socially and economically in the Region. Land-use agencies carefully consider agricultural land preservation to balance urban development rates. The Placer Legacy is a county-wide open space and habitat protection program. Sacramento County and its partners, finished the South Sacramento Habitat Conservation Plan in May 2018. The Sacramento Valley Conservancy is also active in land stewardship along the Cosumnes River and Sacramento Region.	Strategies ER2, ER3, ER4, CS8
Ecosystem Restoration	Applicable	Since the WFA, water management issues in the Region have been intricately linked with environmental interests and needs. Discussion continues for establishing minimum flow requirements on the lower American River and creating strategies to provide flows for anadromous fish passage on the Cosumnes River, impacted by groundwater overdraft. Numerous watershed organizations are active in this Region. Land preservation and stewardship are important in western Placer County and southern Sacramento County as well.	Strategies ER1, ER2, ER3, ER4, ER5, ER6, ER7, FM4
Forest Management	Not Applicable	While some portions of the Region are forested, most of the upstream forested areas lie within the neighboring CABY IRWM Region.	N/A
Land-Use Planning and Management	Applicable	Land-use planning is inextricably tied to water resources planning. Some water agencies (cities and counties) have land-use authority, and Sacramento and Placer counties have policies and practices that limit urban development relying strictly on groundwater use. Water managers work closely with land-use managers on floodplain issues and evaluating lands for use in meeting ecosystem goals.	Strategies CS3, CS4, CS5, CS6

Table 5-7. CWP Resource Management Strategies and Applicability to the Region (contd.)

CWP RMS	Applicability	Description	Applicable ARB Strategies
Recharge Area Protection	Applicable	The surface of the Region is overlaid by various improved (paved) and unimproved surfaces including rural lands, and open space. Numerous projects have studied the effectiveness of protecting known groundwater recharge areas, and mapping the region's sand and gravel areas has been completed. The Region developed a strategy to identify natural recharge areas and to notify land-use agencies of recharge protection. Additional measures and projects to enhance or protect recharge areas are included in the ARB SWRP and West Slope SWRP.	Strategy CS3
Sediment Management	Applicable	Sediment management is of particular concern in stormwater and flood management as well as a water quality concern in smaller streams. Stormwater management plans and ecosystem or watershed plans throughout the Region include actions on sediment management.	Strategies WR9, WQ3, ER7, FM4, CS4
Watershed Management	Applicable	The IRWM planning process promotes integrated watershed management that crosses jurisdictional and political boundaries. The Region also encompasses numerous smaller watersheds, some of which have established watershed management groups. Collaborative watershed management will continue to gain importance in the Region, in line with water quality, flood, and ecosystem priorities.	Strategies WQ2, WQ3, ER3, ER7, FM4, FM5, CS4
RMS Topic: People and Water			
Economic Incentives (Loans, Grants, and Water Pricing)	Applicable	Economic incentives influence water management in the Region. Regional agencies, such as RWA and SAFCA, have been effective in securing grants and/or leveraging state or federal programs to plan and implement projects and programs. Water and power agencies, in turn, have established and continue to improve economic incentives for their customers to promote water conservation. For example, RWA's WEP includes a rebate program to encourage consumers to purchase water efficient appliances.	Strategy WR6
Outreach and Education	Applicable	Community Stewardship is one of five identified goals in the Region. This goal includes both outreach and education of the public as well as better communication and integration among the various water resources managers.	Strategies CS1, CS2, CS4, CS5, CS6

Table 5-7. CWP Resource Management Strategies and Applicability to the Region (contd.)

CWP RMS	Applicability	Description	Applicable ARB Strategies
Water and Culture	Applicable	Infrastructure history, such as the building of Folsom Dam as a part of the CVP, has cultural significance in the Region. The Sacramento region originally developed as a regional hub in part because of proximity to water transportation; this history is preserved in Old Town Sacramento. The relative abundance of water regionally was also important to Native American tribes that relied on local water supplies.	Strategies CS1, CS5, CS6
Water-Dependent Recreation	Applicable	The Region enjoys vast opportunities for water-dependent recreation and has purposefully designated certain lands for recreation. For example: the American River Parkway and recreation (boating, camping) at Folsom Lake. Integrating recreation and public access into project and ecosystem management allows the public to enjoy open spaces. It can also provide education to the public about the Region's water supply and ecosystem. Multiple projects and programs for the Region include recreation and public access elements.	Strategies ER7, CS1
RMS Topic: Other RMSs			
Crop Idling for Water Transfers	Not Applicable	The Region does not currently recognize the need for crop idling for water transfers.	N/A
Dew-vaporation or Atmospheric Pressure Desalination	Not Applicable	The Region does not currently recognize a need for any form of desalination for water supply.	N/A
Fog Collection	Not Applicable	The Region does not currently recognize a need for fog collection for water supply.	N/A
Irrigated Land Retirement	Not Applicable	Irrigated land retirement occurs through market based, economic forces and through land-use planning actions. The Region does not currently recognize a need for forced retirement of irrigated land for water supply.	N/A
Rain-fed Agriculture	Not Applicable	Crops that receive their full water supply from rainfall are generally economically impractical in the Region due to hot summers and the lack of significant rainfall in the summer and fall months.	N/A
Snow fences	Not applicable	This strategy is considered impractical in the Region, as the Region does not typically receive enough snow mass to require the use of snow fences.	N/A
Waterbag Transport/Storage Technology	Not Applicable	This strategy is considered impractical in the Region, and would require coastal infrastructure to divert, onload, transport, and offload the waterbags.	N/A

Table 5-7. CWP Resource Management Strategies and Applicability to the Region (contd.)

Key:

ARB = American River Basin
CABY = Cosumnes, American, Bear, and Yuba
CALFED = California Federal Bay-Delta Program
CUWCC = California Urban Water Conservation Council
CVP = Central Valley Project
CV-SALTS = Central Valley Salinity Alternatives for Long-Term Sustainability
CWP = California Water Plan
Delta = Sacramento-San Joaquin River Delta
FEMA = Federal Emergency Management Agency
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
IRWM = Integrated Regional Water Management
IRWMP = Integrated Regional Water Management Plan
LID = low impact development
NPDES = National Pollutant Discharge Elimination System
OCAP = Operations Criteria Plan
Region = American River Basin Region
RMS = Resources Management Strategies
RWA = Regional Water Authority
SAFCA = Sacramento Area Flood Control Agency
SGA = Sacramento Groundwater Authority
SRCSD = Sacramento Regional County Sanitation District
State Water Board = California State Water Resources Control Board
SWRP = Storm Water Resource Plan
TMDL = total maximum daily load
WEP = Water Use Efficiency Program
WFA = Water Forum Agreement

5.6.8. ARB Strategies and Climate Change Adaptation

An assessment of regional climate change impacts, vulnerabilities, and adaptation measures was conducted as part of the 2013 ARB IRWMP Update. This assessment was completed in accordance with the *Climate Change Handbook for Regional Water Planning* (USEPA and DWR 2011). Extreme weather events and changing hydrologic conditions in the past several years have underscored the need for the Region to continue to evaluate, identify, and implement mitigation and adaption actions.

From 2012 through 2016, California experienced a historic drought. In late 2015, stored water in Folsom Reservoir reached historic lows, threatening the water supply to over one million people in the Region as the municipal intake from the Reservoir serving multiple agencies verged on inoperability. Water managers in the Region continue to have concerns over the potential of a growing imbalance between water demands and water supply due to a variety of factors, including population growth; increased regulatory requirements; changes in 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 Region recognizes that the effects of a changing climate have introduced significant uncertainty in long-term water supply reliability. The NAB RDCP expanded upon the vulnerability assessment conducted in 2013 and identified additional adaptation actions and emergency response actions for that area. The RWA-led Regional Water Reliability Plan (RWRP) further identified potential coordinated and collaborative actions of the Region’s water agencies, as well as opportunities to expand regional conjunctive use to bolster regional reliability and resiliency to future conditions.

The strategies identified in the 2013 ARB IRWMP Update were developed, in part, to address regional vulnerabilities to the effects of climate change. Information developed during the 2013 vulnerability assessment was used to inform development of the strategies. During the 2018 ARB IRWMP Update, the RWMG and Planning Forum assessed the IRWMP strategies for Region-specific adaptation and resiliency actions. Where appropriate, measures from the NAB RDCP, RWRP, CARB’s AB 32 Scoping Plan, CWP 2013 Update (RMSs), and other documents were incorporated into the strategies. **Section 2.10** further describes the Region-specific adaptation actions. **Table 5-8** illustrates how the adaptation actions identified in Section 2 are addressed in the 2018 ARB IRWMP Update strategies.

Table 5-8. ARB Adaptation Actions and Applicable ARB Strategies

ARB Adaptation Action	Applicable ARB Strategies
Water demand reduction	WR5, WR6, WQ9, WQ6
Water supply system improvement	WR 1, WR2, WR3, WR 4, WR5, WR7, WR8, WR9
Integrated flood management	FM1, FM2, FM3, FM4, FM5, FM6, CS5
Ecosystem stewardship	ER1, ER2, ER3, ER4, ER5, ER6, ER7, ER8, FM3
Watershed stewardship	WQ1, WQ2, WQ3, WQ4, WQ7, ER1, ER2, ER4, ER6, ER7, ER8, FM4, CS1, CS2, CS3, CS4, CS5, CS6, CS7
Regional water transfers	WR4, WR8
New surface water diversions	WR1, WR4
Groundwater banking	WR2, WR3, WR8, WQ5, WQ6, ER8, CS3

5.7. Project Submission, Review, and Communication Process

The Region vision, goals, objectives, and strategies are implemented by projects or programs that are led by project proponents in the Region. The Region, therefore, has an interest in knowing the variety of potential projects and ideas in the Region and identifying projects that would be in the regional interest to help implement, should such an opportunity arise. The ARB project review process was developed with input from stakeholders, so that the process would be fair, understandable, and aligned with the Framework elements. This process was also approved by the Advisory Committee during the 2013 ARB IRWMP Update. This process is presented with descriptions of the project submission process, project review process, and communication process.

5.7.1. Project Submission Process

Successful IRWM planning and implementation requires the identification of, and collaboration on, projects of regional significance. This is intended to be a "living process" that continues after formal adoption of the IRWMP and project implementation. To support the process over the long term and to provide an easy-to-use tool for stakeholders to enter their projects and collaborate with other stakeholders, the ARB IRWMP developed a Web site to serve as an on-line planning tool and information center (also known as "Opti"), which is available at <http://irwm.rmcwater.com/rwa/login.php>. The Opti user guide is available by clicking on the help icon on the site. Opti was developed with a committee of stakeholders to ensure the functions were user friendly and that a project could be entered by stakeholders without extensive computer or engineering backgrounds while maintaining data integrity. One part of the Opti submission form is shown in **Figure 5-3**. A paper copy of the project input form is also available to stakeholders that are unable to use the Web site.

Add Project [Close]

Project Info | Contact | Description | Benefits | Objectives | Feasibility | Cost/Funding | Other Considerations

Project Info

Project Name: *

Organization: *

I don't want my project ranked at this time ?

Project Location

Project Coordinates: Enter decimal latitude and longitude below or [Find My Location on the Map](#).

Latitude: * Longitude: *

Project Area: [Draw or Add a Project Boundary](#)

File Name	Type

Save **Submit** * Minimum Required Information for Project Submission ** Information Used in Project Ranking

Figure 5-3. Opti Project Submission Form

Stakeholders are able to enter projects at any time during development and future implementation of the ARB IRWMP. By creating a user account at the site and requesting to become a member of the "community," stakeholders are able to add and edit their projects. While a stakeholder is entering their project information, they can share it with other community members of their choice that are also able to add information to the project. The project information can be saved, so that stakeholders are able to add their project information over multiple sessions. However, the entered project does not become visible to either the site administrator (RWA and its consultant) or the remainder of the ARB IRWMP community until the stakeholder selects the "submit" button.

Because the ARB IRWMP will pursue a diverse set of funding mechanisms well into the future, RWA encourages stakeholders to enter their projects into the system regardless of their current state of readiness. This will allow for greater collaboration and flexibility in shaping future projects. The ARB IRWMP allows for projects at various levels of completion, so only a subset of project information is required to enter a project into the Web site initially. There are two levels of required information as noted on the Web site. If a stakeholder only wishes to enter a project concept so that the community is aware of it, but does not want to have an initial project score assigned, very minimal information is required. However, until a project score is assigned (discussed in **Section 5.7.2**) and the project is vetted with stakeholders (**Section 5.7.3**), it cannot be considered as part of the ARB IRWMP. If a project score is requested by the stakeholder, additional information used to prioritize the project is collected on the Web site.

5.7.2. Project Review Process

RWA, as the RWMG, carefully considered DWR's 2016 IRWMP Guidelines in updating the process to review projects for inclusion into the ARB IRWMP. RWA was able to incorporate all of the review considerations (described below), with the exception of "whether the project proponent has adopted or will adopt the IRWM Plan." This is a funding criteria specific to the DWR IRWM Grant Program, and will only be applied if a specific grant proposal is developed in the future with this standard as a criteria. While RWA encourages others to consider adopting the ARB IRWMP, RWA will not require it of each individual stakeholder unless a specific funding mechanism requires it and that particular stakeholder is interested in pursuing the funding opportunity.

RWA interpreted that the DWR project review factors could be grouped into one of two categories: (1) factors related to the level of integration of a project, and (2) factors related to the implementability (or feasibility) of a project. The ARB project review process distinguishes these two project characteristics. In consultation with the 2013 ARB IRWMP Advisory Committee and following input from stakeholders, RWA devised an alpha-numeric ranking system that places projects into one of 16 categories based on the

project’s level of alignment with regional priorities and implementability. This is shown graphically in **Figure 5-4**. Projects are assigned a regional priorities score of 1 through 4, where those with the highest level of alignment score a 1 and the lowest score a 4. Projects are also assigned a letter from A to D for an implementability score, with A being the most implementable or the most ready-to-proceed and D being the least implementable, or the least ready-to-proceed, at the time of scoring. A project with a score of 1A is considered to be of both the highest level of priority based on its level of alignment with regional priorities and the most ready-to-proceed based on its implementability score. A project score of 4D would be the least aligned and the least ready to proceed.

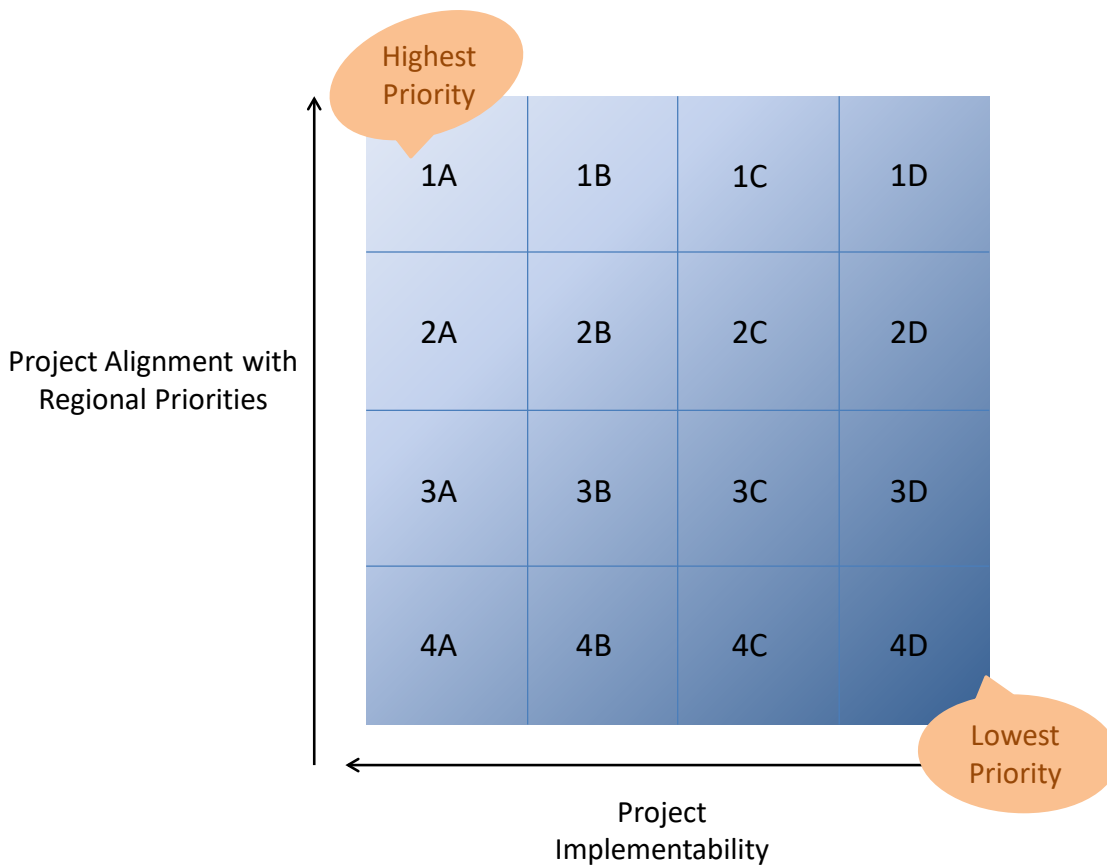


Figure 5-4. ARB Project Review Score Tiers

This method allows RWA to assign projects to tiers, rather than having to assign an absolute or relative ranking (e.g., Projects 1 through 150). This allows projects with different primary benefits (e.g., water supply, water quality, habitat, flood) to be on more level footing in being identified as a priority for the Region, which will help in promoting a diverse set of priority projects within the Region. This method also gives project proponents feedback on where the Region sees their projects in terms of priority and

implementability. Project proponents can then work on modifying their projects to increase alignment with regional priorities (e.g., bring in additional partners, find additional benefits) and update information on implementability to increase the readiness to proceed score in the future. The two categories of review factors and relative scoring are described below.

5.7.2.1. Project Alignment with Regional Priorities Score

This part of the scoring considers how a project provides benefits to the Region, according in part, to the goals and objectives identified by stakeholders. It also considers how integrated the project is with other regional stakeholders/agencies and their efforts as well as to DWR Guidelines. **Figure 5-5** shows an example project report card that assigns a score to a project that is a part of the ARB IRWMP.

Project Name:
Project Proponent:
Project Rank:

	Possible Point Value	Points Awarded	Comments
Regional Priorities Ranking			
Objectives (max 8 points)			
Meets 1	2		
Meets 2	4		
Meets 3	6		
Meets 4+	8		
Goals (max 1 point)			
Addresses more than one IRWMP goal	1		
Resources Management Strategies (max 1 point)			
Addresses more than one DWR Resource Management Strategy	1		
Strategic Considerations (max 3 points)			
1 Includes multiple partners	1		
2 Provides benefit beyond proponent	1		
3 Purposefully restructured for added benefit	1		
4 Necessary as a single-purpose, but considered integration opportunities	1		
5 Part of Water Forum Agreement implementation	1		
6 Implements other regional, collaborative plan	1		
Assists in climate change adaptation or reduces GHG emissions or energy consumption (max 1 point)	1		
Benefits to local disadvantaged community or tribal community (max 1 point)	1		
Total			
Regional Priorities Ranking Tiers			
Tier 1 = 10 points or greater		Tier 3 = 6 to 7 points	
Tier 2 = 8 to 9 points		Tier 4 = 5 points or less	
Implementability Ranking			
Ready to commence within 2 years, if funding available	1		
Project Status section of Feasibility tab is complete	1		
Project Funding and Project Cost Breakdown sections of Cost/Funding tab are complete	1		
Benefits section of Benefits tab is complete with explanations	1		
Total			
Implementability Ranking Tiers			
Tier A = 4 points		Tier C = 2 points	
Tier B = 3 points		Tier D = 1 point	

Comments

Figure 5-5. ARB Project Review Report Card Template

A total of 16 possible points can be awarded to a project based on the following criteria:

- **Number of ARB IRWMP Objectives Addressed.** The ARB IRWMP includes 18 adopted objectives. Because objectives represent the heart of the ARB IRWMP effort, these points account for a majority of the score. A project must address at least one objective to be included in the IRWMP. The objective scores are allocated as follows:

The project meets...	Points awarded:
1 objective	2
2 objectives	4
3 objectives	6
4 or more objectives	8

- **Number of ARB IRWMP Goals Addressed** – Projects that address more than one of the five adopted goals would receive a score of one point. This scoring criterion was added during the 2013 ARB IRWMP update at the request of the Advisory Committee, because they felt that it was relatively easy to address more than one objective with a project but more challenging to address more than one goal; those multi-purpose, integrated projects should receive a preference point in the scoring method.

- **DWR RMS** – Projects that implement more than one of the DWR RMSs will receive a score of one point. RMSs are listed on the Opti Web site and a link to DWR's explanation of each RMS is provided.

- **Strategic Considerations** – This criterion examines the level of integration a project achieves. Strategic Considerations represent an opportunity to address both DWR and local considerations. Because there were several ways in which a project proponent could receive a point with relative ease, this criterion is capped with a maximum of four points regardless of the number of considerations addressed. Points are eligible for addressing the following:
 - Project includes multiple partners
 - Project is single purpose, but is part of broader plan implementation⁴
 - Project provides benefits that extend beyond the project proponent and its immediate constituents
 - Project was purposefully restructured to provide additional benefit

⁴ This factor acknowledges that there are projects that would appear to have little direct integration (e.g., groundwater public supply well), but are necessary as part of a broader regional strategy that will achieve integrated benefits (e.g., a groundwater public supply well that will help implement a conjunctive use program that dedicates water to environmental purposes in dry periods).

- Project can be demonstrated to be important part of implementation of the WFA or another regional or collaborative planning effort
- Project includes data collection that will be shared with ARB IRWMP stakeholders
- **Climate Change/Greenhouse Gas Emissions** – A project is awarded a point if it can demonstrate that it contributes to adapting to the effects of climate change or that it will result in the reduction of greenhouse gas emissions or energy consumption. Detailed project greenhouse gas emissions will be calculated later as the project develops, as part of a California Environmental Quality Act requirement. Detailed energy use data will also be calculated as the project develops. Energy reduction measures implemented by a project may include those outlined in CARB’s AB 32 Scoping Report.
- **Disadvantaged Community/Native American Tribal Community/Environmental Justice Considerations** – A project is awarded a point if it can demonstrate that it addresses critical water supply needs of these communities.

The allocation of points is a result of a calibration exercise that reviewed more than three dozen projects in the project database. The raw number of points awarded for the regional priorities score results in a distribution of projects into one of four tiers, which represent the project’s level of alignment with regional priorities. The tiers and raw point scores are related as shown in the table below. The regional priorities score is also dynamic, as project proponents can continue to develop and adjust their projects to provide more regional benefits and integration.

Raw Regional Priorities Score	Tier
10 or more points	1
8 or 9 points	2
6 or 7 points	3
5 of less points	4

Note that the scale of the projects, or the quantified level of benefits of the projects (e.g., acres of habitat restored) were not considered. This ensures that smaller projects would not be disadvantaged by larger projects. Additionally, many projects (e.g., environmental and water quality) have benefits that can be difficult to quantify and compare against other projects. Considerations such as the relative contribution of a project's benefits would only be applied to specific criteria associated with distinct funding opportunities.

Detailed project benefit and impact analysis will occur as each project develops and such an analysis becomes required by funding opportunities and/or environmental permitting.

5.7.2.2. Project Implementability Score

This part of the project review process takes into account the readiness of the project to proceed or its overall feasibility. Under this category, up to four points can be awarded based on meeting the criteria listed below. These criteria are also shown in the Report Card in **Figure 5-5**, above.

- **Readiness** – One point is awarded if the project proponent indicates that the project could commence construction (for construction projects) or implementation (for non-construction projects) within 2 years if project funding is available.
- **Feasibility** – One point is awarded if the project proponent is able to complete the project status section of the feasibility tab on the Opti site. Information in this section includes the status and estimated timeline for project tasks and identification of required environmental and other project permits.
- **Project Budget** – One point is awarded if the project proponent completes the project function and project cost breakdown sections of the cost/funding tab on the Opti site. This includes identifying current funding and funding needs as well as a basic project budget broken down by task.
- **Project Benefits** – One point is awarded for projects that complete the benefits section with explanations on the benefits tab of the Opti site. Benefits are organized around the five primary ARB IRWMP goals. This information will be helpful in looking at the benefits to costs of a project, once such an analysis becomes necessary in the future.

Projects are reviewed using the above criteria and assigned to one of four tiers for implementability. The tiers and raw point scores are related as shown in the table below. As with the regional priorities score, this implementability score should be considered dynamic, and it is expected that projects will increase their score as the project develops. It is also expected that some projects will ultimately be removed if they do not continue to develop through time.

Raw Implementability Score	Tier
4 points	A
3 points	B
2 points	C
1 point	D

5.7.3. Project Review Communication and Vetting Process

Projects are scored by RWA, unless project proponents request otherwise. The scores are reviewed by the Advisory Committee. Project proponents have the opportunity to view and receive feedback on how their projects scored and the reasons why. Staff and project proponents communicate to make any scoring adjustments as necessary. This allows project proponents to be aware of their project scores before the scores become available to all stakeholders.

After projects are scored, all scored and non-scored projects are vetted by the Advisory Committee and stakeholders. Project information is communicated to stakeholders through both the Opti Web site and direct e-mails to a distribution list of more than 150 stakeholders that have expressed an interest in the ARB IRWMP. Stakeholders may provide input and comment on any listed project or its score during a 1-month comment period. As described above, a project is not required to receive a score to be included in Opti. However, scoring is necessary for project inclusion in a regional funding application. The final vetted list of projects, identified as “IRWMP Approved” in Opti, is the list of projects selected for inclusion in the IRWMP.

Projects will continue to be accepted on Opti on an ongoing basis, following adoption of the IRWMP. Before being approved for inclusion into the IRWMP, projects will be vetted to stakeholders on a quarterly basis. A summary of projects submitted over the previous quarter will be released at the close of the quarter (i.e., March 31, June 30, September 30, and December 31). Stakeholders would have one month to comment on the projects. For projects that were previously included in the IRWMP but not ranked, project proponents could request rankings and these projected will be vetted on the same quarterly schedule. In cases where a project proponent cannot wait to vet their project until the end of the upcoming quarter (e.g., a funding opportunity with a short schedule arises), RWA will release the project to stakeholders on an as-needed basis. All submitted and vetted projects can be viewed on Opti at <http://irwm.rmcwater.com/rwa/login.php>.

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