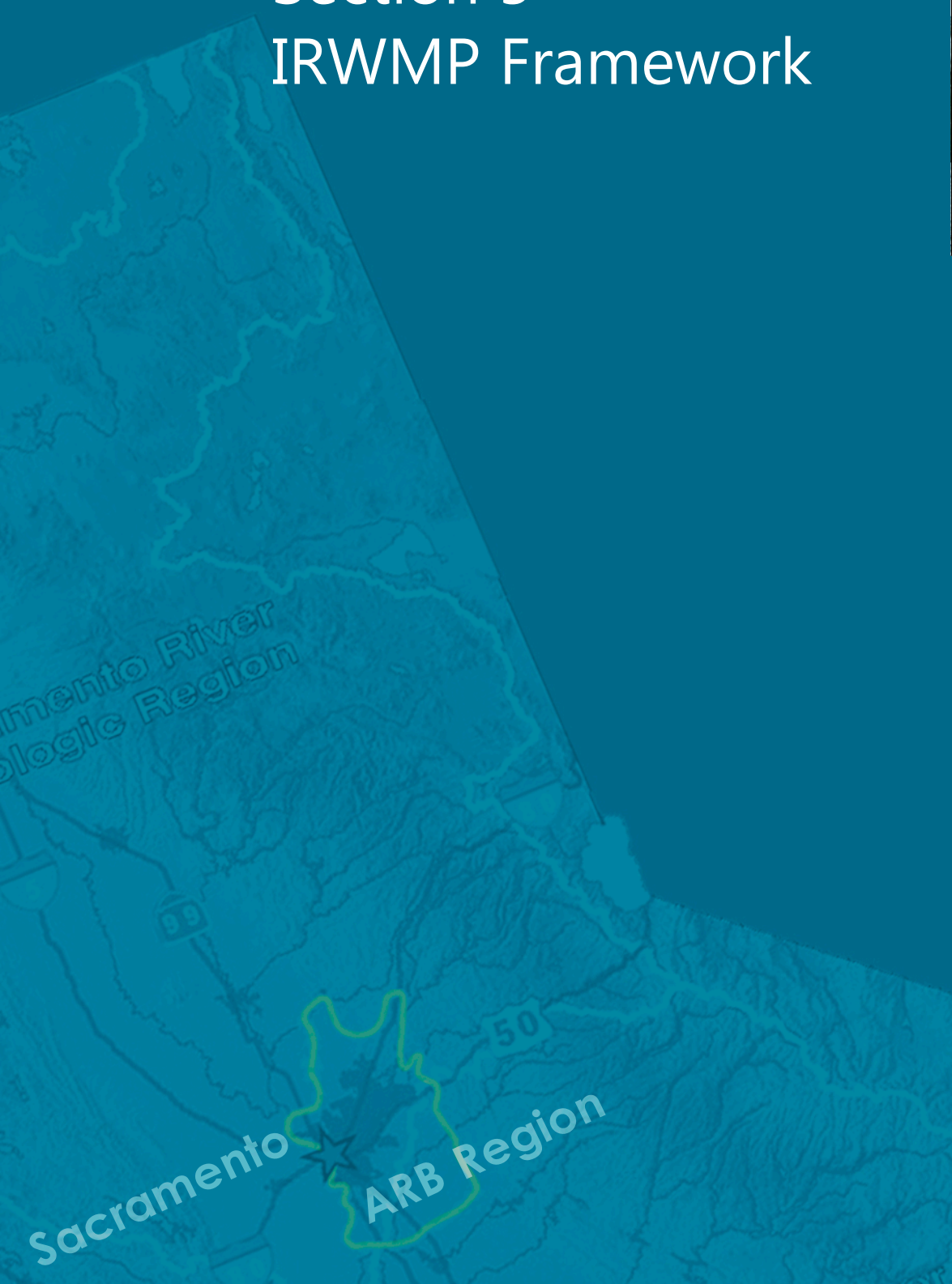


Section 5 IRWMP Framework



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1 Abbreviations and Acronyms

2	AB	Assembly Bill
3	AFB	Air Force Base
4	ARB	American River Basin
5	CARB	California Air Resources Board
6	Central Valley Regional Board	Central Valley Regional Water Quality Control Board
7	CSSIP	Combined Sewer System Improvement Plan
8	CVFPP	Central Valley Flood Protection Plan
9	CVP	Central Valley Project
10	CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
11	CWP	California Water Plan
12	Delta	Sacramento-San Joaquin River Delta
13	DWR	California Department of Water Resources
14	EPA	U.S. Environmental Protection Agency
15	FEMA	Federal Emergency Management Agency
16	Framework	ARB IRWMP Framework
17	GSA	groundwater sustainability agency
18	IRWM	integrated regional water management
19	IRWMP	Integrated Regional Water Management Plan
20	LID	low impact development
21	MGD	million gallons per day
22	NAB RDCP	North American Basin Regional Drought Contingency Plan
23	NPDES	National Pollutant Discharge Elimination System
24	RFMP	Regional Flood Management Plan
25	RMS	resource management strategy
26	RWA	Regional Water Authority
27	RWRP	Regional Water Reliability Plan
28	SAFCA	Sacramento Area Flood Control Agency
29	SCGA	Sacramento Central Groundwater Authority
30	SEA/EIR	Supplemental Environmental Assessment/Environmental Impact Report
31	SGA	Sacramento Groundwater Authority
32	SGMA	Sustainable Groundwater Management Act
33	SNMP	Salt and Nutrient Management Plan
34	SPFC Planning Area	areas currently protected by facilities of the SPFC
35	SPFC	State Plan of Flood Control
36	SRCSD	Sacramento Regional County Sanitation District
37	SSHCP	South Sacramento Habitat Conservation Plan
38	SWRP	Stormwater Resource Plan
39	TAF	thousand acre-feet
40	TMDL	total maximum daily load
41	USACE	U.S. Army Corps of Engineers
42	WDR	Waste Discharge Requirement
43	WEP	Water Use Efficiency Program
44	WFA	Water Forum Agreement
45	WWTP	wastewater treatment plant
46		

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 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.

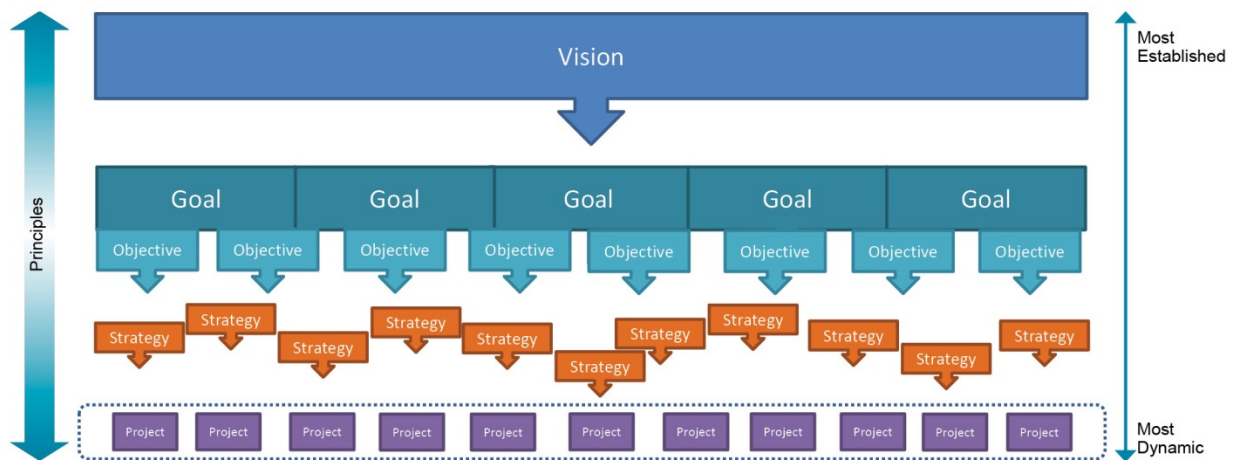


Figure 5-1. ARB IRWMP Framework

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.

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

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

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

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

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

1 The 2013 ARB IRWMP Update principles, vision, goals, objectives, and strategies were iteratively
2 developed through a robust public and stakeholder engagement process that employed the full Governance
3 Structure (as described in **Section 4**). The 2018 ARB IRWMP Update Framework was reviewed and revised
4 through a series of meetings, workshops, research, and individual communications that began in spring
5 2017. Meeting summaries can be found on the Regional Water Authority (RWA) Web site at
6 <http://rwah2o.org/programs/integrated-regional-water-management/american-river-basin-irwmp-2018->
7 [update/](http://rwah2o.org/programs/integrated-regional-water-management/american-river-basin-irwmp-2018-). The remainder of this section is a summary of the content
8 developed at these stakeholder meetings. Revisions were made to the
9 Framework to reflect the 2016 IRWMP Standards, changing
10 conditions in the Region, and updates of existing projects and
11 programs implemented in the ARB as well as new ones. The
12 Framework now addresses legislative initiatives and mandates that
13 affect water resources, such as the Sustainable Groundwater
14 Management Act (SGMA), California Human Right to Water Bill
15 (Assembly Bill (AB) 685), and the Storm Water Resource Planning
16 Act (Senate Bill (SB) 985).



17 **5.2. Vision**

18 The ARB IRWMP vision is:

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

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

27

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

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.

- 1 - Develop projects and programs that allow for the fair treatment of people of all races,
2 cultures, and incomes.

- 3 • Achieving multiple benefits through further integration throughout our water resources planning.
4 This includes:
 - 5 - Value the entirety of the water cycle and consider all forms of water as a potential resource.
 - 6 - Prioritize solutions that are integrated, addressing as many objectives, and providing as many
7 benefits as possible.
 - 8 - Promote improved integration of land-use planning and management with water resources
9 management.
 - 10 - Collaborate to take advantage of the benefits and synergies of water resource planning at the
11 regional level.
 - 12 - Collaborate with other integrated regional water management (IRWM) regions.

- 13 • Employing adaptive management techniques and active monitoring to manage our water resources.
14 This includes:
 - 15 - As needed, adapt planning processes and use the best available information, data, and tools as
16 feasible, to address changes in a dynamic system and reflect evolving science, changing
17 regulations, and/or program evaluation results.
 - 18 - Regularly monitor and evaluate to determine if objectives and targets are met.
 - 19 - Incorporate mitigation and adaptation measures in all aspects of planning and implementation
20 in preparation for projected future changing climate conditions.

- 21 • Engaging a broader community as stewards of our water resources. This includes:
 - 22 - Promote transparency and open communication.
 - 23 - Build community awareness and encourage participation in stewardship of water resources.
 - 24 - Promote and educate on the value of pollution prevention and source reduction.

- 25 • Planning for hydrologic variability and uncertainty. This includes:

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

6 5.5. Objectives

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

16 The 2018 ARB IRWMP Update includes revisions to the 17 objectives originally identified in the 2013
 17 plan. In addition, a new objective was developed to reflect implementation of SGMA and regional actions
 18 to sustainably manage the Region’s groundwater resources. The 18 ARB IRWMP objectives are presented
 19 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.

1

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.

2

1

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, groundwater sustainability agencies will be preparing groundwater sustainability plans or approved alternative plans to ensure basin sustainability.

Key:
AB = Assembly Bill
Region = American River Basin Region

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

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

20

1

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

5.6. Strategies

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**.

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 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.

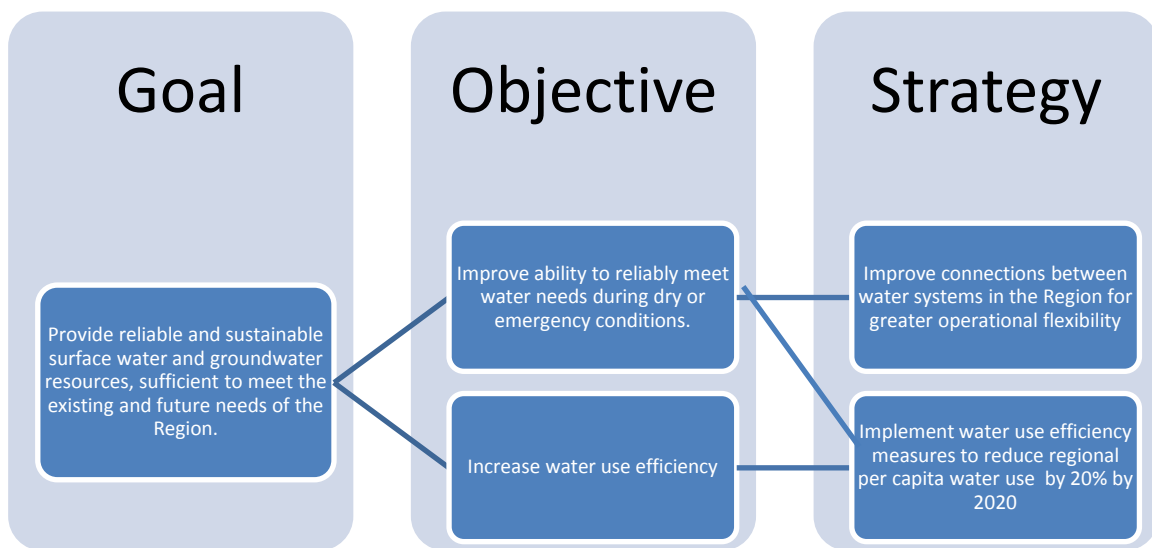


Figure 5-2. Example of Relationships Among a Goal, Objectives, and Strategies

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

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

- 8 • The changing demographics of the Region
- 9 • Changes in technology
- 10 • Climate change
- 11 • Changes in state of California (state) and federal policy
- 12 • Funding uncertainty
- 13 • Aging infrastructure

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

16

1

Table 5-4. ARB IRWMP Strategies

WATER RESOURCE STRATEGIES
WR1. Increase surface water treatment capacity to 839 million gallons per day (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 acre-feet per year by 2035.
WR6. Implement water use efficiency measures to reduce regional per capita water use by 20% by 2020.
WR7. Develop and adopt groundwater sustainability plans or alternative groundwater sustainability plans 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 incidence of invasive species.
ER6. Increase access, quality, and quantity of anadromous and native fish habitat.
ER7. Improve flows, quality, and temperature of area streams and rivers.
ER8. Improve groundwater levels to support and improve habitat.

2

1

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.
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 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.

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—Are 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))

2

3

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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.	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 acre-feet per year by 2035.	•	•	•	•														
WR6. Implement water conservation to reduce regional per capita water use by 20% from 2009 levels by 2020.	•		•															
WR7. Develop and adopt groundwater sustainability plans or alternative groundwater sustainability plans 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.	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 region's groundwater basins sustainably.
ER4. Improve the quality, quantity, and connectivity of habitat communities.	•							•	•									
ER5. Actively manage the incidence of invasive species.	•							•	•									
ER6. Increase access, quality, and quantity of anadromous and native fish habitat.	•							•	•									
ER7. Improve flows, quality, and temperature of area streams and rivers.	•					•		•	•									
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.	•					•	•								•			
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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1 **5.6.1. ARB Water Resource Strategies**

2 **5.6.1.1. WR1. Increase surface water treatment capacity to 839 million gallons per day**
3 **by 2035.**

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

10 Region-wide, urban water demands in 2030 are expected to be 718 thousand acre-feet (TAF) per year (see
11 **Section 2.9.1.2**), and the increased need for surface water treatment and delivery is a certainty. The Region
12 in aggregate has sufficient surface water rights and contracts to meet future needs; however, overcoming
13 legal and institutional constraints (infrastructure, place of use, perfection of rights, etc.) associated with
14 surface water rights and contracts may preclude surface water delivery to the entire Region. In addition,
15 California’s recent historic drought illustrates potential risks to agencies’ water supplies, especially paired
16 with uncertainty in hydrologic conditions and climate variability caused by climate change. For example,
17 in 2015 low Folsom Reservoir storage revealed significant vulnerabilities related to the ability to divert
18 water from that location. Continued surface water deliveries are expected to be a significant source of
19 regional water supply; however, the Region recognizes the need for adaptive management, diversification
20 of diversion locations, and associated surface water treatment plants. In addition to serving the needs of
21 planned growth directly, additional surface water treatment capacity is needed to more fully implement (in
22 combination with other strategies) the regional conjunctive use program, first prescribed by the Water
23 Forum Agreement (WFA) in 2000.

24 **5.6.1.2. WR2. Increase groundwater production capacity to 550 MGD by 2035.**

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

31 Region-wide, urban water demands in 2030 are expected to be 718 TAF per year (see **Section 2.9.1.2**), and
32 the increased need for groundwater production is a certainty. The Region is generally underlain by robust

1 groundwater supplies that have historically been managed and balanced by Western Placer County,
2 Sacramento Groundwater Authority (SGA), and Sacramento Central Groundwater Authority (SCGA) that
3 preserve, protect, and manage these important resources. Following the adoption of SGMA in 2014, 26
4 Groundwater Sustainability Agencies (GSA) have been formed to sustainably manage the three
5 groundwater subbasins underlying the Region. Each GSA is responsible for developing and implementing
6 a Groundwater Sustainability Plan (GSP) to maintain sustainable yield and prevent undesirable results in
7 the subbasins. These GSAs include Placer County, SGA, SCGA, Omochumne Hartnell Water District, Clay
8 Irrigation District, Galt Irrigation District, City of Galt, Sloughouse Resource Conservation District,
9 Sacramento County, and Amador County Groundwater Management Authority.

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

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

23 **5.6.1.3. WR3. Increase distribution system water storage capacity to 525 MG by 2035.**

24 The water purveyors in the Region have various operational strategies and practices for using local
25 groundwater and/or surface water supplies to meet water demands. Water delivery system needs depend on
26 topography, water quality, and demand patterns. Many agencies make use of storage reservoirs to balance
27 diurnal flows and variable demands while other agencies rely on groundwater production and direct
28 delivery to meet variable demands. While increased storage is generally desirable from an operational
29 perspective, changes in regional electricity pricing to time-of-use rates may be a significant driver for
30 investing in additional water storage capacity. As peak water and peak power demands roughly coincide,
31 there will likely be increased incentives to avoid peak power rates by treating and storing water at off-peak
32 times. Also, as water suppliers in the Region continue to expand the regional conjunctive use program and

1 interconnect their respective systems, storage reservoirs can be valuable tools to balance line service
2 pressures, water demands, and water quality needs. Regional stormwater runoff capture and use, floodplain
3 restoration, or in lieu recycled water projects may also provide additional opportunities to recharge and
4 store water in groundwater basins. Conjunctive use may also increase energy efficiency and greenhouse
5 gas reductions through the integrated management of water, as described in CARB’s AB 32 Scoping Plan.
6 The strategy was developed through a survey of public water suppliers in the Region. Current capacity is
7 approximately 400 MGD, so the target represents an increase of about 125 MGD.

8 **5.6.1.4. WR4. Improve connections between water systems in the Region for greater**
9 **operational flexibility.**

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

20 **5.6.1.5. WR5. Increase use of recycled water to 65,000 acre-feet per year by 2035.**

21 Recycled water is currently used to the extent practicable in the Region, considering the current availability
22 of Title 22 supplies. As a nearly 100 percent reliable source of supply, recycled water is expected to
23 eventually play an important role in the Region for irrigation and industrial (process) water, and for direct
24 and indirect groundwater augmentation. National Pollutant Discharge Elimination System (NPDES) permit
25 requirements have become more stringent and most regional wastewater plants will produce Title 22
26 effluent at a minimum, in the very near future. The City of Roseville has a robust recycled water system,
27 and Sacramento Regional County Sanitation District (SRCSD) has set a goal to produce and reuse upwards
28 of 55 MGD of recycled water per year by 2020. Because approximately 65 percent of regional water use is
29 outdoors (irrigation), recycled water supplies are expected to offset or replace the need for other surface
30 and/or groundwater sources, either directly or indirectly. Future challenges to fully using recycled water
31 include construction of new infrastructure as well as gaining social acceptance of this alternate water
32 resource. CARB’s AB 32 Scoping Plan also specifically promotes the reuse of wastewater as a means of
33 increasing energy efficiency and reducing greenhouse gas emissions.

5.6.1.6. WR6. Implement water use efficiency measures to reduce regional per capita water use by 20% by 2020.

As demonstrated by the historic drought experienced in California from 2012 through 2016, demand reduction is an integral part of water supply management 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 actions 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.

Executive Order B-37-16, signed in May 2016, sought to establish long-term conservation measures throughout California.

Although the state of drought emergency was lifted in April 2017, water conservation remains a central focus in California and the Region. 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.

The Region and participating agencies have been proactively engaged in water conservation programs well in advance of SB7x7 and the emergency regulations 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,

1 agency responses to the drought have revealed additional opportunities for collaboration and cooperation
2 to enhance regional reliability.

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

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

15 **5.6.1.7. WR7. Develop and adopt groundwater sustainability plans or alternative**
16 **groundwater sustainability plans by 2022.**

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

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

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

1 **5.6.1.8. WR8. Complete an Analysis of Expanded Conjunctive Use Potential in the**
2 **Region by 2022.**

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

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

- 18 • North American Basin Regional Drought Contingency Plan (October 2017) – The NAB RDCP is
19 a collaborative planning effort to explore opportunities to collaborate and cooperate to enhance
20 regional reliability, and to increase the resiliency of the region’s water resources in the face of
21 future climate and drought conditions.
- 22 • Regional Water Authority Regional Water Reliability Plan (June 2018) – The RWRP is a locally-
23 led effort to identify the most promising regional opportunities to improve water supply reliability
24 by evaluating opportunities for intra- and interregional transfers and exchanges, to reduce water
25 use, to support interregional groundwater management and conjunctive use efforts, to support
26 recycled water planning, and to use shared infrastructure and resources. The agency-level
27 vulnerability assessments identify existing and future water supply and demand imbalances.
28 Development of the plan included development of evaluation criteria and metrics, and identification
29 of response actions and mitigation strategies at both the agency- and project- levels. The
30 preliminary conjunctive use analysis indicated that using existing infrastructure, region-wide
31 recharge could be increased by up to 61 TAF per year in wet years by offsetting groundwater use
32 with surface water, and region-wide recovery could be increased by up to 66 TAF per year in dry

1 years by offsetting surface water use with groundwater. The RWRP did not consider funding
2 mechanisms to implement a conjunctive use program nor the impacts of future climate change on
3 a conjunctive use program.

- 4 • American River Basin Study (ongoing) – Cost-shared by the U.S. Department of the Interior,
5 Bureau of Reclamation (Reclamation) through its WaterSMART Basin Studies Program, the ARBS
6 is examining strategies to integrate or better coordinate local and federal water management
7 practices, incorporating new scientific information on climate change that are specific for the
8 American River Basin, and addressing significant recent changes in conditions and regulatory
9 requirements related to the Central Valley Project (CVP) and regional water management including
10 but not limited by Biological Opinions for endangered fishery species protection and protection of
11 the Sacramento-San Joaquin Delta, SGMA, and water rights administration in drought conditions.
12 A significant element of the ARBS is to develop hydrology under future climate conditions, which
13 will help better estimate future conjunctive use operations.

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

23 Expanded implementation of conjunctive use will be critical to meeting regional water needs, especially
24 considering changes in upstream snowpack and revised reservoir operating rules due to climate change.
25 Conjunctive use may also increase energy efficiency and greenhouse gas reductions through the integrated
26 management of water, as describe in CARB’s AB 32 Scoping Plan.

27 **5.6.1.9. WR9. Increase the capture of stormwater runoff for infiltration or reuse, where**
28 **feasible.**

29 Most stormwater and flood management systems are currently designed and operated to capture,
30 channelize, and convey stormwater runoff away from high-value properties and people as rapidly as
31 possible during and after storm events. However, stormwater can also be a resource, if it can be captured

1 and stored. Groundwater basins often provide the most effective means of storing stormwater. Additional
2 benefits of capturing stormwater include the following:

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

8 Revising existing stormwater and flood management systems to augment groundwater infiltration will
9 require policy, management, design, and operational modifications. Decentralizing flood management
10 requires collaboration between water and land-use agencies, and potentially making difficult decisions to
11 restrict or redesign development. Decreasing impervious area is one example. Expansion of floodplains and
12 associated habitat creates environmental water needs and requirements. This may necessitate changes in
13 water operations to maintain enough flow for those habitats. Some other examples of efforts to increase
14 infiltration include the following:

- 15 • Aquifer Storage and Recovery, where stormwater is artificially pumped into aquifers
- 16 • Increasing use of detention ponds or basins.
- 17 • Other onsite capture of stormwater using low impact development (LID) techniques

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

21 **5.6.2. ARB Water Quality Strategies**

22 **5.6.2.1. WQ1. Meet all appropriate treatment standards and discharge requirements for** 23 **wastewater treatment and other point discharges.**

24 Wastewater treatment standards and waste discharge requirements help protect beneficial uses of receiving
25 waters. If not properly treated, wastewater can introduce bacteria, viruses, and nutrient loads into receiving
26 waters, among other contaminants. Excessive concentrations of contaminants can lead to negative
27 ecological and habitat impacts, restrictions on water-based recreation, increased drinking water treatment
28 costs, and, in extreme cases, decrease water supply availability. The Region recognizes that federal and

1 state water quality regulations and standards will continue to change, and this strategy intends to allow for
2 adaptation to such changes. In addition to public wastewater treatment plants (WWTP), private industrial
3 plants must also meet discharge regulations, but are not specified in this strategy because they are not within
4 the Region’s purview.

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

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

19 Municipal separate stormwater sewer system (MS4) discharges are point discharges that are subject to
20 TMDLs and regulated through MS4 NPDES permits. Improved capture and use of stormwater across the
21 region supports water quality goals for appropriate treatment and discharge standards of urban runoff,
22 including TMDL compliance. Stormwater flows to local watersheds increase pollutant loads, including
23 bacteria, oils and greases, and metals, in local water bodies. Managing stormwater before it reaches natural
24 water channels can reduce contamination. In particular, several key benefits for stormwater capture and use
25 support this IRWMP goal. For instance, reestablishing natural water drainage and treatment can reduce the
26 velocity, and potentially the volume, of stormwater flows in watersheds. This can result in beneficial effects
27 such as depositing solids that would otherwise reach downstream habitat. Additionally, stormwater capture
28 and use aims to increase filtration and treatment of pollutants in runoff before reaching the Region’s rivers
29 and streams, using best management practices and LID to reduce concentrations of pollutants found in
30 stormwater.

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

11 **5.6.2.2. WQ2. Meet all nonpoint discharge requirements.**

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

18 Stormwater capture and use benefits that result from SWRP projects and programs include increased
19 filtration and treatment of pollutants in runoff. Rainfall and snowmelt are the primary sources for nonpoint
20 discharges. Improved treatment of stormwater directly supports goals for meeting TMDLs for nonpoint
21 discharges that seek to protect receiving waters. Reducing pollutant loads and the total volume of
22 stormwater that reaches watersheds can support improved watershed quality. As described in WQ1, the
23 ARB SWRP and West Slope SWRP seek to address both nonpoint and point discharges in the Region. The
24 ARB SWRP, West Slope SWRP, and associated relevant projects and programs are incorporated into the
25 2018 ARB IRWMP Update.

26 The state's Irrigated Lands Regulatory Program under the Waste Discharge Requirements (WDR) Program
27 regulates discharges from irrigated agricultural lands. These discharges include irrigation runoff, flows
28 from tile drains, and stormwater runoff. WDRs contain conditions requiring water quality monitoring and
29 corrective actions when impairments are found. The Region is developed and urbanized, with the exception
30 of the northwestern and southern agricultural and agricultural-residential areas. Agricultural lands offer
31 groundwater recharge opportunities, as well as being a potentially large source of runoff. Comprehensive

1 coordination across the Region will be necessary to accomplish the water quality and water management
2 strategies identified in this IRWMP.

3 **5.6.2.3. WQ3. Reduce source water pollution.**

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

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

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

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

24 **5.6.2.4. WQ4. Reduce the volume, flows, and pollutant loads of stormwater runoff.**

25 Historically, most stormwater runoff was (and often still is) discharged, untreated, directly into surface
26 water bodies. This type of drainage management results in transport of pollutant loads from anthropogenic
27 sources, as well as substantial erosion and other hydromodification impacts from the increased discharge
28 volumes and flow rates. Retaining runoff on site through infiltration or other capture and use mechanisms
29 can help prevent pollution and hydromodification, thereby restoring water quality benefits. Stormwater

1 capture and reuse projects can also increase water supply, reduce flood risks, protect environmental
2 systems, and enhance communities.

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

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

18 **5.6.2.5. WQ5. Reduce the extent of groundwater contamination, consistent with**
19 **regulatory cleanup programs.**

20 There are several locations in the Region where groundwater resources have been impacted by
21 contamination. Some of these sources of contamination are localized, while others are of regional
22 significance. These contamination locations are currently monitored and controlled, and are being
23 remediated by or at the direction of state/federal government agencies. For example, the Aerojet General
24 Corp., McClellan Air Force Base (AFB), and Mather AFB are accountable under the EPA’s Superfund
25 Program (Comprehensive Environmental Response, Compensation, and Liability Act). ARB stakeholders
26 and project proponents need to be aware of these contamination sources and be mindful of ongoing
27 prevention and remediation plans so as not to exacerbate existing contamination plumes. In particular, the
28 water supply agencies should be mindful of groundwater extraction practices that (1) change underlying
29 groundwater elevations (which may remobilize contaminants in the vadose zone of the soil matrix), or (2)
30 change groundwater gradients, which may induce plume migration.

1 **5.6.2.6. WQ6. Increase use of remediated groundwater for beneficial uses.**

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

13 **5.6.2.7. WQ7. Coordinate with the CV-SALTS program to identify potential regional**
14 **issues related to salt and nutrient management.**

15 The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) program is a
16 collaborative stakeholder driven and managed program to develop sustainable salinity and nitrate
17 management planning for the Central Valley. Salt, nutrients, (primarily nitrogen and phosphorous), and
18 salinity management are increasingly important water quality and environmental concerns in California.
19 While the Region naturally has lower levels of salts and nutrients compared to other areas of the state, urban
20 and agricultural pollutants are found in the Region’s impaired waters. As stated by CV-SALTS, salinity
21 management is needed as part of near and long term sustainable water supply management (CV-SALTS
22 2013).

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

29 Given the regulatory environment and available resources described above, the Region stakeholders
30 identified a strategy to coordinate with CV-SALTS to help develop a SNMP for the entire Central Valley
31 Regional Water Quality Control Board’s (Central Valley Regional Board) jurisdictional area. This
32 coordination occurred through communication and collaboration with SRCSD, a member of the CV-
33 SALTS executive committee and a leader in the CV-SALTS program. The final SNMP for the Central

1 Valley Regional Board consideration was completed in December 2016 and released by the Central Valley
2 Regional Board for public review and comment in January 2017. Water management agencies that were
3 required to engage in regional salt and nutrient planning efforts per the 2009 Recycled Water Policy will
4 be the most interested in this strategy. This includes the various GSAs in the Region that may want to
5 consider the need for basin assessments of salt and nutrient trends in the future.

6 **5.6.3. ARB Environmental Resources Strategies**

7 **5.6.3.1. ER1. Restore functional riparian and wetland habitat.**

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

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

21 Restoration of riparian and wetland habitats can provide ecosystem benefits such as water quality
22 improvements, improved in-stream aquatic habitat, recreational opportunities, and increased groundwater
23 recharge. Successful restoration of aquatic, riparian, and floodplain species and communities ordinarily
24 depends upon at least partial restoration of physical processes that are driven by water. These processes
25 include the flooding of floodplains, the natural patterns of erosion and deposition of sediment, the balance
26 between infiltrated water and runoff, and substantial seasonal variation in stream flow.

27 Numerous municipal, watershed management, and environmental organizations are active in restoration
28 efforts throughout the Region, often in collaboration with each other (see **Section 2.6.2**). These projects
29 and programs are often multi-benefit and include flood management and recreational components. Projects
30 that involve riparian and wetland restoration can be found along the American River, Coon Creek, Auburn
31 Ravine, Alder Creek, Laguna Creek (that is a part of the Morrison Stream Group), and the Cosumnes River,

1 among other locations. Multi-benefit projects that conserve riparian and wetland areas can also offer
2 groundwater recharge benefits.

3 **5.6.3.2. ER2. Conserve functional riparian and wetland habitat.**

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

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

15 **5.6.3.3. ER3. Implement local habitat and watershed conservation and restoration plans.**

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

23 **5.6.3.4. ER4. Improve the quality, quantity, and connectivity of habitat communities.**

24 Habitats are the area where an organism lives, including the biotic and abiotic factors that affect it.
25 Ecological communities are composed of populations of different species occupying a particular area,
26 usually interacting with each other and their environment. Riparian and wetland habitats in the Region
27 provide critical ecosystem functions and benefits, but have been reduced in their geographic extent and
28 what remains has been degraded in quality. Large expanses of the Region, and the Central Valley as a
29 whole, lack connectivity between isolated blocks of remaining natural riparian and wetland habitats that
30 support native biodiversity. Habitat connectivity is important for maintaining biological and genetic
31 diversity, allowing seasonal migration or migration in response to habitat losses or climatic shifts, and
32 allowing movement of individual organisms for needed resources. Within the Region, connected riparian

1 corridors are of particular importance. This strategy can be achieved through restoration or conservation
2 actions, as described in Strategies ER1 and ER2.

3 **5.6.3.5. ER5. Actively manage the incidence of invasive species.**

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

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

14 **5.6.3.6. ER6. Increase access, quality, and quantity of anadromous and native fish**
15 **habitat.**

16 Anadromous fish species are those that migrate from the ocean to spawn in freshwater. In the Region, these
17 species include Chinook and Coho salmon, steelhead, Pacific lamprey, sturgeon, striped bass, shad, and
18 others. Other important native fish species include Sacramento sucker, Sacramento pikeminnow, sculpins
19 (prickly and ruffle), tule perch, and hardhead. Many of these species are state- and/or federally listed as
20 threatened or endangered. They are inhibited by degraded habitat quality (water quality, temperature, and
21 flows), and access to substantial amounts of upstream habitat is impeded by barriers to fish passage.
22 Salmonids provide substantial recreational and cultural value to the Region. Previous efforts to promote
23 spawning in regional streams appear to have been helpful, especially in the American River where spawning
24 gravels have been placed to support in-stream spawning. Previous Cosumnes River pre-wetting was also
25 effective in supporting connectivity that enabled anadromous fish to reach upstream gravels and spawn
26 successfully.

27 This strategy can be accomplished by improving flows, quantity, quality, and temperature of area streams
28 and rivers (Strategy ER1 as well as water quality strategies), and by removal of passage barriers, especially
29 to upstream spawning locations. Save Auburn Ravine Salmon and Steelhead, for example, has been active
30 and successful in forming partnerships with Placer County and Nevada Irrigation District to develop
31 alternative migration paths for salmon around barriers. Fishery Foundation (Cosumnes Coalition Partner)

1 worked successfully with the U.S. Fish and Wildlife Service to remove anadromous fish passage barriers
2 at various agricultural and municipal impoundments.

3 **5.6.3.7. ER7. Improve flows, quality, and temperature of area streams and rivers.**

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

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

20 By its nature, achieving Strategy ER7 requires collaborative and integrated resources management, and is
21 dependent on progress in other ARB strategies, such as considering environmental flow needs in water
22 operations (such as how dams are operated, see Strategy FM4), addressing water quality concerns (as
23 described and addressed in water quality strategies), and addressing connectivity in areas where
24 groundwater overdraft drains surface water flows.. The ARB IRWMP effort will continue to bring these
25 stakeholders together to address these interdependent concerns.

26 Stormwater capture and use projects as part of the ARB SWRP will specifically be ranked according to
27 their assessed benefits for reducing peak flows, improving water quality, and improving desired in-stream
28 temperatures for local water bodies. Especially in the urbanized watersheds of the ARB, stormwater capture
29 and use is an important contributor to improving local watershed quality and aquatic habitat. Stormwater
30 capture and use projects in the West SWRP were ranked according to three components: 1) Surface Water
31 Storage, 2) Watershed Management, and 3) Stormwater Management. Projects submitted to West Slope
32 SWRP were grouped into 3 groups (A, B, or C) within one of the three components using multi-benefit

1 metric scoring. Within the “Water Quality” benefit category, projects were evaluated on their ability to
2 increase filtration and/or treatment of stormwater runoff, control nonpoint source pollution, and reestablish
3 natural water drainage and treatment.

4 **5.6.3.8. ER8. Improve groundwater levels to support and improve habitat.**

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

16 **5.6.4. ARB Flood Management Strategies**

17 **5.6.4.1. FM1. Provide a 200-year level of flood protection for urban areas by 2025, where**
18 **feasible.**

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

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

31 After the Board’s adoption of the Central Valley Flood Protection Plan (CVFPP) in 2012, cities and counties
32 within the Sacramento-San Joaquin Valley had up to 24 months to amend local general plans, and 36 months

1 to amend local zoning ordinances to be consistent with the CVFPP. Subsequently, cities and counties were
2 required to make findings regarding an urban level of flood protection when considering decisions about
3 entering into a development agreement for a property, approving a discretionary permit or entitlement for
4 any property development or use, or approving a ministerial permit that would result in construction of a
5 new residence, or approving a tentative map/parcel map for a subdivision. The CVFPP 2017 Update,
6 completed in August 2017, refines the overall near and long-term investment needs established in the 2012
7 CVFPP, and includes recommendations on policies and funding to support comprehensive flood risk
8 management actions. After 2025, for urban and urbanizing areas protected by State Plan of Flood Control
9 (SPFC) levees, cities and counties must find that the new development is protected to at least the urban
10 level of flood protection.

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

15 In support of meeting SB 5 requirements, the Sacramento Area Flood Control Agency (SAFCA) released
16 its draft Comprehensive Flood Risk Reduction Program reduction in March 2017, outlining the agency's
17 three-phase efforts to achieve at least 200-year flood protection for the Sacramento region. SAFCA is now
18 starting its third phase to provide 500-year protection, which includes increasing conveyance downstream
19 of Folsom Dam, investigating additional flood storage in reservoirs above Folsom, and implementing
20 comprehensive system wide levee operations, maintenance, repair, replacement, and rehabilitation
21 measures. In addition, the City of Sacramento developed a Comprehensive Flood Management Plan in
22 2016, which builds upon floodplain conservation and land use measures included in the City's general plan
23 and floodplain management ordinance, as well as other emergency planning documents prepared by the
24 and use agencies. Sacramento County adopted amendments to its General Plans and Zoning Codes in
25 October 2016 to establish a 200-year flood standard of protection in urban areas. The amendments included
26 policies to address regional agency coordination, setbacks along levees, elevation and construction
27 standards, flood-related map data, flood emergency response, floodway management, and building design
28 standards. In addition, Sacramento County also adopted a Floodplain Management Ordinance in January
29 2017.

1 **5.6.4.2. FM2. Improve level of flood protection for levee-protected small communities**
2 **and agricultural lands in the Region, where feasible.**

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

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

11 This strategy recognizes that (1) small communities and rural-agricultural areas will not be required to
12 provide urban level of flood protection (as the name implies), (2) agencies with flood management and/or
13 land-use responsibilities in the Region will need to work together and with state and federal agencies reduce
14 flood risks in small communities and rural-agricultural areas, (3) there will likely be different ways to
15 reduce these flood risks (both structural and nonstructural improvements¹ (4) current federal engineering
16 guidance and design standards may result in cost-prohibitive levee repairs, and (5) flood risk reduction
17 projects that can achieve multiple resource benefits will likely be preferable to single-purpose projects and
18 may provide greater long-term value.

19 **5.6.4.3. FM3. Promote restoration and conservation of floodplain function.**

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

29 In the Region, floodplains provide a broad area to spread out and temporarily store floodwaters. This
30 attenuates flood peaks and reduces velocities and the potential for erosion. One acre of floodplain land
31 flooded 1 foot deep holds 325,851 gallons of water. The natural and beneficial functions of floodplains
32 should be valued and considered in future integrated water management projects and programs. Examples

1 of ongoing floodplain restoration efforts in the Region include those in the Lower Cosumnes River
2 Floodplain, Lower Dry Creek Floodplain, North Laguna Creek Watershed, and Cross Canal Watershed.

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

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

13 **5.6.4.4. FM4. Support a Folsom Dam Water Control Manual update that balances flood**
14 **control, water, environmental and recreational needs.**

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

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

28 The purpose of the ongoing update effort is to identify, evaluate, and recommend changes to the flood
29 management operation rules of Folsom Dam and Reservoir that would reduce flood risk to the Sacramento
30 area by using the new auxiliary spillway and by incorporating an improved understanding of the American
31 River watershed upstream from Folsom Dam. The findings of the evaluation will be used to help define the

1 dam's new flood operations plan, with the intention of meeting flood risk management objectives in a
2 manner that conserves as much water as possible and maximizes all authorized Folsom Dam project uses
3 to the extent practicable.

4 This strategy recognizes that (1) proposed alternatives identified in the SEA/EIR could have significant
5 effects on the other authorized purposes of the project, and (2) a balanced manual update will be critical to
6 achieving the ARB IRWMP goals.

7 **5.6.4.5. FM5. Coordinate with inter-jurisdictional, regional flood management efforts.**

8 Developing and implementing integrated, multi-benefit projects often involves (1) a large number of local,
9 regional, state, and federal agencies with complex and overlapping jurisdictional roles and responsibilities,
10 inconsistent policies and regulations, and multiple management goals, and (2) a continual investment in
11 stakeholder and public education and engagement. Projects with a flood management component often have
12 effects both upstream and downstream, further expanding the geographic scope of the coordination effort.
13 Flood management functions within a single geographic area may be carried out by a combination of city
14 and county planning and public works departments, drainage districts, water supply districts, joint powers
15 authorities, and others. Coordinating activities within this fragmented jurisdictional landscape can be
16 challenging and costly, particularly for local entities.

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

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

28 **5.6.4.6. FM6. Coordinate flood emergency planning and response efforts.**

29 Flood emergency planning and response is an element of residual risk management. It involves preparing
30 for floods, effectively responding to flood events, and quickly recovering when flooding occurs. Often the
31 first responders, local agencies play a key role in the management of flood emergencies in their

1 jurisdictions. However, coordinated flood planning and operations among local agencies, cities and
2 counties, the California Emergency Management Agency, the State-Federal Flood Operation Center, and
3 USACE are critically important in successfully managing and fighting floods, and saving lives and
4 properties.

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

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

15 **5.6.5. ARB Community Stewardship Strategies**

16 **5.6.5.1. CS1. Increase availability and access to educational material on sustainable** 17 **water resources.**

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

24 Educational material could be public-friendly Web sites or fliers and brochures that could be distributed.
25 Currently, RWA's WEP, for example, maintains a user-friendly Web site on water use efficiency and also
26 provides educational classes. Be Water Smart (<http://bewatersmart.info/>) is an award-winning public
27 outreach- and school-education focused program sponsored by the WEP. Watershed management groups
28 and environmental organizations often incorporate outreach and education into their programs and
29 associated efforts. Additionally, educational material such as informational signs could be placed near a
30 project (e.g., a trail or a well site) with an explanation of how that water-related facility is a part of the larger
31 water and sustainability picture and how it influences each citizen. Developing materials suitable for use
32 directly in classrooms may also be important. ARB SWRP and West Slope SWRP projects also receive

1 credit for increasing public education related to stormwater. This may include educating residents on best
2 practices for yard and waste disposal, providing public signs that illustrate habitat restoration projects, and
3 providing accessible materials showing how LID changes urban runoff patterns.

4 **5.6.5.2. CS2. Identify, summarize, and discuss the potential for partnering of existing**
5 **regional outreach and education programs by 2021.**

6 Working to leverage existing regional outreach and educational programs in the Region is a strategy focused
7 on encouraging community stewardship of water and natural resources among citizens in the Region. These
8 efforts include those being undertaken by local and regional water entities, as well as other local, state,
9 federal, and non-government organizations that promote outreach to disadvantaged citizens, and public
10 water education. This can include public events, including Earth Day and Creek Week, volunteer clean up
11 initiatives of local waterways, classroom presentations, and regional water efficiency programs.

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

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

24 **5.6.5.3. CS3. Identify natural recharge areas and relay that information to relevant land-**
25 **use planning agencies by 2022, encouraging the preservation of recharge areas.**

26 Protecting natural groundwater recharge areas to facilitate and promote groundwater infiltration is
27 important to maintain and protect groundwater levels and groundwater quality. Working with willing
28 landowners to protect identified recharge sites via conservation easements or acquisition strategies creates
29 opportunities for multi-benefit projects that recharge groundwater and preserve habitat and agricultural
30 lands. Detailed mapping of the Central and Cosumnes Subbasin regions has been accomplished and is
31 available to guide project selection. Various infiltration investigations have occurred in the past, and water
32 agencies can continue to study and identify the areas with soil/ground characteristics in their respective

1 service areas that promote infiltration. However, only agencies with land-use planning authority (cities and
2 counties) have the ability to make land decisions with respect to zoning. This strategy specifically addresses
3 the need for broader knowledge on the issue of regional groundwater infiltration and sets a deadline for
4 communicating with land-use planning agencies about identified recharge areas. Efforts may continue
5 thereafter to develop a common understanding with land-use planning agencies and to ensure the areas’
6 protection into the future. In addition, regional participating agencies recognize importance of regional
7 coordination between land-use planning agencies and local GSAs to ensure that land decisions are
8 contributing toward meeting GSP and basin sustainability goals.

9 **5.6.5.4. CS4. Promote the use of Low Impact Development methods, where appropriate.**

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

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

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

28 **5.6.5.5. CS5. Provide annual updates to city and county governments and other local**
29 **agencies on accomplishments and continued challenges of integrated water management.**

30 The various discussions that took place in developing the Region goals, objectives, and strategies attested
31 to the increasingly integrated nature of water and land resources as well as economics and people. The
32 Region recognizes that water management is getting more complex and thus more discussion across

1 traditionally separate disciplines is imperative for understanding and eventual success in integrated water
2 resources management. Dialogue must continue and increase in frequency into the future. This strategy,
3 therefore, delineates that city and county governments will be provided with updates of integrated water
4 management efforts yearly. This communication will lead to greater understanding and better integration
5 of local/regional efforts in water management.

6 **5.6.5.6. CS6. Increase engagement of community leaders (e.g., using community-based**
7 **social marketing where applicable).**

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

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

23 **5.6.5.7. CS7. Increase engagement of agricultural stakeholders and private water users.**

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

1 agricultural land plays in integrated water management. Engaging agricultural and private water users is
2 important to achieving the goals identified in this IRWMP.

3 Leveraging existing programs and communication channels can be an effective way of engaging
4 agricultural and private water users without causing “stakeholder fatigue.” For example, SGMA requires
5 local GSAs to conduct a public outreach process and engage beneficial users of groundwater, including
6 agricultural and domestic well owners. Outreach conducted by GSAs to local agricultural stakeholders and
7 private water users can include additional information related to broader integrated water management
8 practices. Other outreach and engagement channels may include the Irrigated Lands Regulatory Program,
9 CV-SALTS, county Farm Bureaus, and prominent local agricultural associations and organizations. The
10 Region will also seek opportunities to coordinate agricultural and urban water suppliers to more effectively
11 address water management and land use planning issues.

12 Existing agricultural stewardship efforts in the Region include the Placer Legacy (a county-wide open space
13 and habitat protection program), Cosumnes River Preserve, and the Sacramento Valley Conservancy. The
14 South Sacramento Habitat Conservation Plan (SSHCP) is a regional approach to addressing issues related
15 to urban development, habitat conservation, and agricultural protection. The SSHCP will consolidate
16 environmental efforts to protect and enhance wetlands (primarily vernal pools) and upland habitats to
17 provide ecologically viable conservation areas. The SSHCP is being collaboratively developed by the
18 County of Sacramento, City of Rancho Cordova, City of Galt, Sacramento County Water Agency,
19 Sacramento Regional County Sanitation District, and the Capital Southeast Connector Joint Powers
20 Authority.

21 **5.6.6. ARB Parking Lot Strategies**

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

28 All Parking Lot strategies outlined in the 2013 ARB IRWMP Update were assessed by RWA and the
29 Planning Forum for inclusion in the 2018 ARB IRWMP Update. Some Parking Lot Strategies were
30 incorporated into existing objectives and strategies, or fully developed into new strategies. Others were
31 removed, because they were determined to no longer be a focus for the Region, or new regulatory
32 requirements were implemented since the Parking Lot item was first identified. Still others were modified

1 to reflect changed conditions or regional priorities. The 2018 ARB IRWMP Update Parking Lot Strategies
2 are described in **Table 5.6**.

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

Item	Description
<p>1. WR: Non-revenue water reduction</p>	<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>
<p>2. WR: Regional data management system for water supply systems</p>	<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 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>
<p>3. WR: Peak demand reduction</p>	<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 afford more 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. Conserving water is necessary for utilities to keep water rates reasonable.</p>

4

1

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

Item	Description
4. (N/A): Quantification of certain strategies	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.

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

2 **5.6.7. California Water Plan Resource Management Strategies and ARB**
 3 **Strategies**

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

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

13

1

Table 5-7. 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
RMS Topic: Improve Operational Efficiency and Transfers			
Conveyance – Delta	Not Applicable	The Region is not dependent of 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 opportunity 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 that may further water transfers.	Strategy WR2, WR8

2

1 **Table 5-7. 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	Not Applicable	With the proximity of major storage facilities in the Region, increased surface storage regionally and locally has not been investigated in decades. However increasing efforts in stormwater and groundwater management may have an indirect benefit to water supplies.	N/A

2

1 **Table 5-7. 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

2

1 **Table 5-7. 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 February 2017. 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

2

1 **Table 5-7. 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

2

1 **Table 5-7. 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 designating certain lands to recreation For example: the American River Parkway and recreation along 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

2

1 **Table 5-7. 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
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
SRCSA = Sacramento Regional County Sanitation District
State Water Board = California State Water Resources Control Board
SWRP = Stormwater Resource Plan
TMDL = total maximum daily load
WEP = Water Use Efficiency Program
WFA = Water Forum Agreement

2 **5.6.8. ARB Strategies and Climate Change Adaptation**

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

8 From 2012 through 2016, California experienced a historic drought. In late 2015, stored water in Folsom
9 Reservoir reached historic lows, threatening the water supply to over one million people in the Region.
10 Water managers in the Region continue to have concerns over the potential of a growing imbalance
11 between water demands and water supply due to a variety of factors, including population growth;
12 increased regulatory requirements; changes in CVP operations; inadequate infrastructure; and lack of
13 interagency planning necessary to address emerging climate change conditions, and increasingly intense
14 and more frequent extreme events (droughts and floods).

15 The Region recognizes that the effects of a changing climate have introduced significant uncertainty in
16 long-term water supply reliability. The NAB RDCP expanded upon the vulnerability assessment
17 conducted in 2013 and identified additional adaptation actions and emergency response actions for that

1 area. The RWA-led Regional Water Reliability Plan (RWRP) further identified potential coordinated and
2 collaborative actions of the Region’s water agencies, as well as opportunities to expand regional
3 conjunctive use to bolster regional reliability and resiliency to future conditions.

4 The strategies identified in the 2013 ARB IRWMP Update were developed, in part, to address regional
5 vulnerabilities to the effects of climate change. Information developed during the 2013 vulnerability
6 assessment was used to inform development of the strategies. During the 2018 ARB IRWMP Update, the
7 RWMG and Planning Forum assessed the IRWMP strategies for Region-specific adaptation and
8 resiliency actions. Where appropriate, measures from the NAB RDCP, RWRP, CARB’s AB 32 Scoping
9 Plan, CWP 2013 Update (RMSs), and other documents were incorporated into the strategies. **Section 2.10**
10 further describes the Region-specific adaptation actions. **Table 5-8** illustrates how the adaptation actions
11 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

13 **5.7. Project Submission, Review, and Communication Process**

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

22 **5.7.1. Project Submission Process**

23 Successful IRWM planning and implementation requires the identification of, and collaboration on,
24 projects of regional significance. This is intended to be a "living process" that continues after formal
25 adoption of the IRWMP and project implementation. To support the process over the long term and to

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1 provide an easy-to-use tool for stakeholders to enter their projects and collaborate with other stakeholders,
2 the ARB IRWMP developed a Web site to serve as an on-line planning tool and information center (also
3 known as "Opti"), which is available at <http://irwm.rmcwater.com/rwa/login.php>. The Opti user guide is
4 available by clicking on the help icon on the site. Opti was developed with a committee of stakeholders to
5 ensure the functions were user friendly and that a project could be entered by stakeholders without extensive
6 computer or engineering backgrounds while maintaining data integrity. One part of the Opti submission
7 form is shown in **Figure 5-3**. A paper copy of the project input form is also available to stakeholders that
8 are unable to use the Web site.

The screenshot shows a web browser window titled "Add Project" with a close button. Below the title bar are several tabs: "Project Info", "Contact", "Description", "Benefits", "Objectives", "Feasibility", "Cost/Funding", and "Other Considerations". The "Project Info" tab is selected and contains the following elements:
- "Project Name: *" followed by a text input field.
- "Organization: *" followed by a text input field.
- A checkbox labeled "I don't want my project ranked at this time" with a help icon.
- "Project Location" section with the instruction: "Project Coordinates: Enter decimal latitude and longitude below or [Find My Location on the Map](#)."
- "Latitude: *" and "Longitude: *" each followed by a text input field.
- "Project Area: [Draw or Add a Project Boundary](#)."
- A table with two columns: "File Name" and "Type".
At the bottom of the form are "Save" and "Submit" buttons. Below the buttons is a legend: "* Minimum Required Information for Project Submission" and "** Information Used in Project Ranking".

9
10 **Figure 5-3. Opti Project Submission Form**

11 Stakeholders are able to enter projects at any time during development and future implementation of the
12 ARB IRWMP. By creating a user account at the site and requesting to become a member of the
13 "community," stakeholders are able to add and edit their projects. While a stakeholder is entering their
14 project information, they can share it with other community members of their choice that are also able to
15 add information to the project. The project information can be saved, so that stakeholders are able to add

1 their project information over multiple sessions. However, the entered project does not become visible to
2 either the site administrator (RWA and its consultant) or the remainder of the ARB IRWMP community
3 until the stakeholder selects the "submit" button.

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

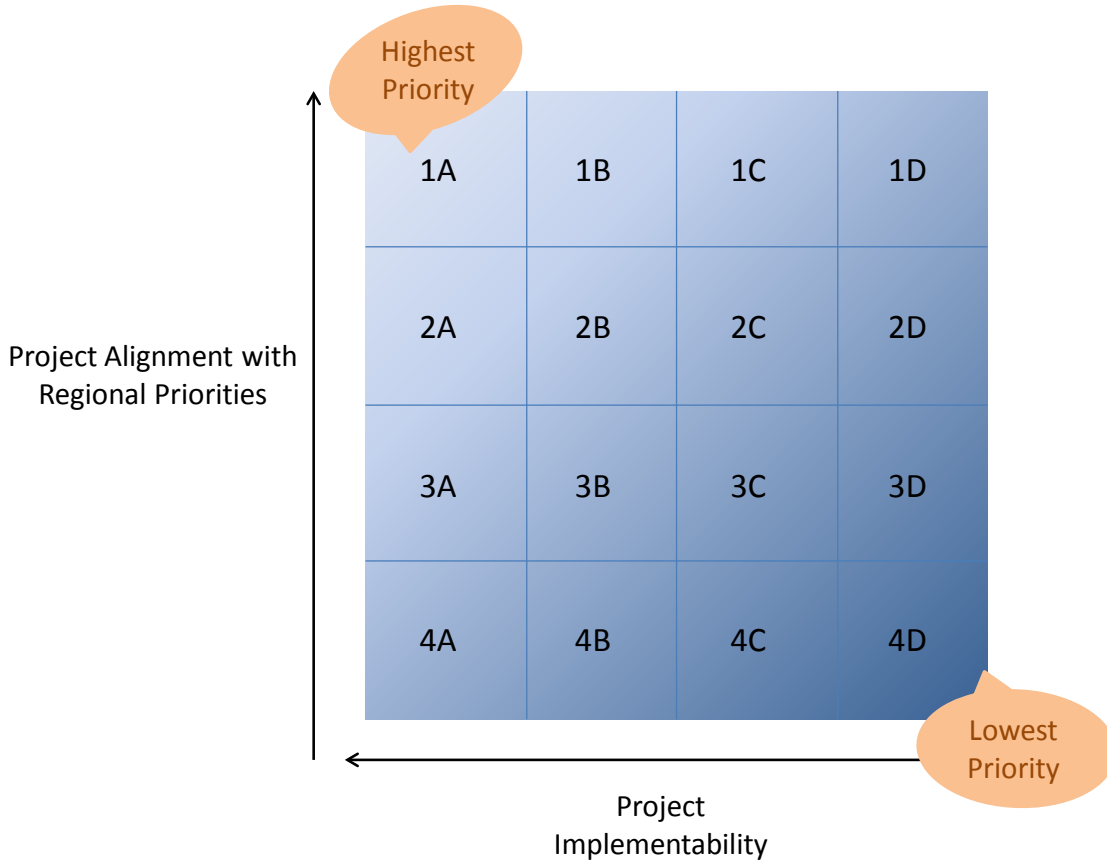
14 **5.7.2. Project Review Process**

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

23 RWA interpreted that the DWR project review factors could be grouped into one of two categories: (1)
24 factors related to the level of integration of a project, and (2) factors related to the implementability (or
25 feasibility) of a project. The ARB project review process distinguishes these two project characteristics. In
26 consultation with the 2013 ARB IRWMP Advisory Committee and following input from stakeholders,
27 RWA devised an alpha-numeric ranking system that places projects into one of 16 categories based on the
28 project's level of alignment with regional priorities and implementability. This is shown graphically in
29 **Figure 5-4**. Projects are assigned a regional priorities score of 1 through 4, where those with the highest
30 level of alignment score a 1 and the lowest score a 4. Projects are also assigned a letter from A to D for an
31 implementability score, with being the most implementable or the most ready-to-proceed and D being the
32 least implementable, or the least ready-to-proceed, at the time of scoring. A project with a score of 1A is

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1 considered to be of both the highest level of priority based on its level of alignment with regional priorities
2 and the most ready-to-proceed based on its implementability score. A project score of 4D would be the least
3 aligned and the least ready to proceed.



4
5 **Figure 5-4. ARB Project Review Score Tiers**

6 This method allows RWA to assign projects to tiers, rather than having to assign an absolute or relative
7 ranking (e.g., Projects 1 through 150). This allows projects with different primary benefits (e.g., water
8 supply, water quality, habitat, flood) to be on more level footing in being identified as a priority for the
9 Region, which will help in promoting a diverse set of priority projects within the Region. This method also
10 gives project proponents feedback on where the Region sees their projects in terms of priority and
11 implementability. Project proponents can then work on modifying their projects to increase alignment with
12 regional priorities (e.g., bring in additional partners, find additional benefits) and update information on
13 implementability to increase the readiness to proceed score in the future. The two categories of review
14 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:

Regional Priorities Ranking	Possible Point Value	Points Awarded	Comments
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	Possible Point Value	Points Awarded	Comments
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	

6
7 Comments

Figure 5-5. ARB Project Review Report Card Template

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

- 2 • **Number of ARB IRWMP Objectives Addressed.** The ARB IRWMP includes 18 adopted
3 objectives. Because objectives represent the heart of the ARB IRWMP effort, the points account
4 for a majority of the score. A project must address at least one objective to be included in the
5 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

- 6
- 7 • **Number of ARB IRWMP Goals Addressed.** Projects that address more than one of the five
8 adopted goals would receive a score of one point. This scoring criterion was added during the 2013
9 ARB IRWMP update at the request of the Advisory Committee, because they felt that it was
10 relatively easy to address more than one objective with a project but more challenging to address
11 more than one goal; those multi-purpose, integrated projects should receive a preference point in
12 the scoring method.

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

- 16 • **Strategic Considerations.** This criterion examines the level of integration a project achieves.
17 Strategic Considerations represent an opportunity to address both DWR and local considerations.
18 Because there were several ways in which a project proponent could receive a point with relative
19 ease, this criterion is capped with a maximum of four points regardless of the number of
20 considerations addressed. Points are eligible for addressing the following:

- 21 – Project includes multiple partners
- 22 – Project is single purpose, but is part of broader plan implementation¹

¹ 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).

- 1 - Project provides benefits that extend beyond the project proponent and its immediate
- 2 constituents

- 3 - Project was purposefully restructured to provide additional benefit

- 4 - Project can be demonstrated to be important part of implementation of the WFA or another
- 5 regional or collaborative planning effort

- 6 - Project includes data collection that will be shared with ARB IRWMP stakeholders

- 7 • **Climate Change/Greenhouse Gas Emissions.** A project is awarded a point if it can demonstrate
- 8 that it contributes to adapting to the effects of climate change or that it will result in the reduction
- 9 of greenhouse gas emissions or energy consumption. Detailed project greenhouse gas emissions
- 10 will be calculated later as the project develops, as part of a California Environmental Quality Act
- 11 requirement. Detailed energy use data will also be calculated as the project develops. Energy
- 12 reduction measures implemented by a project may include those outlined in CARB's AB 32
- 13 Scoping Report.

- 14 • **Disadvantaged Community/Native American Tribal Community/Environmental Justice**
- 15 **Considerations.** A project is awarded a point if it can demonstrate that it addresses critical water
- 16 supply needs of these communities.

17 The allocation of points is a result of a calibration exercise that reviewed more than three dozen projects in
18 the project database. The raw number of points awarded for the regional priorities score results in a
19 distribution of projects into one of four tiers, which represent the project's level of alignment with regional
20 priorities. The tiers and raw point scores are related as shown in the table below. The regional priorities
21 score is also dynamic, as project proponents can continue to develop and adjust their projects to provide
22 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

23
24 Note that the scale of the projects, or the quantified level of benefits of the projects (e.g., acres of habitat
25 restored) were not considered. This ensures that smaller projects would not be disadvantaged by larger

1 projects. Additionally, many projects (e.g., environmental and water quality) have benefits that can be
2 difficult to quantify and compare against other projects. Considerations such as the relative contribution of
3 a project's benefits would only be applied to specific criteria associated with distinct funding opportunities.
4 Detailed project benefit and impact analysis will occur as each project develops and such an analysis
5 becomes required by funding opportunities and/or environmental permitting.

6 **5.7.2.2. Project Implementability Score**

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

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

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

29

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

1 **5.7.3. Project Review Communication and Vetting Process**

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

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

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

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