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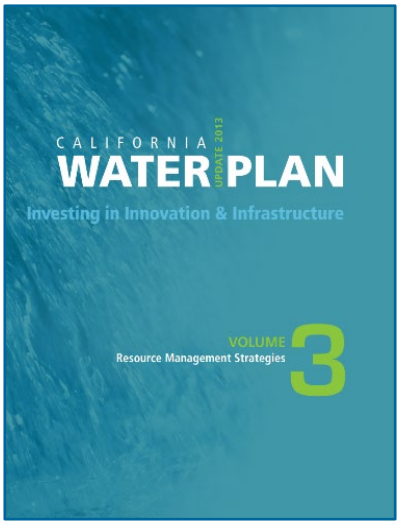
5 Resource Management Strategies

5.1 Resource Management Strategy Standards



A resource management strategy (RMS) is defined by the California Department of Water Resources (DWR) as a project, program, or policy that local agencies can implement to manage water and related resources to meet integrated plan objectives. DWR's standard for RMS review is to encourage diversification of water management approaches, to plan for uncertain future circumstances, and to comply with state law (i.e. the California Public Resources Code and California Water Code). Local groups like the Regional Water Management Group (RWMG) must consider the RMS in the 2013 California Water Plan (CWP) Update when developing their IRWM Plan. The RWMG is also required to consider how RMS can contribute to climate change adaptation and incorporate strategies that address the region's vulnerabilities.

This section provides a summary of the methodology and results of the RWMG's review and evaluation of the DWR RMS.

5.2 RMS Review Process

The RWMG considered the DWR RMSs to build and to diversify the San Luis Obispo Region water management portfolio. RMS review was part of the IRWM Plan scoping process to tailor the RMSs to the Region.

5.2.1 2018 Plan Update RMS Selection

At the April 5, 2017 meeting, the RWMG approved the formation the RWMG Working Group to provide recommendations on updating the IRWM plan. The RWMG Working Group consists of representatives from the following RWMG member agencies and organizations:

- Cambria Community Services District
- City of Morro Bay
- City of San Luis Obispo
- Central Coast Salmon Enhancement
- Morro Bay National Estuary Program
- Nipomo Community Services District
- Templeton Community Services District

This RWMG Working Group met on July 24th, 2017 and subsequently recommended to the RWMG to adopt an un-prioritized set of RMS, listed in Table 5-1. This recommendation was accepted by the RWMG at-large at the October 4th, 2017 regular meeting. The strategies shown in green represent additions to the 2019 RMS that were no included in the 2014 RMS.

Table 5-1 provides the list of RMS adopted by the San Luis Obispo RWMG in 2018. Each of the RMS address one or more Plan Objectives.

Table 5-1: *San Luis Obispo IRWM Plan Resource Management Strategies*

San Luis Obispo IRWM Plan Resource Management Strategies (RMS)
Agricultural water use efficiency
Conjunctive management and groundwater storage
Conveyance – Regional/Local
Desalination
Drinking water treatment and distribution
Ecosystem restoration
Flood risk management
Groundwater remediation/aquifer remediation
Land use planning and management
Matching quality to use
Outreach and engagement
Pollution prevention
Precipitation enhancement
Recharge area protection
Recycle municipal water
Salt and salinity management
Sediment management
Surface storage – CALFED/State
Surface storage – Regional/Local
System reoperation
Urban stormwater runoff management
Urban water use efficiency
Water and culture
Water transfers
Watershed management

Table 5-2 lists the DWR management objectives, the applicable RMS, and the corresponding SLO Region IRWM Objectives.

Table 5-2: *Resource Management Strategies as Applied and Grouped for San Luis Obispo Region*

	IRWM Plan Objectives	Conjunctive Management and Groundwater Storage	Desalination	Municipal Recycled Water	Surface Storage	*Precipitation Enhancement	Drinking Water Treatment and Distribution	*Groundwater Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	*Urban Stormwater Runoff Management	Ecosystem Restoration	Land Use Planning and Management	Watershed Management	*Recharge Area Protection	**Sediment Management	Flood Management	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance	System Reoperation	Water Transfers	**Outreach and Engagement	**Water and Culture
Water Supply	Maximize accessibility of water																				●	●	●		
	Adequate water supply					●	●																		
	Sustainable potable water for rural								●																
	Sustainable water for agriculture								●																
	Water system WQ improvements						●	●																	
	Implement water management Plans								●																
	Conservation/water use efficiency			●															●	●	●	●	●		
	Plan for vulnerabilities of water supply		●			●					●														
	Diverse supply (recycled, desalination)		●	●																					
	Support Watershed Enhancement					●				●			●		●	●									
Ecosystems and Watersheds	Understand watershed needs	●													●										
	Conserve balance of ecosystem	●											●												
	Reduce contaminants									●		●					●								
	Public involvement and stewardship													●											
	Protect endangered species												●				●								
	Reduce impacts of invasive species												●												
	Climate change in ecosystems																				●	●	●		
Ground-water	Understand GW issues and conditions	●																							
	Support local GW management	●																							
	Further local basin management objectives	●						●																	
	CASGEM Program	●																							

IRWM Plan Objectives		Conjunctive Management and Groundwater Storage	Desalination	Municipal Recycled Water	Surface Storage	*Precipitation Enhancement	Drinking Water Treatment and Distribution	*Groundwater Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	*Urban Stormwater Runoff Management	Ecosystem Restoration	Land Use Planning and Management	Watershed Management	*Recharge Area Protection	**Sediment Management	Flood Management	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance	System Reoperation	Water Transfers	**Outreach and Engagement	**Water and Culture
	Groundwater recharge	●														●									
	Protect and improve GW quality							●		●	●														
Flood Management	Understand flood management needs																	●							
	Promote low impact development											●		●											
	Enhance natural recharge															●									
	Improve infrastructure and operations									●		●													
	Implement multiple-benefit projects				●							●													
	Restore streams, rivers and floodplains												●				●								
	Support DAC flood protection																	●							
Management and Outreach	Public outreach on IRWM implementation																							●	●
	Funding for IRWM implementation																								
	Support local control	●																						●	●
	Consider property owner rights																								
	Agency alignment on water resource efforts																							●	●
	Collaboration between urban, rural, and ag																							●	●
	DAC support and education																							●	●
	Promote public education programs																							●	●

5.2.2 Climate Change Review

During the 2018 Plan Update, the RMS were reviewed to ensure they address the region's anticipated climate change impacts. **Section 14.11 – Adaptation and Mitigation Strategies** includes two tables (**Table 14-11 and Table 14-12)** demonstrating the relationship between the Plan's RMS and climate change adaptation and mitigation strategies, respectively. To ensure regional relevance of the adaptation strategies, the RMS are compared to the types of climate change vulnerabilities identified for through the region's vulnerability assessment.

5.3 RWMG Findings and Recommended Project Elements

Findings and Recommended Project Elements, along with the list of RMS, were presented, reviewed, and adopted by the RWMG. Subsequent sections of the IRWM Plan detail and incorporate recommended project elements based on the adopted RMS.

What follows is a short description of the RMS adopted by the RWMG. The Recommended Project Elements are provided to illustrate how each RMS can be implemented through IRWM planning and projects. The Recommended Project Elements are meant to be actions endorsed by the RWMG to be included in the implementation of IRWM projects, when and where possible, to achieve the highest success in meeting the Plan Objectives.

5.3.1 Conjunctive Management and Groundwater Storage

The evaluation and development of groundwater recharge projects/programs aligns directly with Objectives of the Groundwater Management Goal, and crosses over to multiple Objectives in other Goals, specifically, "Enhance Natural Recharge" as listed in the Flood Management Goal.. The primary goal is to enhance recharge to groundwater basins, especially where demand meets or exceeds the existing perennial yield.. Supplementing groundwater in storage would help to meet the goal to diversify the regional water supply portfolio and to ensure a long-term, verifiable, reliable and sustainable supply to meet current and future agricultural, urban, rural, and environmental demands. Any projects would need to be implemented in a way that would not harm overlying users in the basin. Groundwater recharge would help meet multiple Objectives by:

- Helping to avoid impacts to existing users
- Providing a firm, verifiable, and sustainable supply
- Supporting protection of surface water rights by making full use of entitlements for groundwater recharge purposes

5.3.1.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Develop groundwater recharge facilities to enhance recharge to basins and/or capture and protect surface water rights
- Develop groundwater management plan elements to support groundwater recharge projects and to meet requirements for state grant funding
- Conduct needed feasibility studies and/or pilot and demonstration projects to obtain needed data
- Select a preferred groundwater recharge alternative and develop final project designs and funding requirements
- Seek state and federal grant funding to conduct the needed evaluations and pilot projects

5.3.2 Desalination

Desalination of sea water or brackish groundwater has and can continue to be used to diversify the regional water supply portfolio and to ensure a long-term, verifiable, reliable, and sustainable supply to meet current and future agricultural, urban, and environmental demands. Desalination would help meet objectives by providing a new water source to avoid impacts to existing users by not increasing water rates and severe rationing. Desalination of saline water would help meet Objectives by:

- Diversifying supply sources to improve redundancy, water quality, rate stability, and reliability of water supplies
- Helping to avoid impacts to existing water customers by providing a new supply
- Supporting to meet state-mandated 20 percent conservation goals in the region by 2020

5.3.2.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Desalination of ocean water or brackish groundwater is a near- to mid-term proposition and could be sustainable when integrated with groundwater recharge project elements
- Phased projects should be undertaken to pilot and take advantage of current technologies
- Monitoring and reporting elements should be undertaken to determine the feasibility of large-scale water supply and groundwater recharge projects
- Federal or state funding opportunities for development of pilot projects should be pursued if local funding match can be developed
- Local government and water purveyors should coordinate and adopt appropriate policies to allow for and promote development of desalination projects
- Consider and further evaluate economic and political feasibility for including desalinated water as a source of direct groundwater recharge
- Cooperative public/private partnerships should be investigated for purposes of creating a new water supply for non-agricultural water users using desalination technologies
- Economic incentives and pricing would need to be worked out to finalize a business model, and additional economic evaluations are recommended

5.3.3 Municipal Recycled Water

Recycled municipal wastewater, similar to desalinization, meets the goal to diversify the regional water supply portfolio and to ensure a long-term, verifiable, reliable, and sustainable supply to meet current and future agricultural, urban, and environmental demands. Recycled wastewater would help meet objectives by:

- Diversifying supply sources to improve redundancy, water quality, rate stability, and reliability of water supplies
- Helping to avoid impacts to existing users by providing a new supply
- Supporting disadvantaged and other communities in meeting wastewater disposal and permit requirements
- Matching water quality to appropriate uses and supplying treated wastewater to extend use of constrained existing water supplies
- Improving wastewater effluent water quality for discharge to fresh water rivers and ocean
- Supporting to meet 20 percent conservation goals in the region

5.3.3.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Assess the total potential for recycled wastewater in the region
- Support current wastewater facility plant upgrades that propose recycling municipal water for use as part of meeting sustainable water supplies for new growth in urban and agriculture uses
- Create partnerships and meet multiple IRWM Plan goals by using recycled wastewater where cost-effective and timely
- Consider regional municipal water recycling projects to: 1) increase cost-effectiveness (economies of scale) of project development and operation; 2) provide benefits to multiple parties; and 3) improve opportunities and increase the demand for use of reclaimed water
- Provide policy and financial incentives for public/private partnerships to construct municipal recycling facilities and to allow for exchange of treated drinking water with produced water credit for sponsoring entities
- Continue to evaluate the cost-effectiveness and political viability of regional municipal wastewater treatment facilities that include recycling wastewater effluent as part of the mid- and long-term water management strategy
- Continue to monitor the state's draft regulations for recycled water use for direct groundwater recharge through recharge basins and injection

5.3.4 Precipitation Enhancement

Cloud seeding is a method to increase precipitation by injecting substances into the atmosphere that artificially cause cloud formation. This practice has been used in California since the 1950s often to increase rainfall during drought conditions. According to the 2012 Master Water Report, during the 1990s the County of San Luis Obispo and City of San Luis Obispo partnered for a three-year cloud seeding project, which increased rainfall between approximately 11 and 17 percent each year. This increased water supplies in Lopez and Salinas Reservoirs. The County plans to begin new cloud seeding projects in the future to enhance regional water supplies. Cloud seeding will be a key adaptation strategy to address the anticipated increase in drought frequency and severity for the region.

5.3.4.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Consider and evaluate the potential usefulness and environmental impacts of cloud seeding
- Implement precipitation enhancement projects to enhance surface water supplies and combat drought conditions

5.3.5 Surface Storage – Regional, Local, and CALFED

Surface storage aligns with many of the Goals and Objectives because of the water supply, flood management, groundwater recharge, and environmental and recreational values. Surface storage is a preferred alternative for creating new water, providing flood management, adapting to climate change, securing additional supplies for drought protection, and accounting for unexpected failures in other supplies. Incidental benefits are recreation, groundwater recharge, and controlled river flows. However, surface storage projects come at a high monetary and a high environmental cost.

The IRWM Plan region currently makes use of four reservoirs: Salinas Reservoir (Santa Margarita Lake), Whale Rock Reservoir, Lopez Lake, and Nacimiento Reservoir. All four benefit the management of water resources by improving water storage operations and flood control, water supply conveyance operations, necessary instream flows and correct temperatures for aquatic life and ecosystems and play an important role in groundwater recharge.

5.3.5.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Conduct a study of the North Coast and South County Sub-Regions for feasibility of utilizing surface water storage in local watersheds for adapting to climate change

- Evaluate the impacts on the SLO Region of forecasted curtailments in State Water Project (SWP) surface water and the state's proposed future plans to build new storage reservoirs north of the Delta
- Consider opportunities for off-stream reservoirs in the North County Sub-Region

5.3.6 Drinking Water Treatment and Distribution

The SLO IRWM region has approximately 180 state-defined public water systems ranging from very small, serving a single complex or industry, to large, serving cities and communities. Each requires continuous monitoring for both available quantity and quality. Many of the Objectives of the Water Supply Goal are aligned with this RMS in some manner, as follows:

- Addresses water system treatment and conveyance deficiencies in all communities
- Improves utilization and operations of existing conveyance systems
- Provides sustainable drinking water supplies to communities, including DACs
- Supports improvements to existing public drinking water systems to meet state and federal drinking water quality standards
- Implements elements of a community's water management plan
- Integrates with system-wide conservation programs

5.3.6.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Identify and prioritize critical needs for all communities with drinking water system deficiencies, including the ability to meet fire flows and peak summer demands
- Develop water management plan elements to support water system improvements, to promote regionalization of both treatment and conveyance systems, and to meet requirements for state grant funding
- Conduct needed feasibility and environmental studies to develop final project designs and funding requirements
- Seek state and federal grant funding to support critical system improvements

5.3.7 Groundwater/Aquifer Remediation

Groundwater remediation constitutes the removal of water contaminants that restrict beneficial use of the water. Remediation can be passive or active and designed to fit the conditions and setting of the aquifer. Passive remediation allows contaminants to naturally over time, and active remediation involves treatment of water in situ or outside of the aquifer. For communities that rely heavily upon groundwater as a supply source, aquifer remediation can be a critical method of increasing the available water supplies when water quality is degraded.

5.3.7.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Implementation of passive or active remediation in contaminated water basins
- Develop education resources on groundwater pollution and aquifer remediation
- Improve monitoring efforts to identify groundwater contaminants as quickly as possible

5.3.8 Matching Water Quality to Use

As a resource strategy, full implementation of a "Matching Water Quality to Use" program would require significant investment in regionalization of groundwater, surface water, recycled water, and desalinized water treatment and conveyance facilities. This strategy also includes no-cost seasonal exchanges between urban and agricultural water users.

For instance, surface water supplies could be transferred to agriculture using urban surface water rights during the peak agricultural water demand period. During these periods, agricultural users would use groundwater and possibly face pumping constraints in quantity, quality, and energy costs. In return for access to urban surface water supplies, the agricultural users of the surface water would return a similar amount of higher quality pumped groundwater during the fall-winter period when there is excess groundwater pumping capacity. In cases where place-of-use laws are enacted, transfers would likely have to be within the same region.

Initially, smaller projects can be formulated to push untreated source water to the highest possible beneficial use, then consider the added cost if treatment is required for the same use. This methodology or approach in strategy implementation addresses the following Objectives:

- Matching untreated groundwater with rural drinking water uses
- Matching untreated surface water with rural and agricultural irrigation uses
- Making this strategy a part of a community's water management plan, where indoor and outdoor uses share in the allocation of overall least cost alternatives, such as: developing a recycled water system for outdoor irrigation, rather than extracting additional groundwater (high quality, drought protection); or developing surface water supplies (in cases where there is no groundwater) better suited for potable drinking water supplies and/or maintaining minimum environmental flows

5.3.8.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- New development should support use and development of impaired or lower quality water where such uses are cost-effective and could provide economic benefits to the Region
- Phased projects should be undertaken to begin evaluating regionalization of water

systems for purposes of matching water quality to use, and demonstrating economic use of poor quality water to expand the water supply portfolio and support economic growth
- Federal or state funding opportunities for development of pilot projects should be pursued if local funding match dollars can be developed
- Local government and water purveyors should discuss the merits of this strategy and the types of regional partnerships that could be implemented to regionalize raw water supplies for treatment and conveyance to corresponding best and highest beneficial uses

5.3.9 Pollution Prevention

Pollution prevention is a primary objective of multiple goals with many directed at reducing the amount of pollutants entering the environment and drinking water supply sources. Objectives aligned with this RMS are as follows:

- Support projects to improve water quality in drinking water supplies
- Develop public education and involvement programs for watershed enhancement
- Provide ecosystem enhancement mechanisms to protect water supplies
- Increase watershed management activities to prevent point and non-point discharges to surface water or groundwater to minimize the need for enforcement of additional Total Maximum Daily Loads (TMDLs) actions
- Protect groundwater from point and non-point pollution discharges
- Improve flood control infrastructure to improve water quality and upstream soil erosion
- Support low impact development to reduce pollutant runoff and protect natural recharge areas

5.3.9.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Develop water management plan elements to support anti-degradation policies
- Conduct feasibility and environmental studies/assessments to support the implementation of non-point source discharge reduction measures and perform needed monitoring
- Seek state and federal grant funding to support public education and practices to reduce manmade and animal-originated pollution discharge
- Continue to participate in state and federal programs that investigate, assess, and monitor how pollution enters both freshwater supplies and the ocean

5.3.10 Salt and Salinity Management

Salt management occurs along the coastal areas where salinity intrusion is being managed. Saline water resulting from the desalinization of pumped groundwater is discharged to the

ocean. Future actions are being considered that will treat saline groundwater and inject the treated water to act as a barrier to further intrusion.

In inland areas, groundwater basins are in overdraft due to increased extractions by both urban and agricultural pumping. Saline water (Total Dissolved Solids > 2000 mg/l) is migrating to public, agriculture, and private rural wells. The following excerpt taken from the 2012 Master Water Report, describes actions the community of Paso Robles is considering to protect its potable water supplies.

> *Nonetheless, salt loading to the groundwater basin is an important long-term concern. Recognizing that the City's wastewater disposal is one source of salt loading, the Paso Robles has made the reduction of salt loading one of their water resource goals. Major means to reduce salt in the city wastewater, include planned use of high-quality Lake Nacimiento supply, reduced use of home water softeners, strategic use of wells with lower salt concentrations, and implementation of an industrial waste discharge ordinance.*

Salinity Management would help meet Objectives by:

- Maximizing the accessibility and diversification of alternative water supplies other than groundwater in areas of salinity upwelling
- Provide sustainable water supplies for agriculture, urban, and rural areas by actively managing groundwater basins
- Develop groundwater management plans including salt and nutrient management plans
- Provide support and education in all communities, including DACs, reliant on threatened groundwater supplies

5.3.10.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Create groundwater management governance body
- Develop and adopt a GMP for impacted basins
- Increase the use of alternative water supplies such as Lake Nacimiento
- Reduce use of home water softeners that add salt to the treated wastewater stream
- Strategically place urban and agricultural wells in portions of the aquifer with lower salt concentrations and reduce contribution of the salinity upwelling
- Strategically inject desalinized water into aquifers to create hydraulic barriers to reduce further salinity intrusion by the ocean into fresh water coastal aquifers
- Implementation of an industrial waste discharge ordinance for regulating dischargers of high salt concentrations

5.3.11 Urban Stormwater Runoff Management

Urban stormwater runoff management requires a shift away from viewing urban runoff as waste and a pivot towards a watershed approach. A watershed approach attempts to emulate

the natural hydrological cycle and focuses on reducing pollutant loading of runoff as well as minimizing the amount of runoff discharged to surface waters. A key practice of this method is capturing runoff for groundwater runoff. This can improve water supplies, prevent water contamination, and reduce flooding.

5.3.11.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Provide educational resources – guidance documents and workshops – on how to effectively control urban runoff pollution
- Develop stormwater resource plans
- Promote the use of non-point source management measures to reduce uncontrolled urban runoff
- Implement LID techniques and other practices that promote runoff infiltration

5.3.12 Ecosystem Restoration

The ecosystems restoration strategy focuses on aquatic, riparian, and floodplain ecosystems restoration because these natural systems are directly affected by water, flood management, and climate change. Ecosystem Restoration is consistent with the primary IRWM Plan Goal:

> *Maintain or improve the health of the Region's watersheds, ecosystems, and natural resources through collaborative and cooperative actions, with a focus on assessment, protection, and restoration/enhancement of ecosystem and resource needs and vulnerabilities.*

Key objectives of implementing this strategy are summarized as follows:

- Development of watershed plans to determine critical issues in targeting restoration actions
- Restore natural systems through conservation practices and place easements on lands to protect water supplies
- Develop public involvement and stewardship programs
- Protect and recover threatened and endangered species
- Reduce invasive species
- Increase monitoring to assess the impacts of climate change on ecosystems

5.3.12.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Estimate the monetary benefits to ecosystem restoration activities. Cost benefit analysis would consider the improved natural systems contribution in reducing storing, treating, and conveying a quantified amount of a water supply

- Introduce the concept of avoided cost of nature providing natural flood attenuation and sediment control
- Conduct feasibility and environmental studies to identify ecosystem restoration measures for implementation and monitor results
- Seek state and federal grant funding to support public education and activities for restoration practices
- Identify ecosystem restoration and enhancement opportunities appropriate for inclusion in proposed IWRM projects

5.3.13 Land Use Planning and Management

Land use planning is included in multiple IRWM Plan Objectives related to watershed, water management, groundwater management, and low impact development plans. Specific Objectives include:

- Promote low-impact development (LID) and other land use practices designed to reduce flooding and protect water supplies
- Integrate water resources infrastructure into land use planning for flood control and improved water supplies
- Consider water (quantity and quality) rights protection in land use planning to avoid degradation or the reduction of legally protected water supplies
- Introduce watershed enhancement programs to maintain or increase water supplies with changes in land use over time

5.3.13.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Strive to have local planning agencies work with water agencies as watershed, water management, flood management, and groundwater management plans are developed and implemented
- Continue to involve agriculture and rural stakeholders in the land use planning process
- Protect natural groundwater recharge areas by incorporating conservation easements over lands that contribute to the recharge of existing groundwater supplies

5.3.14 Recharge Area Protection

Recharge areas are sites where water can infiltrate and replenish underlying groundwater basins. When maintained properly, recharge areas protect groundwater supplies and water quality. Preserving recharge areas can also support conjunctive use management and minimize flood risks.

5.3.14.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Preserve natural recharge areas
- Promote LID techniques
- Develop educational resources on the value of natural recharge areas
- Investigate areas suitable for artificial recharge projects

5.3.15 Sediment Management

Sediment is a valuable natural resource as sediment processes are integral to various environmental and economic systems. Unfortunately, managing sediment is not simple. In certain settings sediment is desirable, but in other settings sediment is unwanted or excessive. There are three main components addressed in sediment management: source and type of sediment, sediment transportation, and site of sediment deposition. When sediment is managed properly, watersheds benefit from improved water quality, improved flood management, and enhanced health of aquatic habitats.

5.3.15.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Implement policies and programs that prevent soil loss and undesirable sedimentation
- Develop educational materials on how to prevent undesirable sedimentation
- Promote the beneficial reuse of dredged and excavated sediments
- Consider sediment transportation when developing flood management systems
- Create initiatives and support interagency collaboration focused on regional sediment management

5.3.16 Watershed Management

Watershed planning and management activities include quantification of watershed attributes including, but not limited to, the following:

- Political Entities
- Groundwater Basins
- Water Bodies
- Demographics
- Hydrology
- Land Use
- Water Supplies and Demand
- Water, Wastewater, and Drainage Infrastructure
- Water Quality
- Physical Setting
- Environmental and In-stream Water Demands

Watershed Management in the SLO Region is at the stage of collecting factual information prior to assessing management opportunities that may allow for efficiencies and increased reliability/sustainability of water supplies. Key Objectives include:

Further develop watershed plans to determine the existing conditions and critical issues

Develop water management plans that achieve sustainability with existing and foreseeable development

Develop a plan for climate change and the associated impacts of droughts and flooding on urban and agricultural developed areas

5.3.16.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Complete ongoing watershed management inventory and documentation efforts, and provide a list of opportunities and critical issues facing each watershed
- Integrate watershed plans in regional planning efforts which target vulnerabilities (i.e., climate change effects), improve water quality and supply reliability of water

5.3.17 Improve Flood Management

Flood Management strategies are a primary goal of the IRWM Plan as follows:

- Foster an integrated, watershed approach to flood management and improved storm water quality through collaborative community supported processes in order to ensure community health, safety, and to enhance quality of life

Key Objectives include:

- Understand Flood Management needs in the community
- Promote Low Impact Development to reduce runoff and protect against property damage
- Enhance natural groundwater recharge through deliberate ponding and detention of flood flows in areas of conducive to high recharge rates
- Improve infrastructure and operations to reduce flooding in downstream communities
- Implement multiple benefit projects to achieve the highest and best use of flood projects
- Restore streams, rivers, and floodplains to allow the natural flood paths to attenuate peak flood flows
- Support DAC flood protection

5.3.17.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Continue to protect against loss of life and property through flood management actions by the Flood Control District
- Stakeholder assessments and a DAC needs analysis are needed to document localized storm water and runoff issues and bring about an awareness of the need for regional solutions
- Seek development of regional, integrated storm water management projects that provide multiple benefits

Endorse Flood Management projects such as:

- Total storage approach to providing flood protection
- Regional detention/retention ponds that have multiple beneficial uses, instead of development-specific detention ponds
- Improvements to local drains to store additional flow from increased urban runoff
- Utilize specific plan areas to work with developers to produce drainage master plans

5.3.18 Agricultural Water Use Efficiency

Water use efficiency programs are stated as Objectives in the IRWM Plan. For agriculture, programs already in place are providing the benefit of reduced strain on regional groundwater basins. Additional education, conservation and use of technology are needed to realize more benefits. The benefits, in addition to water savings, may include water quality improvements, environmental benefits, improved flow and timing, and often increased energy efficiency. The proposed use of IRWM Plan Objectives is as follows:

- Develop and implement conservation programs to increase water use efficiencies in all water use sectors
- Support sustainable water supplies for agriculture

5.3.18.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

Agricultural growers should be encouraged to organize to:

- Develop Agricultural Water Management Plans
- Become eligible for statewide incentive programs
- Take the lead in submitting IRWM projects for purposes of grant funding
- Studies should be conducted to understand the benefits of subsidizing agricultural water use efficiency measures to use the conserved water for purposes of increased reliability in urban water sectors
- Measures should be taken to ensure a grower's freedom in making crop production decisions

5.3.19 Urban Water Use Efficiency

Water use efficiency programs are stated as Objectives in the IRWM Plan. For many urban users living in California and the SLO Region, water conservation has been a part of their lives, from not wasting water for conservation concerns, to reducing their water bill. As water costs continue to increase, implementation of new conservation measures can help stabilize a customer's costs.

Key objectives of implementing this strategy are summarized as follows:

- Support sustainable water supplies in all communities
- Develop and implement conservation programs to increase water use efficiencies in all water use sectors

5.3.19.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Cities should coordinate the 2010 Urban Water Management Plan (UWMP) updates to:
    - Define urban water conservation regional funding mechanisms and approach
    - Develop a Regional UWMP (near-term action)
    - Develop drought management/contingency and catastrophic supply interruption plans
    - Implement a water conservation public information and outreach campaign
    - Review and track progress in implementing measures and implementing local UWMPs, or a regional San Luis Obispo 2010 UWMP
    - Prepare an annual report to document regional progress
    - Target future water uses, emphasizing development of standards that would minimize future water demands and ensure measurable savings when agricultural land is converted to urban uses consistent with existing land use plans
    - Streamline the development review and permitting process and ensure that water conservation practices are implemented at the time of project development and approval

5.3.20 Conveyance – Regional/Local

In 1997, the 100-mile long Coastal Branch of the State Water Project (SWP) was completed to transport SWP water to the counties of Santa Barbara and San Luis Obispo. The Central Coast Water Authority (CCWA) was specifically formed and modified over time for the purpose of designing, building, and operating regional treatment and conveyance facilities needed to deliver water from the Coastal Branch of the SWP to the various entities with contracts to receive that water in Santa Barbara and San Luis Obispo counties. SLO Region water purveyors receiving SWP today include the following:

- WPA 2 - City of Morro Bay, CMC, County Operations Center, Cuesta College
- WPA 3 – City of Pismo Beach, Oceano CSD, San Miguelito Mutual Water Company (MWC), Avila Beach Community Services District (CSD), Avila Valley MWC, San Luis Coastal Unified School District
- WPA 5 - Shandon

The IRWM Plan related objectives supporting this RMS are as follows:

- Maximizing the accessibility of water through full utilization of regional water facilities
- Supporting watershed enhancement and water management programs meant to convey water into or out of watersheds for beneficial use

5.3.20.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Conduct a regional conveyance and system reoperation study to develop cost-effective programs allowing for full utilization of SWP contracts and conveyance facilities
- Evaluate opportunities to take advantage of unutilized SWP capacity and contract amounts during off-peak periods when surface water can be pumped south of the Delta

5.3.21 System Reoperation

System reoperation includes the evaluation of water, wastewater, recycled, and desalinized facilities to improve effectiveness and efficiency throughout the region. This includes the evaluation and implementation of approaches to use water system infrastructure to gradually generate and/or use renewable energy to offset impacts from forecasted climate change.

Key objectives of implementing this strategy are summarized as follows:

- Maximize the effectiveness and efficiency of large-scale water supply (potable and non-potable) and wastewater facilities
- Develop strategies of reoperation that account for the possible impacts and vulnerabilities of greenhouse gas emissions, climate change, and droughts

5.3.21.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Develop studies to identify vulnerabilities in the existing large-scale water and wastewater systems as they relate to climate change
- Recommend opportunities to off-set climate change impacts through optimization and increased efficiency of large-scale water supply and wastewater facilities

5.3.22 Water Transfers

Water transfer opportunities include both local and regional transfers in San Luis Obispo County of surface water and groundwater for enhancing drought resiliency and mutual aid/emergency aid scenarios. Water transfers offer the ability to move water to places of beneficial use, including environmental and in-stream uses, but must be done in a way that does not harm individuals. Forecasted changes in precipitation patterns resulting from climate change and the potential for longer periods of drought necessitate a more robust ability for SLO County agencies to utilize mutual aid/emergency aid agreements and water transfers for portfolio diversification.

Key objectives of implementing this strategy are summarized as follows:

- Optimize the accessibility of surface water and groundwater in San Luis Obispo County through water transfer agreements and use of existing infrastructure
- Plan for climate change through watershed and ecosystem enhancement programs which make full utilization of available excess water supplies

5.3.22.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Seek to optimize excess surface water and groundwater through water transfer agreements
- Develop robust water management strategies, which include water transfers, to plan for decreased water supplies resulting from forecasted climate change

5.3.23 Outreach and Engagement

Water management can be promoted through outreach and engagement of the public by water agencies. This communication provides decision-makers with insights on local practices and opinions, educates members of the public about best practices and water management activities, and supports collaboration and conflict resolution. As described in the CWP, an effective outreach and engagement strategy has the following characteristics:

- Relevant
- Focused
- Scale-appropriate
- Innovative
- Collaborative
- Factually and scientific sound
- Adaptive
- Visible
- Effective
- Sustainable
- Measurable

5.3.23.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Promote collaborative policy making
- Develop programs for youth education on water management
- Create tools to inform and educate the public on water management activities
- Utilize social media and other online resources to obtain public feedback

5.3.24 Water and Culture

Water and culture are inextricably linked. Cultural values are reflected in policies related to water management. Water use is tied to cultural norms and practices. The condition of current water resources has been shaped by California's history and culture. This strong relationship necessitates the consideration of culture and cultural activities when making water management decisions. Understanding how culture interacts with water management can prevent conflict, promote sustainability, encourage collaboration and support, reduce costs, and facilitate partnerships.

5.3.24.1 *Recommended Project Elements*

The following Recommended Project Elements were provided:

- Create partnerships with cultural groups
- Research TEK and cultural practices related to water management decisions
- Present management decisions in their historical and cultural context

5.4 REFERENCES

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