

**COUNTY OF SAN LUIS OBISPO BOARD OF SUPERVISORS
AGENDA ITEM TRANSMITTAL**

(1) DEPARTMENT Public Works	(2) MEETING DATE 2/14/2012	(3) CONTACT/PHONE Courtney Howard, Water Resources Engineer (805) 781-1016	
(4) SUBJECT Discussion on the status of the January 2012 Draft County-wide Master Water Plan and related efforts.			
(5) RECOMMENDED ACTION It is recommended that your Honorable Board discuss the status of the January 2012 Draft County-wide Master Water Plan, consider directing staff to return to your Honorable Board with focused discussions on high priority water resources management efforts identified in Exhibit "A," and review the status of efforts listed in Exhibit "B" associated with existing staff direction on water resources management efforts.			
(6) FUNDING SOURCE(S) N/A	(7) CURRENT YEAR FINANCIAL IMPACT N/A	(8) ANNUAL FINANCIAL IMPACT N/A	(9) BUDGETED? N/A
(10) AGENDA PLACEMENT <input checked="" type="checkbox"/> Consent <input type="checkbox"/> Presentation <input type="checkbox"/> Hearing (Time Est. _____) <input type="checkbox"/> Board Business (Time Est. _____)			
(11) EXECUTED DOCUMENTS <input type="checkbox"/> Resolutions <input type="checkbox"/> Contracts <input type="checkbox"/> Ordinances <input checked="" type="checkbox"/> N/A		(12) BUDGET ADJUSTMENT REQUIRED? BAR ID Number: N/A <input type="checkbox"/> 4/5th's Vote Required <input checked="" type="checkbox"/> N/A	
(13) OUTLINE AGREEMENT REQUISITION NUMBER (OAR) N/A		(14) W-9 <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	
(15) LOCATION MAP Attached	(16) BUSINESS IMPACT STATEMENT? No	(17) AGENDA ITEM HISTORY <input type="checkbox"/> N/A Date 9/22/09, c-3; 12/13/11	
(18) ADMINISTRATIVE OFFICE REVIEW			
(19) SUPERVISOR DISTRICT(S) All Districts -			

Reference: 12FEB14-C-1

County of San Luis Obispo



TO: Board of Supervisors

FROM: Public Works
Courtney Howard, Water Resources Engineer

VIA: Dean Benedix, Utilities Division Manager
Paavo Ogren, Director of Public Works

DATE: 2/14/2012

SUBJECT: Discussion on the status of the January 2012 Draft County-wide Master Water Plan and related efforts.

RECOMMENDATION

It is recommended that your Honorable Board discuss the status of the January 2012 Draft County-wide Master Water Plan, consider directing staff to return to your Honorable Board with focused discussions on high priority water resources management efforts identified in Exhibit "A," and review the status of efforts listed in Exhibit "B" associated with existing staff direction on water resources management efforts.

DISCUSSION

The current version of the County Master Water Plan was originally prepared in 1972, with updates in 1986 and 1998. There have been major changes in the water resources picture for the county since the completion of those comprehensive documents, such as the construction of the State Water and Nacimiento pipelines, groundwater basin litigation, new water users and new water regulations. In addition, other planning efforts have been occurring, including formation of the Integrated Regional Water Management Program, and the completion of various local and sub-regional water management studies and plans such as Urban Water Management Plans required of urban water suppliers that serve 3000 connections or 3000 acre-feet of water per year or more. As a result, developing a new County-wide Master Water Plan (MWP) is not only important for ensuring effective management of the county's water resources now and into the future, the approach to preparing the MWP has evolved to address current issues, with less emphasis on development of dams and major projects and more emphasis on programs and projects that are possible for regional collaborative efforts.

The Board initiated preparation of the new MWP by approving a contract with Carollo Engineers on April 14, 2009. The January 2012 draft of the MWP is available at the Clerk's office and at www.slocountywater.org.

The primary purpose of the MWP is to provide a comprehensive description and analysis of county-wide water resources now and into the future and potential needs. It also identifies and evaluates water management strategies for addressing needs similar to Urban Water Management Plans and General Plan Water Elements. Since local agencies in the county have developed water resource analysis and land use planning documents for individual communities in the county, the MWP combines those efforts with an analysis of the areas not covered by those local plans (i.e. rural, agricultural and environmental demand analysis). The MWP provides summaries by Water Planning Area¹ of supply and demand information and of the water management strategies currently being considered by local agencies and water management entities. In contrast, the MWP does not include a "judgment evaluation" as to the appropriateness or adequacy of the water management strategies being pursued by other local agencies (i.e. non-County entities) or making alternate recommendations. Staff refrained from developing judgmental evaluations of other agency efforts due to the independence/autonomy of those agencies while also recognizing that those other agencies have essentially evaluated their alternatives at a greater level of detail than the MWP. Consequently, the document itself may be better characterized as a county-wide water "study" or "inventory," and it is recognized that the District's role and/or authority in water resources management may warrant discussion.

The MWP provides a comprehensive description of how water resources are currently managed throughout the county, and how the MWP relates to other water resource documents and programs. The Introduction, Executive Summary and the Table of Contents from the MWP are included in Exhibit "C" and may be helpful for locating specific information of interest in the MWP.

The recommendations of the MWP generally fall into three categories:

1. Efforts to evaluate potential projects and programs to optimize existing resources;
2. Efforts to better quantify and manage supplies and demands; and
3. Efforts to better align the MWP with other water resources planning efforts.

The County and District have already begun to implement several of these efforts via previous direction under the programs and projects that are related to the MWP listed in Exhibit "B." Given the amount of information in the MWP and details associated with water resources planning efforts, a recommended schedule, and accompanying discussion, for returning to your Board with focused discussions on high priority topics is included as Exhibit "A."

OTHER AGENCY INVOLVEMENT/IMPACT

The Planning Department has greatly assisted the District with the development of the new Master Water Plan, especially with respect to the Geographic Information System-based analysis of land use

¹ Organization of information per Water Planning Area is intended to recognize important hydrogeologic units and/or water management areas throughout the County. Water Planning Areas are delineated in the attached vicinity map.

information utilized in the MWP. Throughout the development of the Master Water Plan, the Water Resources Advisory Committee (WRAC) member agencies assisted in the compilation of historical information and in planning estimates for future water demand. At key project milestones, the WRAC provided the District feedback on the approach, issues, and progress of the project. Additionally, the January 2012 Draft Final Report was endorsed by the WRAC during their meeting on February 1, 2012.

FINANCIAL CONSIDERATIONS

On April 14, 2009, your Board approved the cost of developing the Master Water Plan. Labor costs associated with preparing for the focused discussions consistent with the recommendations in Exhibit "A" would be funded through existing operating budgets. It is anticipated that detailed financial considerations will be developed for each focused discussion, building upon the overview on the District's budget discussed at your Board's December 13, 2011 meeting. In general, it will be important to continue to develop cost sharing agreements to fund the development of water resources management tools and implement projects or programs so that the District will be able to also fund building the internal capacity to maintain the tools, projects and/or programs over time.

RESULTS

Discussing the status of the Master Water Plan will provide the Board an opportunity to gain an understanding of what the Master Water Plan has documented in terms of quantification of supply and demand, opportunities and needs, and provide feedback to Staff on next steps. Approval of the recommended schedule will allow for more focused discussions on high priority water resources planning topics. This will contribute to and support the County-wide goal of managing our water resources to provide for livable and well-governed communities.

File: CF 900.43.01

Reference: 12FEB14-C-1

L:\UTILITY\FEB12\BOS\MasterWtrPlan 2.14.12 brd ltr 2.2.doc.CH:lc

ATTACHMENTS

1. Vicinity Map
2. Exhibit A - Water Resource Planning-Recommended Schedule for Focused Discussions
3. Exhibit B - Previous Staff Direction on Water Resources Planning Efforts and Status
4. Exhibit C - January 2012 Draft Final County-wide Master Water Plan Excerpts

VICINITY MAP

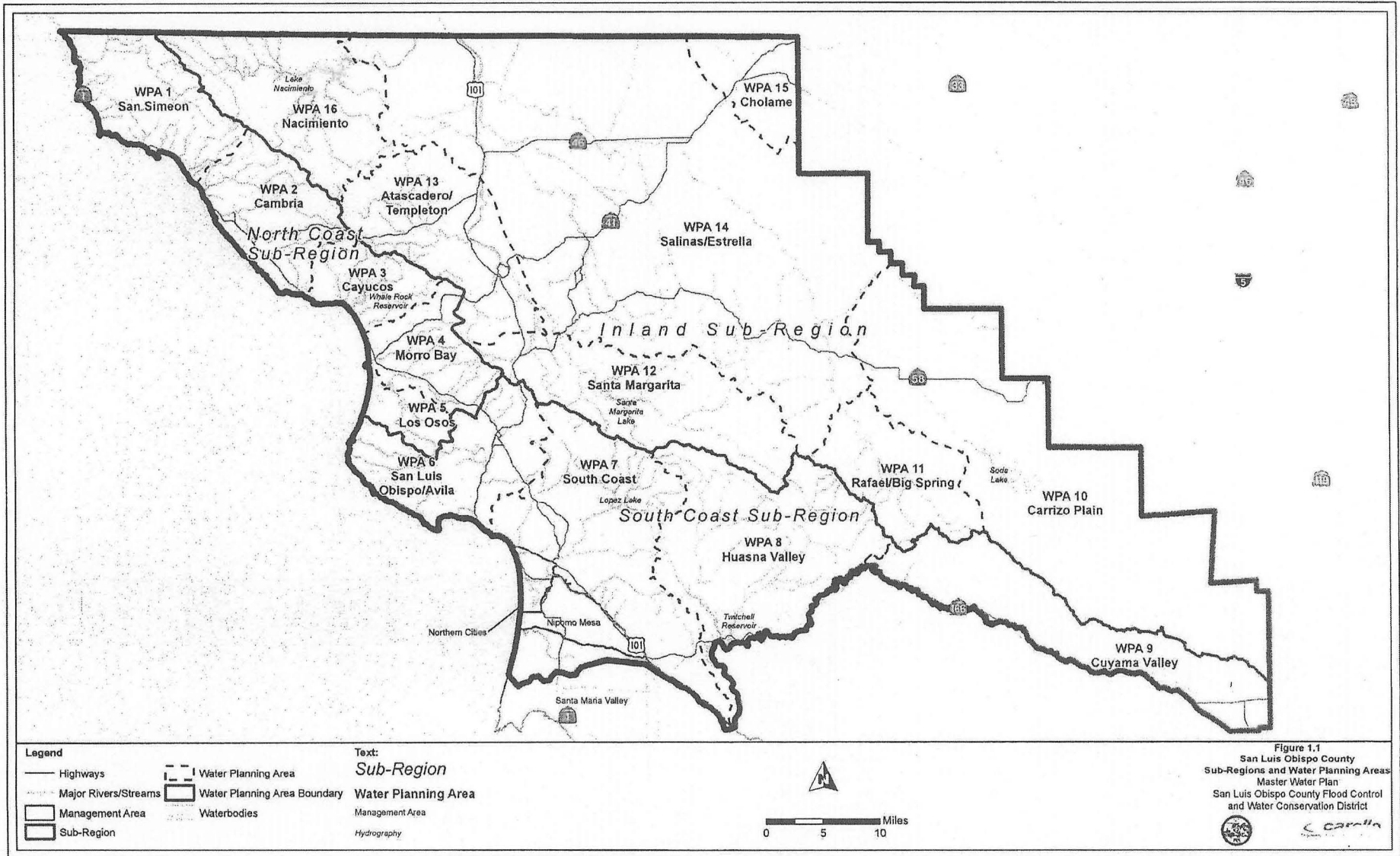


EXHIBIT A

Water Resources Planning Recommended Schedule for Focused Discussions

Given the amount of information in the January 2012 Draft County-wide Master Water Plan (MWP) and details associated with water resources planning efforts, the following is a recommended schedule, and accompanying discussion, for returning to your Board with focused discussions on high priority topics.

Topic	Month
Paso Basin	February 28, 2012
Integrated Regional Water Management Program	Spring 2012
Groundwater/Watershed Management	Spring 2012
State Water Project	Spring/Summer 2012

Paso Robles Groundwater Management Plan

On March 22, 2011, your Board approved a resolution of intent to participate in the development of a Groundwater Management Plan (GMP) for the Paso Robles Groundwater Basin (Basin). The City of Paso Robles, in close coordination with Basin stakeholders, led the preparation of the GMP, which addresses groundwater conditions, identifies local and basin-wide groundwater issues, and outlines voluntary measures to protect groundwater resources within the plan area, consistent with the Groundwater Management Planning Act of 2002 (SB1938). On February 28, 2012, your Board will be considering whether to adopt the GMP and associated staff direction related to its implementation. The GMP is available online at www.slocountywater.org via the Paso Robles Groundwater Basin link.

By adopting the GMP, the District would be confirming its commitment to participate in the implementation of the GMP, eligible for applicable grants, and, assuming stakeholder support, formally establishing the Steering Committee for leading efforts related to the voluntarily implementation of the GMP by Basin stakeholders.

Integrated Regional Water Management (IRWM) Program

Both Proposition 50, the "Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002" and Proposition 84, the "Safe Drinking Water, Water Quality, and Supply, Flood Control, River and Coastal Protection Bond Act of 2006" were passed by California voters and authorized the Legislature to appropriate grant funds for the State's Integrated Regional Water Management (IRWM) program. The IRWM Program encourages local agencies to work cooperatively to manage local and imported water supplies to improve quality, quantity, and reliability by providing

guidelines for effective planning and grant opportunities. Your Board has acted in support of the District's continued participation and leadership role for the county in IRWM efforts by:

- 1) adopting the IRWM Plan developed for our region¹
- 2) authorizing the Public Works Director to submit and administer grant applications and agreements, and
- 3) approving the Memorandum of Understanding between IRWM program participants in the county which outlines the way in which IRWM program efforts will be coordinated amongst signatories, the Water Resources Advisory Committee (WRAC) and the District as the lead agency (collectively, the Regional Water Management Group or RWMG).

Consequently, the District has recently been awarded \$10.4M in IRWM project implementation grants for the Los Osos Wastewater Project, the Flood Control Zone 1/1A Waterway Management Program and the Nipomo Supplemental Water Project. Staff will be bringing grant agreements with the State and the three project proponents to your Board for approval when they are finalized later this spring. A condition of receiving the grant is to update the IRWM Plan to meet current State standards for IRWM plans within two years of executing the grant agreements. In order to be eligible for the next implementation project grant opportunity, the District would need to demonstrate progress on the IRWM Plan update. The MWP has consolidated much of the information related to water supply in the county that can be directly used for the IRWM plan update, which will also provide an opportunity for addressing comments on the January 2012 draft of the MWP. Therefore, it is recommended that staff return to your Board in spring 2012 for a focused discussion on the IRWM program covering:

- 1) the approach with the Plan update,
- 2) whether to consolidate and update water supply and demand information on an ongoing basis in the IRWM Plan instead of the MWP,
- 3) the relationship of the IRWM Plan with other planning efforts, such as the Resource Management System,
- 4) what future MWPs should cover, and
- 5) a recommendation to hire a consultant to develop a Proposition 84 Round 2 Step 1 implementation grant application.

Concurrently, staff is coordinating with the RWMG to develop a planning grant application which is due to the State on March 9, 2012. Consistent with WRAC support during their February 1, 2012 meeting, the application will include a grant allocation request for planning efforts associated with the Plan update, watershed planning efforts and salt and nutrient management/recycled water planning efforts. Your Board will be considering sending this application as the lead agency for the RWMG on February 28, 2012. Discussions during this item will serve as an introduction to the focused discussion item in spring 2012.

¹ Our IRWM region, which is the San Luis Obispo County boundary, was approved by the State in May 2009.

Groundwater/Watershed Management

The County's Resource Management System has been instrumental in identifying groundwater/watershed issues in the county and programs to address them, particularly for the unincorporated areas of the county. Most recently, water use efficiency programs have been implemented on the Nipomo Mesa and in the Los Osos community. Similar programs are under development for the Paso Robles Groundwater Basin. As a result of staff direction at the Board's hearing to consider the level of severity for the Nipomo Water Conservation Area in 2007, the approved recommendations in the 2009 and 2010 Resource Summary Reports and approved actions in the Paso Robles Groundwater Basin Resource Capacity Study, staff will be working toward improving the overall groundwater monitoring program and engaging in particular management efforts in the Paso Robles Groundwater Basin and Santa Maria Valley Groundwater Basin as outlined in Exhibit "B". Specifically, your Board will be considering adopting the Paso Robles Basin Groundwater Management Plan and the approach to updating the Basin computer model on February 28, 2012.

Similar to the RMS, the MWP identifies areas where information is lacking (i.e. outdated basin yield analyses or limited information for assessing environmental water demand) or where watershed/basin management efforts are not well established. Your Board may also consider having a focused discussion on groundwater/watershed management issues covering the District's role and authority in groundwater/watershed management efforts, how that role and authority relates to the RMS and other local water resources management efforts, funding mechanisms, and priorities. In anticipation of grant opportunities in late spring 2012 via the Local Groundwater Assistance Program and requests from local agencies to cost share/participate in groundwater/watershed management projects, staff recommends scheduling the focused discussion for spring 2012.

Central Coast Branch of the State Water Project

Consistent with your Board's direction during the update on the status of this MWP on September 22, 2009, staff has been coordinating with State Water Subcontractors and the Central Coast Water Authority (CCWA)² to evaluate opportunities to optimize the use of the capacity of the Central Coast Branch of the State Water Project. This discussion can be found in Section 4.7.8 of the MWP. A capacity assessment of the Coastal Branch was recently completed³ and while it finds that excess capacity exists, the contract between CCWA and the District specifies a numerical amount of water each entity receives, and would therefore need to be re-negotiated to incorporate terms for the use of any excess pipeline capacity. It is recommended that your Honorable

2 The Central Coast Water Authority is the Joint Powers Authority that operates and maintains the Central Coast Branch of the State Water Project under contract with the State Department of Water Resources and represents Santa Barbara County State Water participants.

3 The final State Water Coastal Branch Capacity Study report is available under the State Water quicklink at www.slocountywater.org.

Board have a focused discussion in summer 2012 on State Water issues covering the process for determining the best use of the excess allocation and capacity, capacity information, informal requests for State Water, reliability information, financial information and policy considerations.

Exhibit B Previous Staff Direction and Status

Tasks	Status	Direction Source(s)
Integrated Regional Water Management (IRWM) Program		
Round 1 IRWM Implementation Grant Agreements	Staff is currently coordinating with the State Department of Water Resources, project proponents for the projects awarded grant funding, and County counsel to develop agreements for the award and administration of the grant. As a requirement of receiving implementation grants, the District will be committing to comply with applicable components of AB 1420 (implementation of water use efficiency best management practices) as a wholesaler. Staff will be bringing these agreements to your Board in Spring 2012 for approval.	
Updating the IRWM Plan	As a requirement for receiving the implementation grant, the District, as lead agency for IRWM Program efforts for our region ¹ , is committing to updating the IRWM Plan to meet current State IRWM Plan standards within two years of executing the grant agreement. The IRWM Plan also needs to be updated to be eligible for future grant opportunities, improve the approach to IRWM planning in the county, to update outdated information and include new projects and programs. Staff will be bringing a contract for consultant services and funding recommendations to your Board for consideration in Spring 2012. Staff will continue to coordinate efforts with the WRAC, local agencies and organizations, and applicable County departments.	<ul style="list-style-type: none"> • IRWM Plan Adopted on 12/6/05 • IRWM Memorandum of Understanding approved (4/21/09) • Authorization to submit IRWM grants and execute grant agreements (6/7/10)
Developing an IRWM Planning Grant	To help fund the cost of updating the IRWM Plan and to fund sub-regional planning efforts in the county that would improve the IRWM Plan, staff, in coordination with the WRAC, is developing a planning grant application that will be considered by your Board on February 28, 2012.	
Preparing for applying for a Round 2 IRWM Implementation Grant	In order to be competitive for an implementation grant opportunity anticipated for Fall 2012, Staff will be developing an approach for updating the IRWM Plan that will ensure the information needed to demonstrate progress to the State is developed by the application due date.	

¹ The IRWM region, which is the San Luis Obispo County boundary, was approved by the State in May 2009.

Exhibit B Previous Staff Direction and Status

Tasks	Status	Direction Source(s)
Resource Management System		
Groundwater Monitoring Ordinance	Starting in mid-2012, Staff will be coordinating with the Planning and Environmental Health Departments, Water Resources Advisory Committee, and groundwater basin management groups to develop a groundwater monitoring ordinance consist with the monitoring-related recommendations approved in the noted documents.	<ul style="list-style-type: none"> • Resource Management System Summary Report recommendations approved (6/8/10)² • Approval of the County being the lead agency to comply with the California Statewide Groundwater Elevation Monitoring Program for groundwater basins in the county (12/14/10)
Conservation outreach and education	Staff is coordinating with the Planning Department, Partners in Water Conservation and groundwater basin management groups to develop outreach and education materials and funding strategies on an ongoing basis.	
Paso Robles Groundwater Basin Management Plan (GMP)	On February 28, 2012, your Board will be considering whether to adopt the GMP, including the formation of a Steering Committee for its implementation and funding implementation efforts.	<ul style="list-style-type: none"> • Paso Robles Groundwater Basin Resource Capacity Study recommendations approved (2/1/11)¹
Update Paso Robles Groundwater Basin model	Staff is currently coordinating with a group of stakeholders in the Paso Basin (Steering Committee) to develop a recommendation for the scope of work and priorities for updating the Basin model. The Steering Committee is pursuing a portion of an IRWM planning grant opportunity for this effort, and funding of this effort will also be considered by your Board on February 28, 2012.	<ul style="list-style-type: none"> • Resolution to develop the Paso Robles Basin GMP (3/22/11) • Certification of Level of Severity III for the Nipomo Mesa Water Conservation Area (6/26/07)

²

http://www.slocounty.ca.gov/planning/General_Plan__Ordinances_and_Elements/Plans_in_Process_and_Draft_Plans/stratgrowth.htm

Exhibit B
Previous Staff Direction and Status

Tasks	Status	Direction Source(s)
Resource Management System (continued)		
Local Groundwater Assistance Grant for Paso Basin	Staff will be coordinating with the Steering Committee to develop a scope of work for inclusion in a Local Groundwater Assistance grant which is anticipated to be due in late spring of 2012.	<ul style="list-style-type: none"> • Resource Management System Summary Report recommendations approved (6/8/10)³ • Approval of the County being the lead agency to comply with the California Statewide Groundwater Elevation Monitoring Program for groundwater basins in the county (12/14/10)
Paso Robles Groundwater Basin Salt and Nutrient Management Plan	In accordance with the RCS approved recommendation to continue studies of the Basin, staff is coordinating with agencies overlying the Basin and its surrounding watersheds to develop a Salt and Nutrient Management Plan for the Basin. These agencies, with the City of Paso Robles acting as the lead agency, are pursuing a portion of an IRWM planning grant opportunity for this effort, and a joint funding agreement will be considered by your Board once the City of Paso Robles receives and selects a proposal in spring of 2012.	<ul style="list-style-type: none"> • Paso Robles Groundwater Basin Resource Capacity Study recommendations approved (2/1/11)¹ • Resolution to develop the Paso Robles Basin GMP (3/22/11) • Certification of Level of Severity III for the Nipomo Mesa Water Conservation Area (6/26/07)
South County Seawater Intrusion Monitoring	Staff will be coordinating with South County agencies on seawater intrusion monitoring components of a request, received December 19, 2011, for the District to fund efforts associated with management of the Santa Maria Valley Groundwater Basin (SMVGB), consistent with Board direction to cooperate with appropriate entities on the scoping and requirements to establish adequate seawater intrusion monitoring locations in the SMVGB and develop an equitable cost sharing proposal and return to the Board for final approval	<ul style="list-style-type: none"> • Resolution to develop the Paso Robles Basin GMP (3/22/11) • Certification of Level of Severity III for the Nipomo Mesa Water Conservation Area (6/26/07)

³

Exhibit B Previous Staff Direction and Status

Tasks	Status	Direction Source(s)
State Water Project		
Additional State Water Project Coastal Branch modeling efforts	Staff, in coordination with State Water Subcontractors and the Central Coast Water Authority (CCWA), recently developed a computer model of the coastal branch and assessed its ability to deliver additional State Water, above contracted amounts, under a range of delivery scenarios ⁴ . Staff will be running additional scenarios with the model to better understand the effect on the amount of additional water that can be delivered to Santa Barbara County when taking additional water at the Lopez turn-out.	<ul style="list-style-type: none"> • Authorization for staff to work with elected officials or other representatives from local agencies (including State Water Subcontractors) interested in State Water as a water supply management option, and the Central Coast Water Authority (CCWA), on the optimization of the Coastal Branch of the State Water Project. (9/22/09)
Develop financial information for participating in the State Water Project	Staff is working with the CCWA to develop financial information in order to better inform those interested in State Water as an option for their water supply needs.	
Develop focused discussion on State Water Issues for the Board of Supervisors	In preparation for anticipated Board policy discussions and negotiations with CCWA regarding the use of the excess capacity in the Coastal Branch of the State Water Project, staff will be coordinating with State Water Subcontractors and the WRAC to develop a focused discussion item for your Board regarding county policies, options and other considerations regarding the use of the District's excess allocation in 2012.	
Lopez Reservoir		
Drought Reliability Programs	During their November 2011 meeting, the Zone 3 Advisory Committee endorsed reserving up to 250 acre-feet per year of storage for a regional drought reliability program. Staff continues to coordinate with the Zone 3 Advisory Committee on the use of the Lopez Reservoir for Drought Reliability Programs. Recent efforts involved coordination with agencies overlying the Santa Maria Valley Groundwater Basin to be prepared to mitigate seawater intrusion and evaluating options for the community of Santa Margarita.	<ul style="list-style-type: none"> • Direction for staff to consider County Service Area 23 – Santa Margarita drought reliability options, and to return with a detailed policy discussion and recommendations (9/22/09)

⁴ The final State Water Coastal Branch Capacity Study report is available under the State Water quicklink at www.slocountywater.org.

Exhibit C

January 2012 Draft Final County-wide
Master Water Plan Excerpts



San Luis Obispo County Flood Control and Water Conservation District

SAN LUIS OBISPO COUNTY MASTER WATER PLAN

January 2012



INTRODUCTION

The purpose of this chapter is to introduce the scope, goals and objectives of the San Luis Obispo County Flood Control and Water Conservation District (District) Master Water Plan (MWP). With the recurrence of drought, degradation of groundwater basins and the limited availability of surface water supplies, it is important for all entities of San Luis Obispo County (“County” for government; “county” for geographic domain) to effectively manage available water resources. Water resources should be managed to simultaneously protect the public health and safety, maintain ecosystems, avoid seawater intrusion, and support agriculture into the future. In order to effectively manage water resources, it is important to understand the complete picture of water resources management in the county and how the practices (i.e. water use, policy adoption, planning, and project implementation) of all entities within the county influence each other.

The District approached the MWP geographically by dividing the county into three (3) sub-regions (North Coast, South Coast, and Inland), and then further subdividing into water planning areas (WPAs) within each sub-region (Figure 1.1). This sub-regionalization facilitated water resources analysis by recognizing jurisdictions that overlie groundwater basins and interconnected watersheds in order to assess their relationship. The relationship between the three sub-regions that are connected by the District’s/County’s jurisdiction as well as the regional water projects such as the Nacimiento Water Project (NWP), Salinas Reservoir system, Whale Rock Reservoir system, Lopez Water System and State Water Coast Branch, were evaluated for their potential to be optimized to better meet the county’s water needs.

It is recommended that future MWPs move away from the three sub-region and WPA approach, and focus more on individual watersheds and groundwater basins. In other words, future MWPs should become more detailed as the current WPAs are broken down further into smaller subsets that better fit the geographic and political boundaries that define local water planning efforts.

1.1 SCOPE OF MASTER WATER PLAN

The MWP is a comprehensive plan that evaluated multiple water management strategies, including optimization of existing water supplies to meet water resource needs countywide. In general, the scope of work for this project included:

- Documentation of existing water resource jurisdictions and their current and future activities/water planning efforts.
- Analysis and documentation of current and future water supply and demand on a county-wide basis.

- Identification and analysis of potential water management strategies to address possible water supply shortfalls.
- Documentation of the role of the Master Water Plan in supporting other water resource planning efforts.

1.2 GOALS AND OBJECTIVES

The main purpose of the MWP is to provide a comprehensive description and analysis of county-wide water resources and management efforts of these resources under current conditions and at general plan build-out for the different agencies within the county, and to identify and evaluate water management strategies for addressing forecast supply deficiencies, similar to Urban Water Management Plans and General Plan Water Elements.

Since many different entities have developed water resource analysis and land use planning documents for individual communities and areas in the county, the MWP combined those efforts with an analysis of the areas not covered by local plans to complete an integrated, county-wide MWP. This effort identified, consolidated, and integrated county-wide water supply and demand information to understand how water resources are influenced by urban, rural and agricultural users and to identify additional opportunities for water resource management.

Other specific goals and objectives of the MWP are discussed below.

1.2.1 Ensure Stakeholder Input/Participation

The approach for the preparation of this MWP included stakeholder input and participation. Participation was accomplished through a series of Water Resources Advisory Committee (WRAC) meetings, presentation of information to different agencies and County departments, and meetings with WRAC sub-committees and working groups. County staff and the project team met with the WRAC in a workshop setting at significant project milestones, as summarized in Table 1.1:

In addition to the WRAC meetings, the project team met with the County's Planning Department to discuss on-going studies for the unincorporated areas of the County and their impact on future development and water demands. The team also gathered data from and met individually (as needed) with some of the water agencies in the County to discuss findings and recommendations of the study.

1.2.2 Create a Framework for Maintaining the Master Water Plan

The recommendation for updating and maintaining the MWP is discussed further in Chapter 5. The goal of those recommendations is to improve the process and efficiency for revising future MWPs. This will be facilitated by the County retaining the GIS shapefiles collected for the project and continually updating them as more information becomes

available. Other recommendations for creating a framework for maintaining the MWP include:

- Maintain a current inventory of water resource data and reports. Information collected to prepare this MWP is presented throughout the documents included in Appendices A through D.

Workshop No.	Date	Completed Tasks
1	June 3, 2009	WRAC Kick Off Meeting Presented goals and objectives of MWP Presented schedule and approach of study Clarify WRAC involvement
2	October 7, 2009	Presented available data Geographic organization of the County - Sub Regions and Water Planning Areas Summarized demand analysis approach - Urban, rural, agricultural, and environmental Summarized groundwater resources and water supply by WPA
3	January 6, 2010	Summarized preliminary water demand and supply analysis Presented criteria for asserting a supply shortfall and for evaluating supply strategies
4	April 7, 2010	Rated criteria for prioritizing water supply strategies Presented preliminary water management strategies Presented concepts for interagency agreements and cooperative programs to optimize existing water supplies
5	September 1, 2010	Presented demand and supply by WPA, urban agency, rural, agriculture and environmental user Presented revised water management strategies to resolve potential supply shortfalls
Working Group Meeting	November 10, 2010	Explored institutional arrangements and regional water management strategies
Working Group Meeting	December 21, 2010	Discussed preferred regional water management strategy options to optimize existing resources
6	March 21, 2011	Presented draft Master Water Plan - Goals and objectives - General recommendations Presented general agricultural and rural water management strategies Presented findings and recommendations for urban users

- Improve the data sharing protocol between local agencies and the County for consistency and overlap/redundancy reduction.
- Specify how information from other water resources planning documents are used in the MWP and how information developed in the MWP can be utilized in other water resources planning documents.
- Establish a schedule for updating the MWP that is consistent with other water resources planning requirements.
- Specify the scope of work involved with updating the MWP.
- Estimate a budget for updating the MWP.

1.2.3 Accurately Present Current and Future Supply/Demand

Chapter 4 presents a summary of the county-wide water supply and demand. A reasonable level of accuracy was achieved because this project:

- Utilized recent water resource information, where available.
- Utilized land-use and demographic information.
- Utilized as much of the existing data as local resource agencies provided.
- Accounted for potential reductions in supply, reliability issues, future land use and/or conservation policies in the future water supply and demand analysis.

1.2.4 Ensure Support for Agricultural Demand Analysis

Chapter 4 summarizes the approach used to quantify the agricultural demands. The approach was presented to the WRAC and to the County's Agricultural Commissioner.

1.2.5 Ensure Support for Environmental Water Demand Characterization

Chapter 4 summarizes the approach used to quantify the environmental demands. The approach was presented to the WRAC.

1.2.6 Respect Autonomy of Individual Jurisdictions while Recognizing Differences/Conflicts

For urban users, this project relied primarily on published water master plans and water supply studies to be consistent with local purveyor water demand projections and planned water supply projects. Chapter 4 summarizes the documents used from the water purveyors within the county. In addition, each purveyor was provided multiple opportunities to review the draft memoranda and reports to ensure consistency between the MWP and their water planning documents.

1.2.7 Present Analysis of Options, Conclusions and Recommendations

Chapter 4 presents the water demand analysis for urban, rural, agricultural and environmental users in the county. It also presents the conclusions and recommendations for addressing potential water supply shortfalls, with an emphasis on promoting:

- Optimization of conservation measures.
- Optimization of unsubscribed State Water allocation.
- Optimization of unsubscribed Nacimiento Water Project allocation.
- Opportunities for optimizing other local surface water supplies.
- Opportunities for increasing the efficiency of existing infrastructure.
- Opportunities for water re-use.
- Opportunities for emergency/drought protection measures such as inter-ties and groundwater banking.

1.2.8 Ensure Compatibility with Other Documents

Chapter 5 summarizes how the MWP is related to, and coordinated with the development of several other County documents, including the:

- County's Integrated Regional Water Management Plan (IRWMP).
- Conservation and Open Space Element (COSE).
- Agricultural Element.
- Land Use Element.
- Resource Management System.

The goals, objectives and policies in the first three documents guided the analysis of water management strategies, and the data contained within and collected by the last two documents were valuable in conducting the analysis.

1.3 LIMITATIONS OF THE MASTER WATER PLAN

This document is not intended to establish water rights or to set the maximum water supply sources available to users within the County. It is primarily a "high-level" summary of available information and estimates of the water supply versus demand analysis.

Comments about cities and other water suppliers are not to be interpreted as overruling the rights and powers of these agencies. Other technical limitations to this Master Water Plan are presented below.

1.3.1 Technical Challenges with Demand Assessment

There were a number of technical challenges with analyzing and developing the urban, rural, agricultural and environmental demands for the MWP. Appendix D contains the technical memorandum that describes the water demand methodology used for this project and the assumptions made to facilitate the calculation of demands for the four categories. A description of the technical limitations in the approach for computing the urban, rural and agricultural demands follows, and the challenges with computing the environmental demands are discussed later in this section.

1.3.1.1 Urban Water Demand

The existing demands for urban users were based on available Water Master Plans, Urban Water Management Plans, and the County's Resource Management System. Although the demands are referred to as "existing," by the time the MWP is finalized, the data could be a few years old. This should not present a substantial problem since water demands do not fluctuate significantly from year to year. However, this minor issue highlights the difficulty in ensuring that the data presented in this report is current and that the demands are not absolute values, but approximations. Water providers should be encouraged to prepare urban water management plans, even if they are not required by California legislation, in order to maintain current demand projections and forecasts.

1.3.1.2 Rural Water Demand

The primary technical challenge with calculating rural water demands was having accurate water duty factors for rural water demands since most individual properties are not metered. Due to different climates and types of water usage, the water duty factors can vary widely between region and time of year. Coastal rural areas will generally require less water than inland rural areas due to greater evapotranspiration in the inland areas and more precipitation in the coastal areas.

1.3.1.3 Agricultural Water Demand

The Agriculture/Crop ArcGIS® layer for the County from August 2008 was used to determine existing agricultural acreage for each crop group. This layer is updated yearly with information from the pesticide use permits growers obtain through the San Luis Obispo Department of Agriculture. These permits are not entirely accurate as they occasionally include permanent crops which are planned and include many annual crops which may or may not be planted based upon various factors. The number of crop rotations varies and is not identified in the Agriculture/Crop ArcGIS® layer. The majority of irrigated vegetables are rotated numerous times throughout the year. Coastal areas with available water may have multiple crops planted in a particular year. The irrigation practices of each operation are also not accounted for. Given the current land use, the demand projection for Water Planning Area 1 in particular could be refined significantly by taking ranching operations water use and conservation easement provisions into account. Ranching operations do not

use pesticides and therefore are not included in the County's Agriculture/Crop ArcGIS® layer were not included in the demand calculation.

The agricultural crop ArcGIS® layer includes approximately 200 classifications of commodities. This included approximately 86,000 acres of rangeland and 42,000 acres of uncultivated agriculture. For purposes of this analysis, the irrigated commodities were categorized into seven groups. Although the groups are based on commodities that may have similar water requirements, the actual water usage will vary based on a number of variables including; individual commodities, soil type, and number of rotations on individual parcels.

1.3.1.4 Definition of "Build-Out" Demand

The forecast demands for urban users were based on available reports but represent the "build-out" demand of a service area, sphere of influence, or urban reserve line of an incorporated or unincorporated city in the county. There are two concerns with referring to the demands as build-out. The first is that the growth boundaries are not static. When general plans are updated, the growth boundaries typically change and expand. Therefore, the values presented in this report could increase in future MWP updates. The second concern is the year in which build-out is reached. Each community in the County grows at different rates and the year in which the forecast demand is reached is neither consistent nor fixed for each community. Therefore, the limitation with the build-out demand, which also applies to rural and agricultural demands, is the variability in future forecasts and the difficulty in estimating these values with available information.

1.3.1.5 Conservation and Irrigation Efficiencies

Since forecast demands are not absolute or fixed values, determining a range of possible demands was selected as the preferred approach. The approach to defining the low end of the demand range required some assumptions regarding conservation, development potential, and agricultural irrigation efficiencies and expansion. There are limitations to this approach because the assumptions made could vary from the actual consumption and create a potential shortfall in supply. The low forecast demand range for urban users assumed a certain amount of conservation for most communities. The amount assumed by each community depended on the anticipated level of conservation that could be achieved. The low demand range for rural users represents a percent of the development potential and recognizes that 100 percent of the property will not be developed. For agricultural demand, the approach assumed higher irrigation efficiencies for future demands than in existing demand calculations.

1.3.2 Use of Available Technical Documents

This MWP relied on and attempted to be consistent with available documents of various agencies. Terminology used in these available documents was often quoted verbatim for the MWP. Therefore, some suggested changes (i.e. comments received) to terms used in

this MWP were not adopted in order to remain consistent with respective reference documents. While this approach may cause some confusion it was believed consistency with the base document was the overriding consideration. The desired changes should be made first in the reference documents, before being incorporated into the MWP.

1.3.3 Groundwater Basin Yield Estimates

Published hydrogeologic information for many groundwater basins in the County are compiled from older reports and may not be representative of current conditions. For some groundwater basins, the safe yield estimate was based on the documented historical production that has not resulted in water supply problems. Also, the relationship between stream underflow, surface flow, and perennial yield is not adequately understood, especially for the coastal groundwater basins. In order to gain more current or detailed information for these basins, new and additional studies would be necessary. Information currently compiled by County departments (such as well logs for private wells or water quality for shared well systems) could be useful to these studies. Additional information may also be available from the DWR and private sources.

1.3.4 Use of Management Area Reports

Annual reports for the Nipomo Mesa Management Area, Northern Cities Management Area and the Santa Maria Valley Management Area are prepared in accordance with the Stipulation and Judgment for the Santa Maria Groundwater Litigation (Lead Case No. 1-97-CV-770214). The annual reports provide an assessment of hydrologic conditions for the three management areas based on an analysis of the data accruing each calendar year. Each annual report is submitted to the court annually in accordance with the Stipulation in the year following that, which is assessed in the report.

The information contained in these annual reports could change based on data collected from the previous year, and the changes may not be reflected in this MWP. Readers should acknowledge that the figures presented in this MWP may not be 100 percent current, but we attempted to provide the most current available information at the time the MWP was being written.

1.3.5 Technical Challenges with Environmental Assessment

The environmental demand estimates presented in this master water plan are not absolute values. Planning-level assessments such as this one do not take the complexity of natural systems into consideration and this point should be acknowledged when using the findings in this plan. The results provide a reasonable and scientifically supported estimate of environmental water demand for the purposes of evaluating water balances on an annual water planning area basis. In watersheds with creeks that have transient high flows during the winter season, the timing of the flows can be as important to biological resources as the amount of flow. Unfortunately, evaluating to this level of detail was beyond the scope of this

study, and will be left to future work. The environmental demand assessment presented in this report should be viewed as a starting point that will be refined over time.

Site- and project-specific in-stream flow requirements determined on a sub-watershed or creek basis would improve future master water plans. A more detailed analysis would moderate the need to extrapolate data from one unimpaired stream and apply it to a neighboring watershed. This approach should make the analysis more focused and increase the certainty in the results. The first steps in this effort are establishing appropriate data collection sites, identifying opportunities for coordination with appropriate entities on the data collection effort and prioritizing locations to study first.

The specific steps that could be taken by the District include (in no particular order or priority):

- Increase the number and distribution of stream flow gauges to capture unimpaired runoff flow measurements and the varying hydrologic conditions throughout the County.
- Determine other data that would be necessary to complete a stream species specific analysis.
- Select a water planning area, watershed or creek to conduct a more focused environmental water demand assessment and develop a workplan for implementing the analysis that could be applied county-wide.
- Determine role of the District, County, resource agencies, local agencies, local stakeholders (project proponents), and riparian rights holders in implementing these steps.

1.4 DEFINITION OF KEY TERMS

ArcGIS: ArcGIS is a geographic information system (GIS) software product used for working with maps and geographic information. It is used for: creating and using maps; compiling geographic data; analyzing mapped information; and managing geographic information in a database.

CCWA: The Central Coast Water Authority was formed in 1991 through a Joint Exercise of Powers Agreement among nine public agencies in Santa Barbara County and has Water Supply Agreements with five other entities. CCWA was specifically formed for the purpose of designing, building and operating the facilities needed to deliver water from the State Water Project (SWP) to the various entities with contracts to receive that water in Santa Barbara County.

- CEQA:** The California Environmental Quality Act is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.
- CSA:** In unincorporated areas, residents of urban communities may want more services than those residing in rural areas. The County Service Area Law (Government Code §25210.1 *et seq.*) was created to provide a means for expanding service levels in areas where residents are willing to pay for the extra service. The law allows residents or county supervisors to initiate the formation of a County Service Area (or CSA). A CSA is authorized to provide a wide variety of services, including fire protection, water and garbage collection. A CSA may span all unincorporated areas of a county or only selected portions.
- CSD:** Community Services Districts (CSDs) are independent governmental agencies that exist separately from, and with substantial administrative and fiscal independence from, general purpose local governments. Special district governments provide specific services such as hospitals, sewerage, water and fire protection. CSDs are also subject to specific legislative and regulatory controls.
- DWR:** The mission of the California State Department of Water Resources (DWR) is to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments. DWR operates and maintains the California State Water Project (SWP). Other programs work to preserve the natural environment and wildlife, monitor dam safety, manage floodwaters, conserve water use, and provide technical assistance and funding for projects for local water needs.
- ISJ:** Interlocutory Stipulated Judgment (ISJ) established a formal process for the County and three water purveyors in Los Osos to engage in cooperative water resources management efforts to solve groundwater overdraft and current sea water intrusion.
- MOA or MOU:** A Memorandum of Agreement (MOA), also known as a Memorandum of Understanding (MOU), is a formal document used to outline an agreement made between two or more separate entities, groups or individuals. An MOA usually precedes a more detailed contract or agreement between the parties, after a process of negotiations and due diligence. This MOA may be used to cooperatively work together on an agreed-upon purpose or meet an agreed objective and outline the discussed terms of a new relationship.

- MWP:** The Master Water Plan (this document) will serve to help policy makers, planners, and the public understand the long-range availability of water resources throughout the County of San Luis Obispo.
- MWC:** Mutual Water Companies (MWCs) are most commonly formed as general corporations or as nonprofit mutual benefit corporations. Mutual water companies may deliver water to their shareholders for agricultural irrigation or domestic uses.
- NCMA:** The Northern Cities Management Area (NCMA) includes the northernmost portion of the Santa Maria Valley Groundwater Basin. The cities of Arroyo Grande, Grover Beach, and Pismo Beach, the Oceano Community Services District, the County and local landowners that signed the court-approved stipulation during the Santa Maria Groundwater Basin litigation actively and cooperatively manage surface and groundwater resources in the NCMA.
- NMMA:** The Nipomo Mesa Management Area (NMMA) lies to the south of the NCMA and includes ConocoPhillips, Golden State Water Company, Nipomo Community Services District, Woodlands Mutual Water Company, Rural Water Company, and other NMMA overlying landowners that signed the court-approved stipulation during the Santa Maria Groundwater Basin litigation. The NMMA Technical Group is charged with developing the technical bases for sustainable management of the surface and groundwater supplies available in this management area.
- RWQCB or Regional Board:** The Regional Water Quality Control Board's (RWQCB or Regional Board) mission is to develop and enforce water quality objectives and implementation plans that will best protect the State's waters, recognizing local differences in climate, topography, geology and hydrology.
- TMA or SMVMA:** Twitchell Management Authority (TMA)(aka the Santa Maria Valley Management Area) is the largest of the three management areas that overlie the Santa Maria Valley Groundwater Basin. This management area lies over the main Santa Maria Valley. The SMVMA encompasses the contiguous area of the Santa Maria Valley, Sisquoc plain, and Orcutt upland, and is primarily comprised of agricultural land and areas of native vegetation, as well as the urban areas of Santa Maria, Guadalupe, Orcutt, Sisquoc, and several small developments.
- UWMP:** Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves 3,000 or more connections is required

to assess the reliability of its water sources over a 20-year planning horizon considering normal, dry, and multiple dry years. This assessment is included in its UWMP, which are prepared every 5 years and submitted to the Department of Water Resources.

WPA: Water Planning Area(s) (WPA or WPAs) represent geographic organization of the County. Water demand, water supply, and supply sources are organized by WPA. In general, the WPA boundaries coincide with watershed or groundwater basin boundaries, and are intended primarily to recognize important hydrogeologic units or water management areas throughout the County.

For additional information on terms found in the MWP, please refer to the reference documents listed throughout the MWP. Various publications (such as the Layperson's Guide to Water Rights Law published by the Water Education Foundation) are also available online for information regarding water rights and water law in California.

MASTER WATER PLAN

With cyclical droughts, declining groundwater levels, degradation of groundwater quality, and the limited availability of surface water supplies, it is important for all entities in San Luis Obispo County (“County” for government; “county” for geographic domain) to effectively manage available water resources to protect the public health and safety, maintain viable ecosystems, avoid seawater intrusion, and allow for sustainable agriculture.

To that end, this Master Water Plan (MWP) is a compilation of the current and future water resource management activities being undertaken by various entities within the County and is organized by Water Planning Area (WPA). The MWP explores how these activities interrelate, analyzes current and future supplies and demands, identifies future water management strategies and ways to optimize existing strategies, and documents the role of the MWP in supporting other water resource planning efforts.

The San Luis Obispo County Flood Control and Water Conservation District (District) initiated and completed this latest Master Water Plan (MWP) update. The original 1972 Master Water and Sewage Plan (subsequent title change) was previously updated in 1986 and 1998.

ES.1 SUMMARY OF REPORT CHAPTERS

- Chapter 1:** Chapter 1 introduces the scope, goals and objectives, as well as the limitations, of the District’s MWP.
- Chapter 2:** Chapter 2 describes the topical and geographical organization of the MWP and the County into three sub-regions and 16 Water Planning Areas (WPAs). Water demand, agricultural water needs, sources of supply, and other information are organized by WPA. The WPAs were intended to recognize important hydrogeologic units or water management areas throughout the County.
- Chapter 3:** Chapter 3 describes the existing data collection programs and the data available for completing the MWP and for managing water resources in the County.
- Chapter 4:** Chapter 4 evaluates and compares the available water supplies (apart from the untreated ocean) to the water demands for the different WPAs.
- Chapter 5:** Chapter 5 describes the relationship between the MWP and the different State, County, and local agency water related documents, programs, or policies that guide water resource management decisions. In addition, this chapter also suggests coordination efforts that should occur in future updates to the MWP

that would promote consistency between it and other County, District and State documents.

ES.2 MASTER WATER PLAN RECOMMENDATIONS

This section presents a summary of the recommendations for District actions to improve water supply to meet existing and future demands throughout the County (Table ES 1). Many of the recommendations explore regional options that could be implemented County-wide to improve supply reliability and to improve the information contained in future MWP's. The analysis and support for implementing different water management strategies to meet existing and forecast demands, and to improve supply reliability for specific water providers and users are presented in Chapter 4 and will not be repeated in the Executive Summary.

ES.2.1 District's Highest Priorities

1. **District's Role with Regional Water Supply and Facilitating Interagency Arrangements:** Lead the effort to optimize the use of unsubscribed water from the State Water Project (SWP) and the Nacimiento Water Project (NWP), in conjunction with other facilities, to promote enhanced use of existing available resources that support local agency use and exchanges by:
 - a. Developing policies for the use of unsubscribed water given the various needs in the County and existing County policies (for example, there is a need for increased direct deliveries in some areas of the County and a need for recharge/in-lieu delivery projects in other areas)
 - b. Identifying and conducting pilot projects with the available resources to evaluate the effectiveness of various exchange concepts
 - c. Establish the District's role in the development of a "boiler plate" agreement, or streamlined, standard process for local agencies to implement transfer agreements, and emergency intertie agreements.
2. **District's Role with Sub-regional Water Balance Analyses and Management:** Water demands were quantified on a WPA basis. Recognizing that some areas do not have adequate assessments of the water demand and supplies available, the District's role in and approach to analyzing water balances on a watershed and/or groundwater basin basis throughout the County should be established. Once established, specific priorities and work efforts can be identified. Two recommendations that support this effort follow:
 - a. **Improve Environmental Water Demand Estimate:** Establish the District's role in implementing the recommendations associated with evaluating Environmental Water Demand in the County (for example, should the District conduct analyses, or somehow be involved with analyses, to estimate in-stream flow requirements to support the associated ecosystem?). Continue to prioritize and establish data collection locations in accordance with the District's Data Enhancement Plan, District funds, and the established role of the District.
 - b. **Improve Agricultural Demand Estimate:** Future planning efforts need to include agricultural demands not captured in the Agriculture Commissioner's

pesticide use permits GIS database. Also, future planning efforts should either develop more accurate agricultural demand estimates or complete a separate study that focuses solely on agricultural demands, and then incorporate the findings into future MWP. Agricultural demand accounts for nearly 80 percent of the total County demand. Inaccuracies in the assumptions could lead to large variances in the demand estimates.

- 3. Future Master Water Plan Updates:** The information in this MWP will be integrated into the region's Integrated Regional Water Management Plan (IRWM Plan). If the District continues to lead efforts in maintaining an IRWM Plan for the region (which is the County line), it may make sense to just update the IRWM Plan. Regardless of the document that houses the information contained and generated from this MWP, updates should occur on a five year cycle, following the completion of Urban Water Management Plans (UWMPs). However, the District should maintain a current inventory of other water resource data, GIS-based land use data and reports (e.g. water master plans, groundwater studies) and track progress on implementation of the recommendations to streamline future document updates. The District should encourage entities that do not prepare UWMPs to provide projected demand information.

ES.2.2 Water Management Strategies for Specific Users

The identification of water management strategies and the potential for implementing a management strategy for cities, communities, and other agencies within the County are discussed in Chapter 4. Note that the suggested water management strategies are not requirements, and most are consistent with existing water planning studies and options being considered by cities, communities, and agencies.

Interested persons not reading the entire MWP will want to become familiar with at least their own WPA as well as the regulations and planning documents of other agencies in the area where they live.

Table ES 1: Master Water Plan Recommendations		
Recommendation (MWP Reference)	Key Steps to Implementing Recommendation	Basis of Recommendation
ACTIONS TO IMPROVE FUTURE MASTER WATER PLAN UPDATES		
Create a Framework for Maintaining the Master Water Plan <i>(MWP Section 5.2)</i>	<ul style="list-style-type: none"> Determine whether to maintain both an IRWM Plan and a MWP - Update the MWP on a five-year cycle, following the completion of Urban Water Management Plans, in years ending in 1 or 6 (i.e. 2016, 2021, etc.) and in coordination with the County's Resource Management System. Encourage all water purveyors to project water demand into the future. Maintain a current inventory of other water resource data and reports (e.g. water master plans, groundwater studies). Develop a consolidated, coordinated, web-based mechanism for improving, gathering, and sharing county-wide water supply and demand information to avoid redundancy and ensure consistency. Utilize a web-based approach to maintain data. Consider the analyses conducted to develop the Land Use and Circulation Element and Community 2050, and updates to the Resource Management System when updating the land-use-based water demand analysis in the MWP. 	<ul style="list-style-type: none"> Updating the MWP on a regular basis, consistent with UWMP timing, will provide the District and agencies in the County with a reliable planning-level document. Will reduce the demand on District resources by streamlining processes (i.e. with UWMP efforts).
Improve Approach for Quantifying Demands <i>(MWP Section 4.6)</i>	<ul style="list-style-type: none"> Refine future MWP investigation of the demand versus supply on a groundwater basin and/or watershed basis within WPAs. 	<ul style="list-style-type: none"> Understanding of demand and source of supply would be improved if the investigation looked more closely than the WPA level.
Improve Agricultural Demand Estimate <i>(MWP Sections 4.6.3 and 4.8.7)</i>	<ul style="list-style-type: none"> Future planning efforts need to include agricultural demands not captured in the Agriculture Commissioner's pesticide use permits GIS database (e.g. irrigated pastures, livestock water use, etc.). Define stakeholder groups in each WPA to coordinate and refine these (and other) estimates on a watershed and groundwater basin basis for their WPA. Future planning efforts should either develop more accurate agricultural demand estimates or complete a separate study that focuses solely on agricultural demands, and then incorporate the findings into future MWPs. Develop a voluntary pilot program where a representative percentage of agricultural water users could meter and report their water use, and the District would track actual applied water per acre for various agricultural users throughout the county. 	<ul style="list-style-type: none"> Agriculture accounted for nearly 80 percent of the total county current water demand. Errors in the assumptions or water duty factors could result in large increases or decreases in the total demand. This MWP likely underestimates the agricultural demands for certain water planning areas, in particular the north coast of the county. The irrigation factors used for each crop type could be under or over estimating the total demand. By forming stakeholder groups, the District would encourage local participation and control for determining agricultural water demand.
Improve Rural Demand Estimate <i>(MWP Sections 4.6.4 and 4.8.8)</i>	<ul style="list-style-type: none"> Utilize rural water use information made available by Resource Management System 2009 Annual Summary Report (e.g. via installation of flow meters on non-agricultural wells, monthly water use recording and semi-annual reporting for water purveyors, etc.), as it becomes available. 	<ul style="list-style-type: none"> Increases accuracy in rural water demand estimates and reduces need for assumptions in water duty factors.

Table ES 1: Master Water Plan Recommendations		
Recommendation (MWP Reference)	Key Steps to Implementing Recommendation	Basis of Recommendation
Agricultural and Rural Users Water Management Strategies (MWP Section 4.8.9)	<ul style="list-style-type: none"> The District should participate in and promote a "stakeholder driven" water balance evaluation on a watershed and groundwater basin basis within the county to better understand the relationship between supply and demand. 	<ul style="list-style-type: none"> The agricultural and rural water demands were quantified on a WPA basis. It is recognized that some areas do not have adequate assessments of the water supplies available to conclude whether a supply deficit exists.
Environmental Water Management Strategy (MWP Sections 4.6.5 and 4.8.10)	<ul style="list-style-type: none"> Develop policies for District's role in further developing the Environmental Water Demand values throughout the WPAs (e.g. installing stream gauges, leading studies, promoting local control). 	<ul style="list-style-type: none"> Site- and project- specific instream flow requirements allow the environmental water demand to be quantified and represented on a sub-watershed or creek basis, while the current analysis considered the Environmental Water Demand on a WPA level.
PROJECTS AND PROGRAMS		
Contingency Plan or Reliability Supply (MWP Section 4.8.1)	<ul style="list-style-type: none"> Suggest that each community in the county consider developing a contingency plan or reliability supply, if they have not already done so. Provide technical expertise or administrative support to County Service Areas. 	<ul style="list-style-type: none"> Facilitates implementation of a combination of emergency conservation measures/ new supplies. Ability to address the uncertainties with climate change and the potential impacts to water supply. Without a contingency or reliability plan, a community may be unable to respond to extended periods of below average water supply.
Stream Gauge Installation (MWP Section 3.2.2)	<ul style="list-style-type: none"> Continue to prioritize and establish data collection locations in accordance with the District's Data Enhancement Plan, District funds, and the established role of the District in implementing the Environmental Water Management recommendations., attempting to place new sites where past, inactive gauges existed (providing a period of record that will complement any new data collected). 	<ul style="list-style-type: none"> Placing gauges on major creeks near the confluence with significant tributaries, on some smaller streams and tributaries, and at major cities along the major creeks would provide valuable information for developing instream flow requirements. The eastern portion of the county (i.e., WPAs 9, 10, 11, 14, and 15) was ultimately excluded from the environmental water demand analysis due to the lack of unimpaired data and regional physiographic differences.
Water Conservation/ Water Use Efficiency (MWP Sections 4.5, 4.7.4, and 4.8.3)	<p>Establish the District's role in:</p> <ul style="list-style-type: none"> Promoting agencies within the county to join Partners in Water Conservation. Increasing communication with the agricultural and rural community, and promote use of conservation measures by rural and agricultural users. Increasing knowledge of supply limitations and findings of this study. Local stakeholder groups should establish conservation goals for different groundwater basins throughout the county. 	<ul style="list-style-type: none"> Conservation supports the Contingency and Reliability Supply Plan recommendation (e.g. secures drought buffer). Consistent with the State's water conservation goals. Improves management of water supplies.
Regional Water Supply Strategies (MWP Section 4.8.2)	<ul style="list-style-type: none"> Lead the effort to optimize the use of unsubscribed SWP or NWP to promote enhanced use of existing available resources that support local agency use and exchanges. 	<ul style="list-style-type: none"> Optimizing the use of surface water supplies could preserve groundwater for agricultural users and County residents or for times when there are reductions in surface water deliveries.
Unsubscribed State Water Project (MWP Sections 4.7.8, 4.8.2, and 4.8.11)	<ul style="list-style-type: none"> Understand which entities may be interested in receiving additional State Water by compiling a list of interested parties. Complete the hydraulic capacity study of the SWP Coastal Branch to determine if sufficient capacity exists to transmit additional State Water to coastal 	<ul style="list-style-type: none"> This effort will identify the potential for the delivery of additional unsubscribed State Water and support the optimization of unsubscribed surface water supplies. Use of unsubscribed SWP will also be considered in evaluating and negotiating the use of any extra capacity in the Coastal Branch.

Table ES 1: Master Water Plan Recommendations		
Recommendation (MWP Reference)	Key Steps to Implementing Recommendation	Basis of Recommendation
	<p>communities.</p> <ul style="list-style-type: none"> • Understand exchange opportunities with other resources within the District that may free up a portion of the existing State Water allocation. • Develop and/or update District policies regarding which entities have priority to receive State Water. • Provide a final opportunity to existing SWP participants to execute Drought Buffer Agreements. • Negotiate use of excess capacity and District allocation with CCWA and DWR guided by District needs and priorities, as-needed. 	
Streamline Institutional Agreements <i>(MWP Section 4.8.6)</i>	<ul style="list-style-type: none"> • Establish the District's role in developing "boiler plate" agreements, or streamlined, standard processes for local agencies to implement transfer and emergency intertie agreements. • Establish the District's role in the development of governance structures to implement future projects and programs, where appropriate (e.g. Nacimiento Project Commission). 	<ul style="list-style-type: none"> • Local agencies have requested that the District lead the development of a template agreement for interagency agreements or water transfers.
Interagency Arrangements and Exchanges <i>(MWP Section 4.8.6)</i>	<ul style="list-style-type: none"> • Develop policies for District's role in promotion of opportunities to move water within the county and to match demands with available sources at different times. • Identify and conduct pilot projects to evaluate options. 	<ul style="list-style-type: none"> • Exchanges would allow entities with water supply needs that cannot feasibly connect directly to the NWP or SWP to receive a supply from a source to which they are already connected via exchange.
Groundwater Evaluations <i>(MWP Section 4.8.4)</i>	<ul style="list-style-type: none"> • Develop policies for District's role in these efforts (i.e. basin monitoring programs, Groundwater Management Plans per basin, education and outreach programs). 	<ul style="list-style-type: none"> • Updates the perennial yield and groundwater information for basins that have not been studied for years. • Promotes the management of groundwater supplies.
Groundwater Banking/ Recharge <i>(MWP Sections 4.7.9 and 4.8.5)</i>	<ul style="list-style-type: none"> • Develop policies for District's role in these efforts (i.e. creation of advisory committees of stakeholders to develop basin-wide groundwater management plans, manage the use of available aquifer space for recharge, identify and evaluate local opportunities to reduce runoff and increase recharge, etc.). • Develop policies or evaluate existing policies that pertain to which water supplies can be used for this purpose. 	<ul style="list-style-type: none"> • Groundwater banking is generally viewed as being difficult to implement and monitor if overlying land owners are not part of the banking project. Overlying land owners could extract water and benefit from a project that was funded by other parties. Or the operations of the banking project, if not designed and operated properly, could negatively affect neighboring overlying users. • County policies may discourage the use of water that is available for banking from being used.

San Luis Obispo County Flood Control and Water Conservation District

SAN LUIS OBISPO COUNTY MASTER WATER PLAN

TABLE OF CONTENTS

Page No.

EXECUTIVE SUMMARY - MASTER WATER PLAN

ES.1	SUMMARY OF REPORT CHAPTERS	1
ES.2	MASTER WATER PLAN RECOMMENDATIONS	2
ES.2.1	District's Highest Priorities	2
ES.2.2	Water Management Strategies for Specific Users	3

CHAPTER 1 - INTRODUCTION

1.1	SCOPE OF MASTER WATER PLAN	1-1
1.2	GOALS AND OBJECTIVES	1-3
1.2.1	Ensure Stakeholder Input/Participation	1-3
1.2.2	Create a Framework for Maintaining the Master Water Plan	1-3
1.2.3	Accurately Present Current and Future Supply/Demand	1-5
1.2.4	Ensure Support for Agricultural Demand Analysis	1-5
1.2.5	Ensure Support for Environmental Water Demand Characterization	1-5
1.2.6	Respect Autonomy of Individual Jurisdictions while Recognizing Differences/Conflicts	1-5
1.2.7	Present Analysis of Options, Conclusions and Recommendations	1-6
1.2.8	Ensure Compatibility with Other Documents	1-6
1.3	LIMITATIONS OF THE MASTER WATER PLAN	1-6
1.3.1	Technical Challenges with Demand Assessment	1-7
1.3.1.1	Urban Water Demand	1-7
1.3.1.2	Rural Water Demand	1-7
1.3.1.3	Agricultural Water Demand	1-7
1.3.1.4	Definition of "Build-Out" Demand	1-8
1.3.1.5	Conservation and Irrigation Efficiencies	1-8
1.3.2	Use of Available Technical Documents	1-8
1.3.3	Groundwater Basin Yield Estimates	1-9
1.3.4	Use of Management Area Reports	1-9
1.3.5	Technical Challenges with Environmental Assessment	1-9
1.4	DEFINITION OF KEY TERMS	1-10

CHAPTER 2 - PART I: BACKGROUND ON WATER RESOURCE MANAGEMENT EFFORT

2.1	WATER PLANNING AREAS	2-1
2.1.1	North Coast Sub-Region	2-1
2.1.1.1	San Simeon WPA 1	2-1
2.1.1.2	Cambria WPA 2	2-3
2.1.1.3	Cayucos WPA 3	2-3
2.1.1.4	Morro Bay WPA 4	2-3
2.1.1.5	Los Osos WPA 5	2-3
2.1.2	South Coast Sub-Region	2-3
2.1.2.1	San Luis Obispo/Avila WPA 6	2-5

2.1.2.2	South Coast WPA 7	2-5
2.1.2.3	Huasna Valley WPA 8	2-5
2.1.2.4	Cuyama Valley WPA 9	2-5
2.1.3	Inland Sub-Region	2-6
2.1.3.1	Carrizo Plain WPA 10	2-6
2.1.3.2	Rafael/Big Spring WPA 11	2-6
2.1.3.3	Santa Margarita WPA 12	2-6
2.1.3.4	Atascadero/Templeton WPA 13	2-6
2.1.3.5	Salinas/Estrella WPA 14	2-8
2.1.3.6	Cholame WPA 15	2-8
2.1.3.7	Nacimiento WPA 16	2-8
2.2	WATER SERVICE COOPERATIVE AGREEMENTS AND OTHER COORDINATION EFFORTS	2-8
2.2.1	WPA 3, 4 and 6 – Whale Rock Reservoir Water Supply	2-9
2.2.2	WPA 4 - City of Morro Bay/Whale Rock Commission	2-9
2.2.3	WPA 4 - Chorro Valley Water System	2-9
2.2.4	WPA 4, 6, 7, and 14 -State Water Project	2-10
2.2.5	WPA 5 – Los Osos Interlocutory Stipulated Judgment (ISJ)	2-10
2.2.6	WPA 6 – Santa Margarita Lake/Salinas Reservoir	2-11
2.2.7	WPA 7 – Groundwater Management Agreement/Northern Cities Management Area	2-11
2.2.8	WPA 6 and 7 – Lopez Lake Zone 3 Water Supply Project	2-12
2.2.9	WPA 7 – Nipomo Mesa Management Area	2-12
2.2.10	WPA 4, 6, 13 and 14 - Nacimiento Water Supply Project	2-13
2.2.11	WPA 13 and 14 - Paso Robles Groundwater Management Plan and Basin Agreement	2-14
	2.2.11.1 Paso Robles Groundwater Management Plan	2-14
	2.2.11.2 Paso Robles Groundwater Basin Agreement	2-14
2.3	RESOURCE AGENCIES	2-15
2.3.1	State Agencies	2-15
2.3.2	Agricultural Organizations	2-16
2.3.3	Environmental Organizations	2-16

CHAPTER 3 - PART II: AVAILABLE DATA

3.1	OBJECTIVES	3-1
3.2	DATA COLLECTION EFFORTS OR PROGRAMS	3-1
3.2.1	Groundwater	3-1
	3.2.1.1 Water levels	3-1
	3.2.1.2 Geologic Data and Well Logs	3-5
3.2.2	Stream Flow	3-7
	3.2.2.1 District Stream Measuring Program	3-10
	3.2.2.2 U.S. Geological Survey Stream Gauging Program	3-10
3.2.3	Precipitation	3-12
	3.2.3.1 District Recording Rain Gauge Program	3-12
	3.2.3.2 District Volunteer Precipitation Program	3-16
	3.2.3.3 District ALERT Rain Gauge Program	3-16
	3.2.3.4 California Irrigation Management Information System (CIMIS) Stations	3-18
	3.2.3.5 National Oceanic and Atmospheric Administration / National Weather Service Cooperative Observer Network	3-20
	3.2.3.6 Citizen Weather Observer Program (CWOP)	3-20

3.2.3.7	Remote Automated Weather Station (RAWS) Gauges	3-23
3.2.3.8	NWS Automated Surface Observing System (ASOS) Stations...	3-25
3.2.3.9	National Weather Service Precipitation Forecasts (QPF)	3-27
3.2.4	Reservoirs	3-30
3.2.4.1	Local Reservoir Operations	3-30
3.2.5	Water Quality	3-30
3.2.5.1	Sampling Surface Water	3-30
3.2.5.2	Streams, Lakes & Reservoirs	3-33
3.2.5.3	Estuaries and Wetlands	3-36
3.2.5.4	Oceans and Beaches	3-37
3.2.5.5	Sampling Groundwater	3-42
3.2.6	Unimpaired Runoff	3-47
3.2.7	Land Use	3-48
3.2.7.1	Urban Land Uses	3-48
3.2.7.2	Rural Land Uses	3-48
3.2.7.3	Agricultural Land Uses	3-49
3.2.8	Population	3-49
3.2.9	Water System Production and Consumption	3-49
3.2.9.1	Water Quantity/Quality	3-49
3.2.9.2	Water Use Data	3-50
3.2.10	Agriculture	3-50

CHAPTER 4 - PART II: WATER RESOURCE ANALYSIS

4.1	OBJECTIVES	4-1
4.2	OVERVIEW OF GROUNDWATER RESOURCES	4-1
4.2.1	North Coast Sub-Region	4-1
4.2.1.1	San Simeon Water Planning Area (WPA) 1	4-2
4.2.1.2	Cambria WPA 2	4-5
4.2.1.3	Cayucos WPA 3	4-9
4.2.1.4	Morro Bay WPA 4	4-14
4.2.1.5	Chorro Valley Groundwater Basin	4-16
4.2.1.6	Los Osos WPA 5	4-17
4.2.2	South Coast Sub-Region	4-19
4.2.2.1	San Luis Obispo/Avila WPA 6	4-20
4.2.2.2	South Coast WPA 7	4-24
4.2.2.3	Huasna Valley WPA 8	4-33
4.2.2.4	Cuyama Valley WPA 9	4-36
4.2.3	Inland Sub-Region	4-38
4.2.3.1	Carrizo Plain WPA 10	4-39
4.2.3.2	Rafael Valley/Big Spring WPA 11	4-42
4.2.3.3	Santa Margarita WPA 12	4-44
4.2.3.4	Atascadero/Templeton WPA 13	4-47
4.2.3.5	Salinas/Estrella WPA 14	4-50
4.2.3.6	Cholame Valley WPA 15	4-53
4.2.3.7	Nacimiento WPA 16	4-55
4.2.4	OTHER GROUNDWATER SUPPLY SOURCES	4-55
4.3	OVERVIEW OF SURFACE WATER SUPPLY	4-57
4.3.1	State Water Project	4-57
4.3.2	Nacimiento Water Project	4-61
4.3.3	Whale Rock Reservoir	4-62
4.3.3.1	Operating Agreements	4-63

4.3.4	Lopez Lake/Reservoir	4-65
4.3.5	Santa Margarita Lake/Salinas Reservoir	4-66
4.3.6	Chorro Reservoir	4-66
4.4	OTHER WATER SUPPLY SOURCES	4-67
4.4.1	Twitchell Reservoir	4-67
4.4.2	Desalination	4-67
4.4.2.1	Morro Bay Desalination	4-67
4.4.2.2	Other Desalination Projects	4-68
4.4.3	Water Recycling	4-68
4.5	WATER CONSERVATION PROGRAMS	4-69
4.5.1.1	Urban Water Management Plans:	4-70
4.5.1.2	Partners in Water Conservation:	4-71
4.5.1.3	Agricultural Water Conservation Programs	4-71
4.5.1.4	California Urban Water Conservation Council	4-72
4.5.1.5	Decentralized Water Supply Opportunities	4-73
4.6	WATER SUPPLY, DEMAND, WATER QUALITY	4-74
4.6.1	Total Water Demand	4-75
4.6.1.1	Method for Calculating Demand	4-75
4.6.1.2	Assumptions for Calculating Demand	4-75
4.6.1.3	Total Demand by WPA	4-76
4.6.2	Urban Water Demand	4-82
4.6.2.1	Sources of Information	4-82
4.6.2.2	Method/Assumptions: Existing Use and Future Water Demand	4-82
4.6.2.3	Urban Water Demand by WPA	4-82
4.6.3	Agricultural Water Demand	4-82
4.6.3.1	Sources of Information	4-83
4.6.3.2	Method/Assumptions: Existing Agricultural Demand	4-84
4.6.3.3	Method/Assumptions: Future Agricultural Demand	4-86
4.6.3.4	Agricultural Water Demand by WPA	4-88
4.6.4	Rural Water Demand	4-89
4.6.4.1	Sources of Information	4-89
4.6.4.2	Method/Assumptions: Existing and Future Rural Demand	4-89
4.6.4.3	Rural Water Demand by WPA	4-90
4.6.5	Environmental Demand	4-91
4.6.5.1	Definitions	4-91
4.6.5.2	Method/Assumptions: Environmental Demand	4-91
4.6.6	North Coast Sub-Region	4-92
4.6.6.1	San Simeon WPA 1	4-92
4.6.6.2	Cambria WPA 2	4-97
4.6.6.3	Cayucos WPA 3	4-101
4.6.6.4	Morro Bay WPA 4	4-105
4.6.6.5	Los Osos WPA 5	4-113
4.6.7	South Coast Sub-Region	4-118
4.6.7.1	San Luis Obispo/Avila WPA 6	4-118
4.6.7.2	South Coast WPA 7	4-128
4.6.7.3	Huasna Valley WPA 8	4-154
4.6.7.4	Urban Users	4-154
4.6.7.5	Cuyama Valley WPA 9	4-156
4.6.8	Inland Sub-Region	4-158
4.6.8.1	Carrizo Plain WPA 10	4-158
4.6.8.2	Rafael/Big Spring WPA 11	4-162

	4.6.8.3	Santa Margarita WPA 12.....	4-164
	4.6.8.4	Atascadero/Templeton WPA 13.....	4-169
	4.6.8.5	Salinas/Estrella WPA 14.....	4-180
	4.6.8.6	Cholame WPA 15.....	4-189
	4.6.8.7	Nacimiento WPA 16.....	4-191
4.7		ANALYSIS CRITERIA.....	4-195
	4.7.1	Criteria for Declaring a Water Resource Shortfall.....	4-195
	4.7.2	Criteria for Evaluating and Ranking Water Resource Management Strategies (management, projects, programs, policies).....	4-195
	4.7.3	Water Management Strategies.....	4-196
	4.7.3.1	Conservation Programs.....	4-196
	4.7.3.2	Optimize Use of the Nacimiento Water Project (NWP).....	4-197
	4.7.3.3	Land Use Management.....	4-197
	4.7.3.4	Recycled Water.....	4-198
	4.7.3.5	Optimize Use of State Water Project (SWP).....	4-198
	4.7.3.6	Groundwater Banking/Recharge.....	4-198
	4.7.3.7	Groundwater Supply Sources.....	4-199
	4.7.3.8	Salinas Reservoir Expansion/Exchanges.....	4-199
	4.7.3.9	Desalination.....	4-200
	4.7.3.10	Lopez Lake Expansion/Exchanges.....	4-200
	4.7.3.11	New Off-stream Storage.....	4-200
	4.7.3.12	Nipomo Supplemental Water Project Optimization.....	4-201
	4.7.3.13	Precipitation Enhancement.....	4-201
	4.7.3.14	New On-stream Storage.....	4-201
	4.7.4	Conservation Programs.....	4-202
	4.7.4.1	Agriculture Conservation.....	4-202
	4.7.4.2	Urban and Rural Water Use Efficiency.....	4-205
	4.7.4.3	Economic Incentives.....	4-208
	4.7.5	Optimize Use of the Nacimiento Water Project.....	4-211
	4.7.5.1	Potential Benefits of Optimizing the use of the Nacimiento Water Project.....	4-211
	4.7.5.2	Potential Cost of Optimizing the use of the Nacimiento Water Project.....	4-212
	4.7.5.3	Major Issues Facing Optimization of the use of the Nacimiento Water Project.....	4-212
	4.7.5.4	Recommendations to Optimize the use of the Nacimiento Water Project.....	4-213
	4.7.6	Land Use Management.....	4-214
	4.7.6.1	Potential Benefits from Land Use Management.....	4-216
	4.7.6.2	Potential Cost of Land Use Management.....	4-217
	4.7.6.3	Major Issues Facing Land Use Management.....	4-218
	4.7.6.4	Recommendations for Implementation of Land Use Management.....	4-221
	4.7.7	Recycled Water.....	4-223
	4.7.7.1	Potential Benefits of Water Recycling.....	4-224
	4.7.7.2	Potential Cost of Recycled Water.....	4-225
	4.7.7.3	Major Issues Facing Water Recycling.....	4-225
	4.7.7.4	Central Coast RWQCB Conditional Waiver.....	4-227
	4.7.7.5	Recommendations to Increase Recycled Water Use.....	4-227
	4.7.8	Optimize Use of State Water Project.....	4-228
	4.7.8.1	Potential Benefits of Optimizing the Use of the State Water Project.....	4-229

4.7.8.2	Potential Cost of Optimizing the use of the State Water Project.....	4-229
4.7.8.3	Major Issues Facing Optimization of the use of the State Water Project.....	4-230
4.7.8.4	Recommendations to Optimize the use of the State Water Project.....	4-231
4.7.9	Groundwater Banking/Recharge	4-232
4.7.9.1	Potential Benefits of Groundwater Banking/ Recharge	4-233
4.7.9.2	Potential Costs of Groundwater Banking/Recharge	4-234
4.7.9.3	Major Issues Facing Groundwater Banking/ Recharge	4-234
4.7.9.4	Recommendations to Improve Groundwater Banking/ Recharge	4-235
4.7.10	Groundwater Supply Sources	4-236
4.7.10.1	Potential Benefits of using Groundwater Supply Sources	4-236
4.7.10.2	Potential Cost of Groundwater Supply Sources	4-236
4.7.10.3	Major Issues Facing the use of Groundwater Supply Sources..	4-236
4.7.10.4	Recommendations to Facilitate Management of Groundwater Supply Sources.....	4-236
4.7.11	Salinas Reservoir Expansion/Exchanges.....	4-237
4.7.11.1	Potential Benefits of Salinas Reservoir Expansion/Exchanges.	4-237
4.7.11.2	Potential Cost of Salinas Reservoir Expansion/Exchanges.....	4-237
4.7.11.3	Major Issues Facing Salinas Reservoir Expansion/Exchanges.	4-237
4.7.11.4	Recommendations to Facilitate Salinas Reservoir Expansion/Exchanges	4-238
4.7.12	Desalination	4-238
4.7.13	Lopez Lake Expansion/Exchanges	4-243
4.7.13.1	Potential Benefits of Lopez Reservoir Expansion/Exchanges ...	4-243
4.7.13.2	Potential Cost of Lopez Reservoir Expansion/Exchanges.....	4-243
4.7.13.3	Major Issues Facing Lopez Reservoir Expansion/Exchanges...	4-244
4.7.13.4	Recommendations to Facilitate Lopez Reservoir Expansion/Exchanges	4-244
4.7.14	New Off Stream Storage.....	4-244
4.7.14.1	Potential Benefits of Off Stream Surface Storage	4-245
4.7.14.2	Potential Costs of New Off Stream Surface Storage	4-245
4.7.14.3	Major Issues Facing New Off Stream Storage.....	4-245
4.7.14.4	Recommendation to Increase Off Stream Surface Storage Benefits	4-246
4.7.15	Nipomo Supplemental Water Project	4-246
4.7.15.1	Potential Benefits of the Nipomo Supplemental Water Project .	4-247
4.7.15.2	Potential Cost of the Nipomo Supplemental Water Project	4-247
4.7.15.3	Major Issues Facing the Nipomo Supplemental Water Project .	4-247
4.7.15.4	Recommendations to Facilitate the Nipomo Supplemental Water Project.....	4-247
4.7.16	Precipitation Enhancement.....	4-247
4.7.16.1	Potential Benefits from Precipitation Enhancement.....	4-248
4.7.16.2	Potential Cost of Precipitation Enhancement.....	4-249
4.7.16.3	Major Issues for Precipitation Enhancement	4-249
4.7.16.4	Recommendations to Increase Precipitation Enhancement.....	4-250
4.7.17	New On Stream Storage.....	4-250
4.7.17.1	Potential Benefits of On Stream Surface Storage.....	4-251
4.7.17.2	Potential Costs of New On Stream Surface Storage	4-252
4.7.17.3	Major Issues Facing New On Stream Storage.....	4-252

	4.7.17.4 Recommendation to Increase On Stream Surface Storage Benefits	4-253
4.8	SUMMARY ANALYSIS, CONCLUSIONS, RECOMMENDATIONS	4-253
4.8.1	Contingency Plan or Reliability Supply	4-253
4.8.1.1	City of San Luis Obispo Reliability Reserve	4-254
4.8.1.2	Reliability Supply Goal	4-256
4.8.2	Regional Water Supply Strategies	4-256
4.8.2.1	Interagency Arrangements and Exchanges	4-257
4.8.2.2	Chorro Valley Water System Connection to NWP	4-257
4.8.2.3	Santa Margarita Lake/Salinas Reservoir Release	4-257
4.8.3	Water Conservation	4-258
4.8.4	Groundwater Evaluations	4-258
4.8.5	Groundwater Banking/Recharge	4-259
4.8.6	Streamline Institutional Agreements	4-259
4.8.7	Improving Agriculture Demand Estimate	4-259
4.8.8	Improving Rural Demand Estimate	4-260
4.8.9	Agricultural and Rural Users Water Management Strategies	4-261
4.8.10	Environmental Water Management Strategy	4-262
4.8.11	Unsubscribed State Water Project	4-263
4.8.12	North Coast Sub-Region	4-263
4.8.12.1	San Simeon WPA 1	4-263
4.8.12.2	Cambria WPA 2	4-269
4.8.12.3	Cayucos WPA 3	4-272
4.8.12.4	Morro Bay WPA 4	4-275
4.8.12.5	Los Osos WPA 5	4-281
4.8.13	South Coast Sub-Region	4-285
4.8.13.1	San Luis Obispo/Avila WPA 6	4-285
4.8.13.2	South Coast WPA 7	4-290
4.8.13.3	Huasna Valley WPA 8	4-299
4.8.13.4	Cuyama Valley WPA 9	4-302
4.8.14	Inland Sub-Region	4-305
4.8.14.1	Carrizo Plain WPA 10	4-305
4.8.14.2	Rafael/Big Spring WPA 11	4-309
4.8.14.3	Santa Margarita WPA 12	4-312
4.8.14.4	Atascadero/Templeton WPA 13	4-316
4.8.14.5	Salinas/Estrella WPA 14	4-322
4.8.14.6	Cholame WPA 15	4-328
4.8.14.7	Nacimiento WPA 16	4-331

CHAPTER 5 - PART III: WATER RESOURCE PLANNING

5.1	RELATIONSHIP OF MASTER WATER PLAN TO EXISTING DOCUMENTS	5-1
5.1.1	California Water Plan	5-1
5.1.1.1	Description	5-1
5.1.1.2	Relationship to Master Water Plan (MWP)	5-1
5.1.1.3	Timing	5-1
5.1.1.4	Issues Related to Coordination	5-2
5.1.1.5	Recommendations for Coordination	5-2
5.1.2	Integrated Regional Water Management Plan	5-2
5.1.2.1	Description	5-2
5.1.2.2	Relationship to MWP	5-2
5.1.2.3	Timing	5-3

5.1.2.4	Issues related to coordination	5-3
5.1.2.5	Recommendations for coordination	5-3
5.1.3	County General Plan	5-3
5.1.3.1	Conservation and Open Space Element	5-3
5.1.3.2	Land Use and Circulation Element	5-5
5.1.3.3	County Resource Management System	5-6
5.1.3.4	Agricultural Element	5-8
5.1.4	Sub-Regional/Area Water Resources Planning Documents	5-9
5.1.4.1	Description	5-9
5.1.4.2	Relationship to MWP	5-10
5.1.4.3	Timing	5-10
5.1.4.4	Issues related to coordination	5-10
5.1.4.5	Recommendations for Coordination	5-10
5.2	RECOMMENDATIONS FOR FUTURE MASTER WATER PLAN UPDATES	5-11
5.2.1	Areas of Improvement and Data Limitations	5-11
APPENDIX A	TM No. 1, Description of Available Date, prepared by Wallace Group in association with Carollo Engineers, Fugro West, Inc. and Cleath-Harris Geologists	
APPENDIX B	TM No. 2, Water Supply Inventory and Assessment – Description of Water Resources, prepared by Wallace Group in association with Fugro West, Inc., and Cleath-Harris Geologists	
APPENDIX C	TM No. 3, Water Supply Inventory and Assessment – Water Supply, Demand, and Water Quality	
APPENDIX D	Memorandum, San Luis Obispo County Water Demand Analysis Methodology and Results, ESA, January 11, 2010	

LIST OF TABLES

Table ES 1:	Master Water Plan Recommendations	4
Table 1.1	WRAC Workshops	1-4
Table 4.1	North Coast Sub-Region Groundwater Basins	4-2
Table 4.2	South Coast Sub-Region Groundwater Basins	4-20
Table 4.3	Inland Sub-Region Groundwater Basins	4-39
Table 4.4	Other Developed Supply Sources	4-55
Table 4.5	State Water Project Water Service Amount	4-60
Table 4.6	Nacimiento Water Project Participants	4-62
Table 4.7	Whale Rock Reservoir Allocations	4-63
Table 4.8	Whale Rock Downstream Entitlements	4-64
Table 4.9	Lopez Lake Allocations	4-65
Table 4.10	Existing and Forecast Water Demand for All Water Planning Areas ⁽¹⁾	4-77
Table 4.11	Urban Water Demand by Water Planning Area ⁽¹⁾	4-83
Table 4.12	Crop Group and Commodities Used for the Agricultural Demand Analysis	4-84
Table 4.13	Existing Irrigated Crop Acreage Determined in GIS ⁽¹⁾	4-85
Table 4.14	Forecast Irrigated Crop Acreage Determined in GIS ⁽¹⁾	4-87
Table 4.15	Agricultural Water Demand by Water Planning Area ⁽¹⁾	4-88
Table 4.16	Existing and Future Rural Water Demand	4-90
Table 4.17	Mean Annual Discharge and Environmental Water Demand Estimates	4-93

Table 4.18	San Simeon CSD Demand and Supply	4-95
Table 4.19	San Simeon WPA 1 Demand and Supply	4-96
Table 4.20	Cambria CSD Demand and Supply	4-98
Table 4.21	Cambria WPA 2 Demand and Supply	4-100
Table 4.22	Cayucos Area Water Organization Demand and Supply	4-102
Table 4.23	Cayucos WPA 3 Supply and Demand	4-104
Table 4.24	Morro Bay and Chorro Valley Water Demand and Supply	4-108
Table 4.25	Morro Bay WPA 4 Supply and Demand	4-112
Table 4.26	Population Estimates and Connection Data for Urban Water Purveyors (2002 Los Osos CSD WMP, 2009 RMS, and GSWC Files)	4-114
Table 4.27	Los Osos Area Demand and Supply	4-115
Table 4.28	Los Osos WPA 5 Demand and Supply	4-117
Table 4.29	San Luis Obispo (includes County airport), Cal Poly San Luis Obispo, Avila Beach CSD, Avila Valley MWC, San Miguelito MWC, CSA 12, and Port San Luis Demand and Supply	4-123
Table 4.30	San Luis Obispo/Avila WPA 6 Demand and Supply	4-126
Table 4.31	Golden State Water Company (Edna Valley) Demand and Supply	4-128
Table 4.32	Pismo Beach, Arroyo Grande, Grover Beach, and Oceano CSD Demand and Supply	4-134
Table 4.33	Northern Cities Management Area Rural Water Use Demand	4-136
Table 4.34	Northern Cities Management Area Demand and Supply	4-138
Table 4.35	Golden State Water Company, Nipomo CSD, Rural Water Company, and Conoco-Phillips Demand and Supply	4-144
Table 4.36	Agricultural Demand	4-146
Table 4.37	NMMA Demand and Supply	4-147
Table 4.38	South Coast WPA 7 Demand and Supply	4-150
Table 4.39	Huasna Valley WPA 8 Demand and Supply	4-155
Table 4.40	Cuyama Valley WPA 9 Demand and Supply	4-157
Table 4.41	Solar Farm Demand Estimates	4-159
Table 4.42	Carrizo Plain WPA 10 Demand and Supply	4-161
Table 4.43	Rafael/Big Spring WPA 11 Demand and Supply	4-163
Table 4.44	Santa Margarita Area Demand and Supply	4-166
Table 4.45	Santa Margarita WPA 12 Demand and Supply	4-167
Table 4.46	Summary of Existing Water Supplies for Templeton CSD	4-170
Table 4.47	Garden Farms CWD, Templeton CSD, Atascadero MWC, and Paso Robles Demand and Supply	4-174
Table 4.48	Atascadero/Templeton WPA 13 Demand and Supply	4-177
Table 4.49	San Miguel CSD, Camp Roberts, CSA 16, and Paso Robles Demand and Supply	4-184
Table 4.50	Salinas/Estrella WPA 14 Demand and Supply	4-187
Table 4.51	Cholame WPA 15 Demand and Supply	4-190
Table 4.52	Nacimiento WPA 16 Demand and Supply	4-193
Table 4.53	City of San Luis Obispo 2010 Water Supply Accounting	4-255
Table 4.54	San Simeon WPA 1 Water Management Strategies	4-266
Table 4.55	Cambria WPA 2 Water Management Strategies	4-270
Table 4.56	Cayucos WPA 3 Water Management Strategies	4-273
Table 4.57	Morro Bay WPA 4 Water Management Strategies	4-278
Table 4.58	Los Osos WPA 5 Water Management Strategies	4-282
Table 4.59	San Luis Obispo/Avila WPA 6 Water Management Strategies	4-287
Table 4.60	South Coast WPA 7 Water Management Strategies	4-294
Table 4.61	Huasna Valley WPA 8 Water Management Strategies	4-300
Table 4.62	Cuyama Valley WPA 9 Water Management Strategies	4-303

Table 4.63	Carrizo Plain WPA 10 Water Management Strategies	4-306
Table 4.64	Rafael/Big Spring WPA 11 Water Management Strategies	4-310
Table 4.65	Santa Margarita WPA 12 Water Management Strategies	4-313
Table 4.66	Atascadero/Templeton WPA 13 Water Management Strategies	4-318
Table 4.67	Salinas/Estrella WPA 14 Water Management Strategies	4-324
Table 4.68	Cholame WPA 15 Water Management Strategies	4-329
Table 4.69	Nacimiento WPA 16 Water Management Strategies	4-332

LIST OF FIGURES

Figure 1.1	Sub-Regions and Water Planning Areas	1-2
Figure 2.1	North Coast Sub-Region	2-2
Figure 2.2	South Coast Sub Region	2-4
Figure 2.3	Inland Sub-Region	2-7
Figure 3.1	Measured Regional Groundwater Wells	3-2
Figure 3.2	District Groundwater Measuring Program	3-4
Figure 3.3	U.S. Geological Survey Well Measuring Program	3-6
Figure 3.4	Streams With Current Gauge Stations	3-8
Figure 3.5	San Luis Obispo County Stream Measuring Program	3-11
Figure 3.6	USGS Stream Gauge Sites	3-13
Figure 3.7	Regional Rain Gauge Network	3-14
Figure 3.8	County Recording Rain Gauge Distribution	3-15
Figure 3.9	County Volunteer Rain Gauge Distribution	3-17
Figure 3.10	District Real-Time Rain Gauge Network	3-19
Figure 3.12	Regional COOP Stations	3-22
Figure 3.13	Citizen Weather Observer Program Gauges	3-24
Figure 3.14	Remote Automated Weather Station (RAWS) Gauges	3-26
Figure 3.15	FAA ASOS Stations	3-28
Figure 3.16	Local National Weather Service QPFs	3-29
Figure 3.17	Reservoir Locations	3-31
Figure 3.18	Central Coast Ambient Monitoring Program	3-35
Figure 3.19	SLOSEA Sites	3-38
Figure 3.20	EPA's National Coastal Assessment	3-39
Figure 3.21	County Public Health Beach Monitoring 2010	3-41
Figure 3.22	National Data Buoy Center	3-43
Figure 3.23	Historic United States Geological Survey (USGS) Water Quality Monitoring Sites	3-44
Figure 3.24	NCMA Coastal Sentry Wells	3-46
Figure 4.1	San Luis Obispo County Water Planning Area 1	4-3
Figure 4.2	San Luis Obispo County Water Planning Area 2	4-7
Figure 4.3	San Luis Obispo County Water Planning Area 3	4-11
Figure 4.4	San Luis Obispo County Water Planning Area 4	4-15
Figure 4.5	San Luis Obispo County Water Planning Area 5	4-18
Figure 4.6	San Luis Obispo County Water Planning Area 6	4-21
Figure 4.7	San Luis Obispo County Water Planning Area 7	4-25
Figure 4.8	San Luis Obispo County Water Planning Area 8	4-35
Figure 4.9	San Luis Obispo County Water Planning Area 9	4-37
Figure 4.10	San Luis Obispo County Water Planning Area 10	4-41
Figure 4.11	San Luis Obispo County Water Planning Area 11	4-43

Figure 4.12	San Luis Obispo County Water Planning Area 12	4-45
Figure 4.13	San Luis Obispo County Water Planning Area 13	4-48
Figure 4.14	San Luis Obispo County Water Planning Area 14	4-51
Figure 4.15	San Luis Obispo County Water Planning Area 15	4-54
Figure 4.16	San Luis Obispo County Water Planning Area 16	4-56
Figure 4.17	San Luis Obispo County Water Planning Areas	4-58