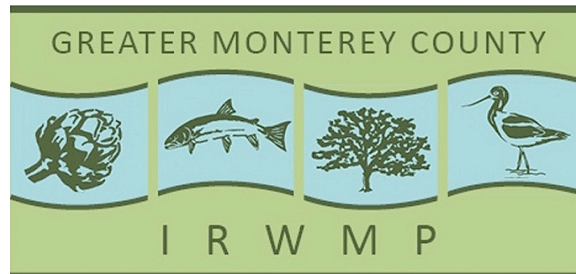


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Integrated Regional Water Management Plan for the Greater Monterey County Region



Regional Water Management Group

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Note that the Greater Monterey County RWMG has been developed as a "working group." Members are expected to actively participate in all aspects of the IRWM planning process. During the development of this Plan, RWMG members attended monthly RWMG meetings, participated on subcommittees to develop various elements of the Plan (such as identifying the region's issues and conflicts, determining goals and objectives, and developing a process for ranking projects), attended public workshops, and reviewed drafts of the IRWM Plan. We would like to acknowledge and thank all of the RWMG members who have contributed so much of their time toward the development of this IRWM Plan.

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FOR MORE INFORMATION

Please visit the Greater Monterey County IRWM website for additional information, resources, and contact information: <http://www.greatermontereyirwmp.org/>.

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Acronyms

AB – Assembly Bill
AF – Acre-feet
AFY – Acre-feet per Year
ACS – US Census American Community Survey
AMBAG – Association of Monterey Bay Area Governments
ASBS – Area of Special Biological Significance
AWEP – Agricultural Water Enhancement Program
AWQA – Agriculture Water Quality Alliance
BLM – U.S. Bureau of Land Management
BMP – Best Management Practice
Cal-Am – California American Water Company
CalDUCS – California Data Upload and Checking System
Cal Water – California Water Service Company
CCA – Critical Coastal Area
CCAMP – Central Coast Ambient Monitoring Program
CCC – California Coastal Commission
CCD – Census County Division
CCSD – Castroville Community Services District
CCWG – Central Coast Wetlands Group
CDFG – California Department of Fish and Game
CDP – Census Designated Place
CDPH – California Department of Public Health
CEDEN – California Environmental Data Exchange Network
CEQA – California Environmental Quality Act
CFR – Code of Federal Regulations
COS – Center for Ocean Solutions
CPUC – California Public Utilities Commission
CRAM – California Rapid Assessment Methods
CRS – Community Rating System
CSA – Monterey County Service Area
CSIP – Castroville Seawater Intrusion Project
CSUMB – California State University Monterey Bay
CWC – California Water Code
DAC – Disadvantaged Community
DAU – Data Analysis Unit
DEH – Monterey County Division of Environmental Health
DMS – Data Management System
DPS – Distinct Population Segment
DWR – California Department of Water Resources
DWS – Drinking Water Standard
EIR – Environmental Impact Report

EJCW – Environmental Justice Coalition for Water
EQIP – Environmental Quality Incentives Program
ESF – Elkhorn Slough Foundation
ESNERR – Elkhorn Slough National Estuarine Research Reserve
FEMA – Federal Emergency Management Agency
FEP – Functionally Equivalent Plan
FORA – Fort Ord Reuse Authority
GAMA – Groundwater Ambient Monitoring and Assessment
GIS – Geographic Information System
GPM – Gallons per Minute
GWESR – Ground Water Extraction Summary Report
ICLEI – International Council for Local Environmental Initiatives
IPCC – Intergovernmental Panel on Climate Change
IRWM – Integrated Regional Water Management
IWRP – Integrated Watershed Restoration Program
LAFCO – Local Agency Formation Commission
LCP – Local Coastal Program or Local Coastal Plan
LID – Low Impact Development
MBNMS – Monterey Bay National Marine Sanctuary
MCL – Maximum Contaminant Level
MCRMA – Monterey County Resource Management Agency
MCWD – Marina Coast Water District
MCWRA – Monterey County Water Resources Agency
MGD – Million Gallons per Day
MHI – Median Household Income
MM – Management Measure
MOA – Memorandum of Agreement
MOU – Memorandum of Understanding
MPA – Marine Protected Area
MRSWMP – Monterey Regional Storm Water Management Program
MPWMD – Monterey Peninsula Water Management District
MRWMD – Monterey Regional Waste Management District
MRWPCA – Monterey Regional Water Pollution Control Agency
MS4 – Municipal Separate Storm Sewer System
MSR – Municipal Service Review
NFIP – National Flood Insurance Program
NFWF – National Fish and Wildlife Foundation
NMFS - National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric
NPDES – National Pollutant Discharge Elimination System
NPS – Nonpoint Source
NRCS – Natural Resources Conservation Service
O&M – Operations and Maintenance
OPR – Governor’s Office of Planning and Research

PRC – California Public Resources Code
PVWMA – Pajaro Valley Water Management Agency
RCAC – Rural Community Assistance Corporation
RCD – Resource Conservation District
RCM – Regional Climate Model
RDC – Regional Data Center
RDIPAC – Reclamation Ditch Improvement Plan Advisory Committee
RLP – Repetitive Loss Property
RON – Return of the Natives Restoration Education Project
RTP – Regional Treatment Plant
RUWAP – Regional Urban Water Augmentation Project
RWMG – Regional Water Management Group
RWQCB – Regional Water Quality Control Board
SB – Senate Bill
SBCWD – San Benito County Water District
SMCA – State Marine Conservation Area
SMR – State Marine Reserve
SVIGSM – Salinas Valley Integrated Ground and Surface Water Model
SVRP – Salinas Valley Reclamation Plant
SVWP – Salinas Valley Water Project
SWAMP – California Surface Water Ambient Monitoring Program
SWRCB – State Water Resources Control Board
SWMP – Stormwater Management Plan
TAC – Technical Advisory Committee
TDS – Total Dissolved Solids
TMDL – Total Maximum Daily Load
USDA – United States Department of Agriculture
US EPA – United States Environmental Protection Agency
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Survey
UWMP – Urban Water Management Plan
WDR – Waste Discharge Requirement
WMI – Watershed Management Initiative
WQPP – Water Quality Protection Program
WRPC – Water Resource Project Coordination
WSA – Water Supply Assessment

Executive Summary

Introduction

Integrated regional water management (IRWM) is an approach to water resource management in California that is being strongly promoted by the State as a way to increase regional self-sufficiency. IRWM offers an approach for managing the uncertainties that lie ahead, particularly in light of climate change. The IRWM planning process brings together water and natural resource managers, along with other community stakeholders, to collaboratively plan for and ensure the region's continued water supply reliability, improved water quality, flood management, and healthy functioning ecosystems—allowing for creative new solutions and greater efficiencies. This IRWM Plan has been developed for the Greater Monterey County IRWM region to fulfill the goals of IRWM planning in this region and to provide eligibility for State IRWM grant funds.

Section A: Governance

The Greater Monterey County Regional Water Management Group (RWMG) is the group responsible for development of this IRWM Plan. The Greater Monterey County RWMG consists of 18 organizations including government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Resource Management Agency
- Monterey County Water Resources Agency
- Monterey One Water
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

Members of the RWMG have entered into a Memorandum of Understanding (MOU) to acknowledge cooperative efforts in the planning region and to form an institutional structure to develop and implement an IRWM Plan. The IRWM Plan is intended to be a long-term planning document with a minimum 20-year planning horizon. As such, the Plan will need to undergo periodic updates and revisions to reflect changing conditions. RWMG membership and governance processes may evolve over time.

Section B: Greater Monterey County Region Description

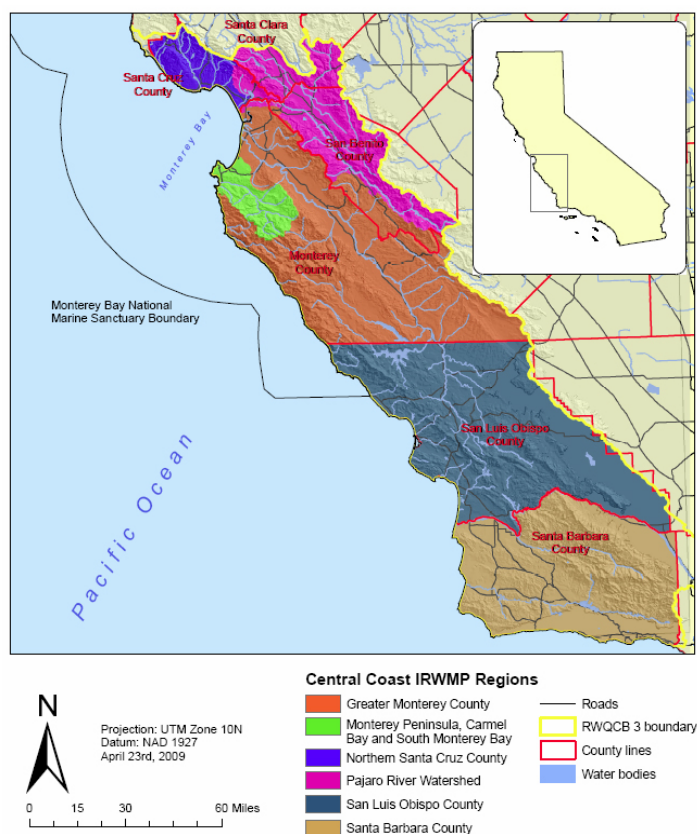
The Greater Monterey County IRWM region lies entirely within the Central Coast Regional Water Quality Control Board district and is part of the IRWM Central Coast Funding Area. Adjacent IRWM regions include:

- Pajaro River Watershed IRWM region
- Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region
- San Luis Obispo County IRWM region

Together these four regions, plus the Northern Santa Cruz County and the Santa Barbara County IRWM regions, form the Central Coast IRWM Funding Area.

The Greater Monterey County IRWM region includes the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region and the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region established under Proposition 50. The Greater Monterey County IRWM region also includes a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County. Generally, the region includes the entire Salinas River watershed north of the San Luis Obispo County line, all of the Gabilan and Bolsa Nueva watersheds in the northern part of the county, and all of the coastal watersheds of the Big Sur coastal region within Monterey County.

Areas within Monterey County that are not represented in this IRWM Plan (but that are represented in other IRWM Plans) include: the Pajaro River watershed, represented in the Pajaro River Watershed IRWM Plan; and the Carmel River watershed, the San Jose Creek watershed, areas overlying the Seaside Groundwater Basin, and all areas within the Monterey Peninsula Water Management District jurisdictional boundary (including the Monterey Peninsula cities of Carmel-by-the-Sea, Del Rey Oaks, Pacific Grove, Monterey, Sand City, and Seaside), which are represented in the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Plan.



This chapter provides an overview of the watersheds, significant environmental resources, and water systems in the region, including surface waters, groundwater, reclaimed water, desalination, floodwater, and water supply infrastructure. These systems are integrally interconnected. The Greater Monterey County IRWM region receives no “imported” water, that is, no water from the State Water Project or from any other water source imported from outside of its boundaries (except for water from the Salinas River, which flows naturally from San Luis Obispo County). Therefore, maintaining the region’s water systems is absolutely critical for ensuring the health, prosperity, and long-term sustainability of local communities in the region.

The Greater Monterey County IRWM region includes six major watersheds (or portions thereof). The Salinas River watershed is by far the largest watershed in the region, encompassing an area of approximately 3,950 square miles within Monterey and San Luis Obispo Counties. The significant surface waters of the Greater Monterey County IRWM region include the Salinas River in the Salinas Valley and its tributaries, the largest of which are the Arroyo Seco, San Antonio, and Nacimiento Rivers; the San Antonio and Nacimiento Reservoirs; the numerous rivers originating in the Santa Lucia Mountains along the Big Sur coast; Elkhorn Slough and Moro Cojo Slough; Monterey Bay, and the coastal waters of the Monterey Bay National Marine Sanctuary. The Nacimiento and San Antonio Reservoirs are considered the most prominent elements of the region's water infrastructure. The Nacimiento Reservoir yields on average about 62 percent of the total water in the Salinas River system, while the San Antonio Reservoir yields on average about 13 percent of the total water in the Salinas River system.

Groundwater is the main source of water for most water users in the planning region with the exception of residents along the Big Sur coast, who depend entirely on surface water and shallow wells for their water supply, and of residents in an area near Greenfield in the Salinas Valley, who have a diversion from the Arroyo Seco River. The largest groundwater basin in the planning region is the Salinas Valley Groundwater Basin. The basin consists of one large hydrologic unit comprised of eight sub-basins. According to the 2015 MCWRA Ground Water Extraction Data Summary Report, total groundwater pumping from the Salinas Valley Groundwater Basin in the 2015 reporting year was 514,714 acre feet (AF). Agricultural pumping accounted for 93 percent of total groundwater pumping and urban uses accounted for the remaining 7 percent of the reported extractions. Groundwater recharge in the Salinas Valley is principally from infiltration from the Salinas River, Arroyo Seco, and to a much less extent, other tributaries to the Salinas River, and from deep percolation of rainfall. It is estimated that stream recharge accounts for approximately half of the total basin recharge.

The chapter also describes internal boundaries within the Greater Monterey County region, including political boundaries; service areas of individual water, wastewater, and flood control districts; and service areas of land use agencies. The Greater Monterey County IRWM region includes six incorporated cities, which comprise 69 percent of the region's population: Salinas, Soledad, Marina, Greenfield, King City, and Gonzales. Unincorporated communities include: Prunedale, Castroville, and the significantly smaller communities of Moss Landing, Las Lomas, Spreckels, Chualar, San Lucas, San Ardo, Lockwood, Bradley, and Parkfield. Along the Big Sur coast, unincorporated communities include: Big Sur, Lucia, and Gorda. Military areas in the region include Fort Hunter Liggett, a United States Army Reserve command post encompassing 165,000 acres on the eastern side of the Santa Lucia Mountains, and Camp Roberts, a National Guard training base located in southern Monterey County and northern San Luis Obispo County, encompassing approximately 17,000 acres within Monterey County.

Water supply in the region is managed by several agencies, both public and private. Monterey County Water Resource Agency (MCWRA), formed in 1947, is the primary water management agency for Monterey County and is responsible for managing, protecting, and enhancing water supply and water quality, as well as providing flood protection, in the County.

Major water suppliers in the region include California Water Service Company, California American Water Company, Alco Water Service Company, Marina Coast Water District, Castroville Community Services District, and the municipalities of Gonzales, Greenfield, Soledad, and King City. The U.S. Army and California State Parks supply water for use on their properties. The majority of residents and businesses in the Big Sur coastal region obtain water from private wells and springs.

The Water Supply and Water Demand section describes historic land use, population, and water use trends in the region, and projected water demand over a 25-year planning horizon based on projected land

use and population trends. Most of the urban development in the region has occurred in the cities of Salinas, Soledad, Gonzales, Greenfield, and King City. Over the next 20 years, population in the Big Sur coastal region is expected to remain relatively stable; however, continuous growth is expected in the cities of Gonzales, Greenfield, Salinas, King City, and Soledad.

The primary land use in Monterey County is agriculture, representing about 56 percent of the total land area and occupying more than 1.4 million acres of land. The second largest land use consists of public and quasi-public uses (such as parks, recreational, community, and military facilities), comprising about 23 percent of the total land area. Only 5 percent of the county has been developed with residential, industrial, and commercial uses.

Water use in the Salinas Valley Groundwater Basin has significantly outpaced water supply over the past several decades, resulting in overextraction and seawater intrusion. Conditions are expected to improve somewhat by 2030, at least in terms of basin overdraft. However, seawater intrusion is expected to worsen, particularly with increasing impacts of climate change. The IRWM Plan promotes projects that address specific infrastructure needs as well as overall water supply reliability for the region.

The chapter also describes current water quality conditions in the Greater Monterey County IRWM region for surface and groundwater, regional water quality goals and objectives, and current efforts to protect and improve water quality in the IRWM planning region. The quality of surface waters in the region is greatly influenced by land use practices. Primary causes of pollutants to surface waters include urban runoff, agricultural runoff, erosion and sedimentation, and septic systems. Erosion is a widespread problem in Monterey County. Two major water quality problems affecting the Salinas Valley Groundwater Basin are nitrate contamination and seawater intrusion. Nitrate contamination is due primarily to use of nitrogen-based synthetic fertilizers for irrigated agriculture, and commonly occurs in the unconfined and semi-confined aquifers that underlie areas of intense agricultural activity. Seawater intrusion was first observed in a few wells in the Castroville area in 1932. As of 2017, seawater has intruded approximately 7.5 miles inland in the 180-Foot Aquifer and 4.5 miles inland in the 400-Foot Aquifer. As a result of seawater intrusion, urban and agricultural supply wells have been abandoned, destroyed, and relocated.

Within the Greater Monterey County IRWM region, 31 water bodies have been determined by the RWQCB to be impaired under Section 303(d) of the Clean Water Act. The water bodies in the lower Salinas Valley have some of the worst pollutant impairments on the Central Coast. The Lower Salinas River has the most pollutant impairments identified on the 303(d) list of any other water body on the Central Coast, with 19 impairments.

Section C: Flood Management

This chapter describes the current framework for flood management in the Greater Monterey County IRWM region and identifies the potential for integrated flood management. Historic records from 1911-2007 show flooding and flood damage to have occurred on a fairly regular basis (every few years) within Monterey County. The agency with primary responsibility for floodplain management in Monterey County is the Monterey County Water Resources Agency (MCWRA). Flood control also falls under the authority of municipalities throughout the region, which are responsible for storm drain maintenance and surface water disposal. The Nacimiento and San Antonio Dams, constructed in 1957 and 1967 respectively, dams were constructed to control floodwaters and to release water into the Salinas River for percolation to underground aquifers throughout the summer.

Section D: Goals and Objectives

This chapter includes a description of the process for identifying the goals and objectives for the Greater Monterey County IRWM planning region, the list of approved goals and objectives, a matrix used to measure progress toward achieving each of the objectives, and an explanation of why the Greater Monterey County RWMG chose not to prioritize objectives. Below are the goals and objectives for this IRWM Plan:

WATER SUPPLY Goal: Improve water supply reliability and protect groundwater and surface water supplies.

WATER SUPPLY Objectives:

- Increase groundwater recharge and protect groundwater recharge areas.
- Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.
- Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.
- Diversify water supply sources, including but not limited to the use of recycled water.
- Maximize water conservation programs.
- Capture and manage stormwater runoff.
- Optimize conjunctive use where appropriate.
- Support research and monitoring to better understand identified water supply needs.
- Support the creation of water supply certainties for local production of agricultural products.
- Promote public education about water supply issues and needs.
- Promote planning efforts to provide emergency drinking water to communities in the region in the event of a disaster.

WATER QUALITY Goal: Protect and improve surface, groundwater, estuarine, and coastal water quality, and ensure the provision of high-quality, potable, affordable drinking water for all communities in the region.

WATER QUALITY Objectives:

- Promote practices necessary to meet, or where practicable, exceed all applicable water quality regulatory standards (for drinking water, surface and groundwater quality).
- Promote projects to prevent seawater intrusion.
- Incorporate or promote principles of low impact development where feasible, appropriate, and cost effective.
- Protect surface waters and groundwater basins from contamination and the threat of contamination.
- Support research and pilot projects for the co-management of food safety and water quality protection.
- Improve septic systems, sewer system infrastructure, wastewater treatment systems, and manure management programs to prevent water quality contamination.
- Support research and other efforts on salinity management.
- Support monitoring to better understand major sources of erosion, and implement a comprehensive erosion control program.
- Promote programs and projects to reduce the quantity and improve the quality of urban and agricultural runoff and/or mitigate their effects in surface waters, groundwater, and the marine environment.

- Promote regional monitoring and analysis to better understand water quality conditions.
- Support research and utilization of emerging technologies (enzymes, etc.) to develop effective water pollution prevention and mitigation measures, and source tracking.
- Promote public education about water quality issues and needs.

FLOOD PROTECTION AND FLOODPLAIN MANAGEMENT Goal: Develop, fund, and implement integrated watershed approaches to flood management through collaborative and community supported processes.

FLOOD PROTECTION AND FLOODPLAIN MANAGEMENT Objectives:

- Promote projects and practices to protect infrastructure and property from flood damage.
- Improve flood management infrastructure and operational techniques/strategies.
- Implement flood management projects that provide multiple benefits such as public safety, habitat protection, recreation, agriculture, and economic development.
- Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.
- Support research and monitoring efforts to understand the effects of flooding on transport and persistence of pathogens in food crop production areas.
- Support management of flood waters so that they do not contaminate fresh produce in the field.
- Promote public education about local flood management issues and needs.

ENVIRONMENT Goal: Protect, enhance, and restore the region's ecological resources while respecting the rights of private property owners.

ENVIRONMENT Objectives:

- Support science-based projects to protect, improve, enhance, and/or restore the region's ecological resources, while providing opportunities for public access and recreation where appropriate.
- Protect and enhance state and federally listed species and their habitats.
- Minimize adverse environmental impacts of water resource management projects.
- Support applied research and monitoring to better understand environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources.
- Implement fish-friendly stream and river corridor restoration projects.
- Reduce adverse impacts of sedimentation into streams, particularly from roads and non-point sources.
- Promote efforts to prevent, control, reduce, and/or eradicate high priority invasive species.
- Promote native drought-tolerant plantings in municipal and residential landscaping.
- Consider opportunities to purchase fee title or conservation easements on lands from willing sellers that provide integrated water resource management benefits. Ensure adequate funding and infrastructure to manage properties and/or monitor easements.
- Support research and monitoring efforts to understand the effects of wildfire events on water resources.

REGIONAL COMMUNICATION AND COOPERATION Goal: Promote regional communication, cooperation, and education regarding water resource management.

REGIONAL COMMUNICATION AND COOPERATION Objectives:

- Facilitate dialogue and reduce inconsistencies in water management strategies/regulations between local, regional, state, and federal entities.

- Promote dialogue between federal and state regulators and small water system managers to facilitate water quality regulation compliance.
- Foster collaboration between regional entities to minimize and resolve potential conflicts and to obtain support for responsible water supply solutions and improved water quality.
- Build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects.
- Increase stakeholder input and public education about the need, complexity, and cost of strategies, programs, plans, and projects to improve water supply, water quality, flood management, coastal conservation, and environmental protection.

DISADVANTAGED COMMUNITIES Goal: Ensure the provision of high-quality, potable, affordable water and healthy conditions for disadvantaged communities (DACs).

DISADVANTAGED COMMUNITIES Objectives:

- Seek funding opportunities to ensure all communities have a water system with adequate, safe, high-quality drinking water.
- Seek funding opportunities to ensure all communities have adequate wastewater treatment.
- Ensure that DACs are adequately protected from flooding and the impacts of poor surface and groundwater quality.
- Provide support for the participation of DACs in the development, implementation, monitoring, and long-term maintenance of water resource management projects.
- Promote public education in DACs about water resource protection, pollution prevention, conservation, water quality, and watershed health.

CLIMATE CHANGE Goal: Adapt the region's water management approach to deal with impacts of climate change using science-based approaches, and minimize the regional causal effects.

CLIMATE CHANGE Objectives:

- Plan for potential impacts of future climate change.
- Support increased monitoring and research to obtain greater understanding of long-term impacts of climate change in the Greater Monterey County region.
- Support efforts to research alternative energy and to diversify energy sources appropriate for the region.
- Seek long-term solutions to reduce greenhouse gas (GHG) producing energy use.
- Seek long-term solutions to maintain and protect existing pristine natural resources from the impacts of climate change.
- Support research and/or implementation of land-based efforts such as carbon-sequestration on working lands and wildlands in the Greater Monterey County region.
- Promote public education about impacts of climate change, particularly as it relates to water resource management in the Greater Monterey County region.

Section E: Resource Management Strategies

The IRWM Program requires RWMGs to consider certain resource management strategies for potential use in their regions and for possible inclusion in their IRWM Plans. This chapter describes the 40 regional water management strategies chosen for the IRWM Plan.

Section F: Project Review Process

All projects submitted for inclusion in the IRWM Plan must undergo a thorough review process before they can be formally adopted into the Plan. With each new project solicitation for the IRWM Plan, a Project Review Committee, comprised of RWMG members, is convened to review each of the projects. The result of the project review process is a ranked project list, vetted and approved by the RWMG. Table F-1 shows the categories and the maximum number of points that a project can achieve per the project prioritization process:

Table F-1: Project Ranking - Summary of Points

Criteria	Explanation of Scoring	Maximum Potential Points
Addresses Goals and Objectives	For each goal category (there are 7 goals): 4 = strongly addresses that goal category 2 = moderately addresses 0 = slightly addresses or does not address	28
Addresses RMS	4 points = 11 or more RMS 2 points = 5 – 10 RMS 0 points = 0 – 4 RMS	4
Contributes to climate change adaptation	2 points = fully addresses 1 point = partially addresses 0 points = inadequate consideration	2
Contributes to reduction in GHG emissions, compared with project alternatives	2 points = fully addresses 1 point = partially addresses 0 points = inadequate consideration	2
TOTAL		36

Section G: Projects

This chapter provides, as an example, the list of projects included in the IRWM Plan through 2012. The most current Project List is posted on the website: www.greatermontereyirwmp.org/projects.

Section H: Impacts and Benefits

This chapter describes the anticipated benefits and potential impacts that will result from the implementation of this IRWM Plan, both on a project-specific level and in terms of how the projects will help achieve regional goals. The chapter includes detailed tables that summarize the impacts and benefits anticipated from each of the IRWM Plan projects, as described by the project proponents themselves.

Section I: Integration

The intent of the Integration standard in the IRWM Program Guidelines is to ensure that RWMGs intentionally create a system where integration can occur. This section discusses three types of integration: 1) stakeholder/institutional integration, 2) resource integration, and 3) project integration.

Section J: Plan Performance and Monitoring

This chapter describes the process for tracking progress toward meeting IRWM Plan objectives. Project implementation is tracked using the “Conservation Action Tracker” database, a data system for tracking land-use management improvements in the Central Coast region.

Section K: Data Management

The Data Management chapter describes how data from IRWM-funded projects is stored, validated, and shared in the Greater Monterey County IRWM planning region. The intent and design of the Greater Monterey County IRWM Plan data management system focuses on a localized approach to data collection and management with uploading of data into statewide databases.

Section L: Finance

This chapter summarizes the anticipated and potential sources of funding to support the projects and programs included in the IRWM Plan, and describes how the Greater Monterey County IRWM planning process will continue to be supported into the future.

Section M: Technical Analysis

This IRWM Plan was developed almost entirely from existing plans, reports, and studies. This chapter describes the technical information, methods, and analyses used by the RWMG for developing this Plan.

Section N: Relation to Local Water Planning

This chapter describes how the IRWM Plan incorporates local water plans, including: groundwater management plans and studies, urban water management plans, flood management plans, watershed management plans, storm water management plans, emergency response and disaster plans, county and city general plans, and other local plans related to water resource management.

Section O: Relation to Local Land Use Planning

The effort to link land use decisions and water management decisions remains an area of challenge in the Greater Monterey County IRWM region as it does in many other regions of the state. This chapter provides examples of how water resource managers currently communicate with land use planners in the Greater Monterey County IRWM region, and provides suggestions for improving coordination.

Section P: Stakeholder Involvement

The Stakeholder Involvement chapter describes the protocols used for stakeholder involvement in the Greater Monterey County IRWM region, including the process used to identify stakeholders, the process used to communicate with stakeholders, special outreach to disadvantaged communities and Native American tribes, and how stakeholders can participate in the IRWM planning process.

Special effort has been made to encourage the participation of disadvantaged communities (DACs) in the Greater Monterey County IRWM planning process and to ensure that their water resource needs are considered and addressed. DACs are defined as communities with annual median household incomes (MHI) that are less than 80 percent of the statewide MHI (the California MHI was \$61,818 in 2015,

according to the American Community Survey [ACS]). Based on 2015 ACS data, eight US Census places within the IRWM region are defined as disadvantaged, along with numerous census tracts and block groups. In all, 36 percent of the population within the Greater Monterey County IRWM region is defined as being disadvantaged, according to 2015 ACS data at the block group level. The chapter describes recent efforts on the part of the RWMG to identify DACs in the planning region and evaluate their drinking water and wastewater needs.

Section Q: Coordination

The intent of the Coordination standard in the IRWM Program Guidelines is to ensure that RWMGs coordinate their activities with local agencies and stakeholders; are aware of adjacent planning efforts and are coordinating with adjacent RWMGs; and are aware of state, federal, and local agency resources and roles in the implementation of their plans and projects. This chapter describes how the IRWM planning effort in the Greater Monterey County IRWM region addresses that standard.

Section R: Climate Change

The intent of the Climate Change standard in the IRWM Program Guidelines is to ensure that IRWM Plans describe, consider, and address the effects of climate change on their regions and disclose, consider, and reduce when possible greenhouse gas (GHG) emissions when developing and implementing projects. This chapter describes the anticipated impacts of climate change for the Greater Monterey County region, including a vulnerability analysis and risk assessment, and offers preliminary adaptation measures and climate change mitigation and GHG reduction strategies for the planning region. These strategies will be refined as more climate change data, and more refined analysis tools, become available.

The chapter summarizes potential vulnerabilities in the Greater Monterey County IRWM region due to climate change impacts, which include (among others) higher temperatures, changes in rainfall patterns, higher flow rates leading to increased erosion and flooding, more frequent and more severe droughts, sea level rise, increased coastal erosion, increased coastal inundation, and increased seawater intrusion. The RWMG conducted an initial climate impact risk assessment to help water resource managers evaluate these risks and to consider potential adaptation measures. The climate risk analyses and priority impact assessment indicate the following climate risks to be top priority for the RWMG and other water managers in the Greater Monterey County IRWM region for considering how to adapt the region's water management systems for climate change impacts:

- ***Decreased water supply*** due to changes in precipitation, more frequent and severe droughts, increased surface and groundwater consumption, and increased seawater intrusion (due to sea level rise affecting coastal aquifers).
- ***Increased flooding and erosion of creeks and rivers*** due to more intense storm events (higher river flow rates), and overburdening of conveyance systems, levees, and culverts.
- ***Coastal inundation of urban development and other land uses, and impacts to river and wetland ecosystems*** due to changes in rainfall patterns, storm intensity, storm surges (due to increased storm intensity) and sea level rise.

The chapter provides an initial adaptation strategy for the Greater Monterey County IRWM region, discusses the region's adaptive capacity, and describes possible strategies to reduce vulnerabilities, including specific assets that lie within various future climate hazard zones according to climate scenarios for the years 2018-2030, 2030-2060, and 2060-2100. The chapter also discusses greenhouse gas emissions reduction strategies.

Introduction

Integrated regional water management is a relatively new approach to water resource management in California. It is an approach that is being strongly promoted by State water managers and legislators as a way to increase regional self-sufficiency, encouraging local water resource managers to take a proactive, leadership role in solving water management problems on a local level through collaborative regional planning. This regional approach is considered absolutely necessary in order for water managers to be able to cope with the impending water management challenges ahead.

The *California Water Plan* is the State's blueprint for managing water resources. Updated every five years, the *California Water Plan* provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The *California Water Plan Update 2009* identifies the most pressing water management issues and challenges faced statewide, and provides recommendations (in the form of 13 objectives and over 115 related actions) to help ensure California's sustainable water use and reliable water supplies through the year 2050 and on for future generations. The authors of *California Water Plan Update 2009* wrote with a certain sense of urgency:

California is facing one of the most significant water crises in its history... We must adapt and evolve California's water systems more quickly and effectively to keep pace with ever changing conditions now and in the future. Population is growing while available water supplies are static and even decreasing. Climate change, as evidenced by changes in snowpack, river flows, and sea levels, is profoundly impacting our water resources. The Delta and other watersheds and ecosystems continue to decline. The state's current water and flood management systems are increasingly challenged by legal remedies and regulatory protections, with economic and societal consequences. The entire system—water and flood management, watersheds, and ecosystems—has lost its resilience and is changing in undesirable ways. (vol. 1, p. 2-5 and p. 2-26)

Planning for and adapting to the effects of climate change, in particular, “will be among the most significant challenges facing water and flood managers this century” (DWR 2009b, vol. 1, p. 2-9). While the exact conditions of future climate change remain uncertain, the effects of climate change on hydrology (snowpack, river flows), storm intensity, temperature, winds, and sea levels are already evident in California. The average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage, and sea level rose 7 inches along California's coast (vol. 1, p. 4-36). The authors conclude: “For more than 200 years, California water and flood management systems have provided the foundation for the state's economic vitality, providing water supply, sanitation, electricity, recreation, and flood protection. However, the climate patterns that these systems were designed for are different now and may continue to change at an accelerated pace. These changes collectively result in significant uncertainty and peril to water supplies and quality, ecosystems, and flood protection; and our water systems cannot be operated as they were originally designed” (vol. 1, p. 2-9).

Integrated regional water management offers an approach for managing the uncertainties that lie ahead. While the traditional approach to water resource management has typically involved separate and distinct agencies managing different aspects of the water system, i.e., water supply, water quality, flood management, and natural resources, integrated regional water management considers the hydrologic system as a whole. The IRWM planning process brings together water and natural resource managers, along with other community stakeholders, to collaboratively plan for and ensure the region's continued water supply reliability, improved water quality, flood management, and healthy functioning

ecosystems—allowing for creative new solutions, greater efficiencies, and an increased promise of long-term success.

In 2008 the Association of California Water Agencies (ACWA) developed a set of policy principles for environmental and economic sustainability, including the following five overriding principles (DWR 2009b, vol. 1, p. 5-21):

- Reliable, adequate water supplies and a healthy ecosystem must be primary co-equal goals for sustainable water management.
- Sustainable solutions will require comprehensive programs that combine substantial investments in ecosystem enhancement and water supply infrastructure.
- Providing reliable, high quality water supplies remains the primary mission of ACWA’s public agency members.
- Water investment and management decisions must recognize that investing in an environmentally sustainable system serves the economic interests of water users statewide.
- New investments are required to progress toward sustainability and adapt to changing environmental conditions like climate change.

The ACWA developed these principles because “ACWA member agencies believe that California’s water policies today are unsustainable” (DWR 2009b, vol. 1, p. 5-21). The IRWM planning approach represents an effort to make California’s water policies more sustainable. IRWM planning recognizes the critical link between water supply reliability and healthy ecosystems, and seeks to manage these systems in a way that is adaptive to changing conditions and sustainable for future generations.

LEGISLATIVE BACKGROUND

California voters have passed several statewide bond measures providing billions of dollars to support local and regional water management activities. In November of 2002, California voters passed Proposition 50 (the “Water Security, Clean Drinking Water, Coastal and Beach Protection Act”), approving the IRWM Program, administered jointly by the State Water Resources Control Board (SWRCB) and the Department of Water Resources (DWR). The purpose of the IRWM Program is to “encourage integrated regional strategies for management of water resources and to provide funding, through competitive grants, for projects that protect communities from drought, protect and improve water quality, and improve local water security by reducing dependence on imported water.” Proposition 50 authorized \$500 million in grant funds for IRWM projects.

In November 2006, California voters passed Proposition 84, the “Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act of 2006.” Administered by DWR, Proposition 84 included an additional \$1 billion in funding for the IRWM Grant Program. Of that \$1 billion, \$52 million was allocated specifically for projects within the Central Coast Funding Area. Proposition 1E, the “Disaster Preparedness and Flood Prevention Bond Act of 2006,” was also passed in 2006, authorizing \$4.09 billion in State bonds to rebuild and repair California’s most vulnerable flood control structures to protect homes and prevent loss of life from flood-related disasters; and to protect California’s drinking water supply system by rebuilding delta levees that are vulnerable to earthquakes and storms.

In November 2014, California voters approved Proposition 1, the Water Quality, Supply, and Infrastructure Improvement Act of 2014. Proposition 1 authorized \$510 million in IRWM funding, \$43 million of which has been allocated to the Central Coast Funding Area. The Proposition 1 IRWM Grant Program, administered by DWR, provides funding for projects that help meet the long-term water needs of the state, including:

- Assisting water infrastructure systems adapt to climate change;
- Providing incentives throughout each watershed to collaborate in managing the region's water resources and setting regional priorities for water infrastructure; and
- Improving regional water self-reliance, while reducing reliance on Sacramento-San Joaquin Delta.

In order to be eligible for IRWM grant funds, a project must be contained within an adopted IRWM Plan. According to the California Water Code §10540(c), an IRWM Plan must address at a minimum all of the following:

1. Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies.
2. Identification and consideration of the drinking water quality of communities within the area of the plan.
3. Protection and improvement of water quality within the area of the plan, consistent with the relevant basin plan.
4. Identification of any significant threats to groundwater resources from overdraft.
5. Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region.
6. Protection of groundwater resources from contamination.
7. Identification and consideration of the water-related needs of disadvantaged communities in the area within the boundaries of the plan.

This IRWM Plan has been developed for the Greater Monterey County region to fulfill the goals of IRWM planning in our region, and as a prerequisite for obtaining IRWM grant funding through Propositions 84 and 1E, and subsequently through Proposition 1, for regional planning and project implementation. This Plan may also serve as a basis for obtaining grant funds through other sources, such as the federal Clean Water Act Section 319 Nonpoint Source Implementation Program, the U.S. Bureau of Reclamation's Title XVI Program, and other federal, state, and private funding programs.

EVOLUTION OF THE GREATER MONTEREY COUNTY IRWM PLAN

To meet requirements for the Proposition 50 IRWM Grant Program, six IRWM Plans were initially developed within the Central Coast region:

- Pajaro River Watershed IRWM Plan (May 2007)
- Monterey Peninsula, Carmel Bay and South Monterey Bay IRWM Plan (November 2007, amended March 2009)
- Salinas Valley IRWM Functionally Equivalent Plan (May 2006, amended October 2008)
- Northern Santa Cruz County IRWM Plan (October 2005)
- San Luis Obispo County IRWM Plan (December 2005, amended July 2007)
- Santa Barbara Countywide IRWM Plan (May 2007)

The first three plans covered geographic areas within Monterey County. Together these plans represented most of the Salinas Valley, all of the Pajaro River watershed, all of the Carmel River and San Jose Creek watersheds, and the Monterey Peninsula. However, many key areas of Monterey County were not represented within any of these plans, creating significant coverage voids for the purposes of IRWM planning and project implementation. These areas include, specifically: the Big Sur coastal watersheds

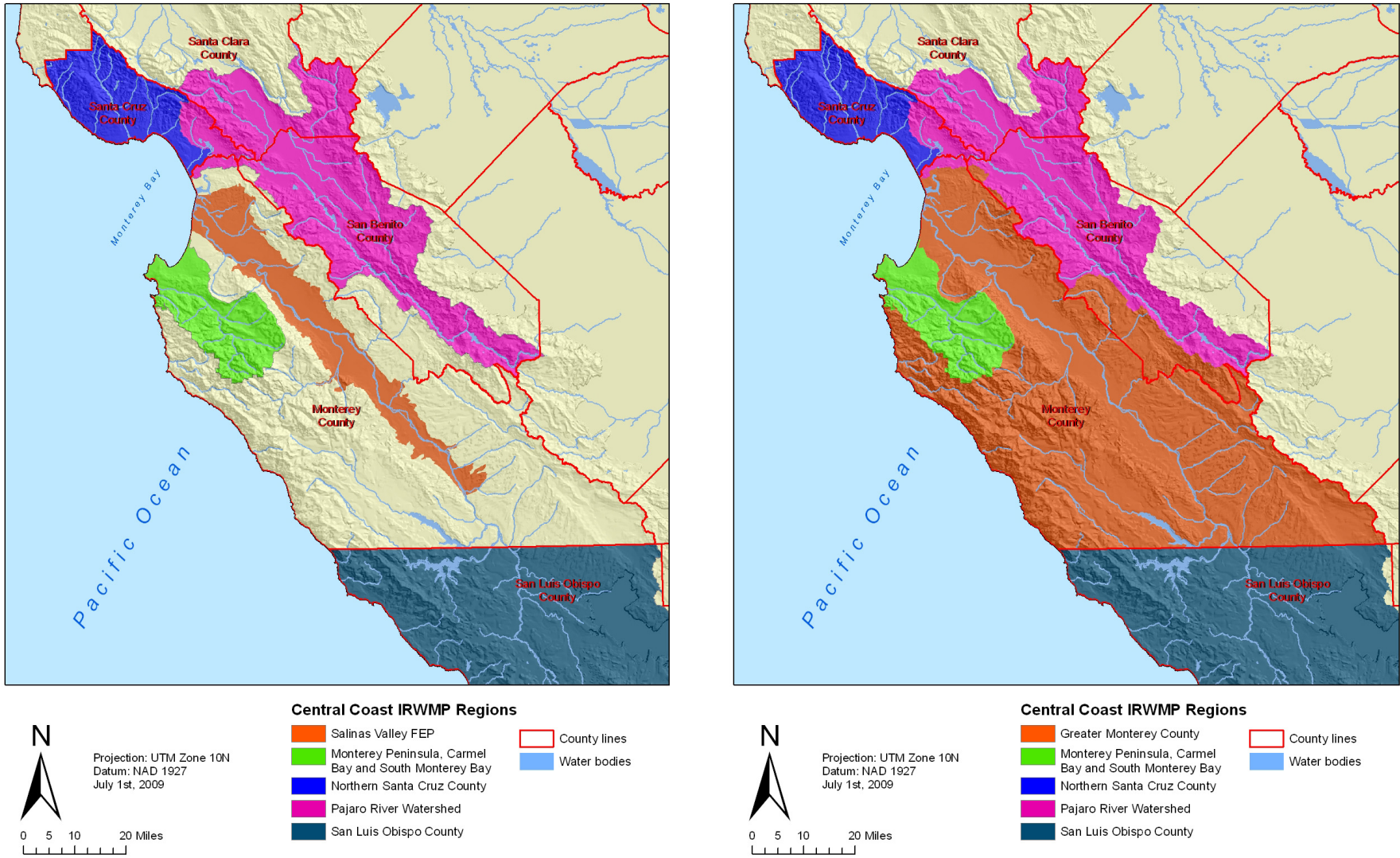
and communities on the western side of the Santa Lucia Range, from Pt. Lobos south to the San Luis Obispo County line; the larger Salinas River watershed from the Salinas River National Wildlife Refuge at the Pacific Ocean south to the San Luis Obispo County line and including the east and west ranges of the valley (including a small portion of western San Benito County); and the Gabilan watershed.

In February 2008, representatives of the Central Coast IRWM regions decided that the Salinas Valley IRWM Functionally Equivalent Plan (FEP) region should be expanded and an entirely new region created for the purposes of IRWM planning and implementation. The proposed new region—the Greater Monterey County IRWM region—would address IRWM plan coverage voids in Monterey County and would bring previously underrepresented areas into the IRWM planning process, including such key areas as the Big Sur coastal watersheds, the larger Salinas watershed, the Gabilan watershed, and parts of northern Monterey County. The maps on the following page illustrate the change in geographic coverage from the Salinas Valley IRWM planning region to the Greater Monterey County IRWM planning region.

This IRWM Plan for the Greater Monterey County region supersedes and replaces the Salinas Valley IRWM FEP, and meets all requirements established by Proposition 1 as specified in the 2016 Integrated Regional Water Management Grant Program Guidelines (DWR 2016). The Greater Monterey County IRWM Plan was formally adopted by vote of the RWMG on April 17, 2013 by the RWMG at a regularly scheduled RWMG meeting that was open to the public. Please see Appendix A for the formal resolutions, signed by the governing boards of each member of the RWMG, to adopt the IRWM Plan. On September 19, 2018, the RWMG voted to approve updates to the IRWM Plan to comply with 2016 IRWM Program standards.

This IRWM Plan is intended to be a living document that will be updated and amended as needed to meet the changing conditions in the region as well as the changing legislative standards of the State's IRWM Grant Program.

Figure Intro-1: Change in geographic coverage from the Salinas Valley IRWM planning region to the Greater Monterey County IRWM planning region:



Section A: Governance

A.1 DESCRIPTION OF REGIONAL WATER MANAGEMENT GROUP

The Greater Monterey County Regional Water Management Group (RWMG) is the group responsible for development of this Integrated Regional Water Management (IRWM) Plan. According to California Water Code §10539, a RWMG is “a group in which three or more local agencies, at least two of which have statutory authority over water supply or water management, as well as those other persons who may be necessary for the development and implementation of a plan that meets the requirements of [IRWM planning], participate by means of a joint powers agreement, memorandum of understanding, or other written agreement, as appropriate, that is approved by the governing bodies of those local agencies.”

Eighteen organizations currently form the Greater Monterey County RWMG. These organizations were invited to join the RWMG based on the intention to create a diverse and inclusive RWMG with adequate and balanced representation of water resource management issues and geographic areas in the Greater Monterey County IRWM region. The member entities include government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests, as follows:

Big Sur Land Trust
California State University Monterey Bay
California Water Service Company
Castroville Community Services District
Central Coast Wetlands Group at Moss Landing Marine Laboratories
City of Salinas
City of Soledad
Elkhorn Slough National Estuarine Research Reserve
Environmental Justice Coalition for Water
Marina Coast Water District
Monterey Bay National Marine Sanctuary
Monterey County Agricultural Commissioner’s Office
Monterey County Resource Management Agency
Monterey County Water Resources Agency
Monterey One Water
Resource Conservation District of Monterey County
Rural Community Assistance Corporation
San Jerardo Cooperative, Inc.

The Greater Monterey County RWMG includes all of the agencies and organizations necessary to address the objectives involved in the development of the IRWM Plan. Seven of the 18 RWMG organizations have statutory authority over water supply and/or water management within the Greater Monterey County region: Castroville Community Services District, City of Salinas, City of Soledad, Marina Coast Water District, Monterey Bay National Marine Sanctuary, Monterey County Water Resources Agency, and the Monterey One Water. The following provides a brief description of each RWMG member, their

relationship to water management issues, and if applicable, their statutory authority over water supply or water management.

Big Sur Land Trust: The Big Sur Land Trust is a 501(c)3 non-profit organization established in 1978 whose mission it is to conserve the significant lands and waters of California's Central Coast for all generations. Working with private and public partners over the past 30+ years, The Big Sur Land Trust has successfully conserved more than 30,000 acres of shoreline, wildlife habitat, streams, forests, grasslands, rangelands and riparian corridors along the Big Sur Coast, Monterey Bay shoreline, and other special places in Monterey County.

California State University Monterey Bay: California State University Monterey Bay is represented on the RWMG by the Watershed Institute, a research and community action institute of the university. The Watershed Institute consists of a coalition of researchers, restoration ecologists, educators, planners, students, and volunteers working together to promote sustainable management of watersheds in the Monterey Bay region and around the world. The Watershed Institute's Central Coast Watershed Studies Team (CCoWS) conducts watershed and ecosystem research at sites throughout the planning region, including stormwater quality monitoring in agricultural, natural, and urban settings, water quality studies, aquatic ecology research, and watershed assessment. The Return of the Natives Restoration Education Project (RON), the education and outreach arm of the Watershed Institute, conducts community-based watershed restoration projects at sites throughout the planning region.

California Water Service Company: California Water Service Group is the third-largest publicly traded water utility in the United States. The company provides water utility services to more than two million people in 100 cities through six operating subsidiaries (four of which are regulated by state public utility commissions and two of which are not). The company's largest subsidiary, California Water Service Company (Cal Water), began providing water utility services in the Salinas area in 1962. Cal Water's Salinas District serves more than 130,000 people, delivering approximately 20,000 acre-feet (AF) of groundwater per year through a system that includes 59 wells, 300 miles of main pipeline, and 8.6 million gallons of storage capacity.

Castroville Community Services District: The Castroville Water District was formed in 1952 under the County Water District Act for the purpose of installing and operating water supply and distribution system facilities for the community of Castroville. In 2007, the Castroville Water District joined with County Service Area 14 to form the Castroville Community Services District. The District provides water, sewer, and stormwater services to the Castroville community, Monte de Lago, North Monterey County High School and Moro Cojo subdivision, as well as recreation facilities, open space, street lighting, private street maintenance, pest control and abatement services within the district boundaries. The District serves more than 6,800 customers, delivering approximately 1,000 acre-feet/year (AFY) of water, all of which comes from the Salinas Valley Groundwater Basin.

Central Coast Wetlands Group at Moss Landing Marine Laboratories: Moss Landing Marine Labs, established in 1966, hosts and administers an interdisciplinary Master of Science Degree in Marine Science for seven California State University campuses: Fresno, East Bay, Sacramento, San Francisco, San Jose, Monterey Bay and Stanislaus. It is the second oldest marine laboratory on Monterey Bay, serving approximately 120 students. Since the early 1990s Moss Landing Marine Labs has participated in the development of water quality management and wetland restoration activities that enhance coastal resources and reduce human impacts on the marine environment. The Moss Landing Marine Lab Restoration Group and Central Coast Wetlands Group have provided technical assistance to study these dynamic systems. They have developed numerous habitat management and restoration plans, have

implemented numerous restoration activities and have helped build an infrastructure of local scientists working collaboratively to protect and restore aquatic resources within the Monterey Bay area.

City of Salinas: The City of Salinas is the largest city within Monterey County with a population of approximately 150,000 people. The City is a compact urban community within a unique agricultural setting, situated at the northern end of the Salinas Valley. It is also the employment center for Monterey County, supporting approximately one-third of all jobs within the county. The City maintains storm drains and the sewer system, and operates an industrial waste facility for the treatment and disposal of process water from local agricultural industries and others with process water requirements. The City is served by two public water service providers, California Water Service Company and Alco Water Service Company. The City of Salinas is the only Phase I entity for stormwater in the Central Coast Regional Water Quality Control Board (RWQCB) region.

City of Soledad: The City of Soledad, incorporated as a general law city in 1921, is located in the southern Salinas Valley approximately 25 miles south of the City of Salinas. The City has no common boundaries with other municipalities and is surrounded completely by unincorporated areas of Monterey County, most of which is agricultural land. The City has a population of about 26,000 people, an estimated 10,000 of which live in one of the two prisons operated by the State Department of Corrections (although they are not contiguous with the rest of the City, the prisons are inside the City limits). The City of Soledad provides a broad range of public facilities and services. The Public Works Department, Water Quality Control Division is responsible for operation and maintenance of the City's water wells and water distribution system, sanitary sewer system and brand new Water Reclamation Facility, and the City's storm drain system.

Elkhorn Slough National Estuarine Research Reserve: The National Estuarine Research Reserves System is a network of 27 areas representing different biogeographic regions of the United States that are protected for long-term research, water-quality monitoring, education and coastal stewardship. Established by the Coastal Zone Management Act of 1972, as amended, the reserve system is a partnership program between the National Oceanic and Atmospheric Administration (NOAA) and the coastal states. The Elkhorn Slough National Estuarine Research Reserve (ESNERR) is managed by the California Department of Fish and Game (CDFG) and is operated in partnership with NOAA. ESNERR is located on the southeast shore of Elkhorn Slough, one of the relatively few coastal wetlands remaining in California. The 1,400-acre reserve is a hub of activity and hosts programs that promote education, research, and conservation in Elkhorn Slough, with 50,000 visitors annually. Portions of the slough are managed as a State Ecological Reserve and Wildlife Management Area by the CDFG, and the beaches at the mouth of the slough are managed for public access by California State Parks.

Environmental Justice Coalition for Water: The Environmental Justice Coalition for Water (EJCW) is a 501(c)3 non-profit organization representing a network of more than 50 grassroots and intermediary organizations. EJCW's mission is to educate, empower, and nurture a community-based coalition that will serve as a public voice and be an effective advocate of environmental justice issues in California water policy. EJCW ensures that policy makers listen to the concerns of community members and holds policy makers accountable for negative impacts caused by certain water policies on low-income communities and communities of color. EJCW has worked on drinking water issues in the Salinas Valley both locally (with communities such as Chualar and the San Jerardo Farmworkers Cooperative) and on a regional basis partnering with community-based organizations and nonprofits such as California Rural Legal Assistance Foundation.

Marina Coast Water District: The Marina Coast Water District (MCWD) is a county water district formed in 1960 and authorized by Division 12 of the California Water Code. The MCWD delivers

approximately 4,500 acre-feet per year (AFY) of potable water to 38,000-42,000 customers in the City of Marina and the Ord Community. All of this water is from the Salinas Valley Groundwater Basin. The MCWD currently delivers water to the Ord Community by contract, though they are in the process of annexing that service area. The MCWD operates six wells and owns a desalination plant (currently idle), which has a capacity of 300 AFY.

Monterey Bay National Marine Sanctuary: The Monterey Bay National Marine Sanctuary (MBNMS) was designated in 1992 as a federally protected marine area offshore of California's Central Coast. The MBNMS encompasses 276 miles of shoreline and 6,094 square miles of ocean, covering everything below the water's surface from Marin County to Cambria, from the high tide mark to as far as 53 miles offshore. MBNMS's authority is established by the National Marine Sanctuaries Act (Title 16, Chapter 32, §§1431 et seq.) and extends to activities in coastal watersheds that drain to the Sanctuary and that affect Sanctuary resources. Specifically, MBNMS prohibits or otherwise regulates activities that include discharging or depositing from beyond the boundary of the Sanctuary any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality (15 Code of Federal Regulations [CFR] Chapter IX, Subpart M-Monterey Bay National Marine Sanctuary 922.132). This authority applies throughout the entirety of the Greater Monterey County IRWM region, since all of the region's coastal watersheds ultimately drain to the Sanctuary. During the designation of the MBNMS, eight key water quality agencies within the Sanctuary region entered into a Memorandum of Agreement to provide a cooperative, ecosystem-based water quality management process to help protect the waters of the MBNMS from non-point source pollutants. Today the MBNMS's Water Quality Protection Program consists of 25 federal, state and local agencies, public and private groups dedicated to protecting and enhancing water quality in the MBNMS and its watersheds.

Monterey County Agricultural Commissioner's Office: The mission of the Monterey County Agricultural Commissioner is to promote and protect agriculture, the environment, and public health and welfare, and to assure consumer and business confidence in the marketplace. Under the authority of the California Department of Food and Agriculture (CDFA), the Agricultural Commissioner's Office is the local regulatory agency for a number of agricultural programs. Major programs include: plant quarantine and export certification, pest exclusion and detection, pest eradication and management, nursery, seed, apiary, crop statistics, fruit and vegetable standardization, and direct marketing. The Agricultural Commissioner also enforces state weights and measures laws to protect the consumer and maintain equity in the marketplace. Under the authority of the California Department of Pesticide Regulation, the Agricultural Commissioner is responsible for the local enforcement of pesticide use requirements including permitting, inspections and investigations. The Monterey County Agricultural Commissioner is also an Accredited Certifying Agency of the National Organic Program. The Monterey County Agricultural Commissioner provides the RWMG with expertise on a wide range of regulatory and technical matters related to agriculture.

Monterey County Resource Management Agency: The Resource Management Agency (RMA) brings together a range of land use and capital services, including building services, planning, public works, facilities, and parks to ensure reasonable and safe development, plan for the future needs of the County, manage infrastructure and county facilities, and protect natural resources. RMA joined the RWMG in March 2016, and provides an important land use planning perspective to the RWMG's water resources management planning.

Monterey County Water Resources Agency: The Monterey County Water Resources Agency (MCWRA) is responsible for managing, protecting, and enhancing water supply and water quality, as well as providing flood protection, in the County of Monterey. MCWRA was formed under Chapter 699 of the Statutes of 1947 as the Monterey County Flood Control and Water Conservation District. In 1990

the District was renamed the Monterey County Water Resources Agency and its mandate was updated to provide for the control of flood and stormwaters, conservation of such waters through storage and percolation, control of groundwater extraction, protection of water quality, reclamation of water, exchange of water, and the construction and operation of hydroelectric power facilities. MCWRA operates the Nacimiento and San Antonio Reservoirs for flood management and water supply (groundwater recharge) purposes. MCWRA also operates a distribution system that delivers approximately 13,300 AF of recycled water to approximately 12,000 acres of agricultural land in the northern Salinas Valley. MCWRA has published a county-wide flood management plan and reviews hydrological data, oversees structural development, and implements land use regulations to reduce the risk of flooding. The MCWRA also performs groundwater elevation and ground and surface water quality monitoring. MCWRA was the lead agency in developing the Salinas Valley IRWM Functionally Equivalent Plan.

Monterey One Water: Monterey One Water (formerly known as the Monterey Regional Water Pollution Control Agency) is a joint powers agency formed in 1972 to provide wastewater collection and treatment. Monterey One Water member communities that lie within the Greater Monterey County IRWM region include the Ord Community, Marina, Castroville, Moss Landing, Boronda, Salinas and some unincorporated areas in northern Monterey County (Monterey One Water also serves the communities of Pacific Grove, Monterey, Del Rey Oaks, Seaside, and Sand City). Monterey One Water is governed by a Board of Directors representing each of the jurisdictions that it serves. The agency operates a regional wastewater treatment plant located two miles north of Marina and maintains 25 pump stations connected to the treatment plant. Monterey One Water also operates the water recycling facility at the Regional Treatment Plant and manages the distribution system under contract from the MCWRA. The recycling operations provide irrigation water to 12,000 acres of Castroville farmland.

Resource Conservation District of Monterey County: The Resource Conservation District (RCD) of Monterey County was established in 1942 as a non-regulatory special local district, authorized under Division 9 of California Public Resources Code. The RCD's mission is to conserve and improve natural resources, integrating the demand for environmental quality with the needs of agricultural and urban users. The RCD of Monterey County has been at the forefront of collaborative, watershed-based natural resource management and protection in Monterey County and the Central Coast. The RCD works closely with the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) to provide technical assistance to Monterey County landowners, growers and ranchers, including assistance with conservation planning and design, project funding, permitting, and implementing management practices. During the past 10 years, RCD/NRCS teamwork has resulted in the establishment of voluntary conservation and restoration projects on over 80 farms by collaborating with over 160 farmers and land managers. The RCD also works with local researchers to develop new ways to improve water quality and to evaluate the effectiveness of management practices.

Rural Community Assistance Corporation: RCAC is a nonprofit organization that provides technical assistance, training, and financing to rural, disadvantaged communities to help them achieve their goals and visions. RCAC's work encompasses a wide range of services including environmental infrastructure; affordable housing development; economic and leadership development; and community development finance. RCAC's services are generally available to disadvantaged communities with populations of 10,000 or fewer, as well as tribal communities. Headquartered in West Sacramento, California, RCAC serves rural communities in 13 western states including Hawaii and Alaska and is part of a national nonprofit network called Rural Community Assistance Partnership. RCAC has been working closely with the San Jerardo Cooperative over the past several years regarding their drinking water issues and has been actively assisting them with their wastewater needs (including the Round 1 Proposition 84 Implementation Grant wastewater project).

San Jerardo Cooperative, Inc.: San Jerardo is a cooperative housing complex for low-income farm working families, located seven miles southwest of Salinas. The Cooperative was built in the 1970s and currently houses 64 families. Over the past two decades, the community had suffered from serious drinking water, wastewater, and human health concerns. Extremely high concentrations of nitrates and 1,2,3-trichloropropane in the drinking water were determined to be a public health risk, requiring intervention by the courts and Monterey County. In November 2010 the Cooperative received a new drinking water system. However, the community's drinking water supply continued to be threatened due to discharges of nitrate, trichloropropane, and other pollutants released from the community-owned wastewater treatment system. The Cooperative recently received grant funds through the Proposition 84 IRWM Implementation Grant program to install much-needed repairs to the wastewater treatment facility. Through their efforts to gain safe drinking water and adequate wastewater treatment, San Jerardo community members have become experts on drinking water contamination, and have agreed to act as a representative on the RWMG for disadvantaged communities in the Salinas Valley.

Table A-1 summarizes the water resource and geographic areas represented by members of the RWMG.

Table A-1: RWMG Members: Water Resource Management and Geographic Areas Served

RWMG Member	Water Supply	Water Quality	Wastewater Treatment	Flood Management	Environmental Resource Protection	Agricultural Interests	Land Use Planning	Environmental Justice	Geographic Areas Represented in Region
Big Sur Land Trust					x				Entire region
California State University Monterey Bay		x			x			x	Entire region
California Water Service Co.	x	x							Salinas Valley
Castroville Community Services District	x	x							Castroville area (north Salinas Valley/north coast)
Central Coast Wetlands Group		x			x				Entire region
City of Salinas		x	x	x			x		City of Salinas (northern/central Salinas Valley)
City of Soledad	x	x	x	x			x		City of Soledad (southern Salinas Valley)
Elkhorn Slough National Estuarine Research Reserve		x			x				Elkhorn Slough (northern coast)
Environmental Justice Coalition for Water		x						x	Entire region
Marina Coast Water District	x	x							Marina and Ord Community (northern Salinas Valley/northern coast)
Monterey Bay National Marine Sanctuary		x			x				Entire region (mean high water, with education and outreach in the watersheds)
Monterey County Agricultural Commissioner's Office						x			Entire region
Monterey County Resource Management Agency					x		x		Monterey County
Monterey County Water Resources Agency	x	x		x		x			Entire region
Monterey One Water	x	x	x						Several cities and unincorporated areas in Monterey County
Resource Conservation District of Monterey County		x			x	x			Entire region
Rural Community Assistance Corporation									Entire region
San Jerardo Cooperative, Inc.		x						x	San Jerardo (Salinas Valley)

A.2 GOVERNANCE STRUCTURE AND PROCESS

A.2.1 Description of Governance Structure

Members of the RWMG have entered into a Memorandum of Understanding (MOU) to acknowledge cooperative efforts in the planning region and to form an institutional structure to develop and implement an IRWM Plan (the MOU and bylaws can be found in the Appendices). The MOU and bylaws formalize the collaborative planning effort, describe the level of participation expected of RWMG members, and outline a process for completing the IRWM Plan and for making amendments in the future. RWMG members share joint responsibilities for ensuring effective and comprehensive IRWM planning and implementation for the region, including development and update of the IRWM Plan, administration and financial support for the IRWM program, project implementation and data management, and continued IRWM planning beyond the State IRWM Grant Program. The RWMG meets on a monthly basis.

Leading the RWMG in development of the IRWM Plan and the overall IRWM planning effort is the IRWM Program Director. The IRWM Program Director is a non-voting member of the RWMG and an independent consultant, supported through a combination of private grant funds, State IRWM Planning Grant funds, and RWMG member contributions. The IRWM Program Director is responsible for leading the RWMG through every step of the IRWM planning process as outlined in the IRWM Program Guidelines, and overseeing the planning process to ensure it meets both the letter and spirit of the original legislation. The IRWM Program Director's responsibilities include, among other things, conducting the monthly RWMG meetings, convening subcommittees, and generally facilitating decision-making on the part of the RWMG to achieve IRWM Plan "milestones"; communicating with stakeholders to keep them informed of IRWM events and to ensure fair and inclusive representation in the planning process; writing and updating the IRWM Plan (with input and oversight from the RWMG and stakeholders); acting as liaison between the Greater Monterey County RWMG and the Department of Water Resources (DWR), and other RWMGs in the Central Coast Funding Area and state; and conducting regular IRWM Plan performance and monitoring activities.

It is recognized that composition of the RWMG will change over time. Incorporation of new members will be decided on a case-by-case basis by a simple majority vote of the RWMG, with the general understanding that a new entity will be considered for inclusion only if such inclusion would result in a more balanced representation on the RWMG of geographic regions, disadvantaged communities (DACs), or water resource management interests within the Greater Monterey County IRWM region.

A.2.2 Decision-making

The RWMG represents a diverse and balanced group of entities involved in (or directly affected by) water resource or watershed management, representing all major geographic areas within the region. Decision-making has proven to be a cooperative and collaborative process throughout the development of this IRWM Plan. The RWMG also ensures public involvement in its decision-making processes through various means, including:

- Regular email updates to stakeholders on the IRWM planning process
- A regularly updated website, that includes the latest news and events, dates and locations of RWMG meetings, contact information, and all significant IRWM-related documents (<http://www.greatermontereyirwmp.org/documents/minutes/>)
- Public comment periods on all major IRWM Plan "milestones"
- Public workshops

In addition, stakeholders are always invited to participate in the monthly RWMG meetings, and meeting minutes are posted on the website following each RWMG meeting. Please see Section P, Stakeholder Involvement, for a full description of public involvement in the RWMG's decision-making process.

The Greater Monterey County RWMG is a truly “democratic” group made up of diverse organizations with differing expertise, perspectives, and authorities of various aspects of water management. There is no one leadership position on the RWMG, and no hierarchy of decision-making. All major IRWM planning decisions and IRWM Plan “milestones” are decided by vote at the regularly scheduled RWMG meetings. Each RWMG organization is allowed one vote regardless of whether or not they have contributed financially to the Plan or to other RWMG activities. A simple majority (50 percent plus one) of the RWMG constitutes a quorum for the transaction of business, and action requires a simple majority vote of those present (in person or via conference call) at a meeting. All votes are counted equally. The protocols for decision-making are clearly outlined in the RWMG Bylaws (Appendix C).

The RWMG has been created to be a “working” group, with RWMG members expected to actively participate in the monthly RWMG meetings and on committees. Committees are convened as needed to assist the RWMG with all aspects of plan development, with IRWM Plan project solicitations, and with ongoing IRWM planning. Any RWMG member can volunteer to participate on any committee. The term of commitment varies; most committees disband after the specified task is achieved, but in the case of ongoing committees (such as the Funding Committee), the term of commitment is decided on a case-by-case basis. The RWMG approves the creation of committees during regularly scheduled RWMG meetings (i.e., in public meetings), and committees always bring recommended actions back to the RWMG for approval via formal vote of the RWMG. The following provides an example and overview of some of the committees convened during the development of this Plan:

- ***Issues and Conflicts Committee:*** The Issues and Conflicts Committee spent several weeks (May – July 2009) interviewing local water resource management experts on matters related to water supply, water quality, flood management, and natural resources in order to gain an understanding of the most significant water resource management issues for the region. In addition, public workshops were held in two different locations (Big Sur and Soledad, in September 2009) to obtain stakeholder input regarding their perception of issues and conflicts in the region. The committee considered all of these sources and developed a summary of the issues and conflicts in the region based on that information. The RWMG discussed the recommendations of the committee and voted to approve a final list of “issues and conflicts” at the October 2009 RWMG meeting.
- ***Goals and Objectives Committee:*** A committee was convened in July 2009 to identify goals and objectives for the purpose of IRWM planning in the Greater Monterey County region. The committee used the list of “issues and conflicts” as the basis for developing the initial goals and objectives. Stakeholders were given ample opportunity to provide comments (via a 30-day public comment period, which was extended an additional three months) and after prolonged discussion, the RWMG voted to approve the final goals and objectives at the March 2010 RWMG meeting. Following the release of the Proposition 84 & 1E IRWM Guidelines in August 2010, a second committee was convened to re-assess the goals and objectives in light of the new guidelines and to make the objectives more measurable. Following a 30-day public comment period, the final goals and objectives were approved by the RWMG in September 2011.
- ***Project Ranking Committee:*** In 2010 for the first round of IRWM Plan projects, a Project Ranking Committee was convened to develop a system for ranking projects that was fair and objective, that clearly reflected the goals and objectives of the region, and that adequately took

into consideration IRWM program preferences in order to ensure regional competitiveness for State IRWM funds. Stakeholders were given an opportunity to provide input into the draft project ranking system via a 30-day public comment period. The RWMG voted to approve the project ranking system, with an allowance for ongoing “adaptive management,” at the May 2010 RWMG meeting. The RWMG has subsequently added minor revisions to this project ranking system, informed by the experience of having prioritized the first (2010) group of IRWM Plan projects and also by having gone through the application process in Round 1 for Proposition 84 IRWM Implementation Grants (2011). The revised project ranking system was subject to a minimum 30-day public comment period and was approved by the RWMG at the September 2011 RWMG meeting.

- ***Project Review Committee:*** For the first IRWM Plan project solicitation in 2010, four separate Project Committees were created to review project proposals according to the primary water resource focus of each project – water supply, water quality, flood/watershed management, or natural resources. These committees consisted of RWMG members plus various experts from the local community in each of these water resource fields (including resource managers, research scientists, farmers, and other specialists). The role of the Project Committees was essentially to ensure that projects were consistent with laws, regulations, and local plans, to review the projects for technical feasibility, costs, and soundness, and to provide feedback both to project proponents and to the RWMG regarding any concerns, recommendations for strengthening or further developing the projects, and/or overall evaluation. After this first review, the projects were then sent to an “Integration Committee,” comprised of members from each of the four Project Committees, whose task it was to seek further opportunities for project integration. This process (involving four Project Committees plus an Integration Committee) worked well but was extremely labor intensive and time consuming. In 2011 for the second IRWM Plan project solicitation, the RWMG decided to simplify the process and create just one Project Review Committee, comprised solely of RWMG members, whose responsibility it was to both review and rank the projects (according to a RWMG-approved ranking system), and then identify potential opportunities for integration. This system has proven to be much more efficient, and will continue to be used for future IRWM Plan project solicitations.
- ***IRWM Plan Draft Review Committee:*** This committee, consisting of RWMG members, worked with the IRWM Program Director to review and revise drafts of the IRWM Plan before submitting them to the full RWMG and to stakeholders for comment and review.
- ***Funding Committee:*** The Funding Committee is an ongoing committee made up of RWMG members. The committee is responsible for determining: 1) ongoing funding of the IRWM Plan and IRWM planning process over time; and 2) potential funding sources for IRWM Plan projects beyond IRWM grants, including federal, other state, and private funding sources.

A.2.3 Effective Communication

The Greater Monterey County RWMG governance structure fosters effective communication both within the RWMG and outside of the RWMG with stakeholders, IRWM Plan project proponents, neighboring RWMGs, government agencies, and the general public. Internally, the RWMG strives to create an environment of open communication, cooperation, collaboration, and respect among its members and at the monthly RWMG meetings. Time has been devoted at RWMG meetings for individual RWMG members to discuss their projects, their water management issues, and any concerns.

The IRWM Program Director works to ensure that stakeholders, project proponents, and the general public are well informed of the latest Greater Monterey County IRWM activities and accomplishments. The IRWM Program Director sends regular email communications to interested stakeholders about IRWM news and events; the emails always contain contact information (email address and phone number) for the IRWM Program Director so that stakeholders can voice their comments, concerns, or questions about the IRWM planning process. The Program Director will also send this information via US Post for any stakeholders who do not have email access.

The RWMG communicates with federal and state government agencies as needed, with some of those agencies serving as members of the RWMG and as such, able to act in an advisory role. In July 2009, several members of the RWMG met with the Secretary of Natural Resources Agency, John Laird, to keep him informed about the Greater Monterey County IRWM planning process and to discuss opportunities for improving the process on a State level. In addition, the IRWM Program Director and RWMG members participate in the statewide Roundtable of Regions meetings, a forum for discussion between all RWMGs in the state, and regionally, in Central Coast Funding Area meetings to coordinate IRWM planning activities between the Central Coast IRWM regions and to discuss potential funding strategies. Please see Section Q, Coordination, for a more detailed description of how the RWMG communicates with neighboring regions and government agencies.

A.2.4 Long-term Implementation of the IRWM Plan

The RWMG will continue to meet on an ongoing basis to implement the IRWM Plan and to carry out IRWM planning. The IRWM Plan is intended to be a long-term planning document with a minimum 20-year planning horizon. As such, the Plan will need to undergo periodic updates and revisions to reflect changing conditions. RWMG membership and governance processes may also evolve over time, and the IRWM Plan will be revised to reflect those changes. This section describes how the governance structure allows for periodic formal and informal changes to the IRWM Plan.

An informal review of the IRWM Plan will occur with each IRWM Plan project solicitation, which is expected to occur on an annual basis or at minimum with each successive IRWM Implementation Grant solicitation. The informal review will consist of a re-assessment and update of the issues and conflicts in the region, the goals and objectives, resource management strategies, and other IRWM Plan “milestones.” In addition, with each new IRWM Plan project solicitation, all projects, both existing and new, will get re-ranked and a new project list will be generated and available for viewing on the website. All amendments resulting from informal reviews of the IRWM Plan will be officially incorporated into the Plan upon approval by the RWMG, as determined by vote at a regularly scheduled RWMG meeting open to the public and according to the decision-making protocols outlined in the bylaws.

Formal plan review may include a review and re-assessment of RWMG composition, regional boundaries, and other “big picture” issues related to IRWM planning in the Greater Monterey County region. A formal plan review may also include re-assessment of IRWM Plan “milestones,” as described above. Formal re-adoption of the IRWM Plan, requiring the approval of the governing boards of each RWMG entity, will occur only as required by the State (for example, in the case of a Region Acceptance Process) or as deemed necessary by the RWMG. Ideally the RWMG would formally review, revise, and adopt the IRWM Plan no less frequently than every five years; however, a formal review is an intensive process and the frequency of this type of review will depend entirely on whether adequate funding is available.

Finally, a Plan Performance Review will occur on an approximately bi-annual basis. The intent of the Plan Performance Review is not to review the “content” of the Plan per se but to determine the extent to

which project implementation is achieving Plan objectives (as described in Section J, Plan Performance and Monitoring). Project data from all projects implemented through the Plan will be tracked using the data management system as described in Section K, Data Management. Monitoring the projects over time will not only enable the RWMG to determine its success in implementing the IRWM Plan but will keep the Plan alive and help drive it forward.

A.3 ADOPTION OF THE PLAN

A notice of intention to prepare the Plan, and then a notice of intention to adopt the Plan, was published in accordance with §6066 of the Government Code. Each of the RWMG members have accepted, approved, or adopted the Greater Monterey County IRWM Plan through resolution by their governing boards or by other means according to organizational protocol. The Greater Monterey County IRWM Plan was formally adopted by vote of the RWMG on April 17, 2013 by the RWMG at a regularly scheduled RWMG meeting that was open to the public. Please see Appendix A for the formal resolutions, signed by the governing boards of each member of the RWMG, to adopt the IRWM Plan. On September 19, 2018, the RWMG voted to approve updates to the IRWM Plan to comply with 2016 IRWM Program standards.

In addition, each project proponent named in an IRWM grant application is also required to adopt the IRWM Plan in order to be eligible to receive IRWM grant funds. Each project proponent will be required to submit a formal, signed resolution adopting the IRWM Plan prior to submission of an IRWM grant application.

Section B: Greater Monterey County Region Description

B.1 REGIONAL BOUNDARY

B.1.1 Description of Greater Monterey County IRWM Regional Boundary and its Relation to Neighboring Regions

The Greater Monterey County Integrated Regional Water Management (IRWM) region includes the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region and the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region established under Proposition 50. The Greater Monterey County IRWM region also includes a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County. Generally, the region includes the entire Salinas River watershed north of the San Luis Obispo County line, all of the Gabilan and Bolsa Nueva watersheds in the northern part of the county, and all of the coastal watersheds of the Big Sur coastal region within Monterey County.

Areas within Monterey County that are not represented in this IRWM Plan (but that are represented in other IRWM Plans) include: the Pajaro River watershed, represented in the Pajaro River Watershed IRWM Plan; and the Carmel River watershed, the San Jose Creek watershed, areas overlying the Seaside Groundwater Basin, and all areas within the Monterey Peninsula Water Management District jurisdictional boundary (including the Monterey Peninsula cities of Carmel-by-the-Sea, Del Rey Oaks, Pacific Grove, Monterey, Sand City, and Seaside), which are represented in the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Plan.

The Greater Monterey County IRWM region lies entirely within the Central Coast Regional Water Quality Control Board (RWQCB) district and is part of the IRWM Central Coast Funding Area. Adjacent IRWM regions include:

- Pajaro River Watershed IRWM region
- Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region
- San Luis Obispo County IRWM region

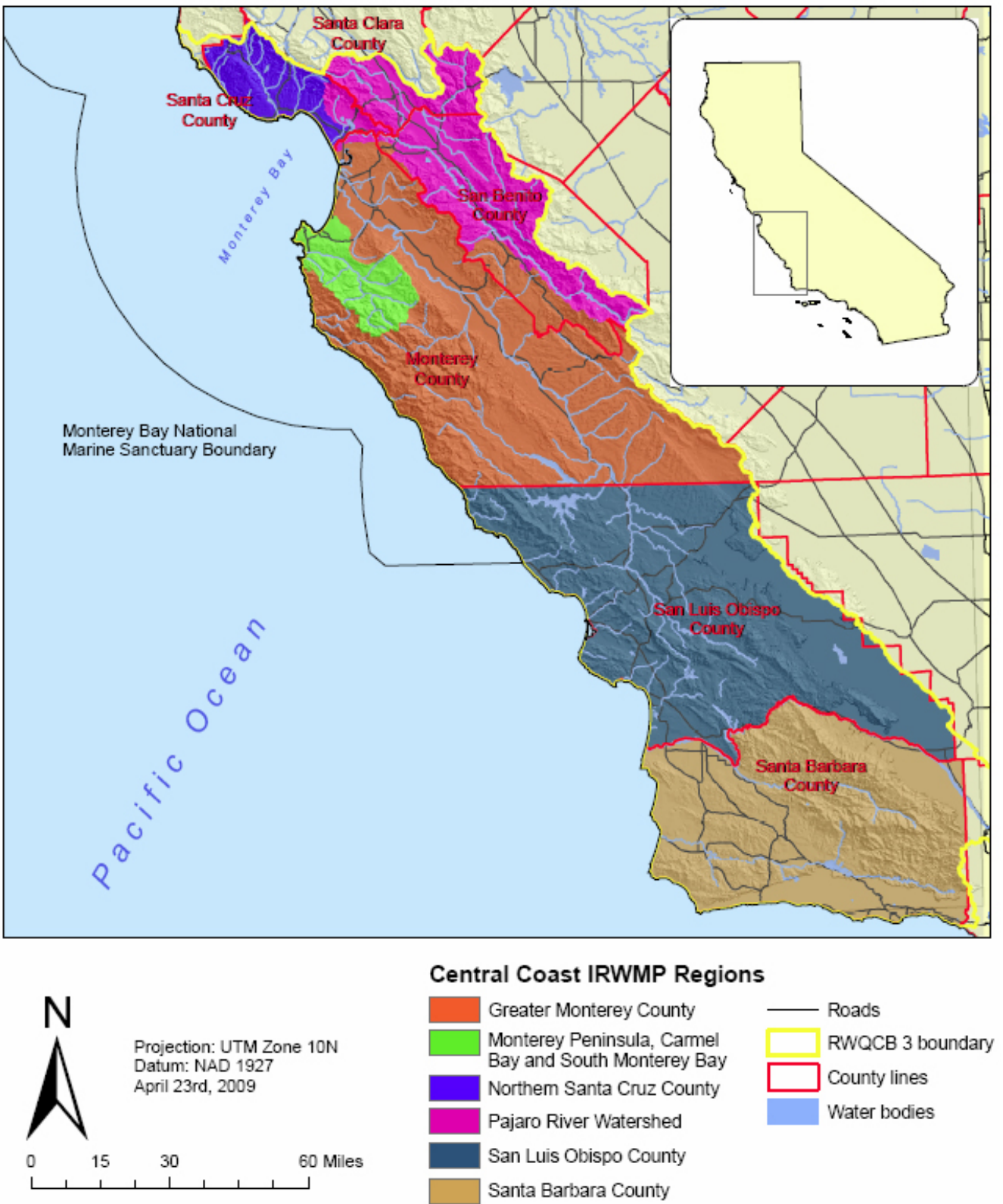
Together these four regions, plus the Northern Santa Cruz County and the Santa Barbara County IRWM regions, form the Central Coast IRWM Funding Area. The Greater Monterey County Regional Water Management Group (RWMG) works cooperatively with neighboring IRWM regions to identify and coordinate inter-regional water resource management issues, and participates in periodic meetings with representatives from each of the six Central Coast IRWM regions to discuss region-wide IRWM issues. Please see Section Q, Coordination, for a more detailed description of how the RWMG communicates and coordinates with the other IRWM regions.

The maps on the following pages illustrate the Greater Monterey County IRWM Region. Figure B-1 shows the region in context with county boundaries, water agency boundaries, and cities and large communities. Figure B-2 shows the region in context with the other five IRWM regions in the Central Coast IRWM Funding Area.

Figure B-1: Greater Monterey County IRWM Region



Figure B-2: Greater Monterey County IRWM Region in Context with the Other Central Coast IRWM Regions



B.1.2 How the Boundaries were Determined and Why the Region is Appropriate

The Greater Monterey County IRWM region is based on watersheds, groundwater basins, jurisdictional boundaries, existing partnerships, and historical planning efforts. As noted earlier, the IRWM Plan for the Greater Monterey County region represents an expansion and modification of a former plan—the Salinas Valley Integrated Regional Water Management Functionally Equivalent Plan (FEP)—that was developed by the Monterey County Water Resources Agency (MCWRA) in May 2006. The new Greater Monterey County region encompasses service areas of multiple local agencies and will promote significant opportunity for integration of water management activities related to water supply, water quality, environmental stewardship, groundwater management, and flood management. Expanding the Salinas Valley IRWM FEP boundary has served to make the region more inclusive, inviting more partners and stakeholders to the table and opening up new opportunities for cooperation and integration of efforts.

Expanding the Salinas Valley IRWM FEP boundary has also served to eliminate previous IRWM Plan coverage voids. As noted above, the new regional alignment includes key areas that have not been previously covered in any other IRWM Plan. These include, specifically: the Big Sur coastal watersheds and communities on the western side of the Santa Lucia Range, from Pt. Lobos south to the San Luis Obispo County line; the larger Salinas River watershed from the Salinas River National Wildlife Refuge at the Pacific Ocean south to the San Luis Obispo County line and including the east and west ranges of the valley; the Gabilan watershed; and portions of western San Benito County.

The Greater Monterey County region, as defined above, is appropriate for IRWM planning because: it provides complete coverage of important watersheds that had not been represented in prior IRWM plans; it aligns with historical water resource management and existing partnerships in the area; and it provides considerable opportunity for further cooperation and integration of water resource management efforts in the region. The Greater Monterey County region was approved by the California Department of Water Resources (DWR) in May 2009 as an IRWM planning region through the Regional Acceptance Process.

B.2 REGIONAL OVERVIEW

This section offers a brief overview of the Greater Monterey County region in terms of its physical setting, social and cultural values, and economy in order to provide context for the water resource system and management in the region.

B.2.1 Physical Setting

The Greater Monterey County IRWM region lies almost entirely within Monterey County on the central California coast, 110 miles south of San Francisco and 320 miles north of Los Angeles. Monterey County has approximately 105 miles of coastline and is bordered by Santa Cruz County to the north, San Luis Obispo County to the south, and San Benito, Kings, and Fresno Counties to the east. Elevation within the county ranges from sea level to 5,862 feet at Junipero Serra Peak, which is located 12 miles inland in the Santa Lucia Range.

Monterey County is famous for its spectacular Big Sur coast, mild year-round weather, and for the Salinas Valley, one of the most productive agricultural regions in the world. Prominent land features in the county include two major northwest-southeast trending mountain ranges—the Santa Lucia Range along the coast, and the Gabilan Range along the county’s eastern border, both of which are part of the Pacific Coast Range. Cradled in between the Santa Lucia and Gabilan mountain ranges is the gentle expanse of the Salinas Valley; and at the center of the Salinas Valley flows the Salinas River, the largest river on California’s Central Coast.

At the northern coastal end of the Greater Monterey County region, between the Pajaro Valley and the Salinas Valley, is an area known as “North County.” North County extends from the Pajaro River southward to Espinoza Road and the mouth of the Salinas River. All of the North County area is included within the Greater Monterey County IRWM region except for the area that lies within the Pajaro River watershed. North County has a more undulating topography than the Salinas Valley, and much of the land is cultivated in agricultural crops. The coastal area of North County contains wide sandy beaches and the primary commercial fishing harbor for the entire county.

The Santa Lucia Mountains have been described as “a chaos of ridges and canyons” bordering the Pacific Ocean (Henson and Usner 1993, p. 8). The Santa Lucia Range stretches approximately 100 miles from just south of Carmel to a point north of the San Luis Obispo County line, and extends as much as 20 miles inland. Along the coast is a single main ridge, the Coast Ridge, which is actually a jumble of narrow spur ridges separated by deep canyons that run perpendicular to the ocean. The steepest slope in the contiguous United States occurs within the Coast Range at Cone Peak, ranging from sea level to 5,155 feet in a distance of just three miles. The jagged peaks, steep slopes, and narrow coastal canyons of the Coast Ridge are what have made the Big Sur coastline so famous, attracting some three million visitors each year. The geologic drama continues out of view of most tourists, as the steep ridges of the Santa Lucia Mountains continue to fall sharply beneath the Pacific Ocean. Just 50 miles offshore, the Pacific Ocean reaches a depth of 12,000 feet. Two deep submarine canyons—the Sur Submarine Canyon and the Partington Submarine Canyon—cut into the continental shelf near the Big Sur coast, and eventually merge to become one of the deepest submarine canyons on earth (ibid.).

On the eastern side of the Santa Lucia Range, the mountain slopes descend abruptly down to the Salinas Valley. The Salinas Valley, famous for its productive soils, is a broad gentle basin filled with several thousand feet of sediment that has been captured over the millennia from the surrounding mountains. The valley is 130 miles long, 10-20 miles wide, narrowing to only about 3 miles wide in its southeastern end and rising in altitude from sea level at the Monterey Bay to approximately 400 feet near Bradley, and containing about 640,000 acres of broad bottomland (MCWRA 2008, p. 10; Monterey County Planning Department 2010b). Wending its way along the floor of the Salinas Valley is the Salinas River, extending about 155 miles from its headwaters at the Santa Margarita Reservoir in San Luis Obispo County and flowing north to its mouth at the Monterey Bay. The river drains approximately 4,043 square miles of land.¹

The Gabilan Mountains, like the Santa Lucia Mountains, are composed of granite and metamorphic rocks and are similarly characterized by steep slopes and complex drainage patterns. The Gabilans, however, are drier than the Santa Lucia Mountains, being located further inland in the rain shadow of the Santa Lucia Range. The Gabilan Range includes several mountain peaks over 3,000 feet, the highest being North Chalone Peak (3,304 feet) located in Pinnacles National Monument in the southern portion of the range (Monterey County Planning Department 2010b).

The climate in Monterey County is considered Mediterranean, with dry summers, rainy winters, and moderate temperatures year-round. Precipitation in the region falls mainly between November and April. Marked variations exist in rainfall amounts between the Big Sur coast and inland areas, as well as from year to year and from sea level to altitude along the coast. Average annual rainfall is 15 inches in the City of Salinas and 11 inches in King City in the Salinas Valley, whereas at Pfeiffer Big Sur State Park near

¹ This statistic is from Newman et al. 2003 (CSUMB Watershed Institute Land Use Mapping report). There is some discrepancy between various plans regarding this number: Monterey County 2010 General Plan EIR claims the drainage area to be 3,950 square miles, the Monterey County General Plan claims it to be 3,300 square miles, the Monterey County Groundwater Management Plan 5,000 square miles, and the Salinas River Management Plan 4,600 square miles.

the coast annual rainfall averages about 42 inches (with a low on record of 18 inches in 1990 and over 90 inches in 2017²), and at higher elevations in the Santa Lucia Mountains precipitation is substantially higher (e.g., average annual rainfall is 78 inches at Mining Ridge at an elevation 4,760 feet, with an annual low on record of 44 inches in 1987 and an annual high of 173 inches in 1983) (Henson and Usner 1993, p. 44).

B.2.2 Social and Cultural Values

The existing social and cultural values in Monterey County have been very much shaped by the landscape, as well as by the three major cultural groups that have occupied the region: American Indians of the Costanoan (Ohlone), Esselen, and Salinan groups; Spanish-Mexicans; and Americans (Gordon 1996; Henson and Usner 1993).³ Spanish explorers first sailed past the Monterey/Big Sur coast in the mid-1500s, but did not land in Monterey Bay until the early 1600s. The Franciscan missionaries began constructing their missions in the late 1700s, establishing missions in Monterey (1770, then moved to Carmel in 1771), in the San Antonio River Valley (1771) along the eastern side of the Santa Lucia Mountains, and in Soledad (1791) in the central-southern Salinas Valley. The American Indians were both voluntarily and forcibly brought into the missions by the Spanish (Monterey County Planning Department 2010b).

The Indian populations were ultimately decimated due to introduced European diseases, particularly whooping cough and measles, and by violence in the missions and declining birth rates (e.g., the Costanoan population was estimated to be 11,000 at the time of the first European arrival, and by 1920, only 56 survivors remained). In 1826, after Mexico's secession from Spain, the governor of Alta California emancipated the Indians from the missions. A small number of their descendants still live in the region. The Ohlone Costanoan Esselen Nation, a recently founded group with a membership of about 500 based in the Carmel Valley region, has been petitioning the federal government to regain recognition as a formal Federally Recognized Tribe (ibid.).

Spanish occupation of the Monterey County region significantly expanded the grasslands, especially in the Salinas Valley, to support an economy based primarily on cattle grazing. While the few gardens that existed were localized mainly around the missions, they are significant for having introduced certain Old World crops to the region, including wine grapes, and olive, apple, and pear trees. The Spanish also left a legacy of place names in Monterey County, for example Salinas, which means "salty marsh" in Spanish (Gordon 1996, p. 56).



² Updated rainfall information (2017) for Pfeiffer Big Sur State Park from the State Park Facebook page, dated April 6, 2017 (<https://www.facebook.com/PfeifferBigSurSP/>).

³ Source for map: www.MTYcounty.com. Used by permission.

In 1833, the Spanish missions were secularized and the extensive mission lands were distributed by the Mexican government to Spanish-speaking settlers as land grants, or ranchos. The boundaries of these ranchos are still clearly evident, shown on aerial photographs where field strips, furrows, and plant rows abut at different angles on opposite sides, or marked by the edges of chaparral tracts (ibid, p. 61). The boundaries of the original ranchos serve to a large extent as today's property boundaries within the region, particularly on the larger tracts of agricultural and ranching lands. Many of the ranchos have continued as working ranches to the present day, not only in the Salinas Valley but along the Big Sur coast as well.

Americans began settling in Monterey County in the 1800s during the period of Mexican control. The discovery of gold in the Sierra Nevada foothills in 1849 brought droves of homesteaders to the county, and as the best parcels in Monterey and the Salinas Valley became occupied, homesteading spread to the rugged Big Sur coast. Many of the first American settlers were cattlemen like the Spanish before them, and sheep were raised in large numbers, both in the Salinas Valley and in the hills of the Big Sur coast. Grazing eventually gave way to irrigated agriculture. By 1870, commercial agriculture was well underway in the Salinas Valley. A major drought in 1863 and 1864 essentially wiped out the cattle industry, and grain production became the county's principal agricultural activity. Sugar beet cultivation and dairying began to replace grain farming by 1897. The extension of the Southern Pacific Railroad from Pajaro to Salinas, along with improved irrigation systems, refrigerated freight cars, and other innovations in technology, encouraged more and more intensive row crop cultivation and set the stage for the Salinas Valley to become one of the most productive agricultural regions in the world (Monterey County Planning Department 2010b).

Today, agriculture dominates the lifestyle and permeates cultural and social values in the Salinas Valley. Agriculture is unique in the Central Coast region compared with agriculture in other parts of the state, such as the Central or Imperial Valley, since the majority of operations in the Salinas Valley are less than 50 acres and many properties have been held in families for many generations (Casagrande and Watson 2005). Monterey County and the Salinas Valley in particular celebrate this agricultural lifestyle with numerous events throughout the year, including the Castroville Artichoke Festival, the Salinas Valley Fair, the Harvest Festival in Greenfield, the Great Wine Escape, and the California Rodeo Salinas (the 100th rodeo was celebrated in July 2010). The region also honors its most famous literary celebrity, John Steinbeck, who wrote lyrically about the Salinas Valley and Monterey County in many of his books, with the National Steinbeck Center located in the City of Salinas and the annual Steinbeck Festival.

Along the Big Sur coast, social and cultural values have developed as an expression of that region's unique geographic landscape and related social history. When the Spanish missions were secularized in 1833, two large land grants (ranchos) were made in the Big Sur coastal area, one of which, El Sur Ranch in the Point Sur area, is still in part a working ranch today (Henson and Usner 1993). The discovery of gold in the Sierra Nevada in 1849 brought an influx of homesteaders to the Big Sur coast, and from the 1860s to the early 1900s a loose-knit community of pioneers established themselves among the rugged and isolated canyons and hillsides of the coast. They initially carved out a rough living for themselves, hunting, fishing, and foraging for food along the coast much like the natives before them, and eventually came to raise cattle and pigs and grow much of their own food. Small-scale industries, such as tanoak harvesting, and limestone and gold mining, were established but were generally short-lived.

The completion of Highway One in 1937 paved the way for a different type of settler in Big Sur, opening up the wild and dramatic coast to those seeking adventure and inspiration. Artists, artisans, and writers—such as Robinson Jeffers, Ansel Adams, and Henry Miller—came to visit and many to settle in the region, creating a strong cultural identity for which the Big Sur region is still known today. It is a cultural identity and ethic born of the landscape, one that continues to express the fierce independence and pioneering

spirit of the early American settlers, as perhaps of the native people who inhabited the land for some 2,500 years prior, despite the considerable changes in actual lifestyle (ibid.).

B.2.3 Economic Overview

Agriculture dominates the economy of Monterey County. In 2016, agriculture accounted for 28.2 percent of the county's workforce (California Employment Development Department) and generated \$4.25 billion in gross production value (Monterey County Agricultural Commissioner's Office 2016). A 2012 report produced by the Monterey County Agriculture Commissioner's Office claimed that, when both the farm and food-processing sectors plus their multiplier effects were taken into account,⁴ Monterey County agriculture contributed a total of \$8.2 billion to the local economy, including \$5.1 billion in direct economic output and \$3.1 billion in additional economic output in the form of expenditures by agriculture companies and their employees.

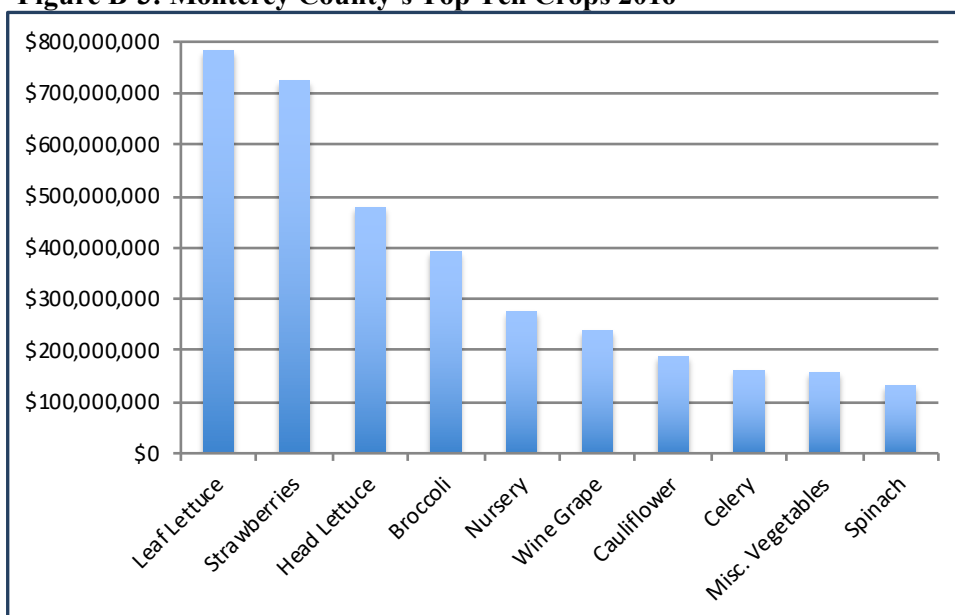
The county supplies the United States and the world with strawberries, lettuce, nursery crops, broccoli, wine grapes and numerous other crops, including (in 2010) 59 percent of the nation's lettuce, 53 percent of the nation's broccoli, and 30 percent of the nation's strawberries.⁵ The Salinas Valley accounts for most of the agricultural production in the county. Approximately 1.47 million acres (about 2,290 square miles) was used for crops in 2016 throughout the county (Monterey County Agricultural Commissioner's Office 2016). Because of the intensity of agricultural production, Salinas Valley has been dubbed the "Salad Bowl of the World." The county's top three producing crops – leaf lettuce, strawberries, and head lettuce – accounted for 44 percent of the gross agricultural income in 2016. The Salinas Valley is also an important viticultural area; there are nine American Viticultural Association appellations in Monterey County, with 98% of vineyards located within the Salinas Valley.

Figure B-3 shows the county's top ten crops, and Figure B-4 shows revenues and acreages for the county's major crop categories in 2016.

⁴ The multiplier effects of agriculture take two forms: *indirect effects* and *induced effects*. Indirect effects consist of "business to business" supplier purchases; for example, when a grower buys farm equipment, fertilizer, seed, insurance, banking services, and other inputs. Induced effects consist of "consumption spending" by agriculture business owners and employees, for example when they buy housing, healthcare, leisure activities, and other things for their households. (Monterey County Agricultural Commissioner's Office 2012)

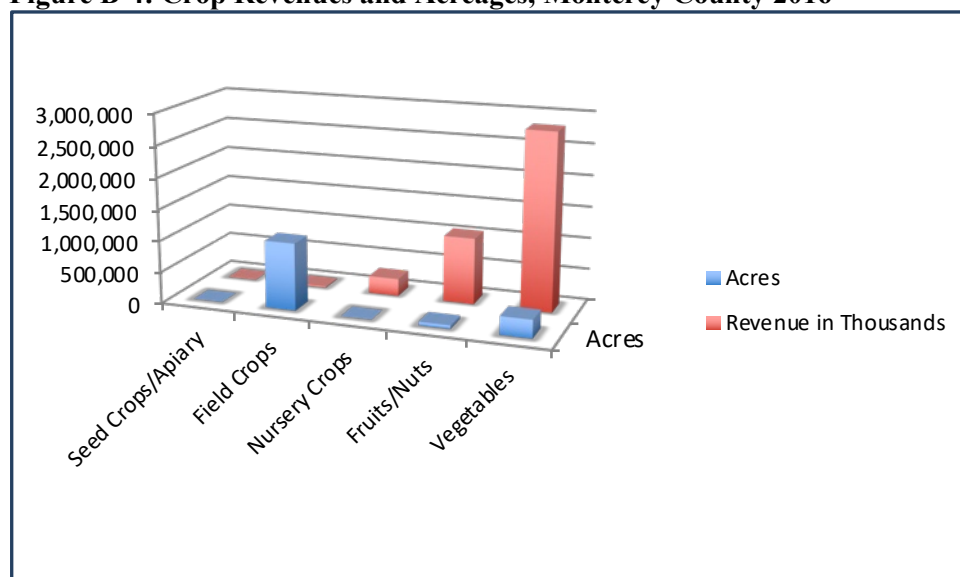
⁵ This information is based on the Monterey County 2010 Crop Report, the USDA Noncitrus Fruits and Nuts 2010 Summary, and the USDA Vegetables 2010 Summary.

Figure B-3: Monterey County's Top Ten Crops 2016



Source: Monterey County Agricultural Commissioner 2016 Crop Report

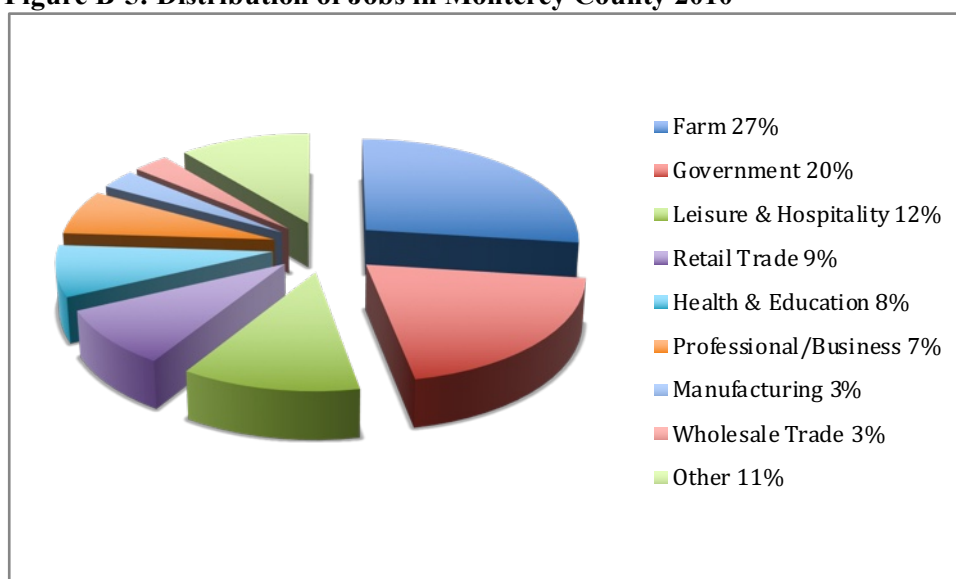
Figure B-4: Crop Revenues and Acreages, Monterey County 2016



Source: Monterey County Agricultural Commissioner 2016 Crop Report.

Following farm-related employment, government is the second largest employment sector in the county, accounting for 20 percent of the county's workforce in 2010. Many of the public sector jobs are associated with the State correctional facilities in Soledad. Leisure and retail trade follow as the county's next largest employment sectors, accounting for about 12 percent and 9 percent of the county's workforce respectively. Figure B-5 illustrates the distribution of Monterey County jobs in 2010 in the various employment sectors (Beacon Economics 2011).

Figure B-5: Distribution of Jobs in Monterey County 2010



Source: 2011 Monterey Economic Forecast (Beacon Economics 2011)

In the Big Sur region, the economy is based mainly on tourism and public services (including U.S. Forest Service, State Parks, and military employment). An estimated 3-4 million visitors come to Big Sur each year to enjoy the spectacular views, the State Park trails, National Forest wilderness areas, and rugged coastal beaches. Other economic activities in the Big Sur region include ranching and a small amount of gold mining. Development in Big Sur is naturally constrained by the rugged mountainous terrain, limited availability of water, unstable soils on steep slopes, and dangers of fire and flood. Given these constraints, along with the strict land use regulations mandated by the County's Local Coastal Plan for the Big Sur Coast (1981), development is not expected to rise sharply or change significantly in the foreseeable future. Primary employment will most likely continue to be in the tourist and public sectors.

B.3 DESCRIPTION OF WATERSHEDS AND WATER SYSTEM

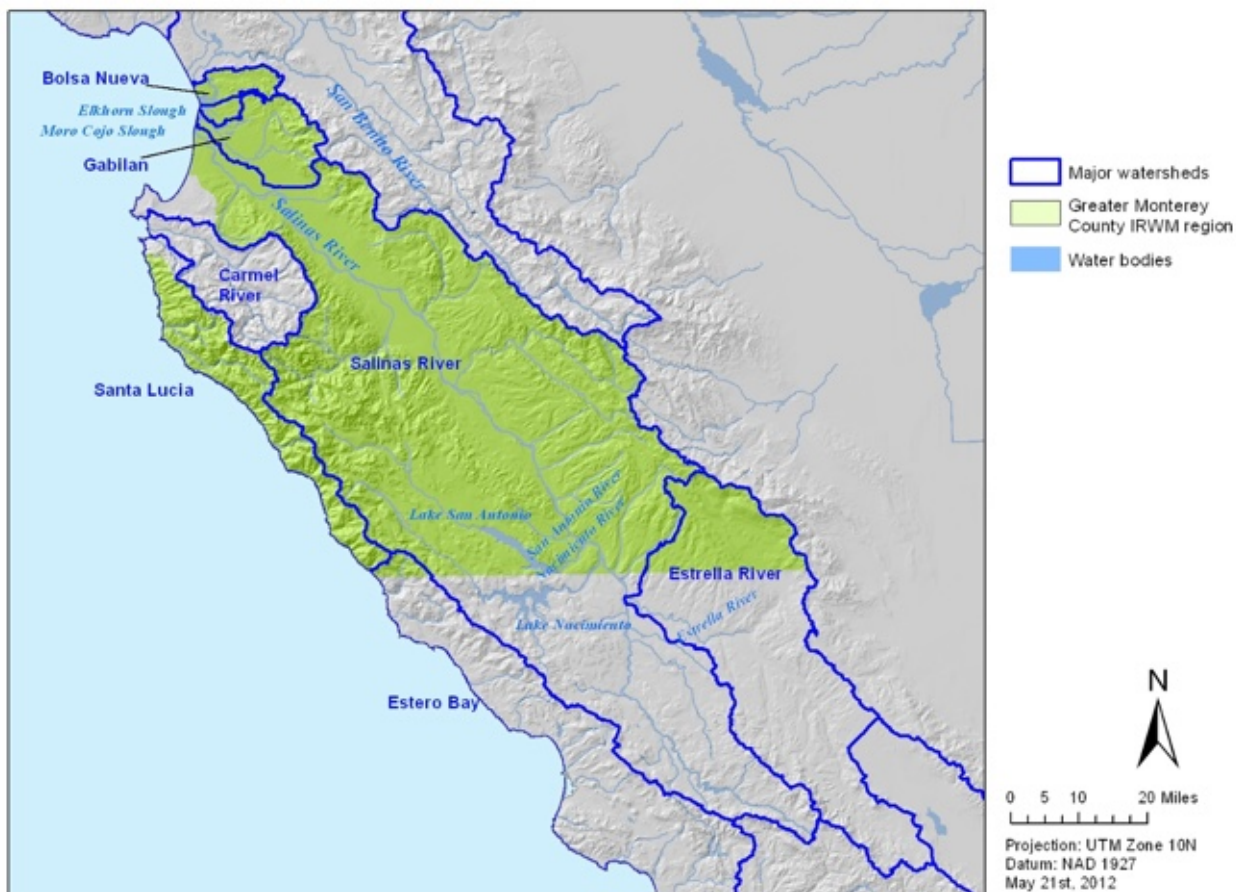
The following sections provide an overview of the watersheds, significant environmental resources, and water systems in the region, including surface waters, groundwater, reclaimed water, desalination, floodwater, and water supply infrastructure. These systems are integrally interconnected. The Greater Monterey County IRWM region receives no "imported" water, that is, no water from the State Water Project or from any other water source imported from outside of its boundaries (except for water from the Salinas River, which flows naturally from San Luis Obispo County). Therefore, maintaining the region's water systems is absolutely critical for ensuring the health, prosperity, and long-term sustainability of local communities in the region. Maintaining adequate water supply and good water quality, in turn, depend on the health and proper functioning of the watersheds and wilderness areas that sustain and protect the region's water resources.

B.3.1 Watersheds

The Greater Monterey County IRWM region includes six major watersheds (or portions thereof). The Salinas River watershed is by far the largest watershed in the region, encompassing an area of approximately 3,950 square miles within Monterey and San Luis Obispo Counties. The watershed includes the Salinas Valley, which extends from the Salinas River headwaters in the La Panza and Garcia Mountains in San Luis Obispo County to Monterey Bay, a length of approximately 170 miles. Other major watersheds in the Greater Monterey County region include the Santa Lucia watershed, comprised

of the numerous coastal watersheds along the Big Sur coast (including the Big Sur River watershed and Little Sur River watershed, among many others), the Estrella River watershed which is located in the southern part of the county (most of this watershed is actually located in San Luis Obispo County), and the Bolsa Nueva and the Gabilan Creek watersheds at the northern end of the county. The region also includes a small portion of the Estero Bay watershed at the southern end of the county along the Big Sur coast. Figure B-6 illustrates major watershed boundaries within the Greater Monterey County IRWM region.

Figure B-6: Major Watersheds of the Greater Monterey County IRWM Region



In terms of hydrologic units, the Greater Monterey County region includes the following hydrologic unit areas (as outlined by the RWQCB in the Central Coast Basin Plan):

Table B-1: Hydrologic Units in the Greater Monterey County IRWM Region

Hydrologic Unit #	Hydrologic Unit/Area/Subarea
306.00	Bolsa Nueva
308.00	Santa Lucia
309.00	Salinas
309.10	Lower Salinas Valley
309.20	Chualar
309.30	Soledad
309.40	Upper Salinas Valley
309.60	Arroyo Seco
309.70	Gabilan Range
309.80	Paso Robles
309.82	Nacimiento Reservoir
309.83	San Antonio Reservoir

B.3.2 Biological Resources

Monterey County occurs within one of the richest biological regions in North America (Ricketts et al. 1999; Abell et al. 2000). Monterey County is especially rich in biological resources because of its highly varied terrain, large elevation range, extensive coastline, broad range of microclimates, and diverse substrate materials. This variability is reflected in the large array of plant communities and resident plant and animal species. For example, there are nearly 3,000 species of plants that occur in Monterey County according to Calflora, a database of California plants (to see the list, visit: <http://www.calflora.org/>). Of these, 287 plant species are listed on the California Department of Fish and Game's (CDFG) 2012 California Natural Diversity Database as "State and Federally Listed Endangered, Threatened, and Rare Plants of California," and 101 plant species are considered to be rare or sensitive by the California Native Plant Society. This section provides an overview of the region's significant ecological processes and environmental resources in terms of vegetation, wilderness, conservation, and open space areas, fisheries, species and habitats of special concern, and management issues.

Note: Much of this Biological Resources section has been either excerpted or summarized from Section 4.9 of the 2010 Monterey County General Plan Environmental Impact Report (EIR) (Monterey County Planning Department 2010b).

B.3.2.a Vegetation

Natural vegetation throughout the county is typical of that occurring in the coastal ranges and interior valleys of central California. The coastal Big Sur coastal range is dominated by redwood, oak woodland, coastal chaparral, and annual grassland. The Salinas Valley is dominated by agriculture and, in the southern county, by significant stands of oak woodlands. The Gabilan Range to the east is dominated by annual and native grassland, and by mixed oak forests. In the northern coastal section of the region are beach dunes near the former Fort Ord and marshlands around the Elkhorn Slough as well as rare maritime chaparral species.

The region includes many vegetation types or plant communities that are considered to be "sensitive natural communities" under the California Environmental Quality Act (CEQA). These include: freshwater marsh, riparian/wetland, native grassland/valley needlegrass grassland, coastal prairie/coastal terrace

prairie, maritime chaparral, oak woodland, blue oak woodland, oak savannah, mixed conifer, redwood forest, dune and dune scrub, saltwater marsh and tidal mudflats. Other plant communities occurring in the region include coastal scrub, interior scrub and chaparral (baccharis chaparral, baccharis scrub, Gabilan scrub, and mixed chaparral), eucalyptus groves, and annual grassland. Table B-2 below provides approximate acreages for vegetation communities that occur in Monterey County.

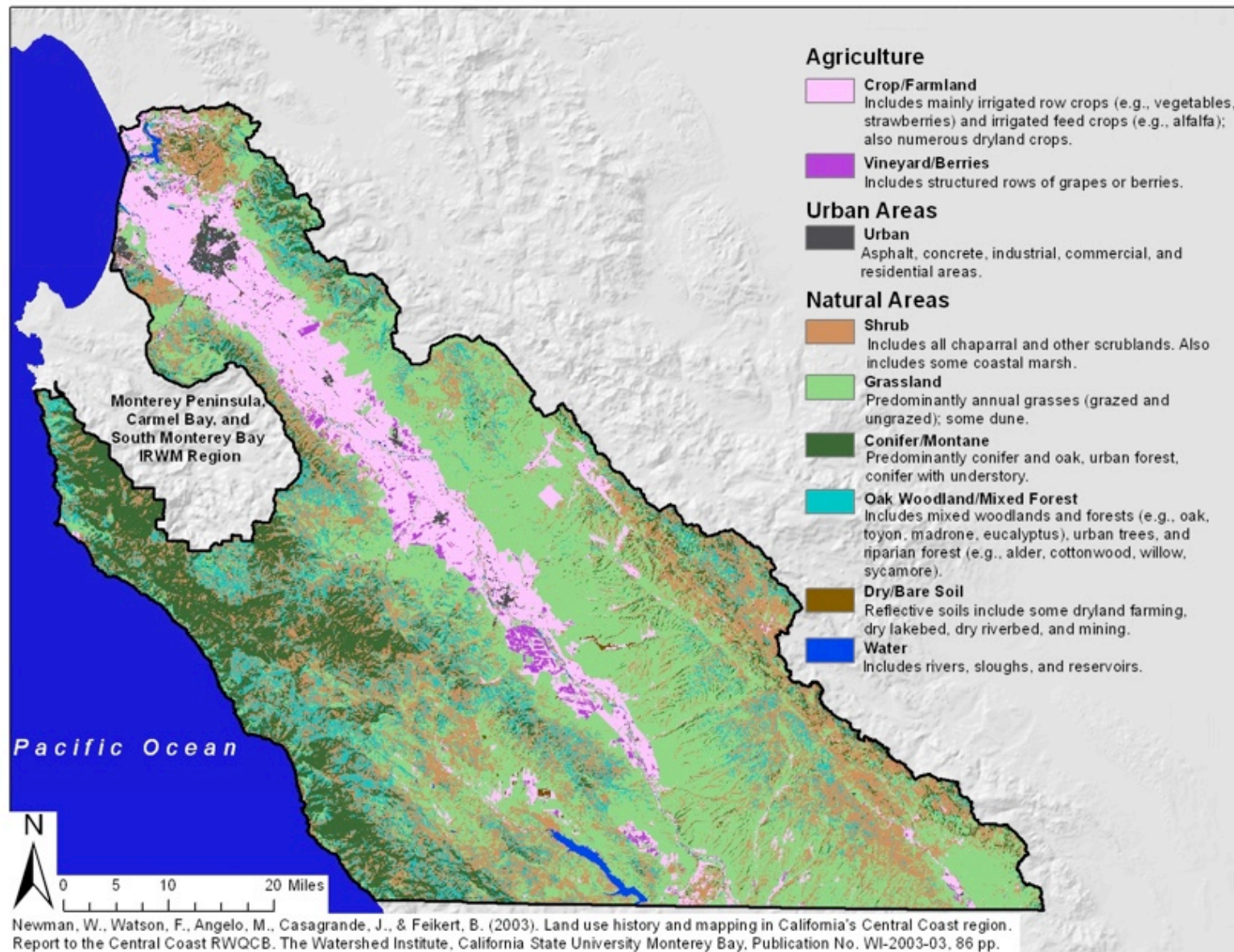
Table B-2: Monterey County Vegetation Communities, Estimated for 2006

Vegetation Community	Acres
Annual Grassland	711,714
Oak Woodland	416,786
Agriculture	262,199
Baccharis Scrub	204,258
Oak Savanna	201,194
Gabilan Scrub	115,040
Urban/Non-Veg	62,284
Sparse Vegetation/Bare Soil	32,789
Mixed Conifer	25,532
Riparian/Wetland	24,891
Redwood Forest	21,734
Maritime Chaparral	12,115
Coastal prairie	9,426
Blue Oak Woodland	5,606
Saltwater Marsh	5,304
Dune Scrub	2,812
Baccharis Chaparral	2,138
Monterey Pine Forest	2,010
Eucalyptus	1,158
Golf Course	580
Coastal Scrub	512
Valley Needlegrass Grassland	392
Dune	281
Freshwater Marsh	148
Coastal Terrace Prairie	97
Native Grassland	81
Total	2,121,082

Source: Monterey County Planning Department 2010b, Section 4.9.3. Includes cities and coastal areas. Note: The table includes areas beyond the boundaries of the Greater Monterey County IRWM region, for example in the Monterey Peninsula region, the Carmel River watershed, and the Pajaro River watershed.

Figure B-7 below illustrates the general vegetation and land use divisions within the Greater Monterey County region in terms of agricultural, urban, and natural areas.

Figure B-7: Land Uses in the Greater Monterey County IRWM Region



B.3.2.b Wilderness, Conservation Areas, and Open Space

The Greater Monterey County region includes approximately 500,000 acres⁶ of land dedicated to wilderness, conservation areas, and open space. Some of the most significant of these areas are described below.

Los Padres National Forest: The magnificent Los Padres National Forest stretches across nearly 220 miles from the Big Sur coast to the western edge of Los Angeles County, encompassing 1.75 million acres of land. Within the Los Padres National Forest and included in the Greater Monterey County region are two spectacular wilderness areas, the 31,500-acre Silver Peak Wilderness and the 240,000-acre Ventana Wilderness. Los Padres is owned and managed by the U.S. Forest Service, though there are a significant number of privately owned properties that exist inside the forest boundaries as in-holdings. Most of the Los Padres National Forest is composed of steep, rugged coastal mountains with watersheds that supply 19 reservoirs. Los Padres contains a wide range of ecosystems, from seacoast and marine habitats to redwood forests, mixed conifer forests, oak woodlands, grasslands, pinyon juniper stands, chaparral and semi-desert areas, which are home to more than 468 fish and wildlife species (including 23 threatened or endangered wildlife species, 20 regionally sensitive wildlife species, and 34 forest-level sensitive wildlife species). Los Padres provides habitat for and is involved with the reintroduction of California condors, bald eagles, peregrine falcons, tule elk, bighorn sheep and many endangered plants.⁷

Pinnacles National Monument: Owned and managed by the U.S. National Park Service, Pinnacles National Monument encompasses about 26,000 acres in the southern portion of the Gabilan Mountains. The Monument was established in 1908 to preserve the incongruent and beautiful rock formations for which Pinnacles is named. The park's striking beauty is attributable, in part, to the Monument's geologic formations, showcase chaparral habitat, finely intergraded ecosystems, and protected native plant and animal diversity. More than 80 percent of the park (15,985 acres) is designated as the Pinnacles Wilderness area. Prairie falcons breed in this area in some of the highest densities of anywhere in North America. Peregrine falcons have also recently returned to the Monument to breed (though in far fewer numbers). A California condor re-establishment program has been in place since 2003.⁸

Salinas River National Wildlife Refuge: The Salinas River National Wildlife Refuge is located approximately 11 miles north of Monterey and three miles south of Castroville, at the point where the Salinas River empties into Monterey Bay. The 367-acre refuge was established in 1974 because of its "particular value in carrying out the national migratory bird management program." The area encompasses several habitat types including sand dunes, pickleweed salt marsh, river lagoon, riverine, and a saline pond, and provides habitat for several threatened and endangered species, including the California brown pelican, Smith's blue butterfly, the western snowy plover, the Monterey sand gilia, and the Monterey spineflower.⁹

Fort Ord National Monument: In April 2012, President Obama declared the Fort Ord Public Lands to be a national monument under the 1906 Antiquities Act. Fort Ord was a former military base established in 1917 and closed in 1994. Approximately half of Fort Ord's 14,651 acres is under the stewardship of the U.S. Bureau of Land Management (BLM). The other half is barred from public use because it could still contain old unexploded ordnance from military years. The Army Corps of Engineers is cleaning up those

⁶ Estimated by the Big Sur Land Trust staff, personal communication between BSLT staff and IRWM Plan Coordinator, January 18, 2012.

⁷ Excerpted from the USDA Forest Service website: <http://www.fs.usda.gov/lpnf>.

⁸ Excerpted from the National Park Service website: <http://www.nps.gov/pinn/index.htm>.

⁹ Excerpted from the US Fish and Wildlife website: <http://www.fws.gov/sfbayrefuges/salinasriver/>

lands and expects to have them ready for public use by 2019.¹⁰ The goal of the community-based Fort Ord Reuse Plan (1997) is to: "Promote the best use of land through well planned and balanced development which ensures educational and economic opportunities as well as environmental protection." Habitat preservation and conservation are primary missions for the Fort Ord National Monument. BLM protects and manages 35 species of rare plants and animals along with their native coastal habitats. The National Monument also includes more than 86 miles of trails for the public to explore on foot, bike or horseback.¹¹

State Parks, Beaches, and Wildlife Preserves: The California Department of Parks and Recreation operates six state parks in the Big Sur region: Garrapata State Park (2,879 acres), Andrew Molera State Park (4,766 acres), Pfeiffer Big Sur State Park (1,006 acres, centered around the Big Sur River and nicknamed a "mini Yosemite"), Julia Pfeiffer Burns State Park (3,762 acres, featuring an 80-foot waterfall and redwoods over 3,500 years old), Limekiln State Park (716 acres), and the Point Sur Historic Park. Other state parks of note in the Greater Monterey County region include Fort Ord Dunes State Park, a 979-acre state park on Monterey Bay, and Fremont Peak State Park, a state park located in the Gabilan Range. State beaches in the Greater Monterey County region include Marina State Beach, a 170-acre protected beach that features some of the highest sand dunes on the Central California coast; Salinas River State Beach, located at the south end of Moss Landing; and Moss Landing State Beach. Moss Landing Wildlife Area is a California State wildlife preserve administered by the CDFG and located on the shore of Elkhorn Slough, just north of Moss Landing. The Moss Landing Wildlife Area protects 728 acres, with access allowed only by foot; all plants and animals are protected.

Other Parks and Protected Areas: One of Central Coast California's most significant undeveloped open spaces is Palo Corona Regional Park. The Big Sur Land Trust, The Nature Conservancy, State of California, and Monterey Peninsula Regional Park District partnered to acquire the 10,000-acre Palo Corona Ranch in 2004. The 10,000-acre ranch was then divided between the CDFG and the Park District to be protected as public conservation and parkland in perpetuity. The CDFG added the southern 5,500 acres of the former ranch to its existing 640-acre Joshua Creek Ecological Preserve, and the Park District created the new Palo Corona Regional Park with the northern 4,350 acres of the former ranch. The park establishes a critical environmental link in a protected 70-mile long wild land corridor that begins at the Carmel River and extends southward to the Hearst Ranch in San Luis Obispo County. The Palo Corona Regional Park includes the headwaters of 13 watersheds and protects significant habitat areas, wildlife corridors, wildlife, and endangered species.

Toro County Park, owned by Monterey County Parks, is a popular recreational park located six miles from downtown Salinas. Along with many recreational facilities and over 20 miles of hiking trails, the park's 4,756 acres is also home to many types of wildlife, including the occasional mountain lions and golden eagles.

Another significant protected area in the Greater Monterey County region is Landels-Hill Big Creek Reserve located along the Big Sur coast. This 3,848-acre reserve is owned and managed by the University of California Natural Reserve System and the University of California at Santa Cruz. In addition to protecting the outstanding natural resources of the area, the purpose of the reserve is to support university research and education. Joshua Creek Canyon Ecological Preserve, mentioned previously, is also in Big Sur, owned by CDFG and comprising approximately 6,140 acres.

¹⁰ Excerpted from online article, "Fort Ord declared a national monument by Obama," written by Ellen Huet in the San Francisco Chronicle, dated April 21, 2012: <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2012/04/20/BAVN106SL3.DTL>

¹¹ From the BLM website: http://www.blm.gov/pgdata/content/ca/en/fo/hollister/fort_ord/index.html

Estuarine, Coastal, and Ocean Protected Areas

Monterey Bay National Marine Sanctuary: The Greater Monterey County region is situated adjacent to the federally protected Monterey Bay National Marine Sanctuary (MBNMS), encompassing four Critical Coastal Areas (CCA), two Areas of Special Biological Significance (ASBS), and five Marine Protected Areas (MPA).¹² The MBNMS was designated in 1992 as a federally protected marine area offshore of California's Central Coast. Supporting one of the world's most diverse marine ecosystems, it is home to numerous mammals, seabirds, fishes, invertebrates and plants in a remarkably productive coastal environment. The Sanctuary encompasses 276 miles of shoreline and 6,094 square statute miles of ocean, covering everything below the water's surface from Marin County to Cambria, from the high tide mark to as far as 53 miles offshore. The MBNMS was established for the purpose of resource protection, research, education, and public use of this national treasure, and is part of a system of 13 National Marine Sanctuaries administered by the National Oceanic and Atmospheric Administration (NOAA).

Elkhorn Slough National Estuarine Research Reserve: The Elkhorn Slough National Estuarine Research Reserve, part of the MBNMS, provides some of the most important freshwater marsh and brackish marsh habitat for wildlife in California. The slough is located in the northern coastal area of the Greater Monterey County IRWM region, and is one of the few coastal wetlands remaining in California. The main channel of Elkhorn Slough, which winds inland nearly seven miles, is flanked by a broad salt marsh second in size in California only to San Francisco Bay. The reserve lands also include oak woodlands, grasslands and freshwater ponds that provide essential coastal habitats that support a great diversity of native organisms and migratory animals. More than 400 species of invertebrates, 80 species of fish, and 200 species of birds have been identified in Elkhorn Slough. The channels and tidal creeks of the slough are nurseries for many species of fish. At least six threatened or endangered species utilize the slough or its surrounding uplands, including peregrine falcons, Santa Cruz long-toed salamanders, California red-legged frogs, brown pelicans, least terns and sea otters. Additionally, the slough is on the Pacific Flyway, providing an important feeding and resting ground for many types of migrating waterfowl and shorebirds.

Elkhorn Slough is protected by a combination of private, federal, and state landowners including the Elkhorn Slough National Estuarine Research Reserve, the Moss Landing Wildlife Area, and the Nature Conservancy. In 1989, the Elkhorn Slough Wetland Management Plan was prepared for the California State Coastal Conservancy and the Monterey County Planning Department to address the preservation and protection of wetlands and other sensitive resources.

Big Creek: Big Creek State Marine Reserve (SMR) and Big Creek State Marine Conservation Area (SMCA) are two adjoining marine protected areas that lie offshore of Big Sur on California's central coast. The combined area of these marine protected areas is 22.5 square miles. The SMR protects all marine life within its boundaries. Fishing and take of all living marine resources is prohibited. Within the SMCA fishing and take of all living marine resources is prohibited except the commercial and recreational take of salmon, albacore, and the commercial take of spot prawn.

Moro Cojo Estuary State Marine Reserve: Moro Cojo SMR is a marine protected area established to protect the wildlife and habitats in Moro Cojo Slough. Moro Cojo Slough is located inland from Monterey Bay, directly south of the Elkhorn Slough. The area covers 0.5 square miles. The SMR protects all marine life within its boundaries.

¹² Protected areas include: Elkhorn Slough (CCA and MPA), Moro Cojo Estuary (MPA), Old Salinas River Estuary (CCA), Salinas River (CCA), Julia Pfeiffer Burns Underwater Park (CCA and ASBS), Point Lobos (MPA), Point Sur (MPA), Big Creek (MPA), and the ocean area surrounding the mouth of Salmon Creek (ASBS).

Figure B-8: Wilderness, Conservation Areas, and Open Space in the Greater Monterey County Region

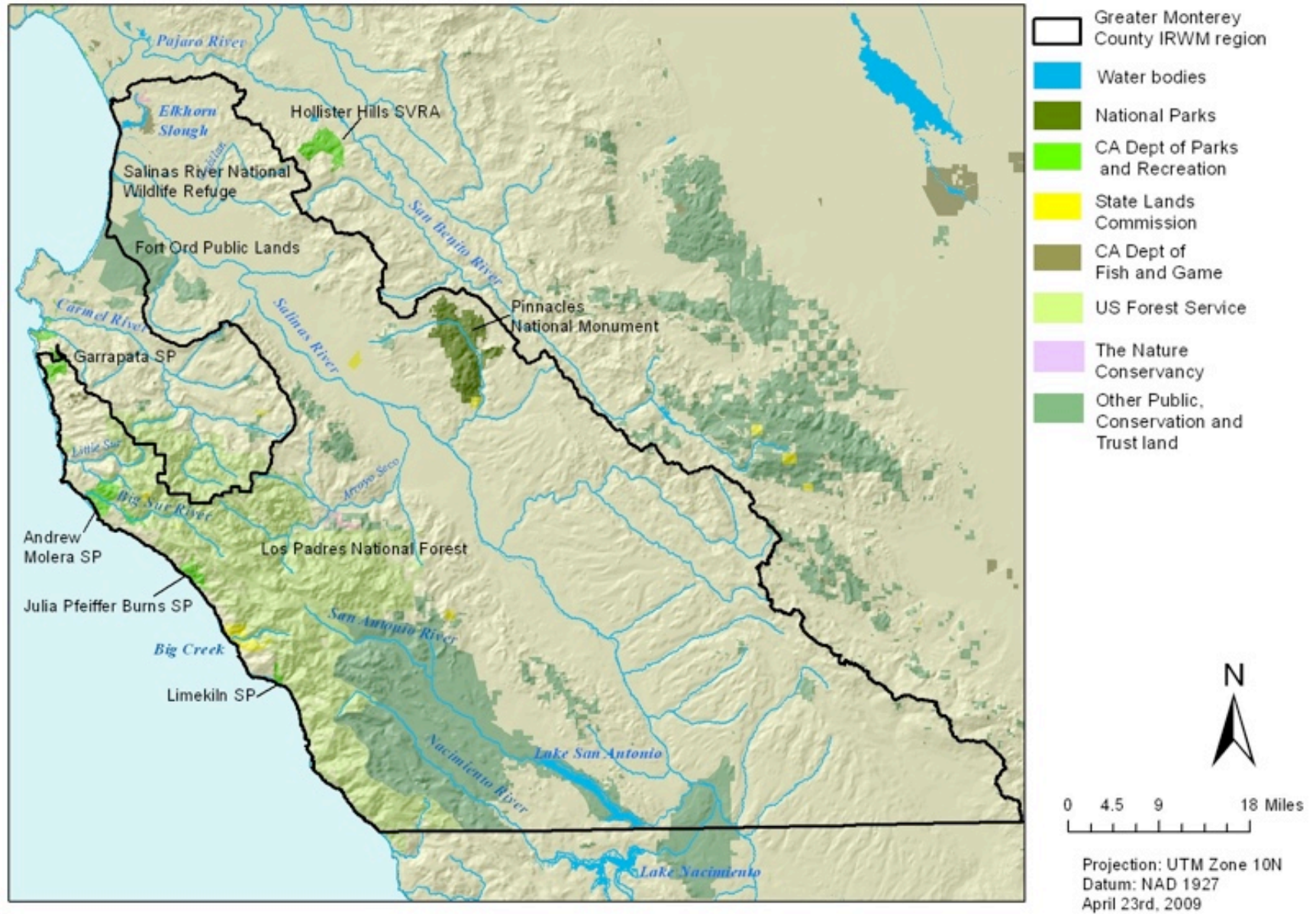
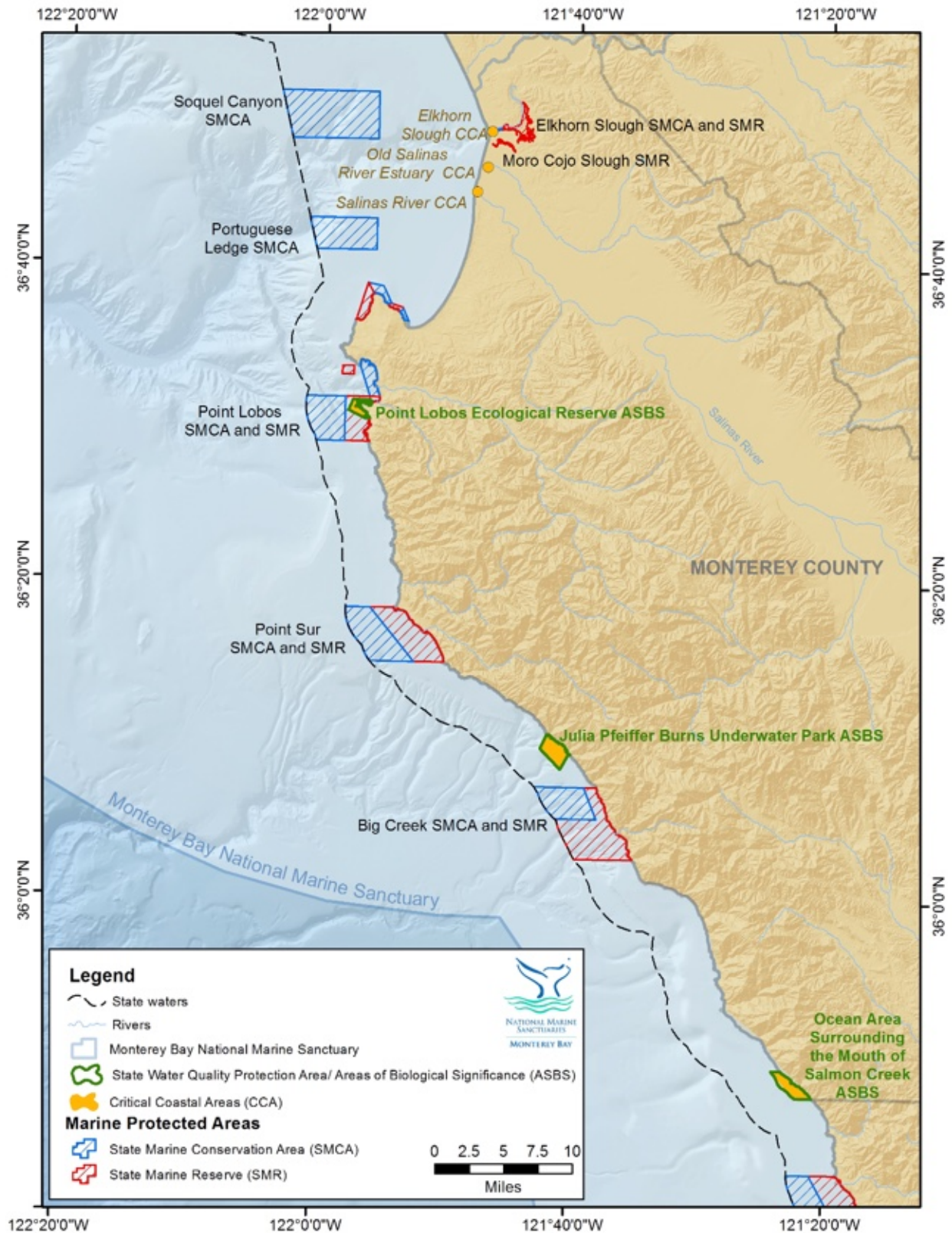


Figure B-9: Estuarine, Coastal, and Ocean Protected Areas within the Greater Monterey County Region



B.3.2.c Fisheries

The region's creeks and streams provide habitat for several federally protected species, including most notably South-Central California Coast steelhead (*Oncorhynchus mykiss*), federally listed as threatened in 1997 (and reconfirmed in 2006). The South-Central California Coast steelhead populations have declined from annual runs totaling 27,000 spawning adults to less than 500. The South-Central California Coast steelhead Distinct Population Segment (DPS) extends from the Pajaro River south to (but excluding) the Santa Maria River at the southern border of San Luis Obispo County, and includes those portions of coastal watersheds that are at least seasonally accessible to steelhead entering from the ocean. The major inland steelhead watersheds in the South-Central California Coast Steelhead Recovery Planning Area include the Pajaro, Salinas, and Carmel Rivers (NMFS 2013).

Within the Greater Monterey County IRWM region, critical habitat has been designated for South-Central California Coast steelhead along the entire Big Sur coast and within the Salinas River basin, which includes the Salinas River, the Salinas River Lagoon, Gabilan Creek, Arroyo Seco River, Nacimiento River, the San Antonio River, and their tributaries. According to a South-Central California Coast Steelhead Threats Assessment conducted in 2008, "Dams and water diversions (including groundwater extractions) on the major rivers of the Interior Coast Range BPG [Biogeographic Population Group] (Salinas and Pajaro Rivers) have had the most severe adverse impacts on the steelhead populations in this BPG, cutting off access to upstream spawning and rearing habitats and reducing both the magnitude and duration of flows, as well as altering the timing, necessary for immigration of adults and emigration of juveniles. Agricultural activities (including agricultural effluents) have also significantly impacted steelhead habitats through encroachment into the riparian corridor and degradation of water quality. ... Estuarine habitat loss is also a significant threat source to steelhead populations" (Hunt & Associates 2008, p. 23). Many growers and ranchers in the region have been working to implement best management practices to improve riparian habitat through such initiatives as the Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP).

Along the Big Sur coast in Monterey County, major steelhead watersheds include Big Sur River, Little Sur River, and Big Creek. In Garrapata Creek along the Big Sur coast, steelhead populations were assessed as part of the watershed assessment and restoration planning effort in 2006, and specific recommendations were made and were implemented to reduce upslope erosion along the creek. Efforts to control invasive species are planned in the lower watershed area, and plans exist to remove in-stream barriers. In addition, steelhead enhancement recommendations have been developed for the Big Sur River, Little Sur River and Big Creek by state and federal resource agencies.

B.3.2.d Species and Habitats of Special Concern

There are 100 CEQA-defined special-status plant species and 47 CEQA-defined special-status fish and wildlife species that are known to occur in Monterey County. Listed CEQA-defined special-status species are plants and animals that are legally protected under the California Endangered Species Act (CESA) and federal Endangered Species Act (FESA). Non-listed CEQA-defined special-status species are plants and animals that are not listed under CESA or FESA but which meet the CEQA definition of a rare, threatened, or endangered species (State CEQA Guidelines Section 15380). Appendix I lists the special status plant and animal species that inhabit Monterey County, along with their protection status, California distribution, and habitat needs.

Among the 100 special-status plant species, the following are considered endangered or threatened (under CESA and/or FESA): beach layia, coastal dunes milk-vetch, Contra Costa goldfields, Hickman's cinquefoil, Menzies's wallflower, Monterey clover, robust spineflower, sand gilia, Santa Cruz tarplant,

Santa Lucia mint, Seaside bird's-beak, Tidestrom's lupine, Yadon's rein orchid, Yadon's wallflower, Gowen cypress, Monterey spineflower, and purple amole.

The special-status fish and wildlife species known to occur in Monterey County include seven species of invertebrates (including the Smith's blue butterfly, bay checkerspot butterfly, and vernal pool fairy shrimp), 13 species of reptiles/amphibians (including the California red-legged frog, California tiger salamander, Arroyo toad, Santa Cruz long-toed salamander, and southwestern pond turtle), two species of fish (including the south-central California coast steelhead and tidewater goby), 20 species of birds (including the bald eagle, golden eagle, California brown pelican, California clapper rail, least Bell's vireo, and western snowy plover), and five species of mammals (including most notably the San Joaquin kit fox).

More than 70,000 acres in the county are designated as critical habitat by the U.S. Fish and Wildlife Service (USFWS). Critical habitat is defined by FESA as specific areas in which physical or biological features essential to the conservation of a protected species are present. The USFWS has designated critical habitat for the western snowy plover, California red-legged frog, California tiger salamander, Monterey spineflower, Santa Cruz tarplant, and purple amole in Monterey County (Monterey County Planning Department 2010b, Section 4.9). In addition, as noted above, NOAA Fisheries has designated several rivers and streams as critical habitat in Monterey County, including those along the Big Sur coast and several waterways within the Salinas River basin, for the South-Central California Coast DPS of steelhead (Federal Register [FR] 70: 52488).

B.3.2.e Watershed Management Issues

Management issues in the Greater Monterey County region watersheds are typical of those in watersheds throughout coastal California. Some of the most significant watershed management issues include the decline of aquatic species, and in particular, steelhead, erosion, invasive species, and fire management. While these four issues stand out in particular, numerous other water-related and water management issues and conflicts exist in the region, causing varying degrees of management challenges to landowners and resource managers. A list of such issues was compiled in October 2009 based on interviews with dozens of land use managers, water managers, and research scientists in the region. The list of regional issues and conflicts is included at the end of this chapter in Section B.7. Note that one issue that does not appear on the list but that some say may underlie many of the other issues is a general lack of scientific knowledge regarding the complexity and natural functioning of ecological systems.¹³ Poor management decisions can often be made due to a simple lack of understanding.

The management issues related to steelhead, erosion, invasive species, and fire management are described briefly below.

Steelhead: Critical habitat has been designated for South-Central California Coast steelhead along the entire Big Sur coast and within the Salinas River basin, which includes the Salinas River, the Salinas River Lagoon, Gabilan Creek, Arroyo Seco River, Nacimiento River, the San Antonio River, and their tributaries. The National Marine Fisheries Service has identified seven principal threats that have contributed to the destruction, modification, or curtailment of the habitat or range of the South-Central California Coast steelhead. These include: 1) alteration of natural stream flow patterns; 2) physical impediments to fish passage; 3) alteration of floodplains and channels, including the degradation or elimination of riparian areas; 4) sedimentation; 5) urban and rural waste discharges; 6) spread and propagation of exotic species (such as bass and bullfrogs that prey on juvenile steelhead, and non-native plants such as *Arundo donax* and *Tamarix*); and 7) loss of estuarine habitat.

¹³ Personal communication with Nikki Nedeff, Ecological Consultant to IRWM Plan Coordinator (June 10, 2011).

In the Salinas River system, two major factors contributing to the decline of steelhead are reduced in-stream flows limiting migration into the upper tributaries, and the reduction and degradation of riparian habitat due to agriculture, building construction, and other land use practices. As noted above, growers and ranchers in the region have been working to implement best management practices to improve riparian habitat, but conditions continue to deteriorate. Along the Big Sur Coast, steelhead enhancement recommendations have been developed for the Big Sur River, Little Sur River, and Big Creek by State and Federal resource agencies. Steelhead habitat recommendations have also been made for Garrapata Creek as part of a 2006 watershed assessment, and implementation has begun.

Erosion: Erosion is a widespread problem in Monterey County, due in part to the erosive nature of local soils as well as from land use practices. These land use practices include farming on steep slopes, unmaintained or improperly designed dirt roads, altered water channels that increase water velocities and alter the natural sediment balance, and areas that have been denuded of vegetation by fire, overgrazing, or clearing. Erosion from roads, agriculture, and unstable stream banks may carry pollutants and can be detrimental to aquatic habitat and organisms.

The Resource Conservation District (RCD) of Monterey County has been addressing erosion and sediment issues related to agricultural practices and farm/ranch roads in Monterey County for decades.¹⁴ The RCD has provided assistance to Hispanic and other hillside (primarily strawberry) farmers for winter erosion control in the Elkhorn Slough, Moro Cojo and Gabilan watersheds. Projects include furrow alignment, furrow and road seeding, irrigation efficiency evaluations (i.e., runoff reduction for specific programs), and engineered practices for particularly problematic sites, including steep slopes with active gullies and erosion. Engineered practices include sediment traps, stormwater detention structures, underground outlets (capturing water at the top and midsections of a field and conveying it underground via pipe to a safe outlet at the bottom of the hill), and other pond-type structures. The RCD has also tested multiple “vegetated treatment systems” on land draining into the Salinas River, Elkhorn Slough, the Salinas Reclamation Ditch, and Blanco Drain.

In addition, the RCD provides education to farmers and private landowners on effective rural road management through individual site visits, workshops, and materials development. With assistance from the USDA NRCS, the Santa Cruz RCD, and the California Coastal Conservancy, the RCD is currently developing and implementing a Rural Roads Erosion Control Assistance Program to help private road associations and landowners identify and treat road erosion and drainage problems for long-term, low maintenance management that reduces sediment movement from rural roads to local waterways. Such projects benefit community access and safety as well as local wildlife dependent on healthy streams and rivers. The RCD recently developed a Private Roads Maintenance Field Guide for Monterey County that includes technical information on design and implementation of road drainage and maintenance practices.¹⁵

In addition, the MBNMS produced an *Agriculture and Rural Lands Action Plan* in 1999 that includes strategies to improve both public and private planning and maintenance practices for rural roadways in order to reduce erosion. The Sanctuary’s Agriculture Water Quality Coordinator is an active participant in pursuing implementation of those strategies with the RCDs and other partners described above.

Invasive Species: An invasive species is a non-native plant or animal species that, when introduced to an ecosystem, causes or is likely to cause economic or environmental harm, or harm to human health.

¹⁴ Source for this paragraph: RCD Spring 2011 newsletter, *Conservation Connections*:
<http://www.rcdmonterey.org/pdf/RCDMCnews-spring2011.pdf>

¹⁵ See RCD website: <http://www.rcdmonterey.org>.

Invasive plant species are usually able to out-compete local native plant species for water and space because they are more prolific, have more vigorous growth, and lack predators that would otherwise help to keep them in check. They degrade habitat for other wildlife, domestic animals, recreation, and other land use activities.¹⁶ In addition, weedy species can increase wildfire hazard and frequency, which is considered particularly problematic in Monterey County where wildfires pose a major threat. Non-native animal species tend to out-compete native species due to lack of natural predators, competition for habitat, and in some instances, preying on native species. Invasive species affect terrestrial, freshwater, estuarine, and marine systems throughout the region and pose a major challenge to private landowners, farmers, ranchers, and resource managers.

The invasive plant and animal species inhabiting the Greater Monterey County region are too numerous to list,¹⁷ but “top offenders” for non-native plants in Monterey County include: *Arundo donax*, yellow star thistle, cape ivy, French broom, pampas/jubata grass, and wakame (a marine invasive plant, which is under eradication in Monterey Bay). The noxious weed *Arundo donax* deserves special mention: the *Arundo* infestation in the Salinas River represents the second-largest invasion in California of this nonnative invasive species. *Arundo* is an aggressive perennial grass that has overtaken approximately 2,500 acres of the Salinas River, forming enormous monocultures with virtually no food or habitat value for native wildlife. Non-native “top offender” animal species in Monterey County include red squirrels, red fox, and bullfrogs. Appendix J includes lists of non-native invasive plant and animal species found in the Monterey County area, compiled from various sources.

Fire Management: The Big Sur coast area is susceptible to major wildfires, and while wildfires are a necessary part of the natural cycle they can cause serious degradation to water and other natural resources. Major wildfires can cause excessive erosion and impaired water quality in creeks, destroy or damage small community water and wastewater systems, and damage public and private roads. Runoff from rain can wash debris from wildfires into coastal creeks and the ocean, with potentially detrimental effects on nearshore marine communities.

A series of record-breaking wildfires burned through Big Sur and the Santa Lucia Range during the summer of 2008. The Indians Fire began on June 8th and was ignited by an unpermitted campfire, while the Basin Complex Fire was ignited by lightning on June 21st, and merged with the Indians Fire by June 25th. About 240,000 acres of federal, state, and private lands—83 percent of which was a part of the Monterey District of the Los Padres National Forest—burned in the fire, making it the seventh largest fire in California history. The fire extended south to Fort Hunter Liggett and north to Carmel Valley, creating a footprint 40 miles north-south and 15 miles east-west. Watershed evaluations were conducted following the fire, and research and monitoring projects were set up to track terrestrial inputs from the fires and determine if those inputs alter water chemistry, quality, and clarity of nearshore waters. The projects also measured community-level responses in the rocky intertidal and adjacent kelp forests.

As development in the wildland/urban interface continues to grow, wildfires also pose an increasing threat to human lives and infrastructure. Fire management at the wildland/urban interface brings to fore competing interests between those whose mission it is to protect structures and those whose mission it is to protect forestlands. While foresters and environmentalists tend to consider natural fires (or when appropriate, prescribed burns) to be healthy for the forest and helpful or even necessary for reducing the

¹⁶ See Monterey County Agricultural Commissioner’s Office website: <http://ag.co.monterey.ca.us/pages/invasive-weeds>.

¹⁷ The California Invasive Plant Inventory Database, compiled by the California Invasive Plant Council (Cal-IPC), includes 166 invasive plant species in the “Central West” region (as of September 2011), which roughly comprises the Monterey County area. See California Invasive Plant Council website: <http://www.cal-ipc.org/ip/inventory/weedlist.php?region=CW>

intensity of wildfires, those whose job it is to fight structure fires, and certainly most homeowners, tend to consider all fires destructive and dangerous. This dichotomy poses a growing challenge for foresters, fire fighters, policy makers, land use planners, and others involved in fire management issues in the region.

A relatively recent effort responding to this challenge, led by the US Forest Service and facilitated by The Nature Conservancy, is FireScape Monterey.¹⁸ FireScape Monterey is a collaborative approach to wildfire management that aims to bring all stakeholders to the table (including those that are traditionally opposed), to “leave swords at the door” and develop wildfire management practices that make sense from a “landscape” fire management point of view rather than a “jurisdictional” point of view. The effort covers a very broad geographic area, including the Los Padres National Forest and Ventana Wilderness, north to Marina, east to Salinas, down the Salinas River to Lake Nacimiento, with the intent of including a sphere of influence that will eventually cover all of Monterey County. FireScape Monterey is in the process of developing goals and strategies and an implementation plan.

B.3.2.f A Note About Climate Change and Biological Resources

It is important to note that many of the important biological resources in the region—particularly species and communities that are indigenous or unique to the region, or that are otherwise considered “special status”—may become increasingly vulnerable in future years due to the impacts of climate change. Climate change is expected to have effects on diverse types of ecosystems, from alpine to deep sea habitat. As temperatures and precipitation change, seasonal shifts in vegetation will occur; this could affect the distribution of associated flora and fauna species. As the range of species shifts, habitat fragmentation could occur, with acute impacts on the distribution of certain sensitive species.

Climate change is expected to put a number of stressors on ecosystems, with potentially catastrophic effects on biodiversity. The Inter-governmental Panel on Climate Change (IPCC) stated that “20 percent to 30 percent of species assessed may be at risk of extinction from climate change impacts within this century if global mean temperatures exceed 2°C to 3°C (3.6°F to 5.4°F) relative to pre-industrial levels” (IPCC 2007a). The following provides just a few examples of anticipated climate change impacts on biological resources in the local region:

- Sea level rise will impact current estuary brackish water interface towards more marine systems. Coastal wetland systems are likely to be inundated with increasing frequency, leading to the dieback of tidal marshes and the salinization of fresh and brackish marshes.
- Changes in precipitation, increased drought, higher flood peaks, and lower spring/summer runoff will likely stress and may threaten many aquatic and plant communities.
- Migration patterns and species distribution will change.
- Shifts in existing biomes could also make ecosystems vulnerable to invasive species encroachment.
- Wildfires may become more severe and more frequent, making it difficult for native plant species to repeatedly re-germinate.
- Changes in hydrograph (driven by rainfall pattern changes) will cause increased erosion and habitat loss in creeks and rivers.
- Some locally unique species and communities such as maritime chaparral, coastal prairie, coastal redwoods and giant kelp that are susceptible to changes in certain locally favorable climate variables (fog duration, coastal upwelling) will become more vulnerable as these conditions change.

¹⁸ For more information, visit the FireScape Monterey website: <http://firescape.ning.com/>.

The RWMG, with assistance from the Central Coast Wetlands Group and a Climate Task Force comprised of regional scientists, water managers, and coastal policy professionals, conducted an analysis to assess priority climate change vulnerabilities and impacts to the region. The results of their analysis are described in Chapter R, Climate Change, of this IRWM Plan. Table R-7 (p. R-38) in that chapter depicts the relative risk of each climate change impact scenario, along with a relative level of urgency to act (priority level). The table shows the results of two separate analyses: one that considers the cumulative consequences from the combined impacts to five different social, economic, and environmental factors (including specifically: public safety, local economy and growth, community and lifestyle, environment and sustainability, and public administration); and a second analysis that considers the consequences for environmental resources and sustainability only. The table also provides adaptation and response strategies along with suggested initial actions.

Table B-3 below summarizes the climate change impacts that are considered highest priority (i.e., “extreme” and “high” priority) for the region in terms of consequences for environmental resources, and that therefore require more urgent action.

Table B-3: Priority Climate Change Impacts Based on Environmental Consequences

Priority Level	Climate Change Consequences
Water Supply	
Extreme	Agricultural water use is expected to increase to offset higher temperatures and evapotranspiration
Extreme	Local rainfall changes are estimated to be reduced by 3-10 inches
Extreme	Sea level rise and higher groundwater extraction will lead to increased rates of saltwater intrusion
Extreme	Droughts will be more frequent and severe
High	Rangelands are expected to be drier
High	Domestic landscaping water needs will be higher
Water Quality	
Extreme	Sea level rise will impact current estuary brackish water interface towards more marine systems
High	Lower seasonal surface flows can lead to higher pollutant concentrations
High	Changes in storm intensity will increase sediment loading in many systems
Flooding	
Extreme	Coastal levees and control structures will be undersized to manage the combined influences of higher flow events and sea level rise
High	Regional levees will provide less protection during higher storm flow events
High	Natural creeks throughout the region and managed conveyance within the Salinas Valley will see higher flow rates leading to increased erosion and flooding
Ecosystem Vulnerabilities	
Extreme	Sea level rise will impact current estuary brackish water interface towards more marine systems
Extreme	Coastal wetland systems are especially vulnerable to the combined influences of climate change
High	Migration patterns and species distribution will change
High	Some locally unique species such as coastal redwoods and giant kelp are susceptible to changes in certain locally favorable climate variables (fog duration, coastal upwelling)

See Section R, Climate Change, for a full discussion of climate change and its potential consequences for water supplies and natural resources in the Greater Monterey County region.

B.3.3 Water System

This section describes the water system in the Greater Monterey County IRWM planning region as it pertains to surface freshwater systems, groundwater basins, reclaimed water, desalted water, floodwater, estuarine, coastal, and ocean waters, and wastewater. These separate water systems work collectively as part of the water system being managed in the Greater Monterey County region, all within the context of the region's watersheds and natural resources described above. Note that the Greater Monterey County IRWM region receives no "imported" water (except for Salinas River water that originates in San Luis Obispo County), and therefore maintaining the region's water system is absolutely critical for ensuring the health, prosperity, and long-term sustainability of local communities in the region. The region's water system is managed for water supply, water quality, flood protection, and for the healthy functioning of the region's natural resources.

The various elements of the water system in the Greater Monterey County region are interconnected. Surface waters within the region's watersheds—including reservoirs, rivers, creeks, rainfall, irrigation water applied to fields, agricultural drainage ditches, urban runoff, and unlined wastewater ponds—flow either downstream into coastal wetlands and coastal waters or down into the ground, infiltrating groundwater basins. The quality of that water affects both drinking water supplies and the health of the region's aquatic resources. As water is used, wastewater is created. Much of this wastewater is reclaimed for agricultural and landscape use. The use of recycled water not only increases the region's water supply, but helps protect the groundwater from seawater intrusion by providing an alternative source of irrigation and landscaping water. Desalted water, both from coastal waters and from wastewater, is currently being pursued to supplement the region's water supply. Floodwater is managed to protect lives and property, and the management of floodwater and of floodplains directly affects the health of the surrounding natural resource systems. Each element of the water system is part of this collective, integrally linked system. The individual elements of that water system are described in turn below.

B.3.3.a Surface Waters

The significant surface waters of the Greater Monterey County IRWM region include the Salinas River in the Salinas Valley and its tributaries; the San Antonio and Nacimiento Reservoirs, which control water flows to the Salinas River and, consequently, impact recharge of the Salinas Valley Groundwater Basin; the numerous rivers originating in the Santa Lucia Mountains along the Big Sur coast, which provide the main source of water for water users in that portion of the region; the Elkhorn Slough and Moro Cojo Slough; the Monterey Bay, and the coastal waters of the Monterey Bay National Marine Sanctuary.

The MBNMS is a federally protected marine area offshore of California's central coast. Stretching from Marin to Cambria, from the high tide mark to as far as 53 miles offshore, the MBNMS encompasses a shoreline length of 276 miles and 6,094 square miles of ocean. The MBNMS was established for the purpose of resource protection, research, education, and public use, and is part of a system of 13 National Marine Sanctuaries administered by NOAA. Its natural resources include our nation's largest kelp forest, one of North America's largest underwater canyons and the closest-to-shore deep ocean environment in the continental United States. The MBNMS is home to one of the most diverse marine ecosystems in the world, including 33 species of marine mammals, 94 species of seabirds, 345 species of fishes, and numerous invertebrates and plants. The Greater Monterey County region includes approximately 65 miles of coastline adjacent to the MBNMS, and the main channel of the Elkhorn Slough.

Located in the northern coastal area of the Greater Monterey County region, Elkhorn Slough, Moro Cojo Slough and the surrounding areas that drain to Moss Landing Harbor provide some of the most important estuarine habitat for wildlife in California, including extensive areas of salt marsh, brackish marsh,

freshwater marsh, intertidal mudflats and open water. The main channel of Elkhorn Slough, which winds inland nearly seven miles, is flanked by a broad salt marsh that is the largest in California south of San Francisco Bay. The diversity of both birds and marine invertebrates in the Elkhorn Slough is among the highest in the United States, and the slough is an important breeding area for sharks, rays and commercially harvested flatfish.

The Salinas River is the third longest river in the state of California and the largest water system in Monterey County, extending about 120 miles from its headwaters at the Santa Margarita Reservoir in San Luis Obispo County to its mouth at the Monterey Bay. The Salinas River drains approximately 4,043 square miles of land. Several tributaries enter the river along the length, including Pancho Rico Creek, Santa Rita Creek, Estrella Creek, Chalone Creek, San Lorenzo Creek, El Toro Creek, Prunedale Creek, Arroyo Seco River, Nacimiento River and San Antonio River.

The Arroyo Seco River is the largest undammed tributary to the Salinas River and is an important source of groundwater recharge to the Salinas Valley Groundwater Basin. The river is 40 miles long and drains 275 square miles of watershed, most of which lies in the rugged coastal range areas southwest of Greenfield and Soledad. The dramatic topographical relief of its drainage area and the fact that there are no dams on the Arroyo Seco make the river prone to flash flooding. The river is therefore significant for Salinas River flood management. Watersheds bordering the Arroyo Seco drainage are the Carmel River and Big Sur River to the northwest, multiple small creeks flowing into the Pacific on the west, the San Antonio River to the south, and other smaller tributaries of the Salinas on the east. As it is the only perennial Salinas River tributary without dams, the Arroyo Seco also sustains a small population of steelhead trout. In recognition of this fishery, as well as its obvious scenic and recreational values, the Arroyo Seco River and its tributary, Tassajara Creek, have been determined eligible for National Wild & Scenic River status by the U.S. Forest Service.

The San Antonio and Nacimiento Rivers are by far the largest tributaries to the Salinas River, with watersheds of about 330 and 328 square miles, respectively. Dams owned and operated by the MCWRA control both of these rivers. The San Antonio River has its headwaters in the Santa Lucia Mountains and flows in a southeasterly and easterly direction through the Los Padres National Forest and Fort Hunter Liggett Military Base to its confluence with the Salinas River, for a total length of 58 miles. The Nacimiento River, located about five miles southwest of the San Antonio River, originates in the Santa Lucia Mountains and flows southeasterly through the Los Padres National Forest, Fort Hunter Liggett, and Camp Roberts to its confluence with the Salinas River, for a total length of 54 miles. Nacimiento and San Antonio Rivers contribute approximately 200,000 acre-feet/year (AFY) and 70,000 AFY, respectively, to the Salinas River.

The Nacimiento and San Antonio Dams—built in 1957 and 1965, respectively—were constructed to control floodwaters and to release water into the Salinas River for percolation to underground aquifers throughout the summer. At maximum pool, the Nacimiento Reservoir's storage capacity is 377,900 AF with a surface elevation of 800 feet and a surface area of 5,400 acres. The Nacimiento Reservoir yields on average about 62 percent of the total water in the Salinas River system. At full pool, the San Antonio Reservoir has a volume of 335,000 AF, surface elevation of 780 feet, and a maximum depth of 180 feet. The San Antonio Reservoir yields on average about 13 percent of the total water in the Salinas River system.

The Nacimiento and San Antonio Reservoirs are considered the most prominent elements of the region's water infrastructure. The watersheds of both the Nacimiento and San Antonio Reservoirs lie astride the boundaries of Monterey and San Luis Obispo Counties; and although the Nacimiento Reservoir is owned and operated by the MCWRA, it is actually located entirely within San Luis Obispo County, outside of the Greater Monterey County IRWM region. San Luis Obispo County has existing entitlements to 17,500

AFY of water from the Nacimiento Reservoir. MCWRA has recently coordinated efforts with the San Luis Obispo County Flood Control and Water Conservation District to implement the Nacimiento Water Project, which includes construction of a pipeline and appurtenant facilities from Nacimiento Reservoir south to the communities of Paso Robles, Templeton, Atascadero and San Luis Obispo to convey the District's existing water entitlement from the reservoir to areas of use.

Average annual flows to the ocean from the Salinas River are around 360,400 AFY,¹⁹ most of which occurs during the period of November through March. This period corresponds to the months of peak seasonal rainfall and coincides with a seasonal reduction in irrigation activities in the valley. During the spring and summer months, the reservoirs on the Nacimiento and San Antonio Rivers regulate flow to maximize groundwater recharge via the Salinas River channel. A natural clay layer underlies the river in the northern portion of the valley, which inhibits natural recharge in this area. Previous reservoir operations maintained flow as far north as the Spreckels area. Since April 2010, with the implementation of the Salinas Valley Water Project, flows are managed to provide increased recharge in the Salinas River channel, and deliver river water from the Salinas River Diversion Facility to the seawater intrusion area, thus reducing the pumping stress on the aquifer system, and reducing seawater intrusion advancement.

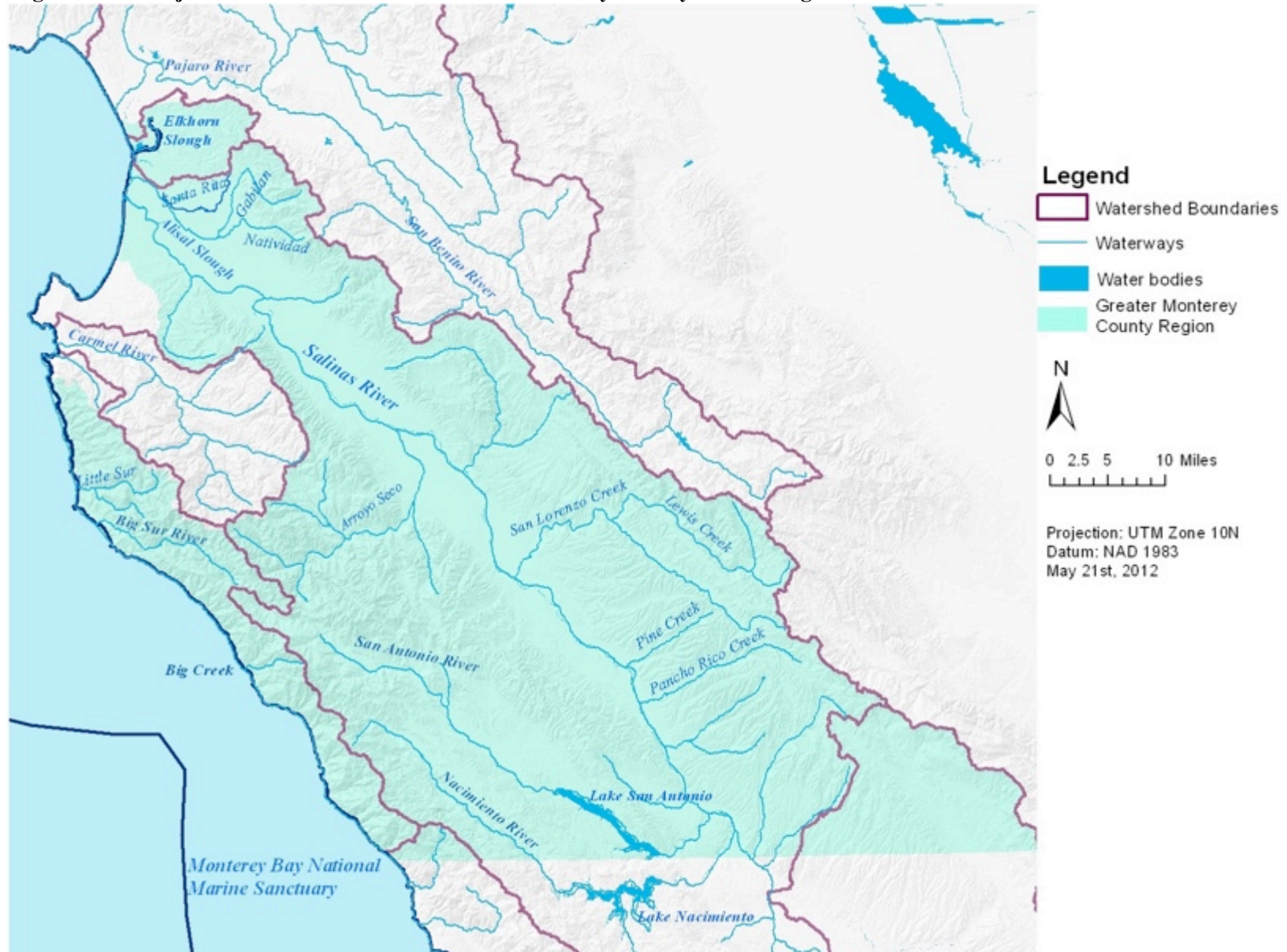
To the northeast of the Salinas River watershed is the smaller Gabilan Creek watershed, which contains five waterways—Gabilan Creek, Alisal Creek, Natividad Creek, Santa Rita Creek, and Tembladero Slough—along with the historic Carr Lake, a 450-acre former wetland and seasonal lake in the City of Salinas now primarily under agricultural production. The Gabilan Creek watershed, which includes the City of Salinas, is one of the most polluted watersheds emptying into the MBNMS. The Salinas Reclamation Ditch and Tembladero Slough are tied for third in having the most pollutant impairments identified on the 303(d) List on the Central Coast, each listed with 14 pollutant impairments. Moss Landing Harbor, which lies at the receiving end of the Gabilan watershed, is listed for 10 pollutant impairments, including pesticides, toxicity, pathogens, and sediment.

In the Big Sur portion of the region, major rivers include the Big Sur River, Little Sur River, and Big Creek, as well as numerous coastal creeks. The Big Sur River was designated a Wild and Scenic River in 1992. Major tributaries to the river include Pfeiffer-Redwood, Juan Higuera, and Pheneger Creeks. The Big Sur River flows in a northerly direction through the Big Sur Valley, at the north end of which lies an extensive floodplain and lagoon. The Big Sur River has a drainage area of about 61 square miles and an average annual runoff of 64,900 AFY (based on USGS stream gauge records), with peak flows in January.

Figure B-10 on the following page illustrates the major surface water bodies in the Greater Monterey County IRWM Region.

¹⁹ Source: Annual data report on United States Geological Survey (USGS) website:
<http://wdr.water.usgs.gov/wy2010/pdfs/11152500.2010.pdf>

Figure B-10: Major Surface Waters in the Greater Monterey County IRWM Region

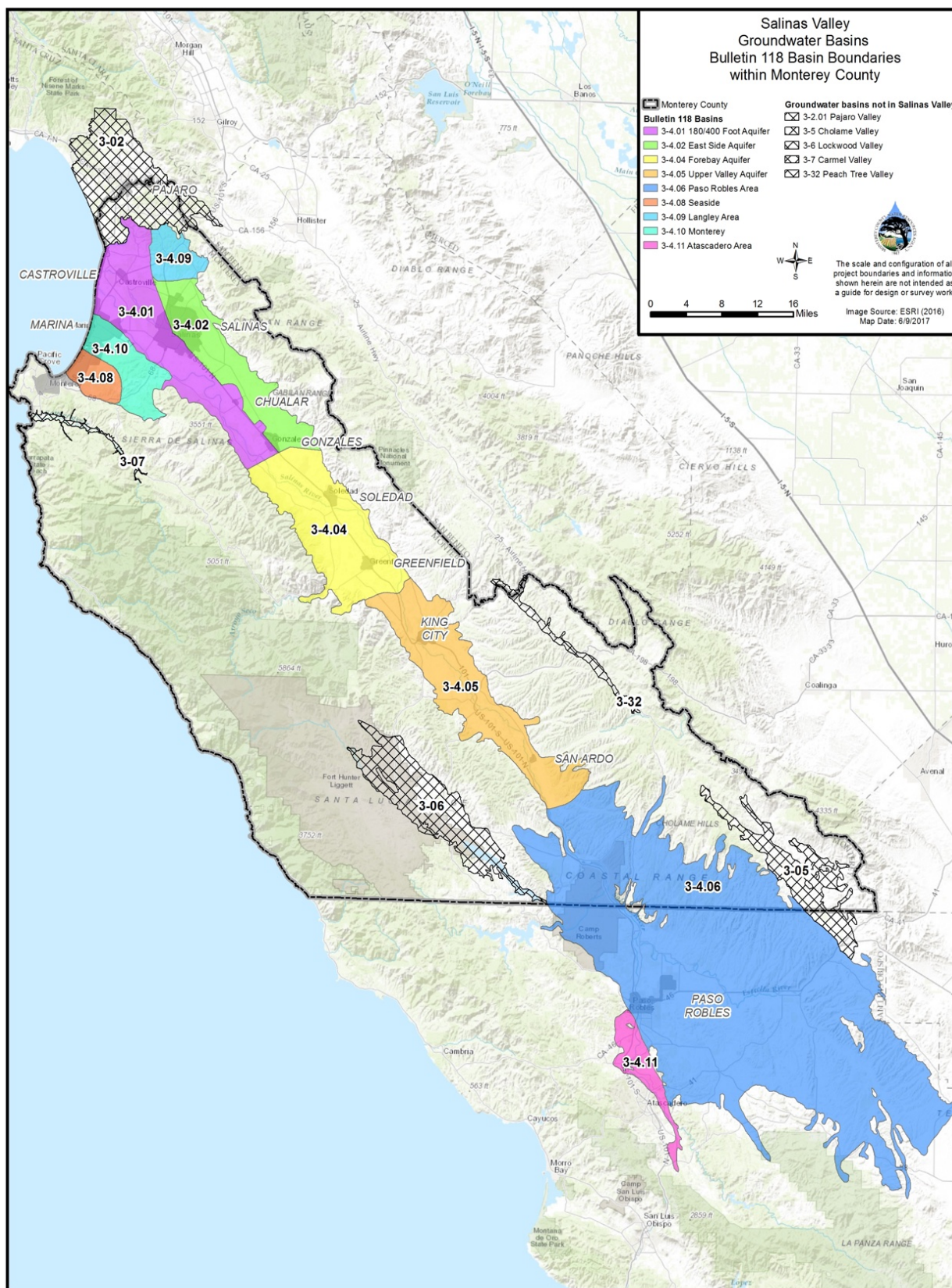


B.3.3.b Groundwater Basins

Groundwater is the main source of water for most water users in the planning region with the exception of residents along the Big Sur coast, who depend entirely on surface water and shallow wells for their water supply, and of residents in an area near Greenfield in the Salinas Valley, who have a diversion from the Arroyo Seco River. The largest groundwater basin in the planning region is the Salinas Valley Groundwater Basin. The Salinas Valley Groundwater Basin is made up of eight sub-basins, highlighted in color on the map in Figure B-11. Note that the Seaside sub-basin is located within the Monterey Peninsula IRWM region, outside of the Greater Monterey County region. The Paso Robles sub-basin extends into San Luis Obispo County (outside of the Greater Monterey County IRWM region). The subareas have different hydrogeologic and recharge characteristics, though they are not separated by barriers to horizontal flow and water can move between them. The Upper Valley and Forebay subareas are unconfined and in direct hydraulic connection with the Salinas River.

Other, considerably smaller groundwater basins in the Greater Monterey County IRWM planning region include Lockwood Valley, Cholame Valley, and Peach Tree Valley basins at the southern end of the county, and a portion of the Pajaro Valley Groundwater Basin at the northern end of the county. (Carmel Valley groundwater basin is located within the Monterey Peninsula IRWM region boundaries).

Figure B-11: Major Groundwater Basins in the Greater Monterey County IRWM Region



According to the 2015 MCWRA Ground Water Extraction Data Summary Report, total groundwater pumping from the Salinas Valley Groundwater Basin in the 2015 reporting year was 514,714 acre feet (AF). This figure is based on reporting from 98 percent of the 1,901 wells in the Salinas Valley for the 2015 reporting year. Note that data is submitted by individual reporting parties and is not verified by Agency staff. Agricultural pumping accounted for 93 percent of total groundwater pumping and urban uses accounted for the remaining 7 percent of the reported extractions, as shown in Table B-4 below.

Table B-4: 2015 Total Extraction Data by Basin Subarea and Type of Use

Subarea	Agricultural Pumping Reported (AF)	Urban Pumping Reported (AF)	Total Pumping Reported (AF)
Pressure	109,214	14,443	123,657
East Side	91,491	12,631	104,122
Forebay	142,668	6,221	148,889
Upper Valley	134,740	3,306	138,046
Total Reported	478,113	36,601	514,714
Percent of Total	92.9%	7.1%	100%

Source: 2015 MCWRA Ground Water Extraction Data Summary Report, with 98% reporting.

Groundwater recharge in the Salinas Valley is principally from infiltration from the Salinas River, Arroyo Seco, and to a much less extent, other tributaries to the Salinas River, and from deep percolation of rainfall. Both natural runoff and conservation releases from Nacimiento and San Antonio Reservoirs contribute to the flow in the Salinas River. It is estimated that stream recharge accounts for approximately half of the total basin recharge. The recharge area is generally believed to end at a point between Chualar and the City of Salinas. Average precipitation in the Salinas Valley ranges from 15 to 60 inches in the mountain ranges on either side of the valley, and from 10 to 15 inches within the valley itself. Most of the precipitation occurs in winter, from November through March. Deep percolation of applied irrigation water is the second largest component of the groundwater budget, but because it represents recirculation of existing groundwater rather than an inflow of “new” water, it is not considered a source of recharge. Below is a more detailed description of the five subareas of the Salinas Valley Groundwater Basin.

The Upper Valley subarea includes approximately 99,000 acres near the south end of the Salinas Valley from Greenfield to Bradley. Groundwater recharge to the Upper Valley subarea occurs primarily from percolation in the channel of the Salinas River. The Forebay subarea, from Gonzales to Greenfield, consists of approximately 60,000 acres of unconsolidated alluvium. Principal sources of recharge to the Forebay subarea are percolation from the Salinas River and groundwater outflow from the Upper Valley subarea. The Arroyo Seco subarea (which is now considered part of the Forebay sub-basin) consists of approximately 22,000 acres of land located on the west side of the Salinas River between Soledad and approximately two miles south of Greenfield. The principal source of groundwater replenishment in the Arroyo Seco subarea is percolation from the Arroyo Seco River and its tributary, Reliz Creek. Average annual flow in the Arroyo Seco River is approximately 40 percent of average annual flow in the Salinas River. This predominance of flow from the Arroyo Seco River precludes flow in the Salinas River from recharging the upper portion of the Arroyo Seco Cone even though the area is in hydraulic continuity with the alluvium of the Salinas Valley.

The Pressure subarea includes approximately 114,000 acres between Gonzales and Monterey Bay. It is composed mostly of confined and semi-confined aquifers separated by clay layers (aquicludes) that limit the amount of vertical recharge. Three primary water-bearing strata have been identified in the Pressure subarea: the 180-Foot Aquifer, the 400-Foot Aquifer, and the Deep (900-Foot) Aquifer. The Deep Aquifer has only recently begun to be used as a water supply source. The aquifer is being tapped near the coast for both urban and agricultural uses, by entities including the Marina Coast Water District (MCWD) which is using Deep Aquifer water to replace groundwater in the shallower aquifers that is unusable due to seawater intrusion, the Castroville Community Services District, the Monterey Dunes Colony, and by

some agricultural users. The 180-Foot, 400-Foot, and Deep Aquifers are separated by aquitards, although some vertical recharge occurs locally where the aquitards are thin or absent. The uppermost aquitards allow some limited recharge from the Salinas River directly to the 180-Foot Aquifer in the area near Spreckels. The areas of thin or absent aquitards also allow some interconnection between the shallow 180-Foot and deeper 400-Foot Aquifers. The three aquifers of the Pressure subarea are all situated below sea level; there is hydrologic continuity with the ocean in all three aquifers.

The East Side subarea consists of 87,000 acres and includes unconfined and semi-confined aquifers in the northern portion of the basin that historically received some of their recharge from percolation from stream channels on the west slope of the Gabilan Range. As a result of extractions in excess of recharge, the declines in groundwater level in the East Side subarea have increased subsurface recharge from the Pressure subarea and the Forebay subarea. The groundwater level in the East Side subarea is declining more rapidly than any other subarea in the Salinas Valley basin. The inflow from the Pressure and Forebay subareas is now a larger source of recharge than the stream channels coming from the Gabilan Range.

The only source of groundwater recharge in the North County area, except for the extreme southwestern portion of that area, is rainfall. This area has significant water supply and water quality problems in many of its aquifers, including falling water levels in its eastern areas, seawater infiltration and intrusion in the western areas, and nitrate ion contamination due to septic tank proliferation and the historic use of commercial fertilizers (LandWatch Monterey County 2008).

B.3.3.c Reclaimed Water

The MCWRA, in partnership with Monterey One Water, built two projects to retard the advancement of seawater intrusion: a water recycling facility at the Regional Treatment Plant and a reclaimed water distribution system that delivers recycled water to approximately 12,000 acres of agricultural users near Castroville. [Monterey One Water](#) owns and operates the regional wastewater treatment plant at the northern end of the City of Marina. Wastewater from the Monterey Peninsula, Salinas, Marina, Moss Landing and the Ord Community is conveyed to the Monterey County Water Recycling Plant for processing. The plant has the capacity to generate approximately 21,600 AFY of recycled water. Of that amount, 13,300 AFY of tertiary treated recycled water is delivered directly to the Castroville area for agricultural irrigation during the irrigation season (the Castroville Seawater Intrusion Project, or CSIP); the remaining 8,300 AFY of available capacity would be generated during the non-irrigation season, but cannot directly be delivered for irrigation purposes due to current lack of seasonal storage facilities (though plans exist to expand the current storage facilities, as described in Section B.5.5.a below).

The CSIP effort uses almost all of the recycled water from the regional generating facility during the summer months, to the extent that there is virtually no wastewater discharged from the regional wastewater treatment plant during peak agricultural irrigation season. The MCWD has recycled water rights to a small fraction of the summer-time recycled water flows and is proposing to distribute that recycled water to regional golf courses, municipalities, and institutions for the irrigation of large landscapes and public common areas. This project is called the “Regional Urban Water Augmentation Project” (RUWAP), and is included as a proposed project in this IRWM Plan. The project will provide service largely to the developed (and developing) parts of the Ord Community and will be supported by developer resources paid to the Fort Ord Reuse Authority (FORA).

The Pure Water Monterey project is another reclaimed water project in the Monterey Bay area, located in the adjacent Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region. Pure Water Monterey will involve further purification of tertiary treated recycled water at the Monterey One Water Regional Treatment Plant, which will then be injected into the Seaside Groundwater Basin. The process

will recharge the Seaside aquifer and help prevent seawater intrusion. Though the Pure Water Monterey project will address water supply issues on the Monterey Peninsula, the Greater Monterey County IRWM region would indirectly benefit by virtue of its neighbor's water supply shortfalls being addressed.

The City of Soledad owns and operates wastewater treatment plant facilities located one mile southwest of the City. The City completed construction of a 5.5 million gallons/day (MGD) water reclamation facility at the wastewater treatment plant in February 2010, with a plan to provide tertiary treated water for agricultural and urban landscape irrigation, but had not yet constructed the delivery system. Through Round 1 of the Proposition 84 IRWM Implementation Grant program, the City received funds to construct the recycled water pump station and design and construct the transmission mains needed to connect the recycled water transmission mains already constructed to the pump station. Completion of this project will enable delivery of recycled water to multiple landscaped areas currently being irrigated with potable water. The project will also include a feasibility study and preliminary conceptual design for the neighboring communities of Gonzales and Greenfield for delivery of their cities' wastewater to the Soledad Water Reclamation Facility for processing. The City plans to build a second facility (the Scalping Plant) by the year 2028, and assuming that plant is built and on line, the two facilities together are projected to produce approximately 6.1 MGD. At this capacity, up to 6,800 AFY of water could be produced for agricultural and urban landscape irrigation.

B.3.3.d Desalted Water

Desalination has been discussed and studied in Monterey County since the 1980s to augment existing, regional, groundwater and surface potable water supplies. One desalination plant currently exists in the Greater Monterey County region. The MCWD owns a small seawater desalination plant that has a capacity of 300 AFY, located at the District's former wastewater treatment plant site on Reservation Road. The source water for the plant comes from a shallow well located on Marina State Beach. This was constructed as a pilot facility, used to verify that adequate seawater supply could be produced from beach wells, and to test the use of beach injection wells for the disposal of brine. The Monterey Bay is a national marine sanctuary, so open ocean intakes and discharges are not allowed. The facility has been idle for several years, though MCWD has signed a developer agreement that obligates the District to re-operate the facility if needed. The supply is currently allocated to the Ord Community under an agreement with three developers in the Marina portion of the Ord Community (MCWD 2011).

MCWD, MCWRA and California American Water (CalAm) have worked together and with other interested agencies and persons during the past decade to develop desalination to augment regional water supplies. The Monterey Peninsula (adjacent IRWM region) needs to replace their current water supply with another water source to stop illegal withdrawals from the Carmel River. A proposed solution is desalination. To date, different desalination concepts and locations have been analyzed in different environmental documents certified by MCWD and by the California Public Utilities Commission (CPUC) under the CEQA. There have been multiple site proposals for a new desalination facility, though the one with the most traction would be a desalination plant near the city of Marina. Proposed desalination has most recently focused on reverse osmosis (RO) desalination facilities to treat brackish water extracted from the seawater-intruded 180-Foot Aquifer of the Salinas Valley Groundwater Basin to produce about a combined 10 MGD of product water. Intake facilities would include intake wells and a pipeline to convey extracted water to desalination facilities for treatment. A great deal of work has been done by MCWD, MCWRA, and CalAm to develop a plant that has slant wells for the seawater intakes. Desalination facilities would include a pretreatment system, an RO system, a post-treatment system, clearwell tanks, and brine disposal. The proposed plant could utilize Monterey One Water's existing ocean outfall for the brine disposal. At the time of the writing of this report, there is not a definitive solution developed for desalination.

B.3.3.e Floodwater and Flood Management

Floodwaters and floodplains are part of the collective water system in the Greater Monterey County IRWM region and must be considered alongside the other water systems being managed. The Flood Protection and Floodplain Management goal in this IRWM Plan is to “develop, fund, and implement integrated watershed approaches to flood management through collaborative and community supported processes.” Plenty of opportunities exist in the region to increase integrated flood management, and the RWMG hopes to achieve that objective by promoting integrated flood management projects through the IRWM planning process. The following section briefly describes floodwater and flood management in the Greater Monterey County region. A more detailed discussion is included as a separate chapter of this Plan (Section C, Flood Management).

Flooding is a major issue in the Greater Monterey County IRWM region. The damages caused by flooding in the Salinas Valley today are far more substantial than they were a century ago. Along the Big Sur coast, streams and rivers draining the steep coastal mountains are subject to short, intense floods, capable of producing significant damage to property. Historic records from 1911-2007 show flooding and flood damage to have occurred on a fairly regular basis (every few years) within Monterey County.

The agency with primary responsibility for flood control and floodplain management in Monterey County is the MCWRA. Flood control also falls under the authority of municipalities throughout the region, which are responsible for storm drain maintenance and surface water disposal. In addition, several other organizations—most notably the RCD of Monterey County and the NRCS—contribute significantly to flood control and floodplain management efforts in the region through sediment and erosion control programs and grant incentives, though they have no jurisdictional flood control authority per se.

The MCWRA employs both structural and non-structural approaches to flood control and floodplain management in the County. Structural approaches include the Nacimiento and San Antonio Dams, constructed in 1957 and 1967 respectively. The agricultural community funded construction of both the Nacimiento and San Antonio Reservoirs. Nacimiento Dam is a large earthfill dam, constructed primarily for flood control and water supply (including percolation into the Salinas Valley aquifer); recreational benefits were also realized after construction was completed. The dam and reservoir are located in San Luis Obispo County and are owned and operated by MCWRA. The drainage basin for Nacimiento Reservoir covers 324 square miles with half of the basin area in Monterey County and the other half in San Luis Obispo County. San Antonio Dam is an earthfill dam also owned and operated by MCWRA. Like the Nacimiento Reservoir, the San Antonio Reservoir is operated for flood control and water supply (including groundwater percolation). The dam is located approximately seven miles southwest of Bradley on the San Antonio River in Monterey County, and has a 330 square mile watershed.

The Salinas Reclamation Ditch, originally named Reclamation Ditch District No. 1665, was constructed in 1917 to drain the marshlands in the northern Salinas Valley for agricultural and urban uses. The ditch was an enlargement of an existing waterway (Gabilan Creek) that connected a series of seven shallow lakes roughly between the City of Salinas and Castroville. A 2005 report developed by the Central Coast Watershed Studies (CCoWS) team at California State University Monterey Bay for the MCWRA (*Final Report: Monterey County Water Resources Agency—Reclamation Ditch Watershed Assessment and Management Strategy*) describes the development of the Reclamation Ditch as follows:

The original hydrology of the Watershed was somewhat different than what it is today. Gabilan Creek and Natividad Creek flowed into Carr Lake, a natural basin near the center of Salinas. To the south, the Alisal Watershed drained into Smith Lake. Between Smith Lake and the southern border of Salinas were two other small lakes, Heinz and Mud Lakes. These basins received local runoff and presumably overflow from Smith Lake

during heavy storms.

The chain of lakes continued to the Northwest, between Salinas and Castroville. These lands were characterized by rolling, grass covered hills, each forming small individual drainages (Cozzens, 1944). At the end of each of these small drainages were natural depressions that formed small lakes, or ponds, during winter (Bechtel Corp., 1959). They included, Merritt Lake, Espinosa Lake, Santa Rita Slough, Vierra Lake, Fontes Lake, Boronda Lake, Markley Swamp, and Mill Lake. The lakes naturally had poor drainage and were only connected during periods of high runoff. The whole system ultimately drained into Tembladero Slough and into Moss Landing Lagoon (now Moss Landing Harbor) (Cozzens, 1944; Bechtel Corp., 1959).

Starting as early as the mid-19th Century, attempts were made to drain portions of the swamps, for use as productive farmlands. Much of the initial work was conducted by Chinese laborers. In the winter of 1890, Carr Lake filled and flooded its adjacent lands, and eventually spilled into the City of Salinas. As a result, Jesse D. Carr modified, or increased, the slow natural drainage of the lake and in doing so, reclaimed approximately 1,475 acres of the lake bottom (Anderson, 2000; Breschini et al., 2000). Eventually, this led to the draining of all the major lakes and much of the adjacent swamplands between Salinas and Castroville. From then on, protecting the newly created valuable farmlands from the natural flooding would become a constant battle. (Casagrande and Watson, 2005, Part A, p. 31, including their original citations)

The Salinas Reclamation Ditch watershed area covers approximately 157 square miles of rural, agricultural, and urban lands located in northern Monterey County and a small mountainous region in San Benito County. While the original purpose of the Reclamation Ditch was drainage (for land reclamation), the Ditch came to be used and depended upon by local residents as a flood control channel. Rapid agricultural and urban development throughout the 1900s, however, significantly changed the hydrology of the watershed, causing a dramatic increase in the rate and amount of runoff from storms. By the end of the 1950s it was clear that the system lacked capacity to manage the flooding from storms and from increased water runoff that resulted from expanded urbanization and agricultural development (Casagrande and Watson 2005).

In 1967, the Monterey County Flood Control and Water Conservation District (now MCWRA) took over maintenance on portions of the Salinas Reclamation Ditch from the Northern Salinas Valley Mosquito Abatement District. After two major floods in the 1990s that resulted in substantial damage to agricultural lands west of Salinas, the MCWRA initiated an evaluation of the Reclamation Ditch and a committee was convened to assist MCWRA in planning for an improved drainage system (1999). That committee, the Reclamation Ditch Improvement Plan Advisory Committee (RDIPAC), has made several recommendations for improvements and provided guidance during the development of several studies such as the Potrero Tide Gates study (September 2000) as a result of changes in the watershed. The implementation of those recommendations is included as a proposed project in this IRWM Plan.

As noted above, the original function of the Reclamation Ditch was intended to “reclaim lands” for other uses, specifically agricultural uses. As the watershed characteristics changed throughout the decades, the Reclamation Ditch’s function changed to providing some relief from local flooding, though it is not a solution for flood control protection. The *MCWRA Reclamation Ditch Watershed Management Strategy* (Casagrande and Watson 2005) suggests several possible management options for maintaining the Salinas Reclamation Ditch, reflecting a more integrated flood management approach. Goals include:

- Improve water quality
- Reduce flooding of developed land
- Create parklands and natural areas
- Determine steelhead status
- Protect rare and special status species
- Reduce mosquitoes
- Facilitate food safety and agricultural pest control
- Reduce harbor sedimentation
- Achieve sustainable water supply
- Maintain economic viability

Non-structural approaches to flood management include land use management tools such as regulation and flood insurance, and emergency response systems. MCWRA developed the *Monterey County Floodplain Management Plan* in 2002 with the goal of creating an action plan to minimize the loss of life and property in areas where repetitive losses have occurred, and to ensure that the natural and beneficial functions of the County's floodplains are protected. Updated in 2008, the plan describes the County's flood control system (infrastructure), identifies flood zones defined by the Federal Emergency Management Agency (FEMA), including maps depicting Repetitive Loss Properties (RLPs) and 100-year floodplains, provides a general hazard assessment (including atmospheric, geologic, hydrologic, seismic, fire, system failure, and general flood hazards), assesses the flood hazards of specific waterways in the County in terms of repetitive losses, and provides an implementation plan for flood mitigation and for mitigation of RLPs.

B.3.3.f Estuarine, Coastal, and Ocean Waters

As noted previously, the Greater Monterey County region is situated adjacent to the federally protected MBNMS. Within the MBNMS are four Critical Coastal Areas (CCA), two Areas of Special Biological Significance (ASBS), and five Marine Protected Areas (MPA).²⁰ The Elkhorn Slough National Estuarine Research Reserve, part of the MBNMS, is located in the northern coastal area of the Greater Monterey County IRWM region, and is one of the few coastal wetlands remaining in California. The slough provides some of the most important freshwater marsh and brackish marsh habitat for wildlife in California. Another significant estuary within the Greater Monterey County region is Moro Cojo Slough, located directly south of the Elkhorn Slough. The Moro Cojo State Marine Reserve protects all marine life within its boundaries. These estuarine, coastal, and ocean waters are described in more detail in Section B.3.2.b, above.

B.3.3.g Wastewater

Wastewater treatment services are provided in the northern part of the Greater Monterey County region by Monterey One Water (formerly called the Monterey Regional Water Pollution Control Agency). Monterey One Water provides regional wastewater conveyance, treatment, disposal, and recycling services to all of the sewered portions of northern Monterey County, including in the Greater Monterey County IRWM planning region the City of Salinas, Boronda, Marina, Castroville, Moss Landing, the Ord

²⁰ Protected areas include: Elkhorn Slough (CCA and MPA), Moro Cojo Estuary (MPA), Old Salinas River Estuary (CCA), Salinas River (CCA), Julia Pfeiffer Burns Underwater Park (CCA and ASBS), Point Lobos (MPA), Point Sur (MPA), Big Creek (MPA), and the ocean area surrounding the mouth of Salmon Creek (ASBS).

community, and some unincorporated areas in northern Monterey County. Monterey One Water owns the Regional Treatment Plant on the Salinas River.

As noted above, Monterey One Water, in partnership with the MCWRA, built two projects to retard the advancement of seawater intrusion: a water recycling facility at the Regional Treatment Plant and a reclaimed water distribution system that delivers recycled water to approximately 12,000 acres of agricultural users near Castroville. Wastewater from the Monterey Peninsula, Salinas, Marina, Moss Landing and Ord Community is conveyed to the Monterey County Water Recycling Plant for processing. The wastewater at the Regional Treatment Plant undergoes secondary treatment with trickling filters, followed by activated carbon, dual media filtration, and chlorine disinfection for recycled water. The Monterey One Water Regional Treatment Plant has a capacity to treat 29.6 million gallons/day (MGD) of wastewater. During the summer months, 100 percent of the treated effluent (approximately 4,600 AFY) from the Regional Treatment Plant is recycled during the summer months for agricultural irrigation of artichokes and a variety of crops. Wastewater is not recycled during the winter months, but is discharged without chlorination to Monterey Bay (Cal Water 2010b).

For other areas of the planning region, wastewater treatment is provided by the municipalities, water districts, or private water utilities that service those areas, or in more rural regions (such as in Big Sur), via septic tanks. Municipalities in the region include Gonzales, Greenfield, King City, Soledad, Marina, and Salinas (the latter two of which are served by Monterey One Water). The City of Gonzales's municipal wastewater treatment plant operates at 1.30 MGD and serves all residential, commercial and industrial customers in the City (LAFCO 2010a). The City of Greenfield's Wastewater Treatment Plant has a capacity to receive a flow of 2.0 MGD, while the plant currently provides a peak month average daily flow of 0.983 MGD (LAFCO 2010b). The King City Wastewater Treatment plant uses primary and secondary ponds, with facilities for non-recoverable industrial wastewater. The average flow capacity is 1.2 MGD, which is well below the design capacity of 3.0 MGD. In June 2010 the City Council approved a contract of over \$900,000 to make improvements to the wastewater ponds including expansion of capacity (LAFCO 2010c).

While the Monterey One Water Regional Treatment Plant provides the residential wastewater service for the Salinas service area, the City of Salinas owns and operates an Industrial Wastewater Treatment Plant with a capacity to treat 4 MGD (but currently receives 2 MGD from industrial customers in Salinas). Treated wastewater from the industrial wastewater treatment plant is not recycled (LAFCO 2010d).

The City of Soledad completed an upgrade and expansion of its wastewater treatment plant in January 2010. The plant capacity was elevated from 3.1 MGD to 5.5 MGD. With completion of the project, the plant meets the effluent limits adopted by the State Water Resources Control Board (SWRCB). In addition, the City of Soledad contractually provides wastewater treatment services to two State prisons that lie within City boundaries, with inmate populations of approximately 6,350 and 3,800 (LAFCO 2010e).

Several water and community services districts provide wastewater treatment services in the more rural areas of the Salinas Valley. The Chualar Community Service Area was formed in 1993 and provides stormwater management and wastewater disposal services to residential and commercial users in the unincorporated village of Chualar, a 175-acre service area located about nine miles south of Salinas and comprising approximately 1,190 people. The wastewater treatment plant does not currently use best available technology and is subject to flooding, as occurred in 1995 (LAFCO 2006a).²¹ The San Lucas County Water District is an independent special district formed in 1965 to provide potable drinking water and sewer services (collection, treatment and disposal) to residential and commercial users within the

²¹ Population estimates for Chualar based on 2010 US Census data.

unincorporated community of San Lucas, located in the Salinas Valley about nine miles south of King City with a population of approximately 270 people. The San Ardo Water District is an independent special district created in 1955 for the delivery of potable water, sewer services, and wastewater disposal and treatment services to the unincorporated community of San Ardo, located about 10 miles south of San Lucas and serving a population of approximately 520 people (LAFCO 2006c).

In 2003, CalAm was granted permission by the CPUC to create its Monterey Wastewater Division and Service Area, and acquired the assets of Las Palmas Ranch, Laguna Seca Ranch, and the Carmel Valley County Sanitation District water systems. The Las Palmas Ranch Wastewater System is made up of two plants, that combined, are designed to handle 235,000 gallons per day, serving approximately 1,000 connections. By the end of 2004, CalAm was granted permission to purchase and operate wastewater operations in the communities of Spreckels, Oak Hills, and Indian Springs, which together serve approximately 900 connections.²²

See Table B-6 in Section B.4.2.b below for a summary of water supply (for purveyors with more than 200 connections) and wastewater treatment providers in the Greater Monterey County region.

B.4 INTERNAL BOUNDARIES

Internal boundaries of relevance to IRWM planning within the Greater Monterey County region include political boundaries (i.e., county, municipal, and military base boundaries); service areas of individual water, wastewater, and flood control districts; service areas of land use agencies; groundwater basins; and watersheds.

B.4.1 Political Boundaries

The Greater Monterey County IRWM region includes most of the land area of Monterey County, as well as a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County along San Benito County's western border. The region includes six incorporated cities, which comprise 69 percent of the region's population (and 56 percent of the county population as a whole). The six cities include: Salinas, Soledad, Marina, Greenfield, King City, and Gonzales. Also included within the region are several unincorporated communities, including in the Salinas Valley: Prunedale (the largest community with a population of 19,628), Castroville (population 6,978), and the significantly smaller communities of Moss Landing, Las Lomas, Spreckels, Chualar, San Lucas, San Ardo, Lockwood, and Bradley. Population for the cities and communities of the region are shown in Table B-5 below (American Community Survey 2012-2016 five-year estimates).

²² Source: Email communication to IRWM Program Director from CalAm staff, December 13, 2011.

Table B-5: Estimated Population for Cities/Communities in Region

Community	Population
Big Sur CCD ^a	1,710
Boronda CDP	1,381
Bradley CDP	134
Castroville CDP	6,978
Chualar CDP	1,238
Elkhorn CDP	1,091
Gonzales city	8,401
Greenfield city	16,994
King City city	13,532
Las Lomas CDP	3,047
Lockwood CDP	443
Marina city	20,816
Moss Landing CDP	118
Pine Canyon CDP	1,799
Prunedale CDP	19,628
Salinas city	155,889
San Ardo CDP	821
San Lucas CDP	362
Soledad city	25,616
Spreckels CDP	745
Toro Park CCD ^a	10,680
<i>Monterey County</i>	<i>430,201</i>

Source: 2016 American Community Survey (ACS) of the US Census five-year estimates (2012 – 2016).

Note: “CCD” = “Census County Division.” “CDP” = “Census-designated Place.”

a: Population estimates for Big Sur CCD and Toro Park CCD are from 2010 US Census (these CCDs were not included in 2016 ACS).

Military areas in the region include Fort Hunter Liggett, a United States Army Reserve command post encompassing 165,000 acres on the eastern side of the Santa Lucia Mountains, and Camp Roberts, a National Guard training base located in southern Monterey County and northern San Luis Obispo County, encompassing approximately 17,000 acres within Monterey County. Figure B-12 below illustrates political boundaries within the Greater Monterey County region.

Figure B-12: Boundaries of Counties, Cities, Communities, and Military Areas in the Greater Monterey County IRWM Region



B.4.2 Service Areas of Water, Wastewater, and Flood Control Districts

B.4.2.a Water Supply Districts

Water supply in the region is managed by several agencies, both public and private. MCWRA, formed in 1947, is the primary water management agency for Monterey County and is responsible for managing, protecting, and enhancing water supply and water quality, as well as providing flood protection, in the County. A small portion of the Greater Monterey County region lies within the jurisdictional boundaries of the San Benito County Water District (SBCWD). This portion is in the northeastern portion of the region where the Salinas River watershed falls within San Benito County. The SBCWD was formed in 1953 to control, manage and conserve waters and provide water services to customers (primarily agricultural water users) within the district. In addition, a small portion of the planning area—in the northernmost section where the Greater Monterey County IRWM planning region abuts the Pajaro River Watershed IRWM planning region—lies within the jurisdictional boundaries of the Pajaro Valley Water Management Agency (PVWMA). The PVWMA was formed in 1984 to manage existing and supplemental water supplies to prevent further increase in and continue reduction of long-term overdraft, and to ensure sufficient water supplies within its boundaries.

Note that the Sustainable Groundwater Management Act (SGMA), enacted in 2014, has resulted in the creation of a new agency with regulatory authority over groundwater use. SGMA provides a framework for long-term sustainable groundwater management across California, with a goal of achieving sustainable management by the year 2042. Under the roadmap laid out by the legislation, local and regional authorities in medium and high priority groundwater basins are required to form Groundwater Sustainability Agencies (GSAs) and to prepare and implement local Groundwater Sustainability Plans (GSPs) for their basins. Local stakeholders in critically overdrafted basins have until January 2020 (or until January 2022 in all other medium and high priority basins) to develop, prepare, and begin implementation of GSPs. Several GSAs have been formed in the Greater Monterey County IRWM region. These include: Salinas Valley Basin GSA, Marina Coast Water District GSA, City of Marina GSA, and Arroyo Seco GSA. Each of these GSAs will be developing a GSP for the groundwater basins or subbasins within their jurisdiction. See Section N.1.1 Sustainable Groundwater Management in the Relation to Local Water Planning chapter for a description of each of these GSAs.

B.4.2.b Service Areas for Major Water Purveyors and Wastewater Treatment Providers

Table B-6 below summarizes the water suppliers and service areas for connections greater than 200, and wastewater treatment providers in the Greater Monterey County IRWM region. Note that there are no water suppliers in the Big Sur coastal region with connections greater than 200.

Table B-6: Water Supply (Connections >200) and Wastewater Treatment Providers

Service Supplier	Service Area (within Greater Monterey County IRWM Region)	Population Served	Water Supply	Wastewater Treatment
Alco Water Service Company	Service areas within the City of Salinas – north and east sides	29,152	x	
California American Water Company	Toro Water Company	408	x	
	Ambler Park	396	x	
	Chualar	186	x	
	Las Palmas	1,046		x
	Indian Springs	180		x
	Oak Hills	460		x
	Spreckels	270		x
	Ralph Lane	28	x	
California State Parks	Julia Pfeiffer Burns State Park		x	
	Andrew Molera State Park		x	

	Pfeiffer Big Sur State Park		x	x
	Fremont Peak State Park		x	
California Utilities	Toro Area	1,100 connections + -		x
California Water Service Company	King City	10,260	x	
	Salinas District (including 70% of the City of Salinas, plus Bolsa Knolls, Las Lomas, Oak Hills, Country Meadows, Salinas Hills, and Buena Vista)	134,870	x	
Camp Roberts	National guard base	5,986	x	x
Castroville Community Services District	Community of Castroville	7,000	x	
Chualar Community Services Area	Community of Chualar	1,190		x
City of Gonzales	City of Gonzales	9,114	x	x
City of Greenfield	City of Greenfield	17,898	x	x
City of Soledad	City of Soledad	16,729	x	x
	Salinas Valley State Prison and Corrections Training Facility/Soledad Prison	11,200		x
Fort Hunter Liggett	Army base	5,500	x	x
King City	King City	12,874		x
Little Bear Water Company	Area southwest of King City	2,314	x	x
Marina Coast Water District	City of Marina and Ord Community	30,480	x	
Monte Del Lago Park	Monte Del Lago Mobile Home Community	750	x	
Monterey County Parks	Lake San Antonio		x	x
Monterey Regional Water Pollution Control Agency	City of Salinas, Marina, unincorporated areas within the County (plus Monterey Peninsula cities which are outside the GMC IRWM region)	250,000 (includes areas outside the IRWM region)		x
Pajaro Sanitation District operated by Monterey County Public Works	Las Lomas Area	3,024		x
Pajaro/Sunny Mesa Community Services District	Pajaro area (lies outside of IRWM region), Elkhorn, Prunedale area, plus Sunny Mesa and Hillcrest subdivisions	7,225	x	
Salinas Valley State Prison	Facility grounds in Soledad	5,719	x	
San Ardo Water District	Community of San Ardo	517	x	x
San Lucas County Water District	Community of San Lucas	269	x	x
Soledad Prison/Corrections Training Facility	Facility grounds in Soledad	7,175	x	
Spreckels Water Company	Community of Spreckels and Tanimura Antle Plant	673	x	

Source: 2007 Data from State of California, Department of Finance, compiled by Association of Monterey Bay Area Governments, except for the following:

- Alco population estimate based on email communication with Alco President, December 13, 2011.
- California American Water Company population from email communication with CalAm, December 13, 2011.
- California Water population estimates from King City 2010 UWMP and Salinas District 2010 UWMP;
- Castroville CSD population estimate based on email communication with CCSD General Manager, October 2011.
- Chualar CSD population estimate based on 2010 US Census data;
- City of Gonzales population estimate from LAFCO 2010 MSR for the City of Gonzales;
- City of Greenfield population estimate from LAFCO 2010 MSR for the City of Greenfield;
- King City population estimate for wastewater services based on 2010 US Census data;
- Las Lomas population estimate (for Pajaro Sanitation District) based on 2010 US Census data;
- Marina Coast Water District population estimate from MCWD 2010 UWMP;
- Pajaro/Sunny Mesa CSD population estimate from LAFCO 2006 MSR for the North County Area of Monterey County;
- San Ardo population estimate based on 2010 US Census data;
- San Lucas population estimate based on 2010 US Census data;
- Soledad population estimate from the Soledad 2010 UWMP;
- Spreckels population estimate based on 2010 US Census data.

Major water suppliers in the region include the MCWD, the Castroville Community Services District, the

California Water Service Company, Alco Water Service Company, and the municipalities of Gonzales, Greenfield, Soledad, and King City. The U.S. Army and California State Parks supply water for use on their properties within the region. The majority of residents and businesses in the Big Sur coastal region obtain water from private wells and springs. California State Parks treats and provides its own water supply at each of the State Parks in Big Sur, including Andrew Molera State Park, Pfeiffer Big Sur State Park, Julia Pfeiffer Burns State Park, and Fremont Peak State Park, which lies within Monterey and San Benito Counties.

Figure B-13 on the following page illustrates the jurisdictional boundaries of the water management agencies and water districts in the region (MCWRA, SBCWD, and PVWMA) along with the boundaries of the Monterey Peninsula Water Management District (MPWMD), which manages water for the Monterey Peninsula area, adjacent to the Greater Monterey County IRWM planning area. The map also shows general boundaries for major water purveyors in the Greater Monterey County IRWM region.

Figure B-13: Water Supply Districts and Purveyors in the Greater Monterey County IRWM Region



The following provides a description of the major water purveyors in the Greater Monterey County IRWM region. (Note that wastewater providers are described above in Section B.3.3.g.)

Alco Water Service

Alisal Water Corporation, dba Alco Water Service (Alco), is an investor-owned public utility water company that has been providing public utility water service to the Alisal community, which was eventually incorporated into the City of Salinas, since 1932. Alco's rates and service quality are regulated by the CPUC and its water quality is regulated by both the California Department of Public Health (CDPH) and the CPUC. The CPUC also regulates the design, construction and operation of the utility's facilities. As of 2011, Alco maintains nine wells, six active wells and three standby wells with a combined total capacity of 15,136 million gallons per year and an existing pump capacity of 9,244 million gallons per year. Current demand, based on year 2010 figures, is approximately 1,381 million gallons of groundwater per year to the Salinas area.

At the City of Salinas's request, the CPUC conducted a complete review of Alco's water quality, water system and its operation, as well as its customer service in providing water service; the review was completed by the CPUC in 2009. The CPUC's review determined that Alco's water quality meets all State and Federal water quality standards, that Alco's water service to its customers meets the requirements set forth by the CPUC, and that Alco has sufficient production capacity and adequate facilities to provide service in its certificated service area, which includes the City of Salinas's Future Growth Area.

California American Water Company

California American Water Company (CalAm) is a regulated utility serving approximately 50 communities throughout the state with high-quality water and wastewater services. In the California Central Coast area, CalAm serves an estimated 120,000 people through more than 40,000 residential and business water service connections.²³ Within the Greater Monterey County IRWM Plan area, the company provides service to approximately 3,000 water and wastewater connections. Communities served within this area include Toro, Ambler Park, Las Palmas and Spreckels, which are all located between the Monterey Peninsula and Salinas Valley. Also included are the communities of Ralph Lane and Indian Springs in Salinas, Oak Hills in northern Monterey County and Chualar in southern Monterey County. All of these systems are independent of each other. All communities that are served by CalAm within the Greater Monterey County region draw their water supply entirely from the Salinas Valley Groundwater Basin.

The quality of water delivered to customers throughout the Monterey System meets or exceeds all State and Federal drinking water requirements. Groundwater pumped by many of the system's wells is of high quality, and requires no treatment other than disinfection, which is accomplished by chlorination. Water from wells serving Ambler Park is high in iron and manganese, and water from Toro and Ambler Park requires arsenic removal treatment. CalAm operates separate facilities for treating and filtering the raw groundwater from these wells prior to distribution.

California Water Service Company

California Water Service Company (Cal Water) is an investor-owned company, regulated by the CPUC. Cal Water serves approximately 130,000 residents (70 percent of the urban users) in the City of Salinas and some of the surrounding areas, including the unincorporated communities of Bolsa Knolls, Las Lomas, Oak Hills, Country Meadows, Salinas Hills, and Buena Vista.²⁴ Alco Water Company serves the

²³ Source for all information in this section: Email communication with CalAm staff from IRWM Plan Coordinator (December 13, 2011).

²⁴ Source for all information in this section regarding the Cal Water Salinas District: Cal Water 2015.

remaining portion of the City of Salinas. According to the Cal Water Salinas District 2015 Urban Water Management Plan, 4,777 million gallons of groundwater was supplied within its service area in 2015.

Cal Water relies solely on groundwater sources from the Pressure and Eastside sub-areas of the Salinas Valley Groundwater Basin. The Pressure sub-area is a region of gradually declining groundwater elevations, and the groundwater level in the Eastside sub-area is declining more rapidly than any other sub-area in the Salinas Valley. The aquifers surrounding the City of Salinas have seen a reduction in groundwater storage and the encroachment of the saline front due to saltwater intrusion. The intruding seawater has advanced into the 180-Foot Aquifer to within one mile of Cal Water's closest well. Cal Water has shifted production as much as possible out of the 180-Foot and Eastside Aquifers and located it further south and more in the 400-Foot Aquifer of the Pressure area. Cal Water does not pump from the Deep (900-Foot) Aquifer.

The Salinas District operates a total of 36 wells, 22 booster pumps, 30 storage tanks, and more than 300 miles of pipeline. Between 2010-2015, the District delivered an average of 16 million gallons of water per day to more than 27,000 service connections.

The drinking water delivered to customers in the Salinas District meets or surpasses all Federal and State regulations. However, over the years, some of the District's wells have experienced declines in water quality due to nitrates, volatile organic compounds (VOCs), MTBE, uranium, and iron and manganese. Since 1999 Cal Water has removed one well from service due to high levels of MTBE. The most common problem has been nitrates, which can be removed by treatment. Cal Water has installed nitrate treatment on four wells. Another emerging concern is MTBE, the additive used in gasoline, getting into the groundwater and contaminating well water. One well was put on inactive status because of MTBE. Some wells have shown a trend toward increases in VOCs, which can be removed by activated carbon. A major future water quality concern is arsenic. There is a possibility that the State of California may set a lower arsenic standard such as 5 parts/billion (ppb) or even less. This new maximum contaminant level (MCL) could impact the availability of several wells for water production. In addition, two regional water quality conditions that may ultimately impact the availability and use of the Salinas water supply are seawater intrusion and nitrate contamination. A very aggressive well replacement program is needed to maintain adequate supply in the Salinas District.

Cal Water also serves approximately 14,850 residents in King City.²⁵ Groundwater is the sole source of water furnished to King City District customers. Although the aquifers of the Salinas Valley have been in a state of overdraft for many years, King City is not significantly impacted by the overdraft due to its proximity to the San Antonio and Nacimiento Reservoirs. The MCWRA releases flows from these reservoirs to provide groundwater recharge throughout the year. As a result, groundwater levels in the King City area have been remarkably stable, and have always recovered quickly after drought events.

The water supply for King City is obtained from Cal Water-owned wells and is pumped directly into the distribution system and into an elevated steel tank. Currently, the water system consists of six groundwater wells, three storage tanks, six booster pumps, and more than 29 miles of pipeline. Total system demand in 2015 was 1,441 AF.

The drinking water delivered to customers in the King City District meets or surpasses all federal and State regulations. However, while the Cal Water King City system has not experienced supply deficiencies, contaminants continue to threaten water supply reliability. Six of the King City wells have been deactivated because of elevated nitrate concentrations in the water produced. The MCL for nitrate in drinking water is 45 milligrams/liter (mg/L). In these six wells the MCL has been exceeded resulting in

²⁵ Source for all information regarding the Cal Water King City District: Cal Water 2015.

the well being taken out of service. Spreading of this condition to the remaining six wells would be a problem for the District. Loss of additional capacity could cause pressure loss during peak flow periods.

Castroville Community Services District

The Castroville Community Services District (CCSD), formed in 1952 as the Castroville Water District, serves approximately 7,750 customers in the communities of Castroville and Moss Landing through 1,984 connections. CCSD currently delivers approximately 800 AFY of water, all of which comes from the Pressure subarea of the Salinas Valley Groundwater Basin. The CCSD system encompasses approximately 13 miles of pipeline and includes two water storage tanks with a capacity of 1.1 million gallons. The stored water is distributed to customers via an average pumping of 800,000 gallons/day; however, CCSD has a maximum capacity to pump up to 4.5 MGD to meet peak demands if needed (LAFCO 2014).

Castroville's wells in the 180/400-Foot Aquifer of the Salinas Valley Groundwater Basin had been experiencing increased salinity (identified as chlorides and total dissolved solids) due to seawater intrusion. In 2007, CCSD drilled a new well, Well No. 2B, into the Deep (900-Foot) Aquifer to reduce pumping from the shallower aquifers. Water quality testing indicated that arsenic levels in the new well exceeded the MCL for drinking water. CCSD received funds in Round 1 of the Proposition 84 IRWM Implementation Grant Program to complete construction of Well 2B, including arsenic removal treatment equipment, allowing the production drinking water from the Deep Aquifer to meet drinking water requirements. The CSIP, managed by MCWRA and described in Section B.3.3.c above, has successfully reduced agricultural water demand in the Castroville region and has consequently stopped most of the migration of seawater intrusion to areas directly west (coastward) of Castroville. Nonetheless, CCSD plans to move a number of its production wells east to ensure supply reliability.

City of Gonzales

The City of Gonzales provides potable water and wastewater treatment to a population of about 9,114. The City operates four production wells in the Pressure subarea. According to recent data, the City delivered 1,450 AF (472 million gallons) of potable water to its citizens and businesses. The City's water system has been operating on a reliable basis for many years even during periods of prolonged drought. Nitrates and MTBE have become constituents of concern at the Pressure 180-Foot level, which could threaten the water supply. However, the City has not found it necessary to consider groundwater treatment since it began sealing its wells at the 400-Foot level in 1988. The City's wells feed directly into the distribution systems which consist of one 1.0 MG and two 3.0 MG storage tanks for a total storage capacity of 7 MG. The municipal wastewater treatment plant currently operates at 1.30 MGD and serves all residential, commercial and industrial customers in the City.²⁶

City of Greenfield

The City of Greenfield is the fastest growing city in Monterey County. Greenfield's 2010 population was estimated at 17,898, a 41.5 percent increase from 2000 (LAFCO 2010b). This percentage increase over the ten-year period was almost double that of any other city in Monterey County. According to the Greenfield General Plan for 2005-2025, the City's population is expected to reach buildout by 2025, more than doubling its size from the present population and exceeding 38,000 residents (note, the City's projections differ significantly from those of the Association of Monterey Bay Area Governments [AMBAG], which estimates a population of less than 30,000 by 2030).

The City of Greenfield Public Works Department is responsible for water supply and delivery in the City of Greenfield. The City utilizes local groundwater as its sole source of water supply. The City is located

²⁶ Sources: LAFCO 2010a; City of Gonzales website accessed July 13, 2018: <http://www.ci.gonzales.ca.us/public-work.php>; and email communication with City of Gonzales Director of Public Works (November 30, 2011).

within the Forebay sub-basin of the Salinas Valley Groundwater Basin. The City's water system currently includes two storage tanks (a 1.0 MG tank and a 1.5 MG storage tank installed in November 2009), three operational wells, and over 17 miles of transmission and distribution pipelines. In 2015, these wells supplied 501 million gallons of water (1,539 AF) through 3,650 municipal connections for Greenfield's residents for personal, commercial use and fire protection (City of Greenfield 2015).

The City's 2005-2025 Water System Capital Improvement Plan (CIP) identified a need for total buildout storage of 3.75 MG (City of Greenfield 2008). The municipal water system has the capacity to pump approximately 8.0 MGD while the maximum current demand is reported at approximately 1.8 MGD (LAFCO 2010b). The City routinely tests its wells to ensure that the groundwater pumped meets US Environmental Protection Agency (EPA) and California Department of Public Health (CDPH) drinking water standards. The water quality of the primary wells is good and currently meets all regulatory standards (LAFCO 2006c).

The City of Greenfield also provides wastewater treatment services to city limit customers, consisting of primary treatment. The sewer collection system spans over 2.1 square miles to serve the City's 3,700 customers. The City's Wastewater Treatment Plant (WWTP) has a capacity to receive a flow of 2.0 MGD. The City's WWTP treated a total of 951 AF in 2015. The basic disposal concept is to percolate all the wastewater into the ground in a manner that protects the public health, maintains or enhances the existing groundwater quality and does not create a visual or odor nuisance. No wastewater effluent is discharged to any of the adjacent surface waters (City of Greenfield 2015).

City of Soledad

The City of Soledad is located in southern Monterey County approximately 25 miles south of Salinas. Two California State Prisons are located within the City of Soledad, but are not served by the City's municipal water system. The City provides domestic water to residential, commercial, industrial and institutional customers within the City limits. The estimated population of the city in 2015 was estimated to be 16,455. In 2015, metered water deliveries totaled 1,731 AF. The City's potable water supply is entirely groundwater, from the Forebay Subarea of the Salinas Valley Groundwater Basin. There are five groundwater wells, four of which (as of 2015) were operational, with a combined capacity of 6,050 AFY. The City's active wells are capable of meeting the existing demands. It was estimated that the City's supply capacity would increase by approximately 1,700 AFY upon the completion of treatment for the fifth well (City of Soledad 2015).

Since 2005, the City has completed construction of three new 1 MG storage tanks, storage booster pumps have been installed in low pressure zones of the system, and construction of a new water transmission main and pressure regulating valve has been completed. The City now has a total of four 1 MG tanks. Contaminants of local concern are pesticides and total dissolved solids (TDS). The water quality of the primary wells is good and meets all standards.

The City of Soledad operates one wastewater treatment plant, which treats the wastewater from the Prison as well as the City. The City of Soledad recently completed an upgrade of the City Plant which, in addition to increasing plant treatment capacity to 5.5 MGD with a disposal capacity of 4.3 MGD, also treats wastewater to meet tertiary requirements for recycled water use. The City of Soledad received funds through Round 1 of Proposition 84 IRWM Implementation Grants to fund completion of design of a recycled water delivery system to both agricultural and recreational areas in and near the City, as well as fund research into the feasibility and conceptual design of providing treatment of the wastewater of the City's of Gonzales and Greenfield. In June 2012 the City completed the conceptual design of a recycled water pump station and transmission main. In April 2015, the City completed the preliminary design of a Title 22 recycled water distribution system. The City completed final design of a recycled water transmission line in November 2015 and expected to begin construction in August 2016.

Marina Coast Water District

The Marina Coast Water District was formed in 1960 to provide potable water service to the community of Marina. MCWD's current jurisdictional boundary and Central Marina service area encompasses 3.2 square miles. Estimated population in 2015 was 32,375. The MCWD also provides potable water delivery and wastewater conveyance services to the Ord Community. The Ord Community encompasses a 44 square mile area, of which about 20 square miles is designated for redevelopment, with the balance being parks and open space. In 2015, the MCWD delivered a total of approximately 3,194 AF of potable water to 7,873 connections (MCWD 2015), including 1,657 AF to Central Marina and 1,332 to the Ord Community. The source of water supply for the MCWD is the Salinas Valley Groundwater Basin. MCWD owns and operates three water production wells in the Deep (900-Foot) Aquifer for the Central Marina service area, plus five wells in the Ord Community service area, one of which is in the Deep Aquifer and the other four in the 400-Foot Aquifer.

Significant water quality issues include seawater intrusion and groundwater contamination from land use activities on the former Fort Ord Army Base. The former Fort Ord was identified by the US EPA as a National Priority List federal Superfund site on the basis of groundwater contamination discovered on the installation in 1990. In 2001, trichloroethylene (TCE), a cleaning solvent, was detected by the Army in one of the three water supply wells at the former Fort Ord. MCWD continues to monitor the affected well, and all other wells, for TCE and other contaminants on a regular basis.

The Salinas Valley Groundwater Basin has been in an overdraft condition with seawater intrusion of about 8,900 AFY at its coastal margins. Historically, MCWD supplied its Marina service area with water from 11 wells screened in the 180-Foot and 400-Foot Aquifers. Between 1960 and 1992, some of those wells indicated varying degrees of seawater intrusion and were replaced, first moving from the 180-Foot aquifer to the 400-Foot aquifer, and later moving to the Deep Aquifer. MCWD is currently the only significant user of the Deep Aquifer. Recent studies for MCWRA indicate that the seawater intrusion front continues to migrate inland in the vicinity of Marina and the Ord Community. There is some concern that the Deep Aquifer may become affected by seawater intrusion. MCWD operates a monitoring well installed between Monterey Bay and the Marina production wells.

MCWD has senior water rights to recycled water from the Monterey One Water treatment plant, though is not currently exercising them. MCWD also owns a desalination plant with a potential capacity of 300 AFY, although this plant is currently idle. At present, discussions are underway between MCWD, MCWRA, California American Water (which supplies water to the Monterey Peninsula region), and Monterey One Water for a replacement to the proposed construction and operation of a major regional desalination facility. There have been multiple site proposals for a new desalination facility, though the one with the most traction would be a desalination plant near the city of Marina. Proposed desalination has most recently focused on reverse osmosis (RO) desalination facilities to treat brackish water extracted from the seawater-intruded 180-Foot Aquifer of the Salinas Valley Groundwater Basin to produce about a combined 10 MGD of product water.

Pajaro/Sunny Mesa Community Services District

The Pajaro/Sunny Mesa Community Services District water system was formed and has been in operation since 1986. The District provides potable water services, fire flows, parks, streetlights, and sanitary sewer services to thousands of residents of North Monterey County. The District provides these services from the Pajaro River in the north, to Moss Landing in the west, to the Highway 101 corridor in the south. It is the only public agency that provides public potable water services in the Pajaro, Elkhorn, and Prunedale

areas (Pajaro lies outside of the Greater Monterey County IRWM region, but the communities of Elkhorn, Prunedale, and Sunny Mesa are located within the region).²⁷

The Pajaro/Sunny Mesa Community Services District lies within the Pajaro Groundwater Basin. Groundwater management and planning is governed by the Pajaro Valley Water Management Agency (PVWMA). The Community Services District owns and operates multiple water systems, including one serving Pajaro and another water system serving the Sunny Mesa area. The District owns and operates 23 wells, 1.8 million gallons of water storage, about 62,000 lineal feet of water mains. These facilities do not meet current needs of the District.²⁸

Water Purveyors in the Big Sur Region

Water supply along the Big Sur coast is provided by many small mutual water companies. Among these are Coastlands Mutual Water Company, Rancho Chapparal, Clear Ridge, Garrapata Water Company and Buck Creek Water Company. Residents and businesses obtain their water from either private wells or springs.

Coastlands Mutual Water Company is the largest water supplier in the Big Sur coastal region, serving 40 connections.²⁹ Coastlands uses surface water for its water supply, drawing most of its supply from Post Creek (with spring boxes located above the Ventana Inn) and a smaller portion of its supply from Mule Creek (serving about 8 connections on that system). Surface water is captured in spring boxes, filtered and chlorinated and piped to each resident's property. Extra capacity is stored at each property owner's personal water storage facility as well as in a community 100,000-gallon storage tank on high ground adjacent to the subdivision.

Coastlands has recently begun monitoring water usage; for 2009, water usage averaged approximately 7,900 gal/day. The company owns two storage tanks (a 15,000-gallon tank and the 100,000-gallon community water tank, the latter of which was installed in 2003 to improve water supply reliability), pipelines, and a skid-mounted water filtration system. The company recently installed 4" pipelines from the 100,000-gallon tank to a particularly steep and isolated area to help with fire suppression. The water quality in Big Sur is generally of excellent quality; however, because Coastlands depends on surface water as its sole water source, turbidity is a significant problem, particularly following wildfire events. The Company is considering the possibility of drilling a well to address this problem.

B.4.2.c Flood Control Districts

As described above in Section B.3.3.e Floodwater and Flood Management, the agency with primary responsibility for flood control and floodplain management in Monterey County is the MCWRA. The MCWRA owns and operates the Nacimiento and San Antonio Dams, and is responsible for maintaining some portions of the Salinas Reclamation Ditch. Flood control also falls under the authority of municipalities throughout the region, which are responsible for storm drain maintenance and surface water disposal.

B.4.3 Service Areas of Land Use Agencies in the Region

Land use agencies in the region include the six incorporated cities noted above, plus the County of Monterey which is responsible for land use planning in the unincorporated areas of the county. In

²⁷ Source: Pajaro/Sunny Mesa Community Services District website: <http://pajarosunnymesa.com/>

²⁸ Source: Email communication with Pajaro/Sunny Mesa CSD General Manager (December 1, 2011).

²⁹ Source: Email communication with Coastlands President (December 1, 2011).

In addition, the U.S. Forest Service makes land use decisions for the federal lands within the Los Padres National Forest, the Bureau of Land Management (BLM) is responsible for land use decisions on its land holdings (including lands in South Monterey County and about 15,000 acres of property on the former Fort Ord, designated for open space and habitat management uses), and California State Parks is responsible for land use planning in its six State Park units within the region. The U.S. Army is responsible for land use planning on Fort Hunter Liggett, Camp Roberts, and its residential holdings on the former Fort Ord. Various other federal and state agencies hold small properties throughout the County, which are outside local land use authority.

In addition, as stipulated in the Coastal Act, the California Coastal Commission (CCC) has authority to certify land use policy in the coastal zone. CCC retains land use authority in areas of original jurisdiction and for all work below the mean high tide level. In addition, CCC has limited appeal authority over the following coastal permit applications (Chapter 20.88 Capital Improvement Program):

- Approved projects between the sea and the first through public road paralleling the sea or within 300 feet of the inland extent of any beach or of the mean high tide line of the sea where there is no beach, whichever is the greater distance.
- Approved projects in county jurisdiction located on tidelands, submerged lands, public trust lands, within 100 feet of any wetland, estuary, or stream or within 300 feet of the top of the seaward face of any coastal bluff.
- Any approved project involving development that is permitted in the underlying zone as a conditional use. Uses listed as principal uses are not appealable to the CCC unless they fall within the above categories by location.
- Any project involving development that constitutes a major public works project or a major energy facility.

Pursuant to the California Coastal Act, Monterey County amended its General Plan in the 1980s to adopt a Local Coastal Program (LCP) made up of land use plans (policy) and coastal implementation plans (regulatory) that govern land use within the coastal zone. Monterey County's LCP consists of four planning areas including, within the Greater Monterey County IRWM region, North County and Big Sur Coast. Policies for development within these areas are established in land use plans that have been certified by the CCC.

B.4.4 Boundaries of Watersheds and Groundwater Basins

The watersheds and groundwater basins in the region are described in detail in the sections above. For a map illustrating the boundaries of the region's watersheds, please see Figure B-6 in Section B.3.1. For a map illustrating the boundaries of the region's groundwater basins, please see Figure B-11 in Section B.3.3.b.

B.5 WATER SUPPLY AND DEMAND

Water for the Greater Monterey County IRWM region is supplied entirely from its own water supply sources, including groundwater and surface water supplies. No water is "imported" from outside the region's boundaries (except, as mentioned previously, for the water that flows via the Salinas River from San Luis Obispo County). Water use in the region is directly affected by land use and population, and will be increasingly impacted by climate change factors. The following sections describe historic land use, population, and water use trends in the region, and projected water demand over a 25-year planning horizon based on projected land use and population trends.

While the discussion of water supply and demand focuses mainly on water quantity, it assumes that the water is also of sufficient quality for its intended use. Thus, municipal water demand assumes water that will generally meet drinking water standards, agricultural water demand assumes a level of water quality suitable for irrigation purposes, and environmental water demand assumes certain water quality parameters, such as suitable water temperature and clarity needed to support aquatic and riparian species.

B.5.1 Population Trends

Table B-7 below shows population trends for cities and communities in the Greater Monterey County IRWM region since 1960.

Table B-7: Population of Cities and Selected Communities 1960 - 2010

	1960	1970	1980	1990	2000	2010
Big Sur Coastal Division	659	898	1,271	1,391	1,180	1,710
Castroville, CDP	2,838	3,235	4,396	5,272	6,724	6,481
Chualar, CDP	-	580	580	700	1,444	1,190
Elkhorn	-	-	-	1,458	1,591	1,565
Gonzales	2,138	2,575	2,891	4,660	7,525	8,187
Greenfield	1,680	2,608	4,181	7,464	12,583	16,330
King City	2,937	3,717	5,495	7,634	11,094	12,874
Las Lomas CDP	-	-	1,740	2,127	3,078	3,024
Marina	-	-	20,647	26,436	25,101	19,718
Prunedale CDP	-	-	-	7,393	16,432	17,560
Salinas	28,957	58,896	80,479	108,777	151,060	150,441
San Ardo, CDP	-	460	460	533	501	517
San Lucas, CDP	-	202	202	439	419	269
Soledad	2,837	4,222	5,928	7,146	11,263	25,738

Source: US Census Bureau (except for Chualar, San Ardo, and San Lucas 1970-1990 data: this data was taken from the Salinas Valley IRWM FEP but the original source is uncertain).

Population in the Big Sur area of the Greater Monterey County region has remained relatively stable over the past hundred years. In the Salinas Valley and North County areas, however, population has expanded considerably. Most of the urban development in the region has occurred in the cities of Salinas, Soledad, Gonzales, Greenfield, and King City. The greater Salinas area has experienced particularly rapid growth and development in recent years, with Salinas absorbing approximately 70 percent of Monterey County's growth within the last 20 years (from 1990 to 2010). This growth is occurring despite the fact that infrastructure and services are minimal outside of the incorporated communities with the majority of dwellings on individual wells and septic systems.³⁰

Despite the general upward trend, growth has slowed considerably in the past decade compared to the previous decade due to the economic downturn. For example, the City of Gonzales experienced 61.5 percent growth from 1990-2000, and 8.8 percent growth from 2000-2010; the City of Greenfield experienced 68.6 percent growth from 1990-2000, and 29.8 percent growth from 2000-2010; and the City of Salinas actually experienced slightly negative growth in the past decade (-0.4 percent), whereas it had experienced 38.9 percent growth from 1990-2000. One exception is the City of Soledad, whose growth more than doubled in the past decade from 11,263 to 25,738 residents (128.5 percent).³¹

AMBAG calculates population projections for urban areas in the Counties of Monterey, San Benito, and Santa Cruz. Table B-8 shows projected populations for selected cities and communities in the Salinas

³⁰ This last statement is excerpted from LAFCO 2006a, however using US Census 1990 – 2010 data for a 20-year percentage.

³¹ Based on US Census data.

Valley and North County areas, projected to the year 2035. Most of the data in this table is from the AMBAG 2008 Regional Forecast; projections for communities not included in the AMBAG Forecast have been estimated as noted below. Note that the cities and communities included in the table below have been chosen to exactly match the urban areas included in the MCWRA Groundwater Extraction Summary Reports (GWESR), in order to facilitate calculating “future water demand” for urban areas in the Salinas Valley (see Section B.5.4.a, Urban Water Use Projections, below). The population for “Other Areas” (which is different from “Unincorporated Monterey County”) has been estimated “backwards” from the GWESR, rather than from a known existing population.

Table B-8: Population Projections for Cities and Communities in the Salinas Valley

	2010	2020	2030	2035	Avg. Annual Growth:
Castroville, CDP	6,481	7,200	8,500	9,000	1.6%
Chualar, CDP	1,190	1,236	1,234	1,239	0.2%
Gonzales	8,187	15,969	20,941	23,418	7.4%
Greenfield	16,330	21,855	27,348	30,337	3.4%
King City	12,874	17,269	22,482	24,726	3.7%
Marina Coast Water District (includes City of Marina and Ord Community)	32,184	57,718	69,887	75,887	5.4%
Other Areas	78,804	81,877	81,771	82,073	0.2%
Salinas	150,441	163,234	170,913	173,359	0.6%
San Ardo, CDP	517	537	536	538	0.2%
San Lucas, CDP	269	279	279	280	0.2%
Soledad (City and State Prisons)	25,738	33,760	38,801	41,405	2.4%
Unincorporated Monterey County	109,509	113,778	113,628	114,052	0.2%
<i>Monterey County</i>	<i>415,057</i>	<i>483,733</i>	<i>515,549</i>	<i>530,362</i>	<i>1.1%</i>

Sources: US Census 2010 data, plus AMBAG Monterey Bay Area 2008 Regional Forecast for 2020-2035 data, with exception of: Castroville population projections were estimated (as a “best guess”) by Castroville Community Services District General Manager (email communication, December 5, 2011); Chualar 2020 projection from AMBAG as cited in LAFCO 2006 North County MSR; Chualar 2030-2035 and San Ardo and San Lucas 2020-2035 projections based on AMBAG projected growth rate for Unincorporated Monterey County. MCWD population estimates are from the MCWD 2010 Urban Water Management Plan. The 2010 population for “Other Areas” was calculated by dividing AF of water used in 2010 for “Other Areas” (11,735 AF) by the average per capita water use in years 2008-2010 (0.1489133, see Section B.5.4.a below); population for years 2020-2035 was then calculated according to Unincorporated Monterey County growth rate.

Continuous growth is expected in the cities of Gonzales, Greenfield, Salinas, King City, and Soledad, as reflected in their respective General Plans. Growth for many of the smaller communities, however, is expected to fluctuate over the years, with an average annual growth rate of about 0.2 percent over the next 20+ years.

B.5.2 Land Use Trends

The primary land use in Monterey County is agriculture, representing about 56 percent of the total land area and occupying more than 1.4 million acres of land. The second largest land use consists of public and quasi-public uses (such as parks, recreational, community, and military facilities), comprising about 23 percent of the total land area. About 16 percent of the land area in the county is devoted to resource conservation and other uses. The remaining 5 percent of the county has been developed with residential, industrial, and commercial uses. Another minor land use includes the exploitation of mineral and oil reserves, including oil drilling in the San Ardo area and several small “family-sized” gold mines in the Los Burros Mining District in the southern Santa Lucia Mountains in Big Sur (Monterey County Planning Department. 2010b, Section 4.1).

Historically there has been a strong military presence in Monterey County with Fort Ord located in the northern Salinas Valley along the coast, Fort Hunter Liggett located on the eastern side of the Santa Lucia Mountains, and Camp Roberts located at the southern end of the county. Recent base closures have resulted in a reduction in the military presence and reuse of the former Fort Ord (recently designated a National Monument, and is also the location of California State University Monterey Bay, plus new residential development and other facilities). Fort Hunter Liggett, encompassing 165,000 acres within the Santa Lucia Mountains, is owned by the United States Army and is used primarily as a training facility. Camp Roberts is also owned by the U.S. Army and while it is used by all branches of the armed forces, it is licensed to the California National Guard and is their largest training base, encompassing 43,000 acres.

In the Big Sur area, the predominant land uses are public recreation and private residential development. Cattle grazing occurs on several of the large private land holdings and on a few grazing allotments on public land. Approximately 65 percent of the Big Sur coastal region (a 234-square mile area, approximately 70 miles long and averaging 3.3 miles in width) is in public ownership held by the U.S. Forest Service (Los Padres National Forest), the State Department of Parks and Recreation, and the University of California (which owns Landels-Hill Big Creek Reserve, 3,848 acres). The California Department of Parks and Recreation operates six state parks in the Big Sur region: Garrapata State Park (2,879 acres), Andrew Molera State Park (4,766 acres), Pfeiffer Big Sur State Park (1,006 acres), Julia Pfeiffer Burns State Park (3,762 acres), Limekiln State Park (716 acres), and the Point Sur Historic Park. Approximately 1,200 private parcels exist in the Big Sur Land Use Area, including dozens of private in-holdings throughout the National Forest, which are only accessible by forest service roads.

Land use activities in Big Sur have changed considerably since its early European settlement. In the 1880s, subsistence ranching, logging of redwoods, harvesting of tan bark, and mining of limestone and gold supported a local population of nearly 1,000 people (Monterey County Planning Department 1981). The completion of Highway One in 1937 made the rugged and wild Big Sur coast far more accessible to the outside world, shifting patterns of interaction and use of the land. Today, single-family residences comprise the major land use on private land, occurring either in rural residential clusters or scattered along Highway One. Commercial uses, including restaurants, small grocery stores, and service stations are generally concentrated in the Big Sur Valley. Small visitor-serving commercial areas include Big Sur, Lucia, and Gorda. Recreational uses include public and private campgrounds, visitor accommodations, restaurants, State Park lands, and the Los Padres National Forest. The Big Sur Local Coastal Plan (LCP), which was certified in 1986, was intended to provide comprehensive policy guidance to balance the development needs of area property owners and the local community with resource protection and public recreation over time. As a result of the LCP, current land use trends are intended to remain largely unchanged over time (Diehl 2006).

While land use activities in Big Sur have remained relatively stable over the past 100 years, land use in the Salinas Valley has changed quite dramatically. Table B-9 below shows agricultural and urban land use trends over the past 40 years for the Greater Monterey County IRWM region, based on DWR Land Use Surveys.³² The table shows a steady increase in both urban and irrigated agricultural acreage over the

³² DWR land use surveys are typically performed every seven years and consist of aerial surveys followed by field verification. The reason for the discrepancies in the Region's total land area from year to year is unclear. The geographic area covered in Table B-8 includes the following DWR Data Analysis Units (DAUs): Pressure (048), East Side (049), Forebay (050), Upper Valley (051), Monterey Peninsula (052), Arroyo Seco North (053), Gabilan Ranges (054), Lockwood (055), Santa Lucia Range (057), and Bolsa Nueva (058). The boundaries of these DAUs align almost perfectly with the boundaries of the Greater Monterey County IRWM region, with the exception of DAU 052 (approximately 44% of the land area lies within the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Region), DAU 057 (approximately 5% lies within the Monterey Peninsula IRWM Region), and DAU 053 (less than 1% lies within the Monterey Peninsula IRWM Region). For the purposes of determining

years, occurring mainly in the Salinas Valley and North County. Urban acreage grew about 33,225 acres from 1968 to 2005 (nearly tripling), while irrigated agricultural acreage grew about 45,427 acres over that time period. As irrigated agriculture and urban populations have expanded, so have the water needs of the region. Note that although several thousand acres of agricultural land have been converted to urban uses, land continues to be brought into agricultural production (Monterey County Planning Department 2010b). This is reflected in the considerable decline in native vegetation (about 80,000 acres) since 1968.

Table B-9: Land Use Trends in the Greater Monterey County IRWM Region

Land Use Type	1968	1976	1982	1989	1997	2005
Irrigated Ag	175,173	209,669	210,546	207,580	219,114	220,600
Non-irrigated Ag	17,033	49,098	58,361	32,944	30,534	14,532
Total Agricultural Acreage	192,206	258,767	268,907	240,524	249,648	235,132
Semi-Agricultural Acreage	1,221	2,389	2,832	3,621	3,214	2,945
Urban Acreage	18,508	25,127	28,224	39,114	49,300	51,733
Native Vegetation	1,698,324	1,624,238	1,611,160	1,625,996	1,600,527	1,618,718
Total Acres	1,910,259	1,910,521	1,911,123	1,909,255	1,902,689	1,908,528

Source: DWR Land Use Surveys. Semi-agricultural acreage includes farmsteads, dairies, livestock feed lots, and poultry farms.

Agriculture in the Salinas Valley is quite different from what it was 150 years ago. Cattle ranching and grain were the primary agricultural activities in the 1850s. As shipping became increasingly available (beginning in 1866 with construction of a major shipping terminal in Moss Landing) and water became increasingly accessible (beginning with gravity-fed irrigation systems, and advancing to wells driven by steam and wind power pumps, and then by gas and electric pumps), farmers shifted from grain to more water intensive crops such as sugar beets, and then to more lucrative crops such as lettuce.

Agricultural trends for selected crop categories (field crops, vegetables, and fruits/nuts) and for some selected crops (sugar beets, lettuce, broccoli, wine grapes, and strawberries) are shown on Table B-10 and illustrated by Figures B-14 and B-15 below, based on Monterey County Agricultural Commissioner Crop Reports from 1930 – 2010.

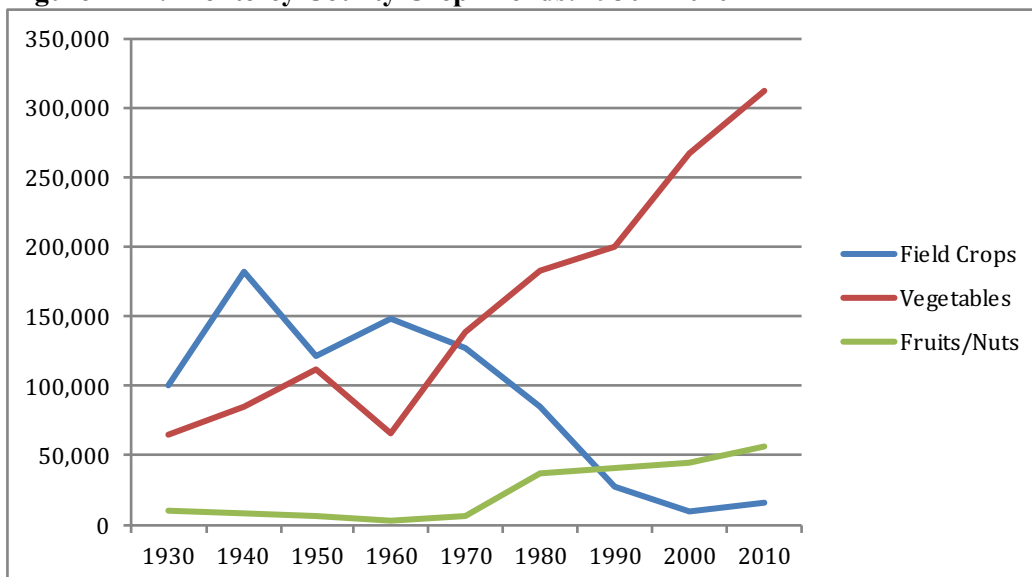
Table B-10: Acreage Trends for Selected Crop Categories in Monterey County 1930 – 2010

	1930	1940	1950	1960	1970	1980	1990	2000	2010
Field Crops	100,540	182,518	122,660	147,894	126,945	85,223	28,080	10,015	16,654
Sugar Beets	250	21,356	23,617	20,200	14,305	11,385	2,740	0	0
Vegetables	65,250	86,235	113,009	65,423	138,164	182,330	200,967	268,489	312,691
Lettuce	50,000	48,202	59,717	51,421	55,473	67,684	78,811	115,088	140,000
Broccoli	0	1,735	6,580	0	23,700	43,395	48,700	61,500	60,926
Fruits/Nuts	10,550	8,294	7,285	3,369	5,778	37,200	40,864	45,458	56,768
Grapes	400	116	0	0	0	33,724	33,154	36,265	43,321
Strawberries	250	148	506	0	2,600	2,785	5,830	6,990	10,664

Source: Monterey County Agricultural Commissioner Crop Reports 1930 - 2010. "Field crops" does not include rangeland (previously called "pasture/dry land" in the Crop Reports).

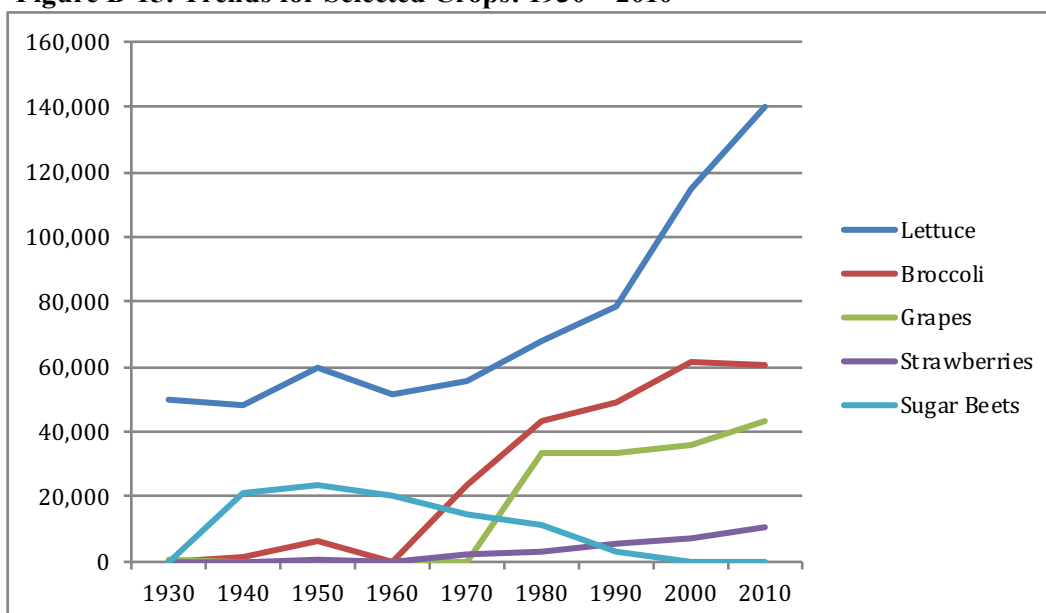
land use, 100% of the acreages in DAUs 057 and 053 have been included as part of the Greater Monterey County Region, and the land use acreages in DAU 052 included as part of the Greater Monterey County Region (about 56%) were estimated based on 2010 Google Maps.

Figure B-14: Monterey County Crop Trends: 1930 – 2010



Source: Monterey County Crop Reports

Figure B-15: Trends for Selected Crops: 1930 – 2010



Source: Monterey County Crop Reports

Of particular importance historically were the disappearance of sugar beets and a decline in field crops production, corresponding with the steep increase in truck crops. These changes demonstrate the dynamics of crop production in the Salinas Valley and depict a pattern towards more lucrative—and generally more water intensive—crops such as lettuce, broccoli, artichokes, and strawberries. The increase in the fruits/nuts category since 1970 is due mainly to heightened production of wine grapes and strawberries. While the strawberry acreage appears modest relative to other crops such as lettuce, the strawberry value in 2009 became for the first time the county’s number one crop, surpassing leaf lettuce and in 2010, grossing \$751 million in revenues (with leaf lettuce grossing \$725 million in 2010).

Agriculture is expected to remain the predominant land use in the Salinas Valley well into the future. Although agricultural land use in the Salinas Valley is not expected to change dramatically over the next 25 years, the pressure to convert agricultural land to urban land will intensify as the population in the Salinas Valley continues to grow. In the North County area, agriculture will likely remain the predominant land use in areas with good soils; however, in steeply sloped areas, rural residential will likely become the predominant land use. Note that “urban development” in North County is quite different than in the Salinas area. In North County, 1-5 acres rural residential is the typical mode, so even the “developed” areas are much less dense than around Salinas.³³

B.5.3 Water Use Trends

Water use information in the Big Sur coastal area has not been systematically tracked, and therefore historic water use trends cannot be assessed. Water suppliers in the Big Sur region report that water supply is not a problem for the area; any water management issues, when they occur, have more to do with infrastructure limitations such as inadequate filtration or insufficient storage capacity. This section will therefore focus entirely on water use trends in the Salinas Valley and North County (i.e., water use from the Salinas Valley Groundwater Basin).

Water use information in the Salinas Valley has been systematically tracked only since the early 1990s; however, MCWRA has estimated historic (1970-1994) agricultural and urban water use with the help of a modeling tool called the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM). The SVIGSM is a sophisticated modeling tool developed for analysis of hydrologic conditions in the Salinas Valley. The SVIGSM was calibrated to be utilized as a planning level analytical tool, and since then it has been applied to a number of projects, including CSIP and the Salinas Valley Water Project (SVWP).

Table B-11 below shows 25 years of historic water use in the Salinas Valley as estimated by SVIGSM; it was modeled based upon historic agricultural land use and cropping pattern analysis between 1970 and 1994 (MCWRA 1997a). While urban water use shows a steady increase over the 25-year period, agricultural water use shows a slightly declining trend (though there is less of a discernable pattern for agricultural use).

Table B-11: Estimated Water Use 1970-1994 in the Salinas Valley, Utilizing the Salinas Valley Integrated Ground and Surface Water Model

Year	Agricultural Pumping (AF)	Urban Pumping (AF)	Total Groundwater Pumping (AF)
1970	564,298	17,127	581,425
1971	568,064	17,619	585,683
1972	611,384	18,231	629,535
1973	545,882	18,845	564,725
1974	500,875	19,457	520,332
1975	524,948	20,072	545,020
1976	500,261	20,681	520,942
1977	563,798	21,465	585,150
1978	503,630	21,941	525,559
1979	566,337	22,508	588,845
1980	475,635	23,118	498,753
1981	491,257	23,868	515,092
1982	415,170	24,654	439,826

³³ Information about North County from Bryan Largay, Elkhorn Slough National Estuarine Research Reserve, November 2010 email communication with IRWM Plan Coordinator.

1983	422,071	25,139	447,214
1984	513,759	25,557	539,319
1985	487,486	25,966	513,456
1986	453,867	26,381	480,328
1987	495,354	26,790	522,349
1988	481,758	27,202	509,166
1989	465,537	26,255	491,907
1990	426,615	28,029	454,789
1991	454,862	29,890	484,977
1992	453,027	32,086	485,235
1993	435,698	34,283	470,190
1994	449,015	36,478	485,691
Average	494,824	24,546	519,420

Source: MCWRA 1997a

In February of 1993, the Monterey County Board of Supervisors adopted Ordinance No. 3663 that required water suppliers in the Agency's Zones 2, 2A and 2B to report water use information for groundwater extraction facilities and service connections. That ordinance was replaced in October 1993 by Ordinance No. 3717, which modified certain requirements in the previous ordinance but kept the groundwater extraction reporting requirements in place for wells with a discharge pipe with an inside diameter of at least three inches.

MCWRA began collecting groundwater extraction data from well operators for agricultural and urban water uses in 1992. Agricultural water use consists of water used for irrigation, while urban water use includes all household consumption as well as commercial and industrial water use. Because agriculture is the main economic activity in the Salinas Valley, commercial and industrial water use is relatively low and therefore considered to be a function of the population. The groundwater extraction data, provided by over 300 well operators, is compiled in the Ground Water Extraction Management System portion of MCWRA Information Management System, a relational database maintained by the MCWRA, and summarized in annual Ground Water Extraction Summary Reports (GWESR). Since 1991, MCWRA has also required the annual submittal of Agricultural Water Conservation Plans, which outline the best management practices (BMPs) that are adopted each year by growers in the Salinas Valley. In 1996, another ordinance was passed that required the filing of Urban Water Conservation Plans. This program provides an overview of per capita water use and BMPs being implemented by urban water users as conservation measures.

Table B-12 below summarizes the GWESR data from 1995 to 2015. The agricultural data cover reporting from November 1 (previous year) through October 31 of the reporting year (the "water year"); the urban data cover the calendar year of the reporting year. Note that reported data provided by the water purveyors is not 100 percent accurate; reporting has varied over the years from 82 percent to 98 percent, and therefore the water use reflected in the table below is lower than actual use. In addition, data is submitted by individual reporting parties and is not verified by MCWRA staff. Note that a second source of agricultural water use not reflected in this table currently includes 13,300 AFY of tertiary treated recycled water from the Monterey One Water plant, delivered to approximately 12,000 acres of agricultural users near Castroville.

Table B-12: Agricultural and Urban Water Use in the Salinas Valley 1995-2015

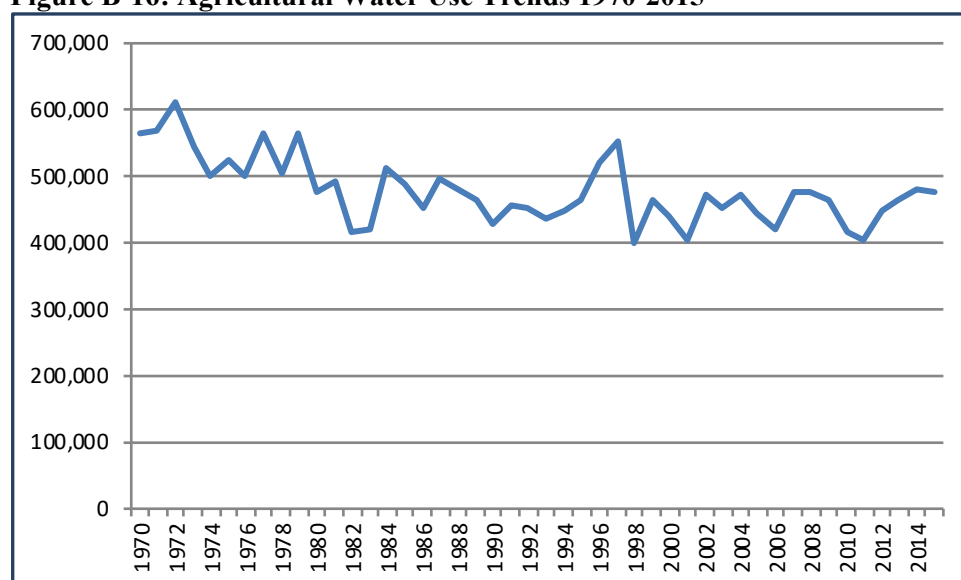
Year	% Reported	Agricultural Pumping (AFY)	Urban Pumping Reported (AFY)	Total Pumping (AFY)
1995	98%	462,628	41,884	504,512
1996	96%	520,804	42,634	563,438
1997	93%	551,900	46,238	598,138
1998	93%	399,521	41,527	441,048
1999	91%	464,008	40,559	504,567
2000	89%	442,061	42,293	484,354
2001	82%	403,583	37,693	441,276
2002	93%	473,246	46,956	520,202
2003	97%	450,864	50,472	501,336
2004	97%	471,052	53,062	524,114
2005	98%	443,567	50,479	494,046
2006	96%	421,634	49,606	471,240
2007	97%	475,155	50,440	525,595
2008	97%	477,124	50,047	527,171
2009	97%	465,707	45,517	511,224
2010	97%	416,421	44,022	460,443
2011	97%	404,110	44,474	448,584
2012	97%	446,620	42,621	489,241
2013	97%	462,873	45,332	508,205
2014	98%	480,160	44,327	524,487
2015	98%	478,113	36,601	514,714

Source: MCWRA GWESR from website: <http://www.mcwra.co.monterey.ca.us/>.

Note: The extraction amounts reflected in this table are lower than actual extraction amounts, since reporting was less than 100% in each reporting year (as shown).

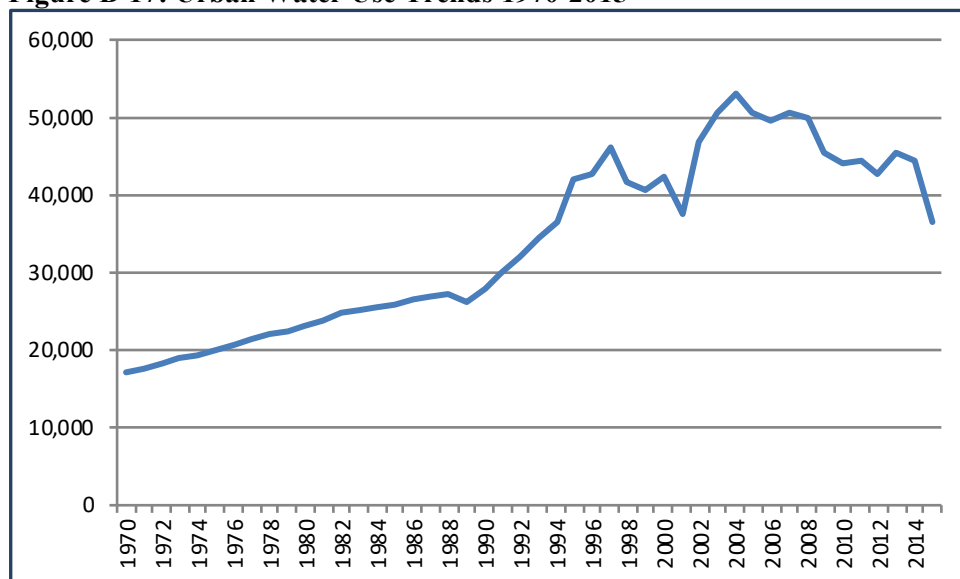
Figures B-16, B-17, and B-18 below illustrate agricultural and urban water use trends from 1970-2015 using the combined data from SVIGSM and GWESR. As of 2015, agricultural pumping accounts for about 93 percent of groundwater extraction in the Salinas Valley Groundwater Basin, with urban pumping accounting for the remaining 7 percent.

Figure B-16: Agricultural Water Use Trends 1970-2015



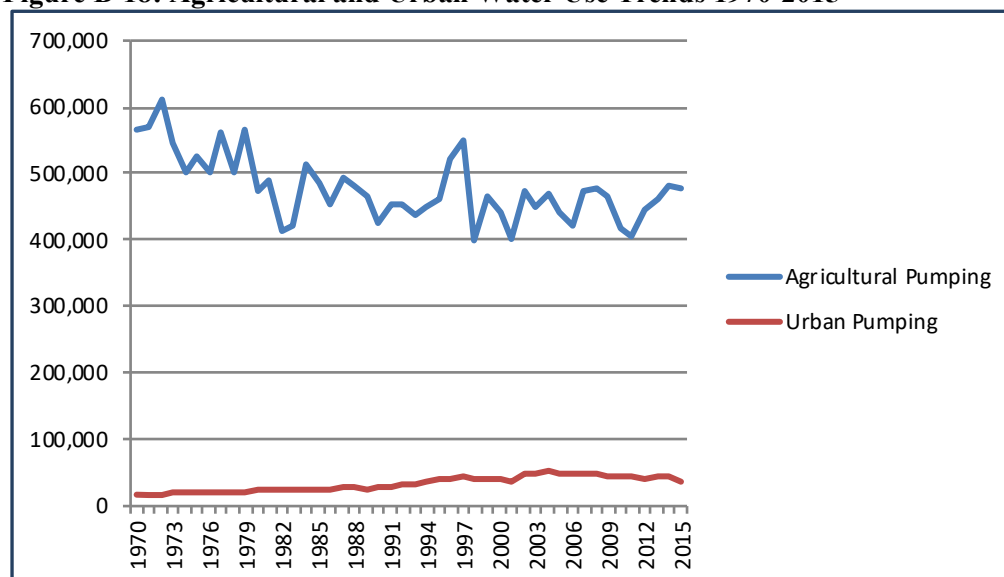
Source: SVIGSM for 1970-1994; GWESR for 1995-2015 (raw data, with less than 100% reporting)

Figure B-17: Urban Water Use Trends 1970-2015



Source: SVIGSM for 1970-1994; GWESR for 1995-2015 (raw data, with less than 100% reporting)

Figure B-18: Agricultural and Urban Water Use Trends 1970-2015

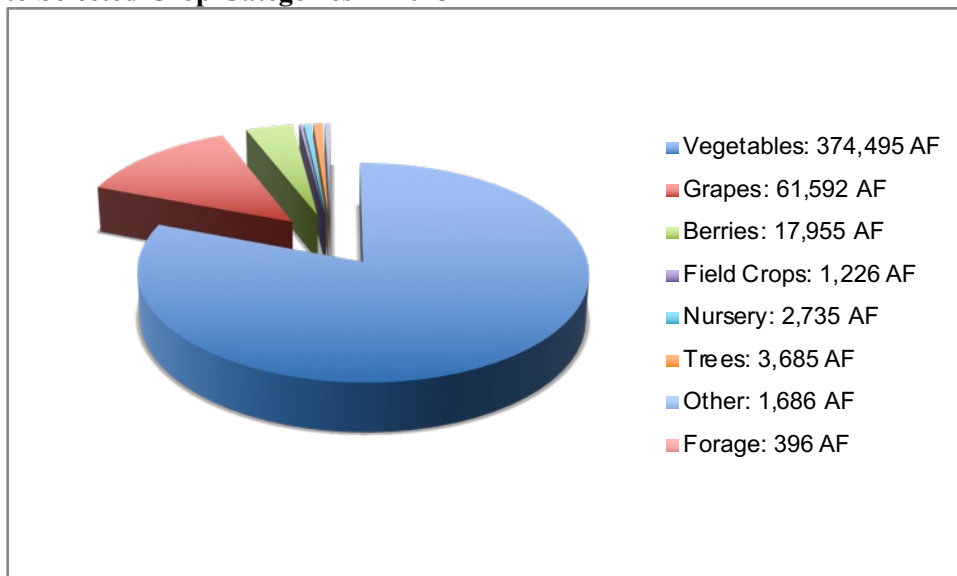


Source: SVIGSM for 1970-1994; GWESR for 1995-2015 (raw data, with less than 100% reporting)

The two figures below provide more detail for both agricultural and urban water use for the most recently reported year (calendar year for urban data, water year for agricultural data). Figure B-19 below illustrates the relative amounts of water used for different crop categories in the Salinas Valley in 2015. Note that 374,495 AF of water was extracted from the Salinas Valley Groundwater Basin to irrigate vegetables, totaling 81 percent of the total agricultural pumping. Groundwater extracted for grapes totaled 61,592 AF, or 13 percent of the total agricultural pumping. These data are based on 98 percent reporting of the 1,901 wells in the Salinas Valley for the 2015 reporting year. Figure B-20 shows relative groundwater

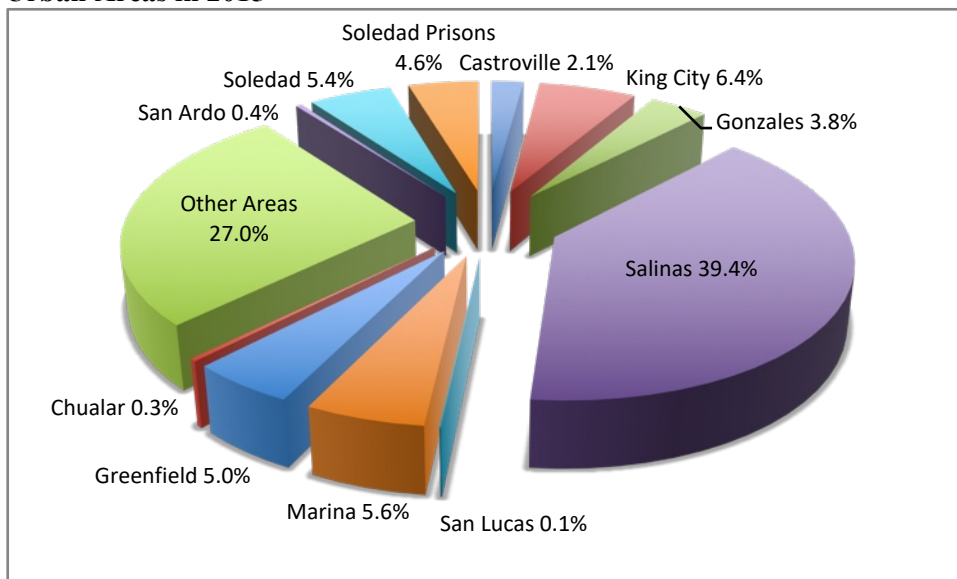
extraction amounts attributed to urban (residential, commercial/institutional, industrial, and governmental) pumping for 2015 in the Salinas Valley.

Figure B-19: Acre-feet of Salinas Valley Groundwater Basin Water applied to Selected Crop Categories in 2015



Source: MCWRA 2015 GWESR

Figure B-20: Distribution of Salinas Valley Groundwater Extraction for Urban Areas in 2015



Source: MCWRA 2015 GWESR

B.5.4 Future Water Demand

In the Big Sur coastal region, population and land use trends are expected to remain relatively constant over the next 20+ years, due to the fairly restrictive land use policies in the Local Coastal Plan. As a result, water demand is also expected to remain relatively stable over the 20-year planning horizon. As noted above, currently there is no shortage of water in the Big Sur coastal region; water supply problems, when they occur, have more to do with infrastructure limitations such as inadequate filtration or insufficient storage capacity. Environmental water needs may change over time with climate change, but the extent and nature of those impacts are still unclear. For the purposes of IRWM planning, therefore, water demand/supply is expected to remain relatively stable (and essentially non-problematic) over the next 20+ years in the Big Sur coastal region.

The remainder of this section will focus entirely on the Salinas Valley and North County areas of the Greater Monterey County IRWM region, i.e., the areas that depend solely on the Salinas Valley Groundwater Basin for water supply. Future water demand can be estimated based on projected urban water uses (including industrial uses) and agricultural water uses, plus environmental water needs. The following sections describe each of these in turn for the Salinas Valley and North Coast areas of the Greater Monterey County IRWM region.

B.5.4.a Urban Water Use Projections

Three different methods for projecting urban water use over the next 20 years are considered and compared for the purposes of this IRWM Plan. Each method is valid, and results are broadly consistent though differences do exist. For planning purposes, the most conservative estimate will be used. This section describes each of these three methods.

First Method: MCWRA GWESR and AMBAG Population Projections

The first method utilizes the GWESR data, US Census population data, and AMBAG population projections for urban areas in the Salinas Valley (see Table B-8 in Section B.5.1 above for population projections for the years 2020-2035). Note that “urban water use” in GWESR includes water used for residential, commercial/institutional, industrial, and governmental uses (including city landscaping).

In order to calculate future water demand using this first method, an average urban water use estimate was determined for the year 2010 by averaging urban water use from 2008-2010 (to account for variability within any one year) for selected cities and communities within the Salinas Valley (locations were chosen based on availability of 2010 US Census data). Next, an average per capita water use was determined based on US Census year 2010 population, as follows:

Table B-13: Determining Average Per Capita Water Use

	Average GW Use (AF) from 2008-2010	Population	Average Per Capita Water Use (AF)
Castroville	792	6,481	0.122203364
King City	2,926	12,874	0.227305681
Gonzales	1,422	8,187	0.173649281
Salinas	19,833	150,441	0.131834628
San Lucas	40	269	0.149938042
Greenfield	2,335	16,330	0.142967953
San Ardo	117	517	0.226305609
Soledad City	2,419	14,538	0.166391526
Soledad Prisons	2,015	11,200	0.179880952
TOTAL	31,899	220,837	0.144445904

Sources: US 2010 Census and MCWRA 2008-2010 GWESR. In all three reporting years,

MCWRA received data for 97% of wells; consequently, the water use amounts reflected in this table will be somewhat lower than actual water use.

Finally, per capita water use was multiplied by the projected populations for each city for the years 2020, 2030, and 2035 to determine future urban water demand in the Salinas Valley. For communities not included in the table above, the average per capita water use rate of 0.144446 was used. Table B-14 illustrates future urban water demand using this method.

Table B-14: Future Water Demand (AFY) for Urban Areas in Salinas Valley, Calculated from MCWRA GWESR and Population Projections

	Urban Water Demand (AFY)			
	2010 (actual data)	2020	2030	2035
Castroville, CDP	810	880	1,039	1,100
Chualar, CDP	121	179	178	179
Gonzales	1,282	2,773	3,636	4,067
Greenfield	2,152	3,125	3,910	4,337
King City	3,089	3,925	5,110	5,620
Marina Coast Water District (Marina + Ord Community)	4,234	8,337	10,095	10,962
Other Areas	11,383	11,827	11,811	11,855
Salinas	16,819	21,520	22,532	22,855
San Ardo, CDP	100	122	121	122
San Lucas, CDP	36	42	42	42
Soledad City	2,293	3,754	4,593	5,026
Soledad State Prisons	1,702	2,015	2,015	2,015
Total Urban Areas	44,022	58,497	65,083	68,179

Sources: 2010 data reflects actual urban water use from the 2010 MCWRA GWESR, with 97% reporting. 2020-2035 estimates are based on: MCWRA GWESR 2008-2010 (averaged raw data, with 97% reporting in each reporting year) and AMBAG population projections for Salinas Valley cities, 2020-2035 (with exceptions as noted in Table B-8, Population Projections for Cities and Communities in the Salinas Valley). Future water demand for “Other Areas” has been calculated by first estimating population (see above), then multiplying by average per capita water use.

Second Method: Data Reported by Water Purveyors

A second method for estimating future water demand for urban areas in the Salinas Valley is based on data reported by the water purveyors. The sources for these data are varied, and include Urban Water Management Plans (UWMPs), personal communications with water managers, and a 2005 survey administered to water purveyors.³⁴ For urban areas that are too small to have a UWMP, the future water demands were estimated using the methodology described above (i.e., using GWESR and population projections). Table B-15 below presents the current and future water demand identified for each urban area of the Salinas Valley using this second method.

³⁴ RMC Water and Environment Survey conducted in October 2005.

Table B-15: Future Water Demand for Urban Areas in Salinas Valley, Based on Information Provided by Water Purveyors

Urban Water Purveyors	Urban Water Demand (AFY)			
	2010	2020	2030	2035
Castroville – Castroville Community Services District ^a	813	1,200	1,600	1,800
Chualar – CalAm ^b	121	179	178	179
Gonzales – City of Gonzales ^c	1,867	3,112	4,800	
Greenfield – City of Greenfield ^d	3,398	5,666	6,800	
King City – California Water Service ^e	1,724	1,985	2,448	2,721
Marina Coast Water District – City of Marina ^f	1,962	3,181	4,044	
Marina Coast Water District – Ord Community ^f	2,592	6,715	8,172	
Other Areas ^b	11,383	11,827	11,811	11,855
Salinas – California Water Service (70% Salinas population plus outlying areas) ^g	16,940	19,840	22,504	23,984
Salinas – Alco (30% Salinas population) ^h	4,240	8,307	10,550	
San Ardo – San Ardo California Water District ^b	100	122	121	122
San Lucas – San Lucas County Water District ^b	36	42	42	42
Soledad – City of Soledad ⁱ	2,355	3,281	4,212	
Soledad State Prisons – California State Prisons ^j	1,702	1,702	1,702	1,702
Total Urban Areas	49,233	67,159	78,984	(incomplete data)

Sources:

- a) Estimated by CCSD General Manager (email communication with IRWM Plan Coordinator, December 5, 2011)
- b) Calculated according to GWESR and population projections (as described in Method One, above).
- c) October 2005 RMC Water and Environment Survey
- d) 2008 City of Greenfield UWMP
- e) 2010 King City UWMP (California Water Service Company)
- f) 2010 Marina Coast UWMP
- g) 2010 Salinas District UWMP (California Water Service Company), accounting for SBx7-7 (20x2020) urban water conservation targets
- h) Estimated by Alco for years 2010 and 2020 (email communication with Alco President, December 13, 2011); year 2030 was estimated based on Alco 2025 and 2027 urban water projection trends (adding 5% to the 2027 projection).
- i) 2010 City of Soledad UWMP
- j) 2010 GWESR: Actual 2010 Soledad State Prison ground water usage, and assuming stable prison population 2020-2035.

Third Method: Salinas Valley Integrated Ground and Surface Water Model

The third method for assessing urban water demand in Salinas Valley utilizes the SVIGSM. In 1997, MCWRA published the Salinas Valley Water Project Report, which utilized the SVIGSM to estimate current (1995 conditions) and future (2030) water demands. This method shows a projected urban water use increase from 45,000 AFY in 1995 to 85,000 AFY in 2030 (a 90 percent increase).

Urban Water Use Projections: Comparison of the Three Methods

Table B-16 below compares the results of the three methods used to estimate future urban water use. The results differ but are not entirely inconsistent. All three methods are valid, but for the purposes of IRWM planning, the most conservative water use estimate—resulting from the SVIGSM method—will be used.

Table B-16: Comparison of Urban Water Use Projection Methods

Method	Urban Water Use in the Salinas Valley (AFY)					
	1995	2000	2010	2020	2030	2035
1. Ground Water Extraction Summary Reports and Population Projections	41,884 (with 98% reporting)	42,293 (with 89% reporting)	44,022 (with 97% reporting)	58,497	65,083	68,179
2. Reports from Purveyors			49,233	67,159	78,984	
3. SVIGSM Method	45,000				85,000	

B.5.4.b Agricultural Water Use Projections

Conclusions about future agricultural water use could not be drawn based on analysis of historical (1970-2010) agricultural water use data from GWESR, as the data suggests no significant trend. Therefore, the SVIGSM, taking into account projected land use changes, will be used to estimate future agricultural water demand for the Salinas Valley. As noted earlier, agriculture is expected to remain the predominant land use in the Salinas Valley well into the future, though the pressure to convert agricultural land to urban will intensify as the population in the Salinas Valley continues to grow. The SVIGSM predicts that agricultural needs, which make up a far greater share of water use, will decrease by approximately 60,000 AFY from the year 1995 to the year 2030, a 13 percent reduction. This prediction was based on several assumptions, including increased irrigation efficiencies, changes from high to low water demand crops, and a slight reduction in agricultural land use resulting from conversion to urban uses.

Table B-17: Agricultural Water Demand Based on SVIGSM Modeling

Basin Groundwater Pumping	Baseline or Existing (1995) Conditions (AFY)	Projected Future Baseline (2030) Conditions (AFY)
Agricultural Water Use	418,000	358,000

Source: MCWRA 1998.

B.5.4.c Environmental Water Needs

Ecological and environmental water needs must also be taken into consideration when considering future water supplies for the region. Unfortunately, environmental water needs are not well quantified for the Greater Monterey County IRWM planning region. The lack of numerical data for environmental water needs—and the preponderance of data for urban and agricultural water needs—suggests that environmental water needs may be getting overlooked in water resource planning. Addressing environmental water needs will become more and more critical as ecosystems become increasingly vulnerable to the impacts of climate change. It is the intention of the RWMG to provide quantified data for environmental water needs in future updates of this IRWM Plan. In the meantime, the following section describes the types of environmental water uses in the region that will be most significant in the planning context.

All plant and animal species, terrestrial and aquatic, depend on water for their survival, but the consideration of “environmental water needs” in water resource planning tends to focus on in-stream and riparian water needs to support special status or other significant species, such as steelhead trout. It may also focus on adequate delivery of water to support the healthy functioning of important ecosystems such as floodplains, wetlands, and coastal waters. At present, environmental water needs are considered more often in the context of a regulatory or permitting process rather than as a component of planning.

The restoration of adequate in-stream flows, as well as the floodplain functions that depend on flow, is the statewide priority for the CDFG. The CDFG has developed Streamflow Recommendations (minimum flows) for rivers and streams throughout the state to assure the continued viability of their fish and wildlife resources. The CDFG has also developed a list of 22 other streams regarded by State and Federal fish and wildlife agencies as high priority for future in-stream flow studies. The only river on that list located within the Greater Monterey County region is the Big Sur River (ranked #5 out of 22). Objectives for the major rivers, estuaries, and wetlands of northern and central California are tabulated in Chapter 5 of the California Water Plan Update 2009, along with the amount of water needed to meet each of them (DWR 2009a, vol. 1, p. 4-16).

Environmental water needs include not only adequate water supply but adequate water quality suitable to the needs of the “water user” (e.g., cool in-stream water temperatures for steelhead). In the Greater

Monterey County IRWM region, environmental water needs will need to be identified primarily for:

- Rivers and streams that provide habitat, or potential habitat, for steelhead and other special status aquatic species. Within the Greater Monterey County IRWM region, critical habitat has been designated for South-Central California Coast steelhead along the entire Big Sur coast, including Big Sur River, Little Sur River, San Carpoforo and Arroyo de la Cruz Creeks, and within the Salinas River basin, which includes the Salinas River, the Salinas River Lagoon, Gabilan Creek, Arroyo Seco River, Nacimiento River, the San Antonio River, and their tributaries.
- Significant wetlands and estuaries such as Elkhorn Slough and Tembladero Slough; and
- Protected coastal waters such as the federally protected MBNMS, which encompasses four Critical Coastal Areas (CCA), two Areas of Special Biological Significance (ASBS), and five Marine Protected Areas (MPA).³⁵ One of the main environmental water uses in the region, according to DWR, is for the 366-acre Salinas River National Wildlife Refuge, where the Salinas River empties into Monterey Bay (DWR 2005, as cited in Monterey County Planning Department 2010b, p. 4.3-5).

B.5.4.d Future Water Demand: Conclusions

The projected water demands for water supply from the Salinas Valley Groundwater Basin are summarized in Table B-18 below. Water demand estimates of the Salinas Valley are based on the SVIGSM model for both urban and agricultural uses, with environmental water needs currently unknown. The SVIGSM model predicts an overall decrease in water use on the order of 20,000 AFY from 1995 to the year 2030. While agricultural water use is expected to decrease by about 60,000 AFY over this time period, urban use is expected to increase by about 40,000 AFY.

Table B-18: Future Water Demand

Water Use	Baseline or Existing (1995) Conditions (AFY)	Projected Future Baseline (2030) Conditions (AFY)
Urban	45,000	85,000
Agricultural	418,000	358,000
Environmental	unknown	unknown
Total Demand	463,000+	443,000+

Source: SVIGSM

B.5.5 Future Water Supply

Water use in the Salinas Valley Groundwater Basin has significantly outpaced water supply over the past several decades, resulting in overextraction and in extensive seawater intrusion. Despite the overall future reduction in total basin water use predicted by the SVIGSM, the current groundwater problems in the basin are projected to continue into the future. Table B-19 below shows SVIGSM estimates for Salinas Valley Groundwater Basin overdraft, seawater intrusion, and Salinas River outflow to the ocean for the year 2030. Though basin overdraft is predicted to decrease 3,000 AF by the year 2030, overdraft will nonetheless continue to be a problem for the Salinas Valley basin (estimated at 14,000 AFY in 2030). In addition, seawater intrusion will continue to worsen (from 8,900 AF in 1995 to 10,300 AF in 2030). A strategy is clearly needed to offset groundwater pumping in order to meet the objective of achieving hydrologic balance within the Salinas Valley Groundwater Basin.

³⁵ Protected areas include: Elkhorn Slough (CCA and MPA), Moro Cojo Estuary (MPA), Old Salinas River Estuary (CCA), Salinas River (CCA), Julia Pfeiffer Burns Underwater Park (CCA and ASBS), Point Lobos (MPA), Point Sur (MPA), Big Creek (MPA), and the ocean area surrounding the mouth of Salmon Creek (ASBS).

Table B-19: Basin Overdraft, Seawater Intrusion, and Salinas River Outflow for the Salinas Valley

	Baseline or Existing (1995) Conditions (AFY)	Projected Future Baseline (2030) Conditions (AFY)
Basin Overdraft (does not include seawater intrusion)	17,000	14,000
Seawater Intrusion	8,900	10,300
Salinas River Outflow to Ocean	238,000	249,000

Source: MCWRA 1998. Note: Both conditions assume that deliveries from the Monterey County Water Recycling Project are being made, with 13,300 AY delivered for 1995 conditions and 15,900 AFY delivered under 2030 conditions. Basin overdraft is defined as the average annual rate of groundwater extraction over and above the total recharge to the groundwater basin. Seawater intrusion is defined as the average annual rate of subsurface flow from the Monterey Bay into the groundwater aquifers. All numbers shown assume that the Salinas Valley Water Project is not in place.

B.5.5.a Locally Proposed Solutions to Local Water Supply Issues

The RWMG is promoting a mix of resource management strategies to help achieve and maintain hydrologic balance in the Salinas Valley Groundwater Basin. Goals and objectives in this IRWM Plan encourage projects that will improve water supply reliability and protect groundwater and surface water supplies. Objectives include:

- Increase groundwater recharge and protect groundwater recharge areas.
- Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.
- Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.
- Diversify water supply sources, including but not limited to the use of recycled water.
- Maximize water conservation programs.
- Capture and manage stormwater runoff.
- Optimize conjunctive use where appropriate.
- Promote projects to prevent seawater intrusion.

Several projects proposed in this IRWM Plan are intended to address these water supply objectives. Projects include, for example: the Granite Ridge Regional Water Supply Project, a project being proposed by the MCWRA to alleviate existing water supply and water quality deficiencies in the Granite Ridge area of northern Monterey County; the Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP), a recycled water distribution system being proposed by MCWD; and an Interlake Tunnel between Lake Nacimiento and Lake San Antonio being proposed by the Nacimiento Regional Water Management Advisory Committee.

A portfolio of possible additional water supply projects, called the Monterey Regional Water Supply Program, has been formulated as part of a regional collaborative process to address pending regional water supply shortages and to develop a regionally supported solution. This portfolio currently contains ten water supply projects—spanning the Greater Monterey County and Monterey Peninsula IRWM regions—that have potential to enhance the region’s water supplies (note that RUWAP is part of this portfolio). Projects with potential benefits for the Greater Monterey County IRWM region include:

- Regional Urban Water Augmentation Project (RUWAP)
- A Regional Desalination Project for the Monterey Bay Area
- Regional Recycled Water Storage Project
- RUWAP/Castroville Seawater Intrusion Project (CSIP) Expansion

- Monterey County Regional Conservation Program
- Monterey Regional Cogeneration Project

The Monterey Regional Water Supply Program will be implemented in multiple phases. Projects that have potential benefits for the Greater Monterey County IRWM region are described below, along with additional water supply projects proposed for the region including expanded storage at the Salinas Valley Reclamation Plant (SVRP), the Granite Ridge Regional Water Supply Project (included as a proposed project in this IRWM Plan), and the Interlake Tunnel between Lake Nacimiento and Lake San Antonio (also included as a proposed project in this Plan).

Regional Urban Water Augmentation Project

RUWAP is a recycled water distribution system developed by MCWD in cooperation with FORA. The MCWD currently owns, operates and maintains the potable water distribution, wastewater collection, and recycled water distribution systems in their service areas that encompass the City of Marina and the Ord Community. Monterey One Water operates the Regional Treatment Plant (RTP) to treat and discharge wastewater, the Salinas Valley Reclamation Plant (SVRP) to take treated wastewater to tertiary levels, and the regional wastewater interceptor facilities. The SVRP tertiary treatment facility is located approximately two miles north of Marina. Institutional agreements between MCWD and Monterey One Water are in place and define the access to recycled water generated by Monterey One Water. MCWD owns a contiguous piece of land next to the RTP/SVRP where MCWD will take ownership of the recycled water and responsibility for distribution of the recycled water to urban users within MCWD jurisdiction and, potentially, the Monterey Peninsula.

Tertiary-treated recycled water produced at the SVRP is currently distributed to agricultural irrigators in the Salinas Valley via the Castroville Seawater Intrusion Project. RUWAP consists of a recycled water distribution system to provide up to 3,000 AFY of tertiary-treated disinfected recycled water from Monterey One Water's existing SVRP to urban users in the MCWD service area and the Ord Community for municipal irrigation. RUWAP includes a connection to the SVRP, an onsite pump station referred to as the Water Augmentation Pumping Plant (WAPP), a new distribution system consisting of approximately 39,000 linear feet of pipeline within existing roadway rights-of-way, one recycled water storage tank (called the Blackhorse Reservoir) at an existing storage tank site, one intermediate pump station (called the 5th Avenue Pump Station) located in the City of Marina, and pressure reducing valves and appurtenances.

Currently, up to 10,000 AF of the treated effluent from the SVRP is discharged annually via Monterey One Water's existing outfall into Monterey Bay. By distributing additional recycled water with RUWAP, discharges of treated effluent to Monterey Bay will be reduced, thus providing a benefit to the adjacent marine environment within the MBNMS, in addition to the potable water offset resulting from the use of recycled water for urban irrigation. There is additional treated water available that will continue to be discharged via the outfall on an annual basis, but seasonal storage is required in order to expand RUWAP and/or CSIP and to maximize recycled water. This seasonal storage of recycled water would be implemented as a separate project as described in a following section.

A Regional Desalination Project for the Monterey Bay Area

The Monterey Peninsula (adjacent IRWM region) needs to replace their current water supply with another water source to stop illegal withdrawals from the Carmel River. A proposed solution is a desalination plant. Desalination has been discussed and studied in Monterey County since the 1980s to augment existing, regional, groundwater and surface potable water supplies. MCWD built and operated a desalination pilot plant in the 1990s; in 1996, MCWRA and MCWD agreed that it would be appropriate for MCWD to plan for and develop new water supplies from reclamation and desalination to meet

MCWD's needs; and, Sand City (in adjacent Monterey Peninsula IRWM region) recently developed a small plant to desalinate brackish water.

There have been multiple site proposals for a new desalination facility, though the one with the most traction would be a desalination plant near the city of Marina. Proposed desalination has most recently focused on reverse osmosis (RO) desalination facilities to treat brackish water extracted from the seawater-intruded 180-Foot Aquifer of the Salinas Valley Groundwater Basin to produce about a combined 10 MGD of product water. Intake facilities would include intake wells and a pipeline to convey extracted water to desalination facilities for treatment. A great deal of work has been done by MCWD, MCWRA, and CalAm to develop a plant that has slant wells for the seawater intakes. Desalination facilities would include a pretreatment system, an RO system, a post-treatment system, clearwell tanks, and brine disposal. The proposed plant could utilize the Monterey One Water's existing ocean outfall for the brine disposal. At the time of the writing of this report, there is not a definitive solution developed for desalination, though the timeline to provide the alternative water source for the Monterey Peninsula is January 1, 2017.

Expanded Storage at SVRP

This project is a Monterey One Water project and is not considered to be part of the Monterey Regional Water Supply Program. As previously mentioned, the SVRP produces recycled water that is distributed to the CSIP for agricultural irrigation during the months of February through October. Wastewater entering the SVRP is treated to meet the requirements of Title 22 for distribution as recycled water. Before being distributed, the recycled water is conveyed to an existing 80-AF storage pond at the southeast corner of the Monterey One Water plant site. Storage is required to equalize the supply and demand for recycled water produced at the plant. As it is currently operated, the SVRP shuts down from November to January of each year, when demand from the CSIP system for irrigation purposes is minimal.

The SVRP facility has operational problems at low flows, primarily due to the prolonged storage (detention) time in the basin and the production of algae in the recycled water. To counteract this prolonged detention time and algae production problems, an Engineering Feasibility Study in 2001 evaluated the construction of a 6-AF (2-MG) storage basin at the SVRP site. Such a facility could be used to maximize use of recycled water throughout the year, allowing production, storage and distribution of recycled water from November through February, when the SVRP would otherwise be shut down. Construction of the 2-MG storage basin would supplement the current supply to CSIP and provide a new supply to RUWAP, described above. The first phase of the urban reclamation project would require between 1,727 AFY (with conservation) and 2,077 AFY (without conservation) of recycled water to meet the anticipated urban demand. With the long-term projected CSIP demand at approximately 19,000 AFY, total agricultural and urban water demand from the SVRP/CSIP system would range from 20,727 AFY to 21,077 AFY depending on conservation practices. From November through February, the total demand would range from 1,331 AF (demand without conservation) to 1,318 AF (demand with conservation). It is expected that part of this demand could be met through production and storage of recycled water in the 2-MG storage basin during this period.

Regional Recycled Water Storage Project

Additional seasonal storage, in the form of either surface and/or subsurface storage, is required within the Monterey region in order to maximize use of the recycled water produced at the SVRP. Seasonal storage would consist of storing recycled water produced at the SVRP during winter months for later use during the peak irrigation period by either agricultural and/or urban irrigators. The Regional Recycled Water Storage could be located adjacent to the SVRP or may be located at a distance along the RUWAP and/or CSIP systems. However, regardless of the location or type of seasonal storage developed, this project would allow for the expansion of urban and/or agricultural recycled water use within the Monterey region.

RUWAP/CSIP Expansion

Once the Regional Recycled Water Storage Project is implemented, additional recycled water will be available during peak irrigation months to augment agricultural irrigation via expansion of the CSIP and/or urban recycled water with expansion of RUWAP. Both projects will offset existing potable water supplies derived from groundwater pumping in the Salinas Valley and Seaside Groundwater Basins and/or by Carmel River diversions. Agricultural and urban users have already been identified that would benefit from expanding use of recycled water resulting from expansions of both projects.

Monterey County Regional Conservation Program

The Monterey County Regional Conservation Program would result in conservation savings of up to 1,000 AF over the next three years. Although this savings in water is not considered a new supply source, it can reduce overall demand and the need for additional new potable water supplies. In general, conservation measures to be implemented under this program would include, but are not limited to:

- Water audits for residential, large landscape, and commercial/industrial customers.
- Residential rebates for heavy use appliances including toilets and washers as well as irrigation system equipment and landscape improvements to target reductions in outdoor water usage.
- Residential plumbing retrofits including low-flow showerheads and faucet aerators, leak detection kits, evapotranspiration-based (ETo) irrigation equipment and timers. The ETo controllers would automatically control an outdoor sprinkler system using real-time or historical weather data, utilizing data such as humidity, temperature, solar radiation, soil moisture, and rain gauge sensors.
- Commercial rebates for devices such as high efficiency or dual flush toilets, water-less urinals, waterbrooms, dishwashers, and others.
- School Education Programs targeting grades K-12.
- Implementation of the Expanded Water Conservation and Standby Rationing Plan allowing for mandatory water rationing and conservation during either legal or actual supply shortages, including reductions ranging from 15 percent to 50 percent reduction goals.

Monterey Regional Cogeneration Project

The Monterey Regional Waste Management District (MRWMD) provides integrated waste management services to the greater Monterey Peninsula. Materials that cannot be recycled are deposited in a landfill on MRWMD's 475-acre property, which has capacity to accept solid waste for the next 100 years. Methane gas is produced as a by-product of decomposition of material within the landfill; MRWMD currently captures the methane and uses it as fuel to produce electricity in a 5,000 kW cogeneration facility. As the landfill capacity increases, the MRWMD is evaluating plans to construct an additional 5,000 kW cogeneration plant on the southern side of the landfill site, immediately adjacent to the proposed desalination facilities.

The combined power from both the existing and new cogeneration facilities would be sufficient to provide all of the power needed for operation of the desalination facilities, specifically the desalination water treatment plant and distribution pumping. The power would be delivered to the desalination plant through a new power transmission line running directly from the co-generation facilities to a substation at the regional facilities. This would provide an "over-the-fence" power delivery of up to 10,000 kW for the desalination plant and any adjunct facilities. Powering the regional facilities from the Monterey Regional Cogeneration Project provides the following added benefits:

- Significantly reduced greenhouse gas emissions.
- Reduced carbon footprint for the regional water supply facilities.
- Power potentially provided at a cost lower than buying from PG&E.
- Power will not be required from PG&E on a regular basis. Connection, if any, to PG&E will be for backup only, and so a locally controlled power supply will be created.

Granite Ridge Regional Water Supply Project

The Granite Ridge Regional Water Supply Project is a project being proposed by the MCWRA to alleviate existing water supply and water quality deficiencies in the Granite Ridge area of northern Monterey County. Groundwater is the single source of water supply for the Granite Ridge area and is highly limited due to an underlying granitic formation. The Granite Ridge project will enable MCWRA to provide potable water service in a way that complies with US EPA and CDPH drinking water standards. The Granite Ridge Project will enable MCWRA to improve the reliability of water supply by interconnecting existing smaller systems into a consolidated water supply system with a new groundwater well to improve supply reliability. The project has been developed to meet four objectives:

- *Increase water supply availability:* Water supply availability would be increased through the creation of a new water distribution system that would obtain its water supply from the higher producing alluvium wells of the Salinas Valley East Side subarea. Relocating the supply sources takes advantage of the water supply benefits made available through implementation of the SVWP.
- *Improve reliability of water supplies:* The reliability of water supplies would be improved by pumping from an area with enhanced long-term hydrologic balance between recharge and withdrawal, and interconnecting existing smaller systems into a consolidated water supply system with backup well pumping and storage capabilities.
- *Provide supply meeting drinking water quality standards:* The project would supply potable water that meets drinking water quality standards, thus providing the residents in Granite Ridge with uniform access to improved water quality.
- *Enhance fire protection:* Fire protection would be enhanced by installing system storage, water transmission and fire hydrants meeting North County Fire District requirements.

Interlake Tunnel between Lake Nacimiento and Lake San Antonio

This project proposed by the Nacimiento Regional Water Management Advisory Committee consists of building an interlake tunnel between Lake Nacimiento and Lake San Antonio. With the recent changes in allowed water storage derived from the modification of the Lake Nacimiento dam spillway due to the completion of the SVWP, there has been a renewed interest in capturing all of the rainwater run-off. This past year, despite the increased storage capacity of Lake Nacimiento, tens of thousands of AF of water were released for flood control, ultimately flowing to the ocean. Over the same period Lake San Antonio had a minimum of 20 percent of its storage capacity available—twice what was needed to store the extra runoff from Lake Nacimiento. During the winter season, this tunnel would transfer extra rainwater that would be released, traveling the Salinas River and ending up as “wasted water” in the Pacific Ocean. The water from these two lakes would then be used downstream for groundwater recharge, abatement of saltwater intrusion, and the promotion of fish habitats. Increasing the total available supply of water will benefit all of these uses, industries, and communities.

B.5.5.b Potential Impacts of Climate Change on Water Supply and Demand

Typically, water demand projections are based on past water use along with population projections. However, given climate change as a “new” factor, it may no longer be adequate to simply rely on historical water years when projecting future demand or supply. Local governments, agencies, and organizations in the Greater Monterey County IRWM region are only in the beginning stages of considering and planning for the effects of climate change on water supply, other critical services and infrastructure, and natural resources in the region (though state and federal projects do consider climate change in their reliability assessments, so any region that is connected to such projects will have it factored in to some degree).

The water supply and demand projections provided in this IRWM Plan do not reflect anticipated effects of climate change, since the effects have not yet been well quantified in those terms. As water managers (along with regional scientists, local government agencies, and other key decision-makers) obtain better analytical tools for understanding the specific effects of climate change, the water supply and demand projections in this IRWM Plan will reflect that information. The RWMG will continue to work closely with other community leaders and scientists throughout the state to obtain and refine the tools needed to better understand and plan for the impacts of climate change in the Greater Monterey County region.

In the meantime, the RWMG—with assistance from a Climate Task Force comprised of regional scientists, water managers, and coastal policy professionals—has conducted preliminary climate risk analyses. These analyses indicate the following climate risks to be top priority for the Greater Monterey County IRWM region for considering how to adapt the region’s water management systems for climate change impacts:

- ***Decreased water supply*** due to changes in precipitation, more frequent and severe droughts, increased surface and groundwater consumption, and increased seawater intrusion (due to sea level rise affecting coastal aquifers).
- ***Increased flooding and erosion of creeks and rivers*** due to more intense storm events (higher river flow rates), and overburdening of conveyance systems, levees, and culverts.
- ***Coastal inundation of urban development and other land uses, and impacts to river and wetland ecosystems due to changes in rainfall patterns, storm intensity, storm surges (due to increased storm intensity) and sea level rise.***

The RWMG is aware of the following significant impacts that climate change is expected to have on water supply and demand, generally:

- Sea level rise and higher groundwater extraction will lead to increased rates of saltwater intrusion.
- Agricultural water use is expected to increase to offset higher temperatures and evapotranspiration.
- Rangelands are expected to be drier.
- Domestic landscaping water needs will be higher.
- Droughts are expected to be more frequent and severe.
- Average rainfall is expected to change (though at this point it is unclear whether rainfall in the local region will increase or decrease; a decrease will lead to diminished water supplies, but even if it increases, the rainfall may tend toward more sporadic and intense storms, which may not produce the water supply benefits that a more even distribution would provide).
- Climate change will also likely have adverse effects on water quality, which in turn will affect the beneficial uses (habitat, water supply, etc.) of surface water bodies and groundwater in the region. Changes in precipitation may result in increased sedimentation, higher concentrations of pollutants, higher dissolved oxygen levels, increased temperatures, and an increase in the amount of runoff constituents reaching surface water bodies.

Please see Section R, Climate Change, for an overview of the most current information and regional activity regarding climate change in the Monterey Bay area.

B.5.6 Water Supply and Demand: Conclusions

Water use in the Salinas Valley Groundwater Basin has significantly outpaced water supply over the past several decades, resulting in overextraction and seawater intrusion. The SVIGSM modeling estimated basin overdraft in 1995 to be approximately 17,000 AFY, with an additional 8,900 AFY of the groundwater supplies affected by seawater intrusion (defined as the average annual rate of subsurface flow from the Monterey Bay into the groundwater aquifers).

Conditions are expected to improve somewhat by 2030, at least in terms of basin overdraft. SVIGSM modeling predicts basin overdraft in the Salinas Valley Groundwater Basin to be approximately 14,000 AFY in 2030, about 3,000 AFY less than baseline (1995) conditions. This improvement is attributed to an expected overall decrease in water use on the order of 20,000 AFY from 1995 to the year 2030: while urban water use is predicted to increase by about 40,000 AFY (totaling 85,000 AFY in 2030), agricultural water use is predicted to decrease by about 60,000 AFY (totaling 358,000 AFY in 2030). The SVIGSM model based the predicted decline in agricultural water use over the 35-year time period on several factors, including increased irrigation efficiencies, changes from high to low water demand crops, and a slight reduction in agricultural land use resulting from conversion to urban uses. It is important to note, however, that the SVIGSM modeling does not take into account the potential impacts of climate change.

The SVIGSM predicts total water use in the year 2030 to be 443,000 AFY. This projection does not take into account environmental water demand. If environmental water needs are factored in, total water demand in the year 2030 will likely be considerably higher than the predicted 443,000 AFY. The RWMG intends to include environmental water needs, as well as the impacts of climate change, in future modeling efforts for the region.

Finally, “water demand” in the region is met not only by ensuring an adequate water supply, but by ensuring adequate water supply infrastructure to meet the storage, treatment, and distribution needs of water users. The IRWM Plan promotes projects that address specific infrastructure needs as well as overall water supply reliability for the region, in terms water conservation projects, water recycling projects, desalination, and other “water supply enhancement” projects. It is the hope and intention of the RWMG that projects developed and funded through the IRWM planning process will, over time, reverse the trend of basin overdraft in the Salinas Valley Groundwater Basin, halt the advance of seawater intrusion, and ultimately help achieve hydrologic balance and water supply reliability for the Greater Monterey County IRWM region.

B.6 WATER QUALITY

This section describes current water quality conditions in the Greater Monterey County IRWM region for surface and groundwater, regional water quality goals and objectives (including Central Coast Basin Plan, Watershed Management Initiative, and specific watershed goals), and current efforts to protect and improve water quality in the IRWM planning region.

B.6.1 Water Quality: Current Conditions

B.6.1.a Surface Waters: Rivers and Waterways

The quality of surface waters in the region is greatly influenced by land use practices. Primary causes of pollutants to surface waters include urban runoff, agricultural runoff, erosion and sedimentation, and septic systems. Erosion is a widespread problem in Monterey County, due in part to the erosive nature of local soils as well as from land use practices (including farming on steep slopes, unmaintained or improperly designed dirt roads, altered water channels that increase water velocities and alter the natural

sediment balance, and areas that have been denuded of vegetation by fire, overgrazing, or clearing).

The coastal rivers of the Big Sur region, where urban and agricultural land uses are minimal, are generally considered to be of excellent to good water quality. Big Sur rivers, creeks, and coastal waters are primarily affected by erosion and sedimentation (e.g., from roads and construction, and from periodic wildfire events), septic systems located close to the rivers, and trash from park visitors.

The North County portion of the region is comprised of the Monterey County portion of the Pajaro Valley Groundwater Basin that lies within the Salinas River watershed, the Elkhorn Coastal Plain, and the Hilly Area including Prunedale. The North County area has significant erosion problems. The sandy soils and slopes in the interior hills are especially conducive to erosion. This has become more problematic in recent years due to intensified strawberry farming activity, particularly since strawberry farming practices often involve covering the fields in plastic,³⁶ creating impermeable surfaces for runoff. Cultivation practices particularly in the Elkhorn Highlands and to a lesser extent in the Carneros Creek watershed have led to high erosion/sedimentation rates. There is relatively little urban land use in the North County area, and urban runoff sources are limited to the areas of commercial development and small communities at Moss Landing, Castroville, and Prunedale. However, because of their proximity to water bodies throughout the North County area, such as the Elkhorn Slough and creeks and sloughs tributary to the Elkhorn Slough drainage system, these limited urban uses have the potential to generate significant adverse water quality impacts (excerpted from Monterey County Planning Department 2010b, Section 4.3).

In the Salinas Valley, surface waters are impacted largely by intensive agricultural use (including grazing) and nonpoint source pollutants from urban uses. Salinas Valley surface waters are especially impaired by nitrates, pesticides, toxicity, and pathogens. Nitrate contamination is of particular concern in the Salinas Valley, resulting mainly from the use of nitrogen-based synthetic fertilizers for irrigated agriculture (though elevated nitrate levels also exist near septic systems and wastewater treatment plants). Urban runoff from communities along the Salinas Valley impacts the Salinas River, Salinas Reclamation Ditch, and other tributaries ultimately flowing to the Monterey Bay.

The City of Salinas monitors water quality as part of National Pollutant Discharge Elimination System (NPDES) Phase I requirements. The City of Salinas is the only Phase I Municipal Separate Storm Sewer System (MS4) in the Central Coast Region and is covered by an individual NPDES permit. There are five Phase II Small MS4 regulated entities within the IRWM planning region: the cities of Marina, Soledad, Gonzales, and King City, and the County of Monterey. Monterey County Resource Management Agency administers the Phase II General Permit for unincorporated urban areas of the county.

For a more in-depth discussion of impaired surface waters in the region, see “Impaired Water Bodies and Total Maximum Daily Loads (TMDLs)” in Section B.6.3.a below.

B.6.1.b Estuaries

The following information is excerpted from the *Monterey Bay National Marine Sanctuary Condition Report 2009* (Office of National Marine Sanctuaries, 2009, pp. 72-74).³⁷

Over the past 150 years, human actions have altered the tidal, freshwater, and sediment processes in Elkhorn Slough and its watersheds. Such impacts have substantially changed the water quality

³⁶ Specifically: Whole fields are covered in plastic for fumigation. During the growing period, only the planting beds are covered; furrows are bare soil.

³⁷ To see a summary of impacts on the estuarine environment, go to the MBNMS website: http://sanctuaries.noaa.gov/science/condition/mbnms/welcome_est.html

conditions and have increased the levels of pollution and eutrophication in the slough (Elkhorn Slough Tidal Wetland Project Team 2007). Approximately two dozen wetlands comprising nearly 637 acres of estuarine habitats in the Elkhorn watershed are currently behind water control structures and levees. Control structures have caused many sites in Elkhorn Slough to have very restricted tidal exchange, thus resulting in poor water quality conditions, as evident through low dissolved oxygen and elevated levels of organic matter accumulation (*ibid.*).

A main cause of water and sediment quality degradation is agricultural non-point source pollution (Caffrey 2002; Phillips et al. 2002; ESNERR, NOAA, and CDFG 2009). Relatively high levels of nutrients and legacy agricultural pesticides, such as DDT, have been documented within the Elkhorn Slough wetlands complex, with the highest concentrations measured in areas that receive the most freshwater runoff (*ibid.*). Pathogens, pesticides, sediments, low dissolved oxygen levels and ammonia have impaired sections of Elkhorn Slough and water bodies adjacent to the slough (Moro Cojo Slough and Moss Landing Harbor). A Central Coast Ambient Monitoring Program (CCAMP) study conducted between 2001 and 2006 showed problematic levels of dissolved oxygen, dissolved inorganic nitrogen, ortho-phosphate, and chlorophyll, and poor water clarity at the mouth of the slough in Moss Landing Harbor (Sigala, Fairey, and Adams 2007). Toxicity due to organophosphate (such as diazinon and chlorpyrifos) and pyrethroid pesticides has been documented in adjacent watersheds (Hunt et al. 2003; Anderson et al. 2006; Phillips et al. 2006), pointing to the potential for similar toxicity problems in Elkhorn Slough.

Use of persistent pesticides for agriculture in the area has been phased out, but high concentrations are still present in the sediment and can become re-suspended by erosion (ESNERR, NOAA, and CDFG 2009). As legacy organochlorines were phased out in the 1970s and 1980s, organophosphate pesticides such as diazinon and chlorpyrifos became widely used, and these pesticides have been found at toxic concentrations in many Central Coast watersheds (Hunt et al. 2003). Pyrethroid pesticides are now increasingly applied along the Central Coast and have been found at toxic concentrations in watershed sediments (Anderson et al. 2006; Phillips et al. 2006). Management efforts by a number of organizations are aimed at reducing inputs of pollutants to estuarine habitats, however, these management activities have yet to show measurable decreases in contaminants in Elkhorn Slough (ESNERR, NOAA, and CDFG 2009).

Water bodies adjacent to the main channel of Elkhorn Slough, including Moro Cojo Slough, Old Salinas River Estuary, and Salinas River Lagoon, are impaired by nutrients and low dissolved oxygen levels. Elkhorn Slough is currently classified as moderately eutrophic (Bricker et al. 2007); however, the report noted concerns for the future based on the susceptibility of the system and predicted nutrient loads (*ibid.*). Eutrophication can lead to an array of harmful effects including reduction in water quality (specifically low dissolved oxygen levels), fish mortality, and the loss of biodiversity (Cloern 2001), and has been identified by the Millennium Ecosystem Assessment as one of the largest and most dangerous threats to coastal ecosystems in the United States and globally.

B.6.1.c Coastal Marine Waters

Significant surface waters of the Greater Monterey County IRWM region also include the coastal waters that lie immediately offshore the region's boundaries. The Greater Monterey County region lies adjacent to the MBNMS, which spans nearly 300 miles of California coastline. The Sanctuary receives runoff from all of the region's major watershed areas. Offshore areas of the Sanctuary are in relatively good condition, but nearshore coastal areas show a number of problems resulting largely from nonpoint sources of

pollution. The following information is excerpted from the *Monterey Bay National Marine Sanctuary Condition Report 2009* (Office of National Marine Sanctuaries, 2009, pp. 55-59).³⁸

Pollutants associated with urban development and agricultural cultivation exert pressure on nearshore water quality conditions in the sanctuary. The greatest loads of nutrients and persistent contaminants in the sanctuary are delivered via the rivers that drain heavily cultivated watersheds (Los Huertos, Gentry, and Shennan 2003; CCLEAN 2007).

Certain portions of the nearshore ocean, such as along the Big Sur Coast, are relatively free from direct inputs of watershed based contaminants, compared to areas that drain relatively large human-altered watersheds such as the Salinas and Pajaro (Conley, Hoover, and De Beukelaer 2008). While there is no overall regional trend for changes in pollutant concentrations at coastal confluences of watersheds that drain to the sanctuary, significant increases at some locations are cause for concern (ibid.). Non-point sources flow into rivers that drain to the sanctuary and deliver substantial loads of persistent organic pollutants (e.g., PCBs, PAHs, dieldrin, DDT) to the nearshore environment (CCLEAN 2006). The Central Coast Long-term Environmental Assessment Network (CCLEAN) monitoring program has reported PCB levels that exceed the California Ocean Plan standards and determined that the four largest rivers that drain to Monterey Bay, the Salinas, Pajaro, Carmel, and San Lorenzo Rivers, were the source of most of the PCBs (CCLEAN 2006 and 2007).

Of the 51 water bodies draining directly to the sanctuary that were monitored for impairment, 15 were determined to be impaired by elevated nutrient levels (SWRCB 2006). Sources of nutrients, such as phosphorus, nitrate, and urea, to the nearshore environment include waste products from mammals, runoff from agriculture fields, leaking septic tanks, and sewage discharge systems. Rivers vary in their load contributions relative to different nutrients (CCLEAN 2006). Nitrates from the Pajaro and Salinas Rivers and Tembladero Slough are far greater in comparison to other major rivers that drain to the sanctuary (CCLEAN 2007). ...Harmful algal bloom (HAB) events have been linked with freshwater runoff events (Kudela and Chavez 2004). Biotoxins produced by HABs have been shown to accumulate in filter feeders, such as anchovy and mussels, and can cause health effects in nearshore mammals and seabirds that consume tainted prey (Fritz et al. 1992; Scholin et al. 2000; Kreuder et al. 2005).

Although the majority of the sanctuary's nearshore waters generally do not pose risks to human health, there are localized areas and isolated impacts that pose serious health risks. Pollutants present in nearshore waters are absorbed into the tissues of organisms such as mussels and fish. High levels of contaminants such as pesticides and metals can pose a human consumption risk. Toxins (domoic acid and paralytic shellfish poison) are produced by certain algal species and have been observed at levels in Monterey Bay that are potentially harmful to human health via bioaccumulation in the food web (Jester 2008). ... Periodic beach warnings and closures, due to the presence of pathogen indicators (*E. coli*, fecal coliform, total coliform, *Enterococcus*) that can cause illness in beach goers, are common at some locations (Ricker and Peters 2006).

B.6.1.d Groundwater Quality

The MCWRA has an existing monitoring program focused on monitoring water supply levels and water quality changes over time. Conditions currently tracked by the MCWRA include: seawater intrusion; nitrate and other groundwater quality conditions; factors influencing basin balance (i.e., data for rainfall,

³⁸ To see a summary of impacts on the nearshore environment, go to the MBNMS website:
http://sanctuaries.noaa.gov/science/condition/mbnms/welcome_near.html

stream flows, reservoir operations, groundwater levels, etc.); and land use and water needs. Two major water quality problems affecting the Salinas Valley Groundwater Basin are nitrate contamination and seawater intrusion. Note that much of the information below regarding nitrate contamination and seawater intrusion has been excerpted from Technical Memorandums to EPA Region IX from MCWRA, dated July 30, 2010 (MCWRA 2010a and MCWRA 2010b).

Nitrate Contamination

Nitrogen, in the form of nitrate, is the most significant nutrient affecting groundwater quality in the lower Salinas River watershed. The US EPA established the current drinking water standard (DWS) and health advisory level of 45 mg/l NO₃ (note that the DWS has been changed to 10 mg/l NO₃-N, however for the purposes of consistency this plan will continue to use the former standard notation of 45 mg/l NO₃). Levels of nitrate in groundwater that exceed that level pose a threat to human health and to other biological organisms that depend on groundwater. Particularly in rural, private wells, incidence of methemoglobinemia, or blue baby syndrome, appears to be the result of high nitrate levels. Nitrate may also interact with organic compounds to form N-nitrosamines, which are known to cause cancer (Mahler, Colter, and Hirnyck 2007). Many organic compounds could link with nitrate to form N-nitrosamines, including some pesticides. This is potentially significant because wells with high nitrate levels are also sometimes associated with high pesticide levels. Neither the immediate nor the chronic health effects of N-nitrosamines in humans are well understood.

Nitrate contamination in the Salinas Valley was first documented in a report published by AMBAG in 1978. Nitrate may occur naturally in groundwater due to biologic activity or decomposition of geologic deposits, but rarely do natural concentrations exceed the Primary DWS of 45 mg/l NO₃. Nitrate contamination in the Salinas Valley is due primarily to use of nitrogen-based synthetic fertilizers for irrigated agriculture, and commonly occurs in the unconfined and semi-confined aquifers that underlie areas of intense agricultural activity. However, nitrate contamination can also be caused from septic system failures, from wastewater treatment ponds located in floodplains that convey sewage during flood events, and from livestock waste.

Nitrate contamination is present throughout the Salinas Valley in varying concentrations. In 2007, 37 percent of the 152 wells sampled in the Salinas Valley Groundwater Basin showed nitrate levels greater than the maximum DWS of 45 mg/l NO₃, with concentrations highest in the Upper Valley and East Side Subareas. In the Upper Valley Subarea, 68 percent of wells had nitrate concentrations reported at greater than the DWS, with a maximum concentration of 425 mg/L NO₃ and a mean concentration of 90 mg/L NO₃; and in the East Side Subarea, 60 percent of wells had nitrate concentrations reported at greater than the DWS, with a maximum concentration of 502 mg/L NO₃ and a mean concentration of 106 mg/L NO₃, as shown in the table below (MCWRA 2010a):

Table B-20: 2007 Summary of Nitrate-NO₃ Concentrations for Study Wells in Salinas Valley Basin

Hydrologic Subarea	Number of Wells Sampled	Mean NO ₃ (mg/L)	Median Concentration NO ₃ (mg/L)	Maximum Concentration NO ₃ (mg/L)	Percent of Wells Greater than DWS
Upper Valley	19	90	78	425	68%
East Side	15	106	63	502	60%
Forebay	41	79	54	290	54%
Pressure 180-Foot Aquifer	28	49	20	284	32%
Pressure 400-Foot Aquifer	44	12	3	143	7%
Pressure Deep Aquifer	5	1	1	2	0%
All Locations	152	56	20	502	37%

Source: Technical Memorandum from MCWRA to EPA Region IX, dated July 30, 2010 (MCWRA 2010a)

The MCWRA has documented increasing trends of nitrate levels in the Salinas Valley Groundwater Basin. Three hundred and seventy (370) wells were sampled in 1993, 152 wells were sampled in 2007, and 96 of those wells were sampled in both years. The change in groundwater nitrate concentration in those 96 wells ranged from a maximum 75 mg/L decrease to a maximum 255 mg/L increase. Many nitrate concentrations for wells in the Pressure subarea showed no change in nitrate concentration from 1993 to 2007 (ibid.).

Between 1993 and 2007, the percentage of wells sampled within the Salinas Valley Groundwater Basin with concentrations of NO₃ greater than the DWS increased from 25 percent to 37 percent (ibid.). Significant increases in both mean and median concentrations of NO₃ were also observed, as shown in the table below.

Table B-21: 1993 and 2007 Comparison of Nitrate-NO₃ Concentrations for Study Wells in Salinas Valley Basin

Hydrologic Subarea	Mean NO ₃ (mg/L)			Median Concentration NO ₃ (mg/L)			Percent of Wells Greater than DWS	
	1993	2007	Mean Change 1993 - 2007	1993	2007	Median Change 1993 - 2007	1993	2007
Upper Valley	96	90	-6	59	78	+19	53%	68%
East Side	70	106	+36	36	63	+27	45%	60%
Forebay	41	79	+38	33	54	+21	36%	54%
Pressure 180-Foot Aquifer	23	49	+26	6	20	+14	14%	32%
Pressure 400-Foot Aquifer	11	12	+1	3	3	0	7%	7%
Pressure Deep Aquifer	1	1	0	1	1	0	0%	0%
All Locations	38	56	+18	13	20	+7	25%	37%

Source: Technical Memorandum from MCWRA to EPA Region IX, dated July 30, 2010 (MCWRA 2010a)

All of the Salinas Valley cities have had to replace domestic water wells due to high nitrate levels that exceed the drinking water standard. In 1988, a report by the SWRCB documented that nitrate levels in the Salinas Valley groundwater had impaired its beneficial use as a drinking water supply. In response to that report an Ad Hoc Nitrate Advisory Committee was formed by the MCWRA to examine nitrate in the Salinas Valley Groundwater Basin and recommend a course of action. Their report was published in 1990 and echoed the concerns and findings of the SWRCB. In a July 1995 staff report, the SWRCB ranked the Salinas Valley as their number one water quality concern due to the severity of nitrate contamination. Development and implementation of a nitrate management program for the Salinas Valley has become a priority for the SWRCB. In 1998, MCWRA convened a Nitrate Technical Advisory Committee (NTAC) to re-evaluate current nitrate management needs. The NTAC recommendations were incorporated into a MCWRA Nitrate Management Program. Eleven of the 13 Nitrate Management Program Elements were implemented as objectives for two Clean Water Act 319(h) grants which concluded in 2002, and some of the program elements have been incorporated into ongoing Agency programs.

Seawater Intrusion

As both irrigated agriculture and urban development have increased during the past several decades, groundwater demand has exceeded available recharge. Seawater intrusion was first observed in a few wells in the Castroville area in 1932, and was documented in Bulletin 52 (DWR 1946). By the 1940s, many agricultural wells in the Castroville area had become so salty that they had to be abandoned. According to the 2015 Urban Water Management Plan for the Salinas District (Cal Water 2016), the annual non-drought overdraft of the Salinas Valley Groundwater Basin is estimated to be approximately 45,300 AF per year. Because of the hydrologic continuity between the ocean and the 180-Foot and 400-Foot Aquifers of the Pressure Subarea, seawater has been intruding into these aquifers at a rate of approximately 28,800 AF per year. During droughts, the annual overdraft can escalate to between

150,000 to 300,000 AF per year. As a result of this consistent overdraft, groundwater levels in the Salinas Valley Groundwater Basin have dropped below sea level, allowing seawater to intrude from Monterey Bay into aquifers located 180 and 400 feet below ground surface. The East Side and Pressure Subareas of the Salinas Valley Groundwater Basin are the most impacted by lack of recharge.

Groundwater quality during phase I, early intrusion of seawater, is characterized by increasing chloride and conductivity concentrations. Early intrusion also includes a cation base exchange; there is an exchange of calcium and sodium between the aquifer matrix and intruding seawater. As intrusion proceeds, groundwater is mixed with seawater, trending directly toward seawater quality. Seawater is high in chlorides. Chloride, according to the California Safe Drinking Water Act, has a Secondary DWS upper limit of 500 mg/L. This upper limit indicates drinking water impairment and is used as the benchmark for determining the isocontours used in developing maps of the seawater intrusion front, shown on the following pages. In addition to the fact that chloride concentrations above 500 mg/L impair drinking water, chloride ion concentrations above 350 mg/L are considered to be injurious to plants, according to guidelines for agricultural suitability of irrigation water (Todd Engineers 1989).

Figures B-21 and B-22 on the following pages illustrate the extent of seawater intrusion in the Salinas Valley through the year 2017. Seawater has intruded approximately 7.5 miles inland in the 180-Foot Aquifer and 4.5 miles inland in the 400-Foot Aquifer. As a result of seawater intrusion, urban and agricultural supply wells have been abandoned, destroyed, and relocated. In the past several years there has been an increase in the number of Pressure Deep Aquifer (900-Foot Aquifer) wells that have been drilled in the Castroville coastal area. For this reason MCWRA has begun to sample Pressure Deep Aquifer wells as part of its Coastal Sampling Program. Thus far, the Deep Aquifer is not known to be impacted by seawater intrusion (MCWRA 2010b).

The current land use overlying the intruded aquifers is predominantly agricultural production. Large agricultural wells are owned and operated by the private sector and used for drawing groundwater for irrigation purposes. As noted previously, MCWRA constructed CSIP in the mid-1990s, aimed at providing recycled water to agricultural growers within the seawater intrusion front area. These growers use the recycled water in lieu of pumping groundwater. Since 1998, recycled water deliveries have ranged from approximately 7,500-14,000 AFY. As a result of the CSIP, the seawater intrusion front has slowed, but has not been halted (*ibid.*). More recently, MCWRA has developed the Salinas Valley Water Project as a means to increase the availability of recycled water, thereby further reducing agricultural pumping from intruded Pressure Subarea Aquifers. Both the CSIP and the Salinas Valley Water Project are described in Section B.6.3.b (Efforts to Improve Groundwater Quality in the Salinas Valley Groundwater Basin) below.

Despite best efforts on the part of water managers and water users in the region to reverse the trend of seawater intrusion, the problem is expected to become worse as a result of climate change in future years. One of the most serious anticipated consequences of climate change for the Monterey Bay region is sea level rise. Sea level rose approximately seven inches (18 cm) over the past century (1900–2005) along most of the California coast (Cayan et al. 2008). Currently, the State of California is using estimates of global sea level rise produced by Rahmstorf (2007) and Cayan et al. (2008) for coastal adaptation planning purposes. These projections suggest possible sea level rise of approximately 14 inches (36 cm) by 2050 and up to approximately 55 inches (140 cm) by 2100. Sea level rise will significantly increase the pressure of saltwater on the coastal Salinas Valley Groundwater Basin aquifers, causing increased seawater intrusion in critical groundwater supplies.

Figure B-21: Seawater Intrusion in the Salinas Valley Groundwater Basin: Pressure 180-Foot Aquifer

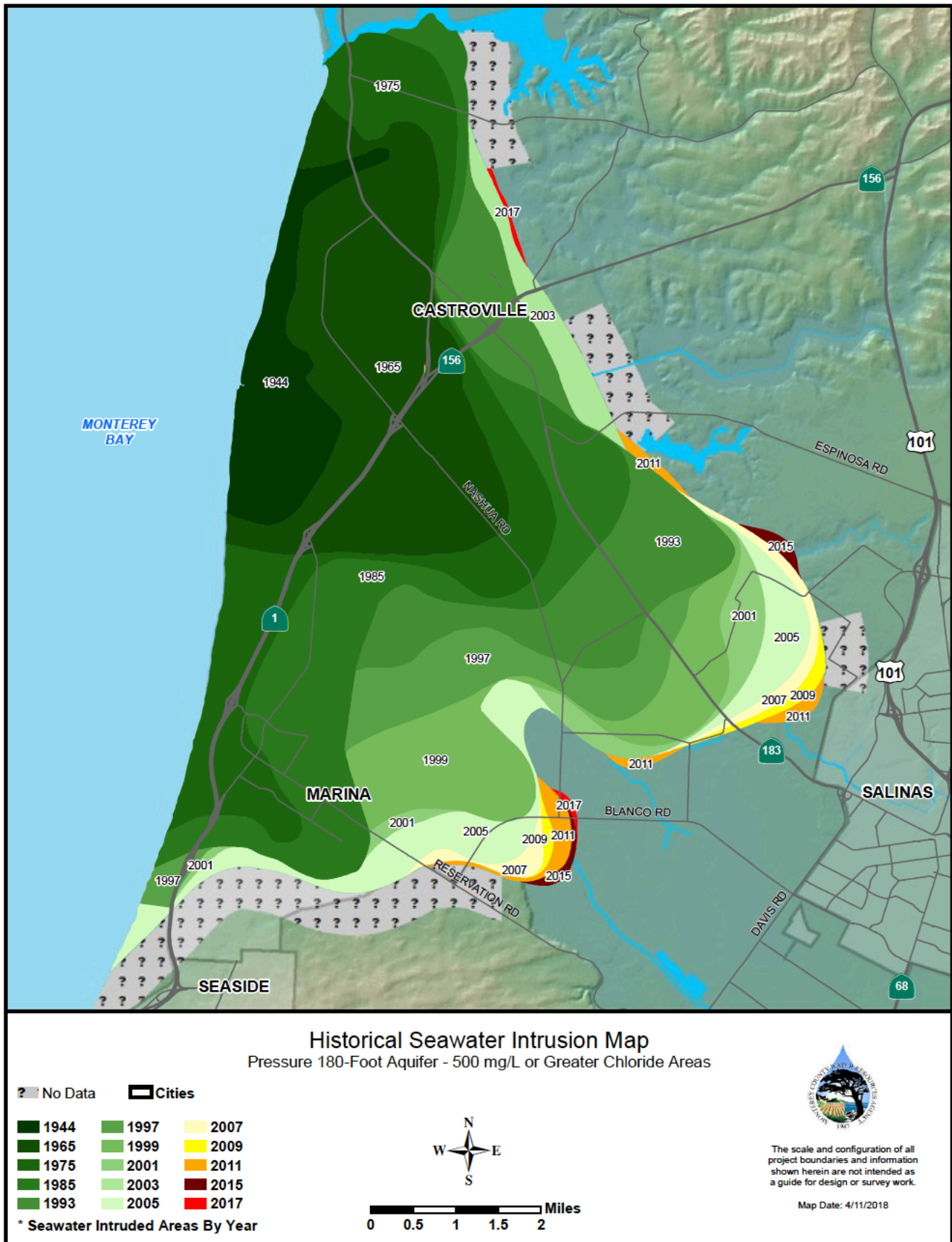
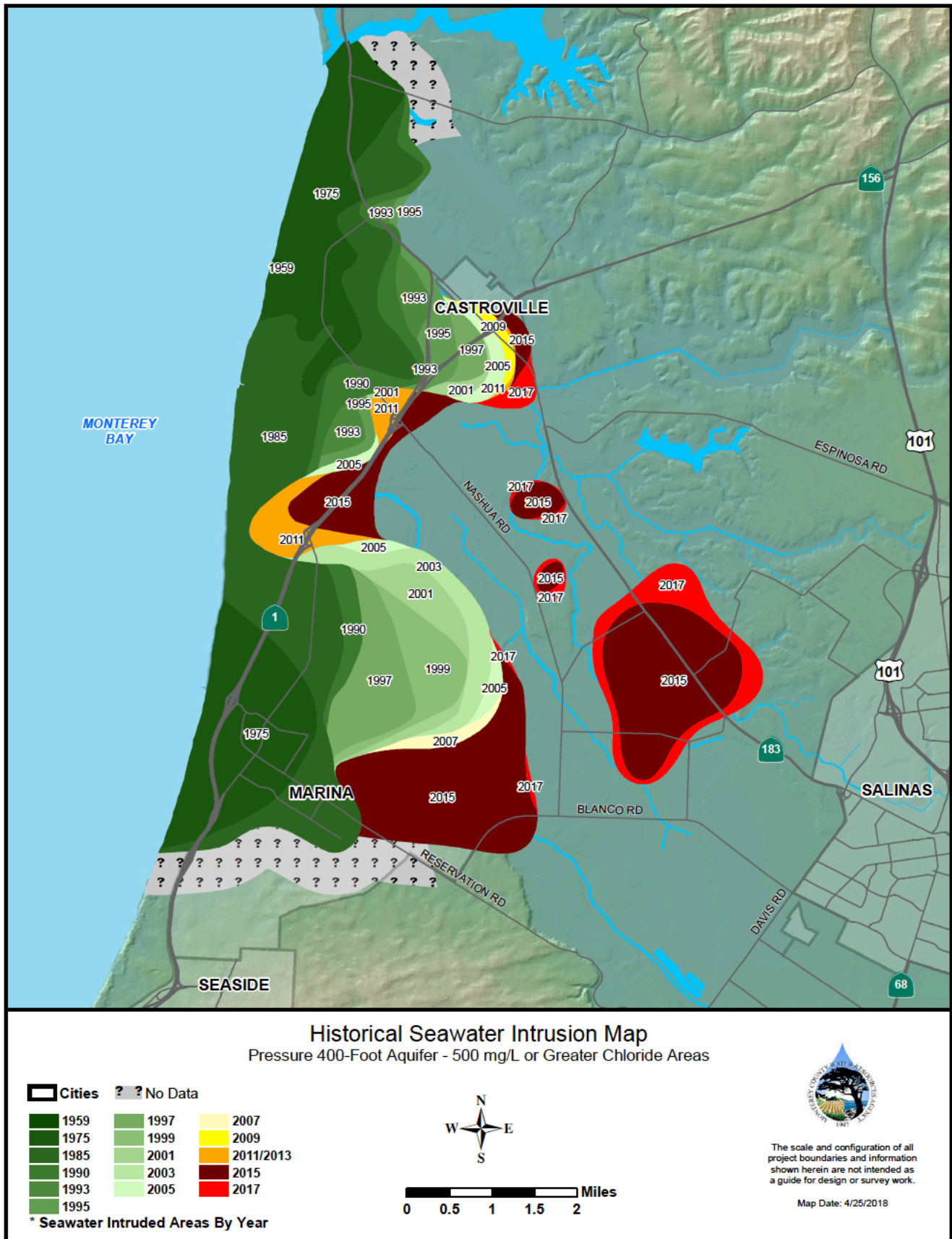


Figure B-22: Seawater Intrusion in the Salinas Valley Groundwater Basin: Pressure 400-Foot Aquifer



B.6.2 Regional Water Quality Goals and Objectives

This section describes regional water quality goals and objectives that have been established on a state level by the Central Coast RWQCB. The water quality goals and objectives that have been established specifically for the Greater Monterey County IRWM region by the RWMG as part of this IRWM planning effort are described in Section D, Objectives.

B.6.2.a Basin Plan Goals

California's Porter-Cologne Water Quality Control Act (1969) establishes the responsibilities and authorities of the State's nine Regional Water Quality Control Boards and the State Water Resources Control Board. The Porter-Cologne Act names the Regional Boards "...the principal State agencies with primary responsibility for the coordination and control of water quality" (Section 13001). Each Regional Board is directed to formulate a water quality control plan for all areas within its region. The Central Coastal Basin Plan is the water quality control plan formulated and adopted by the RWQCB for the Central Coast region. The Basin Plan was updated in March 2016 (see RWQCB 2016).

The objective of the Central Coastal Basin Plan is to show how the quality of the surface and ground waters in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The Basin Plan lists various water uses (Beneficial Uses), then describes the water quality which must be maintained to allow those uses (Water Quality Objectives). The Implementation Plan then describes the programs, projects, and other actions necessary to achieve the standards established in the plan. The RWQCB implements the Basin Plan by issuing and enforcing waste discharge requirements to individuals, communities, or businesses whose waste discharges can affect water quality. These requirements can be either State Waste Discharge Requirements for discharges to land, or federally delegated NPDES permits for discharges to surface water. The Basin Plan is also implemented by encouraging water users to improve the quality of their water supplies, particularly where the wastewater they discharge is likely to be reused.

The Central Coast RWQCB has established the following planning goals for water quality in the Central Coast Region (p. IV-2):

1. Protect and enhance all basin waters, surface and underground, fresh and saline, for present and anticipated beneficial uses, including aquatic environmental values.
2. The quality of all surface waters shall allow unrestricted recreational use.
3. Manage municipal and industrial wastewater disposal as part of an integrated system of fresh water supplies to achieve maximum benefit of fresh water resources for present and future beneficial uses and to achieve harmony with the natural environment.
4. Achieve maximum effective use of fresh waters through reclamation and recycling.
5. Continually improve waste treatment systems and processes to assure consistent high quality effluent based on best economically achievable technology.
6. Reduce and prevent accelerated (man-caused) erosion to the level necessary to restore and protect beneficial uses of receiving waters now significantly impaired or threatened with impairment by sediment.

B.6.2.b Watershed Management Initiative Goals

Each of the nine RWQCBs in the state is responsible for developing a Watershed Management Initiative (WMI) Chapter as part of the State's five-year Strategic Plan for water resource protection. Together the nine Chapters constitute the State's Watershed Management Initiative Integrated Plan. The aim of the

WMI is to plan and prioritize activities within and amongst watersheds; integrate various surface and groundwater regulatory programs; promote local, collaborative efforts; and focus limited resources on priorities.

In the WMI, the Central Coast RWQCB outlines water quality priorities for the region, identifies priority watersheds and water quality issues, describes watershed management strategies. The WMI includes the following Water Quality Priorities (RWQCB 2002, List D-7 from the 2004 Update, Appendix D):

- Agriculture: Addressing water quality impacts from irrigated agriculture, a major land use in the region that has been identified as a potential source of impairment for many of the water bodies on the 303(d) list (constituents of concern include nutrients, pesticides and sediment) by implementing the conditional waiver for irrigated lands.
- Total Maximum Daily Loads: Developing and implementing TMDLs throughout the region.
- Urban Runoff: Addressing beach closure issues, implementing Phase II of the NPDES Stormwater Program.
- Point Source Regulatory Programs: Streamlining permit writing, renewing major permits and several existing Waste Discharge Requirements, performing inspections.
- Basin Planning: Developing a riparian corridor policy, revising or developing water quality objectives.
- Monitoring: Maintaining the Central Coast Ambient Monitoring Program, integrating data from the agricultural cooperative monitoring program.
- Clean-up: Overseeing perchlorate, MTBE, military base, hazardous waste, and underground storage tank cleanups.

As part of the WMI planning process, the RWQCB has identified nine priority watersheds. Two watersheds within the Greater Monterey County IRWM region are included on that list: the Salinas River watershed and the Elkhorn Slough, with the Salinas River watershed being targeted as a “highest priority watershed.” Pollutants of concern in the Salinas River watershed include seawater intrusion, nitrates and minerals in groundwater, nutrients, pesticides, heavy metals, and sedimentation. Water quality problems include overpumping of groundwater, agricultural activities, urban development and runoff, past mineral mining, and gravel mining. The primary water quality concerns in the Elkhorn Slough watershed include erosion, pesticides, bacteria and scour. Many of these water quality concerns are generated from surrounding agricultural activities. Several Moss Landing Harbor activities, including ongoing dredging, impact the slough at its confluence with the harbor.

Table D-7 in the WMI Appendix D (updated 2004) lists the following Targeted Projects and Activities for the Salinas River and Elkhorn Slough watersheds as well as Central Coast region-wide efforts (the Table includes the other seven priority watersheds as well):

Region-wide:

1. Projects that support implementation of the Conditional Waiver for Irrigated Lands (“agricultural waiver”), including:
 - a. Projects that support implementation of the Cooperative Monitoring Program
 - b. Projects that support development and implementation of farm water quality management plans for irrigated operations to address irrigation management, nutrient management, pesticide management and erosion control
 - c. Projects that implement and test the effectiveness of management practices
2. Projects that implement approved or developed TMDLs (see below)

3. Projects that support development of scheduled TMDLs

Salinas Watershed:

1. Agricultural waiver implementation (monitoring, education, BMP implementation)
2. Riparian and wetland protection and restoration
3. Urban runoff reduction/increase infiltration

Elkhorn Slough Watershed:

1. Agricultural waiver implementation (monitoring, education, BMP implementation)
2. Riparian and wetland protection and restoration

B.6.2.c Water Quality Goals and Objectives for Watersheds in the Region

Watershed assessments and management plans have been completed to varying extents for several watersheds in the region, including the San Antonio River and Nacimiento River watersheds in the southern portion of the region (and northern San Luis Obispo County), Big Sur River watershed and Garrapata Creek watershed in Big Sur, and the Elkhorn Slough watershed, Moro Cojo Slough watershed, and Reclamation Ditch/Gabilan watershed area, all of which are located in the northern Salinas Valley. The section below briefly summarizes the watershed goals and objectives resulting from each of the existing watershed management planning efforts, along with recommended actions.

San Antonio and Nacimiento Rivers Watershed Management Plan: The *San Antonio and Nacimiento Rivers Watershed Management Plan*—a watershed management plan for the combined San Antonio River and Nacimiento River watersheds—was developed by the Nacimiento and San Antonio (Nacitone) Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. for the MCWRA and the SWRCB in October 2008. Goals and objectives in the plan are organized around 11 issue areas, including: Recreation, Monitoring and Information Needs, Preventing Pollution from Point and Nonpoint Sources, The Role of Agriculture, Fire in the Watersheds, Taking Enforcement Action, Coordination and Communication, Watershed Health: Plants and Animals, Roads and Culverts, Education and Outreach, and Invasive Species. Top priorities that emerged from the stakeholder process include steps to continue the watershed planning process plus the following short-term priority actions (i.e., 1-2 years):

- Monterey County, San Luis Obispo County and resident associations should work together to develop and implement programs to control invasive species.
- Continue existing water quality monitoring. In addition, establish a comprehensive water quality monitoring program with uniform collection, analysis and reporting protocols across pertinent jurisdictions for technical and public sector use. ... [As part of the SuperFund site cleanup program,] encourage the US EPA to conduct a lake bottom sediment study of Nacimiento reservoir to better understand mercury contamination.
- Support the work of existing Local Fire Safe Councils.
- Conduct road system survey to prioritize needs for erosion control.
- Collaborate on the design and implementation of educational stewardship campaigns targeting watershed residents and visitors with customized messages such as “Be A Watershed Citizen.”

Big Sur River Watershed Management Plan: The *Big Sur River Watershed Management Plan* was prepared by the Resource Conservation District of Monterey County, Central Coast Salmon Enhancement, Stillwater Sciences, and California State University of Monterey Bay, for the California Department of Fish and Wildlife in 2014. The purpose of the plan was to investigate the habitat factors affecting south-central California steelhead (*Oncorhynchus mykiss*) population dynamics in the Big Sur River Watershed. The plan assesses existing conditions, documents issues and concerns of stakeholders

related to the watershed's ecological conditions, and prioritizes recommendations to support restoration and recovery of steelhead.

Garrapata Creek Watershed Assessment and Restoration Plan: The *Garrapata Creek Watershed Assessment and Restoration Plan* was developed by the Garrapata Creek Watershed Council for the Garrapata Creek Watershed Community and the CDFG in July 2006. The plan focuses on critical issues related to steelhead and invasive species, both as indicators of overall watershed health and as important restoration goals. Specific areas of assessment included: the watershed's hydrologic function and sediment transport; geologic setting; road-produced sediment (erosion issues); the current status of the steelhead population and distribution in the watershed; migration barriers to steelhead in the creeks; the Garrapata Lagoon and its function for steelhead; and the watershed's vegetation composition and the health of the riparian corridor. The keystone limiting factors in the watershed were found to be as follows, in order of importance:

- Sediment delivery to the streams from road erosion in the watershed is causing adverse conditions to Garrapata Creek and tributaries.
- Non-native plant species invasion has restricted riparian habitat and has caused significant negative impacts, including the development of invasive monocultures that impedes the recruitment of native riparian species in the watershed.
- Steelhead migration barriers in the lower reaches of Garrapata Creek and tributaries prevent fish from utilizing all of the habitat available for spawning and rearing.

Goals and objectives were established around each of these limiting factors. Specific recommendations included reducing sediment loading through better road management, improving fish migration, eliminating or reducing non-native plant species, and re-vegetating and stabilizing creek banks with native vegetation. One major restoration opportunity that stood out above all others was reducing sediment delivery to the creeks from unpaved roads. An upslope erosion reduction project was completed in 2010.

Elkhorn Slough Watershed Conservation Plan: This plan was developed for the Elkhorn Slough Foundation and The Nature Conservancy by Scharffenberger Land Planning & Design in 1999. The Conservation Plan was developed to identify critical resources within the Elkhorn Slough watershed, to identify and address threats, and to maintain the long-term viability of Elkhorn Slough and its related upland communities as a significant coastal system. In 2002, a second report was produced based on the Elkhorn Slough Watershed Conservation Plan. *Elkhorn Slough at the Crossroads: Natural Resources and Conservation Strategies for the Elkhorn Slough Watershed* identifies key natural resources of the slough and suggests strategies for conserving them. The proposed vision for the slough includes an intact and interconnected network of natural communities including over 4,000 acres of coastal marsh within Elkhorn Slough and Moro Cojo Slough, enhanced freshwater wetlands of McClusky Slough, a restored stream-side forest along the lower Carneros Creek Floodplain and a series of upland ridges with unfragmented maritime chaparral in the Elkhorn Highlands.

Moro Cojo Slough Management and Enhancement Plan: The *Moro Cojo Slough Management and Enhancement Plan* was developed by The Habitat Restoration Group for the Monterey County Planning and Building Inspection Department and the State Coastal Conservancy in October 1996. The plan includes the following water quality and nonpoint pollution objectives:

1. Identify alternative methods to address water quality problems at the source.
2. Minimize sedimentation and soil erosion through the use of vegetation cover and other erosion control measures.
3. Improve and/or create stormwater detention facilities to protect/enhance water quality of the

slough from agricultural and urban runoff.

4. Manage water and drainage to accommodate agricultural uses on adjacent lands.
5. Avoid actions that impact groundwater.
6. Coordinate with mosquito abatement district on measures to minimize impacts to sensitive habitat features.
7. Develop a monitoring program to evaluate the success of the slough management program.

The RCD of Monterey County has provided considerable assistance to farmers in Moro Coho Slough on winter erosion control, including furrow alignment, furrow and road seeding, irrigation efficiency evaluations, and engineered practices for steep slopes. Engineered practice implementation has included sediment traps, stormwater detention structures, underground outlets, and other pond-type structures.

Northern Salinas Valley Watershed Restoration Plan: The *Northern Salinas Valley Watershed Restoration Plan* was the Final Report of a study entitled, “Nonpoint Pollution in Coastal Harbors and Sloughs of the Monterey Bay Region” prepared by Moss Landing Marine Laboratories and the Watershed Institute for AMBAG in January 1997, and funded under Section 205(j) of the federal Clean Water Act. The plan focuses on the northern Salinas Valley, encompassing all of the water courses that flow from the Gabilan Mountains east of Salinas into Moss Landing Harbor. The plan promotes the restoration of former wetland and riparian areas (“wet corridors”) throughout the watershed as the primary means for water quality restoration, with wetlands and riparian areas acting as natural sediment and pollution filters.

Reclamation Ditch Watershed Assessment and Management Strategy: This study, completed in 2005 by the Central Coast Watershed Studies (CCoWS) team of the Watershed Institute at California State University Monterey Bay for MCWRA, focuses on the same geographic area as the Northern Salinas Valley Watershed Restoration Plan – a 157 square-mile watershed with its headwaters in the Gabilan Range and its terminus at a set of tide gates at the entrance to Moss Landing Harbor.³⁹ Management goals listed in the plan relate to water quality, flood control, parklands, determining fish passage and steelhead presence/absence, special status species protection, mosquito abatement, food safety and agricultural pest control, harbor sedimentation, sustainable water supply, and economic viability. Management actions are listed for each goal. Those specifically related to water quality include:

1. Support the 2004 Conditional Waiver of Agricultural Waste Discharge Requirements developed by the Central Coast RWQCB.
2. Support agricultural discharge source control.
3. Evaluate City of Salinas stormwater (i.e., implement a monitoring program to determine the degree to which City runoff contributes to water quality concerns).
4. Support urban water quality source control (employing appropriate technologies and regulatory instruments for mitigating urban sources of pollution).
5. Implement urban water quality treatment measures, specifically, modify the function of existing urban stormwater detention basins in the City of Salinas to detain magnitude 2-year storms or less (as opposed to 10-year storms or larger).
6. Install vegetated treatment systems, such as constructed wetlands, vegetated furrows, and grassed waterways, to reduce sources of water quality constituents and treat those constituents that are detrimental in waterways. These systems should be located and managed so as to minimize risks relating to food safety and agricultural pests.

³⁹ Casagrande and Watson 2005. The Final Report is available for download on MCWRA’s website: http://www.mcwra.co.monterey.ca.us/Agency_data/RecDitchFinal/RecDitchFinal.htm

Relevant to this last strategy, the RCD of Monterey County has tested multiple vegetated treatment systems on land draining into the Salinas River, Elkhorn Slough, the Salinas Reclamation Ditch, and Blanco Drain (between the Salinas River and the Reclamation Ditch).

B.6.3 Efforts to Improve Water Quality in the Greater Monterey County Region

Efforts to improve water quality throughout the Greater Monterey County IRWM region are being carried out on the federal, state, regional, and local watershed levels through both regulatory and non-regulatory programs, and through collaborative partnerships that involve government agencies, non-profit organizations, research institutions, and private landowners. The following describes some of the major ongoing efforts to protect and improve water quality in the region, while recognizing that many smaller scale water quality improvement projects and monitoring studies, too numerous to describe here, are making great progress toward water quality improvements in the region.

B.6.3.a Regulatory Water Quality Programs

Impaired Water Bodies and Total Maximum Daily Loads

The RWQCBs are responsible for assessing the water quality of all water bodies in their regions. This information is compiled into a statewide Water Quality Assessment, a database that lists water bodies alphabetically by water type (lakes, streams, wetlands, groundwater, etc.) and assesses each water body as having “good,” “intermediate,” “impaired,” or “unknown” water quality. Formally, an impaired water body is one that does not meet water quality standards even after technology based discharge limits on point sources are implemented (i.e., water quality standards are not attainable even with Best Available Treatment/Best Control Technology).

Section 303(d) of the federal Clean Water Act requires each State to maintain a list of impaired water bodies and to develop TMDLs for all impaired water bodies. A TMDL estimates the maximum amount of a pollutant that a water body can receive and still meet water quality standards. A TMDL must be developed for each stressor or pollutant for each water body threatened or impaired. Establishing a TMDL includes gathering data about the sources of the pollutant, including both point and nonpoint sources, and allocating the pollutant loads from the various identified sources. Once a TMDL is established, an implementation plan must be developed to describe how that water body will meet water quality standards.

The Central Coast RWQCB is the State agency responsible for identifying impaired water bodies within the Central Coast region. In April 2018, approved California’s 2014-2016 303(d) list. The final approved list is included as Appendix G in this IRWM Plan, with the identified pollutants. The 2014-2016 303(d) list for water bodies in the Greater Monterey County IRWM region is shown in Table B-22.⁴⁰

Within the Greater Monterey County IRWM region, 31 water bodies have been determined by the RWQCB to be impaired under Section 303(d) of the Clean Water Act. These water bodies are illustrated in Figure B-23. Impairments are found to occur within the Salinas, Gabilan, and Bolsa Nueva watersheds, with very minor impairments listed for two water bodies in the Big Sur coastal watershed. The region has 332 miles of impaired rivers (20 rivers/creeks, including over 100 miles of the Salinas River), 2,339 acres of impaired estuaries (mostly Elkhorn Slough with 2,034 acres listed, but also including the Salinas River Lagoon, Moro Cojo Slough, Salinas River Refuge Lagoon, and Old Salinas River Estuary), 79 acres of impaired harbor (Moss Landing Harbor), and 5,580 acres of impaired lakes/reservoirs (most of which – 5,417 acres – includes San Antonio Reservoir, listed for mercury). Note that Nacimiento Reservoir, which

⁴⁰ To see the Section 303(d) List of water bodies for all of California, go to the RWQCB’s website: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2012.shtml.

is not located within the Greater Monterey County IRWM region but is an important water supply source for the region, is also listed for mercury (5,736 acres). The entire Salinas Valley Groundwater Basin, which includes four sub-basins, is listed as impaired and as only partially supporting beneficial uses due to nitrate contamination and seawater intrusion (RWQCB 2002, p. 29).

The water bodies in the lower Salinas Valley have some of the worst pollutant impairments on the Central Coast. The Lower Salinas River (from the estuary to Gonzales Road) has the most pollutant impairments identified on the 303(d) list of any other water body on the Central Coast, with 19 impairments. Second is Orcutt Creek in Santa Maria (Santa Barbara County) with 15 impairments, but tied for third are the Salinas Reclamation Ditch and Tembladero Slough, each with 14 pollutant impairments. In addition, Quail Creek is listed with 13 impairments, and Old Salinas River Channel is listed with 10.⁴¹ More important than the number of pollutant impairments identified are the magnitude of the problems. Each of these water segments is impaired for toxicity and high levels of pesticides, nutrients and indicator bacteria. Moss Landing Harbor, which lies at the bottom of the Salinas Reclamation Ditch (Gabilan) watershed, is listed for 12 pollutant impairments, including pesticides, toxicity, pathogens, and sediment.

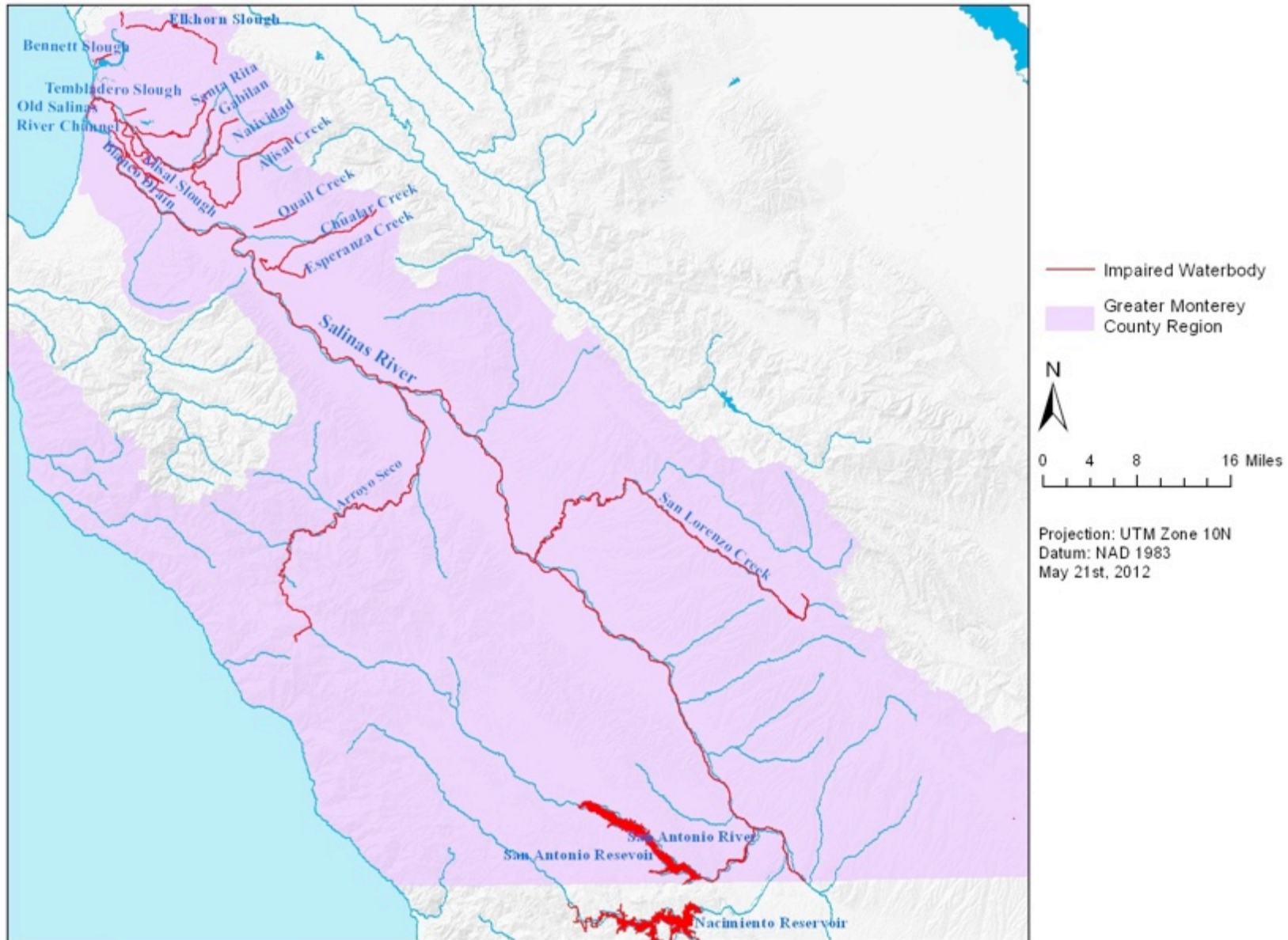
⁴¹ To see the fact sheets for each of these water segments, go to the following link:
http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml

Table B-22: 2014 California 303(D) List of Water Quality Limited Segments in the Greater Monterey County IRWM Region

TO SEE MAP: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

[illegible]

Figure B-23: Impaired Surface Waters in the Greater Monterey County IRWM Region



Central Coast Irrigated Lands Agricultural Order

Many surface water bodies in the Greater Monterey County region, as well as groundwater, are impaired because of pollutants from agricultural sources. Discharges from agricultural lands include surface discharges (also known as irrigation return flows or tailwater), subsurface drainage generated by installing drainage systems to lower the water table below irrigated lands (also known as tile drains), discharges to groundwater through percolation, and stormwater runoff flowing from irrigated lands. These discharges can affect water quality by transporting pollutants including pesticides, sediment, nutrients, salts (including selenium and boron), pathogens, and heavy metals from cultivated fields into surface waters (RWQCB 2012a).

Both regulatory and non-regulatory approaches are being employed in the effort to improve water quality from agricultural sources in the region. In July 2004, the Central Coast RWQCB adopted an order known as the “Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands.” The Central Coast RWQCB extended the 2004 Agricultural Order multiple times, and on March 15, 2012 voted to adopt an updated Irrigated Lands Order (Order No. R3-2012-0011). The 2012 Irrigated Lands Agricultural Order prioritized conditions to control pollutant loading in areas where water quality impairment was documented in the 2010 Clean Water Act section 303(d) List of Impaired Waterbodies, specifically addressing the growing problem of nitrate contamination in the region’s drinking water.

The Agricultural Order mandates all growers within the RWQCB’s jurisdiction who discharge runoff from irrigated agricultural lands to comply with the conditions of the Order. Dischargers are required to implement, and where appropriate update or improve, management practices, which may include local or regional control or treatment practices and changes in farming practices to effectively control discharges, meet water quality standards, and achieve compliance with the Order. Dischargers must also comply with other conditions of the Agricultural Order, including monitoring and reporting requirements. For farms that pose the greatest risk to water quality, growers will be required to develop certified Irrigation and Nutrient Management Plans, Water Quality Buffer Plans if they are adjacent to the most critical creeks, and monitor their individual discharge.

The Central Coast Water Board approved a new Agricultural Order on March 8, 2017. This is a three-year Agricultural Order, which must be replaced by March 7, 2020. The new Agricultural Order is the third Agricultural Order adopted in the central coast region, so is referred to as Ag Order 3.0 (Order R3-2017-0002). Ag Order 3.0 requires groundwater monitoring in 2017. Growers must sample: 1) primary irrigation well located on each ranch, and 2) all domestic wells located on the assessor parcel numbers where the ranch is located. Ag Order 3.0 also expands the Total Nitrogen Applied reporting requirement to include all Tier 2 and Tier 3 ranches that grow any crop with a high potential of loading nitrogen to groundwater.⁴²

Federal and State Stormwater/Urban Runoff Programs

Urban runoff in California is addressed through both state and federal programs: the State’s Nonpoint Source (NPS) Pollution Control Program, and the US EPA’s NPDES Stormwater permit program.⁴³ The State’s NPS Pollution Control Program details how the State will promote the implementation of management measures and BMPs to control and prevent polluted runoff, as required by Section 319 of the federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]). Because of the diffuse nature of polluted runoff, which originates from multiple sources and has a widespread reach, the State’s NPS Pollution Control program has emphasized financial incentives, technical assistance, and

⁴² The 2012 Irrigated Lands Agricultural Order can be viewed at:

https://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/http://www.waterboards.ca.gov/centralcoast/water_issues/programs/ag_waivers/ag_order.shtml

⁴³ Much of this section has been excerpted from the Monterey Regional Storm Water Management Program 2006.

public education, rather than regulatory activities.

Coastal states are also required to develop programs to protect coastal waters from nonpoint source pollution, as mandated by the federal Coastal Zone Act Reauthorization Amendments (CZARA) of 1990. CZARA Section 6217 identifies polluted runoff as a significant factor in coastal water degradation, and requires implementation of management measures and enforceable policies to restore and protect coastal waters. In lieu of developing a separate NPS program for the coastal zone, California's NPS Pollution Control Program was updated in 2000 to address the requirements of both the CWA section 319 and the CZARA section 6217 on a statewide basis.

In 1972, the CWA was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. Although urban nonpoint sources contribute to stormwater runoff, runoff may be channeled into a storm drain and ultimately become a point source. Therefore, stormwater is regulated as a point source under the NPDES permit program.

Phase I of the US EPA's stormwater program was promulgated in 1990 under the CWA. Phase I relies on NPDES permit coverage to address stormwater runoff from: (1) "medium" and "large" MS4s generally serving populations of 100,000 or greater, (2) construction activity disturbing five acres of land or greater, and (3) ten categories of industrial activity. On December 8, 1999, EPA promulgated regulations known as the Stormwater Phase II Final Rule. The Phase II program expanded the Phase I program to include all municipalities within designated urbanized areas, as well as designated small municipalities outside of urbanized areas (generally those with a population of at least 10,000 and/or a population density of at least 1,000 persons per square mile), and operators of small construction sites that disturb between 1-5 acres.

The City of Salinas is the only Phase I MS4 in the Central Coast Region and is covered by an individual NPDES Phase I permit (Order No. R3-2012-0005). Stormwater runoff is generated from various land uses, including urban and agricultural uses, and discharges into the Salinas Reclamation Ditch and the Salinas River. The City's NPDES permit requires the City to reduce the discharge of pollutants in stormwater discharges to the maximum extent practicable (MEP) and protect water quality and beneficial uses. The Order also contains effectiveness assessment measures, including water quality monitoring, detailed BMP assessment requirements, and water quality action levels, designed to provide information about the effectiveness of efforts to reduce pollutant discharges and protect water quality and beneficial uses. In addition, the Order contains requirements for identifying dominant watershed processes that are impacted by stormwater management and are necessary to protect water quality and beneficial uses, and for developing control measures to protect and restore those processes. An emphasis of the Order is on acquiring an understanding of important watershed processes to inform development and stormwater management decisions, and identifying measures for maintaining and restoring watershed processes impacted by stormwater management to protect water quality and beneficial uses that the City will implement in subsequent permit terms (RWQCB 2012d and 2012e).

The City's NPDES Phase I permit was renewed in May 2012. The permit represents the next iterative step in stormwater requirements and includes increased specificity; a blend of water quality monitoring and BMP assessment for evaluating program effectiveness; and commencement of a watershed-based approach to stormwater management (including watershed characterization). Notably, the new permit also includes provisions for the City to pursue IRWM objectives. Specifically, the permit states:

- 3) Aligning Stormwater Management with Related Planning Goals and Requirements
 - a) Integrated Regional Water Management –

- i) Within 12 months of adoption of this Order, the Permittee shall coordinate with other stakeholders to pursue the Environmental Enhancement Objectives of the May 2006 Integrated Regional Water Management Functionally Equivalent Plan Update, or comparable water supply, water quality, and flood protection and flood management goals and objectives of the Integrated Regional Water Management Plan in use, through the Permittee's stormwater management program.
- ii) Within 2 years of adoption of the Order, the Permittee shall identify opportunities to protect, enhance, and/or restore natural resources including streams, groundwater, watersheds, and other resources consistent with the Integrated Regional Water Management Plan. At a minimum, the Permittee shall examine opportunities for stormwater capture and reuse, and stormwater infiltration for aquifer recharge. (RWQCB 2012d, p. 86)

The Phase II NPDES Program is intended to address potentially adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation. Cities within the Greater Monterey County IRWM planning region enrolled under the Phase II General Permit for Stormwater Discharges include King City, Soledad, Gonzales, and Marina.

B.6.3.b Voluntary Water Quality Programs

Agriculture Water Quality Alliance (AWQA)

The MBNMS's Water Quality Protection Program (WQPP) has developed six action plans to address water quality problems in Monterey Bay and its watersheds: *Implementing Solutions to Urban Runoff*; *Regional Monitoring, Data Access, and Interagency Coordination*; *Marinas and Boating*; *Agriculture and Rural Lands*; *Beach Closures and Microbial Contamination*; and *Cruise Ship Discharges*.⁴⁴ Each plan contains a set of voluntary strategies to address the water quality problems specific to the plan. The WQPP has been working in partnership with numerous stakeholder groups in the region to implement those strategies.

The *Agriculture and Rural Lands Action Plan* (Ag Plan) was developed with extensive input from agriculture industry groups, resource agencies, and environmental groups. The plan lays out voluntary strategies for protecting water quality and the productivity of Central Coast agricultural lands through a stewardship approach. These strategies fall into six general categories: identification and adoption of more effective management practices through development of industry networks; expansion and coordination of technical assistance/outreach; public education and public relations; regulatory coordination/permit streamlining for conservation measures; improved funding mechanisms and tax incentives; and strategies for public lands and rural roads.

The Agriculture Water Quality Alliance (AWQA) was initiated in 1999 to carry out the strategies of the Ag Plan.⁴⁵ AWQA is a unique regional partnership that brings together farmers, ranchers, resource conservation agencies, researchers, and agricultural and environmental organizations. Since 1999, AWQA partners have worked together to reduce the runoff of sediments, nutrients, and pesticides from agricultural and rural lands through education and outreach, technical and financial assistance, research and monitoring, permit streamlining, and watershed coordination. AWQA's regional approach focuses on industry-led initiatives and voluntary, collaborative solutions to tackling water quality problems, and as such offers an important non-regulatory approach to improving water quality in the region. AWQA

⁴⁴ Summaries of these actions plans can be found in the *Monterey Bay National Marine Sanctuary Final Management Plan* (MBNMS 2008b).

⁴⁵ See AWQA website at: <http://www.awqa.org/index.html>

partners meet monthly to discuss emerging issues and coordinate projects. The process has led to improved coordination and collaboration of agencies, researchers, non-profits, and industry groups.

With a mix of federal, state, and private funding, AWQA partners have made great strides towards implementing the Ag Plan. Some examples include:

- *Watershed Working Groups:* Through AWQA, farmers and ranchers throughout the region have been establishing management practices on their properties to reduce runoff in the form of sediments, nutrients and pesticides. The Central Coast Agricultural Water Quality Coalition, which represents six County Farm Bureaus whose watersheds drain to the Sanctuary, has been organizing Watershed Working Groups comprised of agricultural landowners and managers along local streams and rivers. These groups work together to identify local water quality issues and implement conservation projects.
- *Irrigation and Nutrient Management Program:* AWQA and a broad suite of partners developed the Central Coast Irrigation and Nutrient Management Program to help farmers implement irrigation and nutrient management practices to address water quantity and water quality concerns in the region. Led by the Central Coast Resource Conservation & Development Council, AWQA has secured millions of dollars in federal financial cost-share assistance under the NRCS Agricultural Water Enhancement Program (AWEP) to support implementation of irrigation and nutrient management practices in Central Coast watersheds. These practices include irrigation system and nutrient management evaluations, improved sprinkler systems, conversion to micro-irrigation, and installation of flow meters, among many others. AWEP is a non-regulatory program; participation is voluntary and confidential.
- *Permit Coordination Programs:* The time, cost, and complexity of navigating the permit process with a host of regulatory agencies can be daunting for landowners seeking to implement conservation projects on their properties. To help farmers, ranchers and other rural landowners overcome these barriers and to encourage implementation of conservation and restoration projects across Sanctuary watersheds, AWQA partners have worked to develop permit coordination programs. Led by Sustainable Conservation, RCDs, and the NRCS, the Partners in Restoration Permit Coordination Programs help landowners to quickly and effectively obtain permits from multiple agencies, and provides technical and cost-share assistance for the installation of certain conservation practices.
- *Education and Outreach:* AWQA developed a Farm Water Quality Planning Short Course through which 70 percent of growers in the region have developed farm water quality management plans for their properties.
- *Confidential Technical and Financial Assistance:* Over the past 10 years the NRCS has assisted growers in the region to voluntarily implement conservation practices through \$18M in Farm Bill support dollars, matched by \$15M of farmer investment in these same practices.

Central Coast Joint Effort for LID and Hydromodification Control

The Municipal NPDES Stormwater Permit requires municipalities to develop performance measures and, in some cases, numeric criteria to manage stormwater. Development of these measures and criteria requires substantial knowledge of urban hydrologic processes; appropriate use of Low Impact Development (LID) techniques; and an understanding of technical, policy and regulatory issues related to implementing municipal stormwater control requirements. The Central Coast RWQCB is providing municipalities the option of participating in a Joint Effort, led by a consultant team, to develop hydromodification control criteria to meet the Water Board's stormwater regulations for new and redevelopment.

While there are various efforts statewide to develop hydromodification control criteria, the focus has generally been on the large Phase I communities. Compared to the Phase I communities, many Phase II communities are small, have fewer resources, and possess less in-house expertise to develop and implement hydromodification controls. By participating in a joint effort led by subject area experts, municipalities will be assisted in moving forward toward optimal water quality protection. Part 1 of the effort will develop a science-based methodology that municipalities on the Central Coast and across the state can use to determine their own specific hydromodification control criteria. Part 2 of the effort includes the technical and modeling analysis required to determine the actual hydromodification control criteria. Municipalities can then propose these resulting hydromodification control criteria to the Central Coast RWQCB to meet the requirements of their NPDES Municipal Stormwater Permit.⁴⁶

Efforts to Improve Groundwater Quality in the Salinas Valley Groundwater Basin

From the MCWRA's beginning in 1947, projects have been designed and developed to address the seawater intrusion issue in the Salinas Valley. Beginning with construction of the Nacimiento and San Antonio reservoirs in 1957 and 1967, respectively, these projects have generally focused on capturing surface water and utilizing that water more effectively.

- **Monterey County Water Recycling Projects:** In 1983, MCWRA received SWRCB funding to evaluate alternatives that would prevent further seawater intrusion. Numerous studies were conducted between 1983 and 1992 to determine the extent of the seawater intrusion and possible solutions. The results of these studies created a series of projects known as the Monterey County Water Recycling Projects, which are joint efforts between MCWRA and [Monterey One Water](#). Landowners of the Salinas Valley agreed to assess themselves to help fund these multi-million dollar projects, creating the Castroville Seawater Intrusion Project (CSIP)—a water recycling facility at the Regional Treatment Plant and a pipeline distribution system to provide recycled water for agricultural irrigation. The project has successfully addressed a portion of the seawater intrusion problem in the Salinas Valley by providing reclaimed wastewater to approximately 12,000 acres of agricultural land near Castroville. The Monterey County Water Recycling Projects have been in operation since April 1998.
- **Salinas Valley Water Project:** The SVWP is MCWRA's most recent project to address the problem of seawater intrusion, designed to transfer water from its reservoirs in the southern part of the Salinas Valley to the northern portion of the groundwater basin. The SVWP was completed in April 2010 and consisted of two main components, the first being the modification of the spillway at Nacimiento Reservoir, and the second being re-operation of the reservoirs and the construction of an inflatable dam diversion structure. The spillway modifications included lowering of the existing spillway, installation of an inflatable dam on the new spillway, and

⁴⁶ For more information on the Central Coast Joint Effort for LID and Hydromodification Control, visit the RWQCB website:
http://www.swrcb.ca.gov/rwqcb3/water_issues/programs/stormwater/docs/lid/lid_hydromod_charette_index.shtml.

enlargement of the spillway chute. The inflatable dam is held in the raised position for normal operations, allowing the reservoir storage to be maintained at its present maximum elevation, and is lowered during large flood events to preclude the dam from overtopping. The second component included the re-operation of the reservoirs and the construction of an inflatable dam diversion structure with associated fish screening and pumping facilities to allow the diversion of Salinas River water into the existing CSIP distribution system. An average of 9,700 AFY of Salinas River is diverted and delivered to the CSIP system, reducing groundwater pumping by the same amount. The water is blended with recycled water, resulting in an improved and more uniform quality of water delivered through the CSIP system. The SVWP also increases groundwater recharge via the Salinas River.

B.6.4 Addressing AB 1249 Requirements

AB 1249 (Salas, Chapter 717, Statutes of 2014) – Water Code §10541 requires IRWM regions with nitrate, arsenic, perchlorate, or hexavalent chromium (chromium-6) contamination to include specific information in their IRWM Plans regarding the location, impacts, actions currently being taken to address the contaminant impacts, and any additional action needed to address the contamination. It also requires grant applications from these regions to include information regarding how the project(s) in their grant application helps to address the contamination or an explanation why the application does not include such project(s). Regions with areas of nitrate, arsenic, perchlorate, or chromium-6 contamination are required to include a description of each of the following:

- The location and extent of that contamination in the region,
- The impacts caused by the contamination to communities within the region,
- Existing efforts being undertaken in the region to address the impacts, and
- Any additional efforts needed to address the impacts.

In 2017-2018, as part of the IRWM Plan update to achieve compliance with 2016 IRWM Guidelines, the RWMG led an effort to address AB 1249 requirements. This effort, funded by Proposition 1 2016 IRWM Planning Grant funds, was led by a project team consisting of the IRWM Program Director, Nilsen and Associates (a consulting company with expertise related to water resources and disadvantaged communities in the local region), and a Technical Advisory Committee (TAC) comprised of staff from the following entities:

- Castroville Community Services District
- Central Coast Regional Water Quality Control Board
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water (EJCW)
- MNS Engineers, Inc.
- Monterey County Environmental Health Bureau, Drinking Water Protection Services
- Monterey County Water Resources Agency
- San Jerardo Cooperative, Inc.

The project team gathered data, information, and applicable maps, developed recommendations based on the data reviewed and existing efforts being taken to address the contaminants, and presented this information to the RWMG for discussion and input at three different RWMG meetings between March 2017 - January 2018. This section describes the results of that effort.

B.6.4.a Background: How Water Systems are Regulated in Monterey County

The State Water Resources Control Board (SWRCB) is the agency responsible for administration and enforcement of the Safe Drinking Water Act in California. The SWRCB Division of Drinking Water regulates public drinking water systems (defined as having 15 or more service connections or regularly serving at least 25 individuals daily at least 60 days out of the year). The State has the authority to delegate primary responsibility for enforcement with regard to community water systems with fewer than 200 connections to county health departments, by means of a local primacy delegation agreement. Monterey County has been delegated local primacy responsibility since 1993.

Monterey County Health Department's Environmental Health Bureau (EHB) regulates Local Primacy Agency (LPA) water systems (serving between 15-199 connections), state small water systems (serving between 5-14 connections), and local small water systems (serving between 2-4 connections) through their Drinking Water Protection Services program. State small and local small systems are regulated through the EHB's Small Water System Program. Private domestic wells are not regulated by the State. The County requires one-time nitrate testing of newly installed private domestic wells, but there are no additional County requirements.

A Word about Hexavalent Chromium: Since the time that AB 1249 was enacted into law (September 2014), the Superior Court of Sacramento County issued (on May 31, 2017) a judgment invalidating the hexavalent chromium maximum contaminant level (MCL) of 10 µ/L that was adopted as a regulatory standard for drinking water on July 1, 2014. The court ordered the SWRCB to take the necessary actions to delete the chromium-6 MCL standard from the California Code of Regulations. As of September 11, 2017, the MCL for chromium-6 is no longer in effect. The court's primary reason for invalidating the MCL is that the California Department of Public Health "failed to properly consider the economic feasibility of complying with the MCL" when adopting the MCL. The court did not make any finding about whether the MCL adequately protected public health, nor did it reach a conclusion about whether the MCL was too low or too high. The court merely found that the department did not adequately document why the MCL was economically feasible. As the successor agency to the California Department of Public Health, the SWRCB will be establishing a new MCL for chromium-6, which will be between the chromium-6 public health goal (PHG) of 0.02 µ/L and the total chromium MCL of 50 µ/L. Both the chromium-6 PHG and the total chromium MCL remain unchanged by the May 31, 2017 court ruling.

Because chromium-6 remains present in the water supply of many public water systems, and continues to pose a threat to public health, the TAC and RWMG chose not to alter its approach in addressing AB 1249 requirements based on the new court ruling, and continues to use the former MCL of 10 µ/L as a "benchmark" for contamination of chromium-6 in the region.

B.6.4.b Addressing the Four Requirements of AB 1249

1) Location and extent of contamination in the region

Section B.6.1.d (Groundwater Quality) previously in this Chapter describes the problem of nitrate in groundwater in Monterey County quite extensively. This section focuses more specifically on the contamination of drinking water systems (all of which use groundwater as their exclusive source for drinking water supply). Because very little groundwater quality data for private domestic wells exist (at the time of this writing), this section does not address private domestic wells. Given the number of rural residents throughout the County that rely on private domestic wells for their drinking water supply and the known extent of groundwater contamination, especially in the Salinas Valley and North County areas, it can be assumed that the actual extent of contamination by arsenic, nitrate, and chromium-6 is more

substantial than described in this section.

Data was collected to determine the location and extent of nitrate, arsenic, chromium-6, and perchlorate contamination within the region. Data sources included:

- SWRCB Division of Drinking Water (for water systems serving 200+ connections)
- Monterey County Health Department (for water systems serving 2-199 connections)
- GeoTracker Groundwater Ambient Monitoring and Assessment (GAMA) online information system (SWRCB)
- United States Geological Survey (USGS) domestic well survey
- Samples collected by EJCW and Community Engineering Corps during the Salinas Valley/Greater Monterey County Disadvantaged Community Water and Wastewater Planning Project (described briefly below, and in Chapter P Stakeholder Involvement)

Results of the data search indicated contamination within the Greater Monterey County IRWM region includes nitrate, arsenic, and chromium-6. Perchlorate has not been identified as an issue at this time; however, Monterey County EHB staff continue to monitor for potential exceedances.

For public drinking water systems serving 200+ connections in Monterey County, SWRCB data as of March 2017 showed no exceedances for perchlorate, nitrate, or arsenic. One system (Sunny Mesa Water System, owned by Pajaro Sunny Mesa Community Services District) was shown to exceed the MCL for chromium-6.⁴⁷ The SWRCB is working with that system to address the contamination.

The Monterey County Drinking Water Protection Services administers LPA, state small, and local small water systems, including 276 LPA systems, 276 state small systems, and 694 local small systems.⁴⁸ Table B-23 summarizes the number of LPA, state small, and local small water systems that are out of compliance for nitrate and/or arsenic, or that exceeded the former MCL for chromium-6 in Monterey County based on October 2017 Monterey County EHB data. Table B-24 provides details about the LPA water systems.

A total of 162 small water systems (2-14 connections) exceed the MCL for nitrate (10 mg/L NO₃-N), 81 exceed the MCL standard for arsenic (10 µ/L), and 165 exceed the former MCL standard for chromium-6 (the former MCL was 10 µ/L and the current public health goal is 0.02 µ/L). The highest level of nitrate detected was 96.3 mg/L NO₃-N. The highest level of arsenic detected was 118 µ/L. The highest level of chromium-6 detected was 49 µ/L.

Nineteen LPA systems are out of compliance for nitrate, and 10 LPA systems are out of compliance for either arsenic or arsenic and cadmium. Note, EHB staff reported that 10-15 systems exceed the former chromium-6 MCL standard (10 µ/L);⁴⁹ however, these systems were not specifically included in the data provided by EHB, given the recent change in the State standard for chromium-6.

⁴⁷ Personal communication between IRWM Program Director Susan Robinson and Jan Sweigert, State Water Resources Control Board Division of Drinking Water, District Engineer for Monterey County, dated March 24, 2017.

⁴⁸ See Monterey County Health Department website (<http://www.mtyhd.org/index.php/services/environmental-health/small-water-system-program/>) and Central Coast Regional Water Quality Control Board website (http://www.swrcb.ca.gov/centralcoast/water_issues/programs/gap/index.shtml).

⁴⁹ Email communication with Cheryl Sandoval, March 30, 2018.

Table B-23: Number of LPA (15-199 Connections) and Small Water Systems (2-14 Connections) in Monterey County Exceeding Arsenic, Nitrate, or Chromium-6 Standards

	Arsenic	Nitrate	Chromium-6
LPA (15-199 connections)	10 (4%)	19 (7%)	10-15 (see note above)
State Smalls (5-14 connections)	29 (11%)	39 (14%)	59 (21%)
Local Smalls (2-4 connections)	52 (7%)	123 (18%)	106 (15%)

Source: Monterey County Environmental Health Bureau, data dated October 2017.

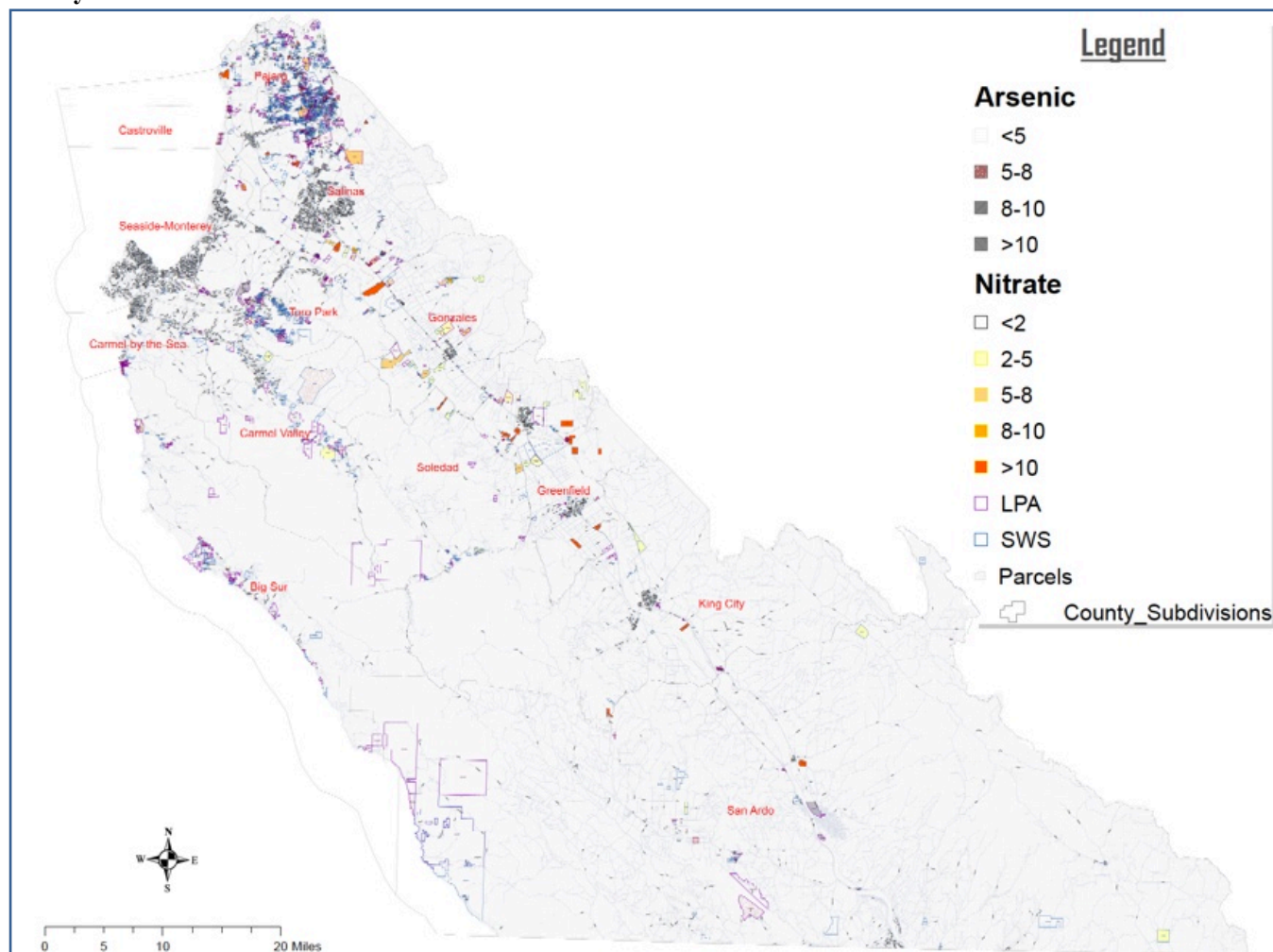
Table B-24: LPA Systems in Monterey County Exceeding Arsenic or Nitrate Standards

System No.	System Name	# of Connections	Population	MCL Violation	Status
2700536	Corral de Tierra Estates WC	16	45	Arsenic	
2702030	Cypress Community Church	4	200	Arsenic	
2702550	Grange Hall WS	1	25	Arsenic	
2702009	Laguna Seca Rec WS	1	500	Arsenic	
2700612	Laguna Seca WC	57	162	At Arsenic MCL	Currently in compliance. Additional monitoring being done to confirm compliance.
2701296	Moro Rd #9	70	210	Arsenic	
2700702	Prunedale MWC	84	252	Arsenic	Has treatment, had previous issues, but upgraded system and recent samples are acceptable
2702370	SPCA WS	8	50	Arsenic	Treatment is failing
2701959	Tierra Vista MWC	19	57	Arsenic	Installed treatment - going through start-up
2701221	Washington School	1	250	Cadmium, Arsenic	Construction plans approved
2700799	Vista Del Toro WS	29	87	Cadmium, Arsenic	
2702616	Altman Plants WS #2	3	25	Nitrate	
2701036	Apple Ave WS #3	20	60	Nitrate	Consolidating with City of Greenfield
2700964	Bradley Union School			Nitrate	
2702409	El Camino WC	31	90	Nitrate	
2702452	El Camino Machine and Welding			Nitrate	
2701241	Encinal Rd WS #1	18	41	Nitrate	
2700686	Garlen Ct WS	23	69	Nitrate	
2701542	Gonzales 76 Station WS	2	200	Nitrate	Working on approving treatment plant
2701153	Growers Transplant			Nitrate	Treatment installed, but needs to upgrade
2702621	Iverson Road WS #3	1	40	Nitrate	Treatment installed, needs to finalize operations plan
2701040	McCoy Rd WS #5			Nitrate	
2700665	Oak Heights WS	35	105	Nitrate	Installed dedicated pipeline to tank. Working on op plan.
2701063	River Rd WS #25	19	65	Nitrate	Consolidating with City of Gonzales
2701676	San Lucas WD			Nitrate	
2700738	San Miguel WS #1	34	100	Nitrate	
2702466	San Vicente MWC			Nitrate	
2701176	Soledad Mission WS			Nitrate	
2701726	Spence Rd WS 05			Nitrate	
2700771	Springfield MWC	42	200	Nitrate	

Source: Monterey County Environmental Health Bureau, data dated October 2017.

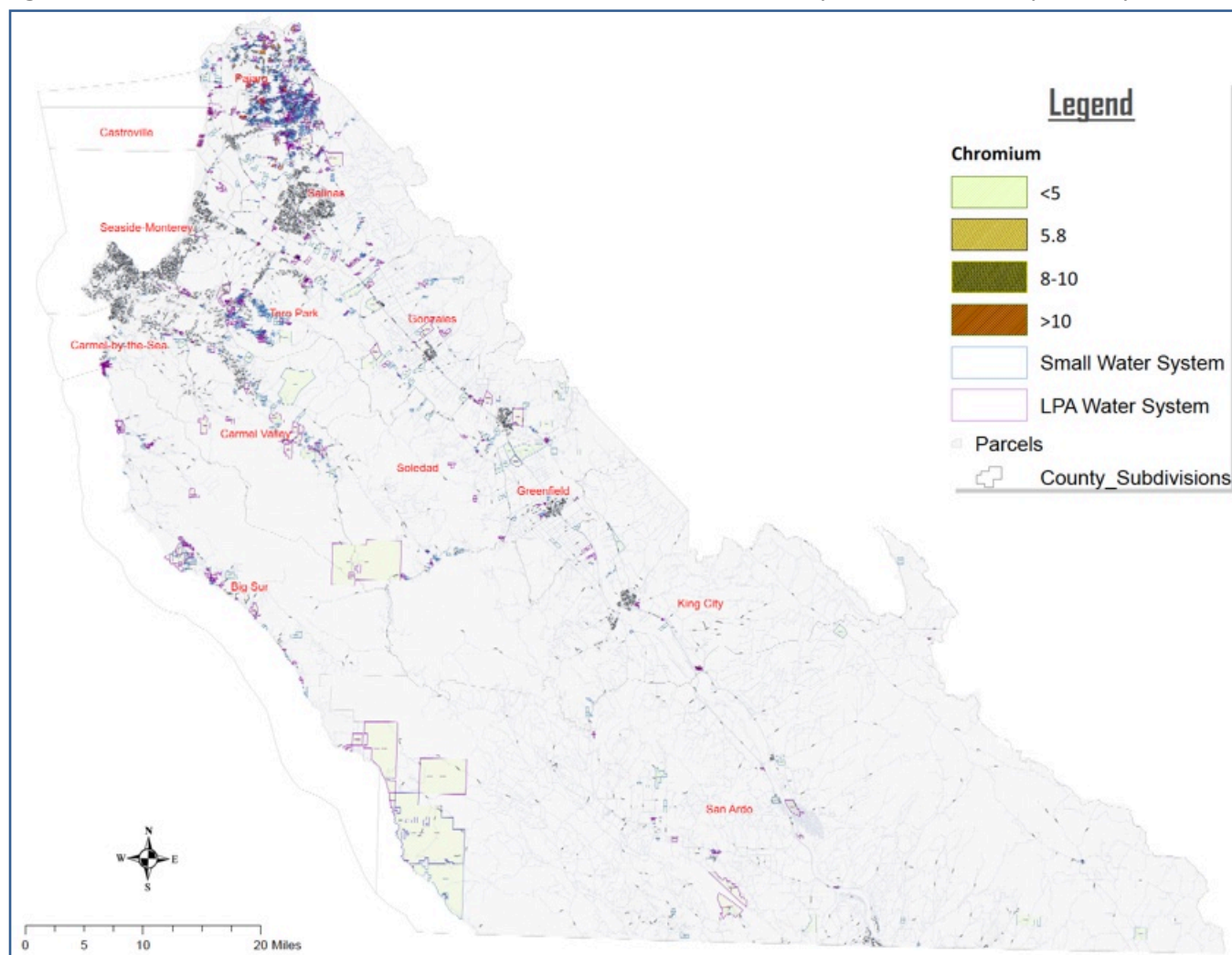
The Monterey County EHB has developed large-scale high-resolution data maps that show the location of contamination for LPA systems and small water systems in the County. The maps allow users to zoom in to street level in order to see water system boundaries. The map files are too large to include in this chapter, but Figures B-24 and B-25 provide low-resolution images of the maps as an example. The maps can be obtained from the Drinking Water Protection Services at Monterey County EHB.

Figure B-24: Location of Nitrate and Arsenic Contamination in Small Water Systems in Monterey County.



Source: Monterey County EHB. March 2017.

Figure B-25: Location of Chromium-6 Contamination in Small Water Systems in Monterey County



Source: Monterey County EHB. March 2017.

2) Impacts caused by the contamination to communities in the region

Drinking water contamination by arsenic, nitrate, or chromium-6 can cause potentially serious health effects. Many individuals, especially those who rely on private domestic wells, may be unaware of the quality of their drinking water and may have been consuming contaminated water for many years. The costs associated with addressing contaminated drinking water wells can result in significant economic impacts, which are particularly onerous for low-income individuals and economically disadvantaged communities. Municipalities, water districts, and water purveyors are incurring significant costs to replace contaminated wells, and ongoing water treatment can be even more costly. Individual homeowners also face substantial costs to replace wells, treat their water, or buy bottled water.

3) Existing efforts being undertaken in the region to address the impacts

The Central Coast Regional Water Quality Control Board (RWQCB), the agency with primary regulatory authority over groundwater quality in the Central Coast region, has implemented several programs to address the causes of nitrate contamination. As described in Section B.6.3.a (Regulatory Water Quality

Programs), the Irrigated Lands Agricultural Order (Ag Waiver) mandates all growers within the RWQCB's jurisdiction who discharge runoff from irrigated agricultural lands to implement, or improve, management practices, to effectively control discharges, meet water quality standards, and achieve compliance with the Ag Waiver. While the RWQCB works to address the causes of contamination, other efforts are underway to address impacts. This section briefly describes some of those efforts.

Monterey County EHB: Monterey County EHB, as a regulatory agency, is tasked with identifying drinking water contamination, ensuring that water system owners are aware of identified problems, informing the water customers/users of contamination problems and providing them with guidance on how to protect themselves. However, it is not specifically within the EHB's mission to help develop or implement drinking water solutions. The Monterey County EHB staff regularly update data and maps to identify nitrate, arsenic, and chromium-6 contamination in small drinking water systems throughout the county.

Central Coast RWQCB: The RWQCB has recently initiated a private well water quality testing program. The well sampling program focuses on private individual household and local/state small drinking water systems, and is a free and voluntary program that will provide testing for nitrate, arsenic, chromium-6, 1,2,3-trichloropropane, perchlorate and general minerals. Priorities of the program are: 1) to provide information to well owners about the safety of their drinking water, along with information on how to interpret testing results, how to address contamination, and other supporting services; 2) to improve the RWQCB's understanding of water quality with respect to beneficial uses in the region (specifically with regard to small water systems). The RWQCB is focusing on individuals in rural and peri-urban areas not served by public water systems through direct mailings and other outreach activities. Funding is currently available to sample about 1,000 wells. The program was launched in early 2018 and will run through at least the end of 2019. Additional information about the program is available at: <https://sites.google.com/view/ccgroundwater>.

Interim Replacement Water Settlement Agreement: In March 2017, the SWRCB's Office of Enforcement and the RWQCB signed an agreement – referred to as the Interim Replacement Water Settlement Agreement –with a coalition of Salinas Valley growers, landowners, and shippers (i.e., Salinas Basin Agricultural Stewardship Group). The settlement agreement temporarily exempts members of the coalition from replacement water related enforcement actions in exchange for providing replacement drinking water to residents with nitrate contaminated drinking water wells within areas of the Salinas Valley as defined by the boundaries of the Upper Valley Aquifer, Forebay Aquifer, East Side Aquifer and 180/400 Aquifer subbasins of the Salinas Valley Groundwater Basin. The Salinas Basin Agricultural Stewardship Group has agreed to supply bottled water for up to two years to customers of qualifying LPA water systems, small water systems, and private domestic wells. The program targets financially disadvantaged communities and individuals during the first year and will include all communities, individuals and water systems regardless of economic status if the program extends into a second year.

As part of the settlement agreement, the Stewardship Group agreed to provide replacement water to a minimum of 58 total systems/wells (including three LPAs, 42 small water systems, and 13 private domestic wells identified in the settlement agreement) during the first year of implementation. The Stewardship Group also agreed that any disadvantaged person whose domestic well tests above the safe drinking water level for nitrate may opt in to the program and be provided replacement water at no cost. More information regarding the settlement agreement and associated replacement water program are available at:

https://www.waterboards.ca.gov/water_issues/programs/enforcement/salinas_valley_nitrate.shtml.

Greater Monterey County IRWM: The Stakeholder Involvement Chapter of this IRWM Plan (Chapter P, see Section P.2.6) briefly describes a recent RWMG effort, completed in September 2017, to address

drinking water and wastewater issues of disadvantaged communities within the Greater Monterey County IRWM Region. The resulting report, *Integrated Plan to Address Drinking Water and Wastewater Needs of Disadvantaged Communities in the Salinas Valley and Greater Monterey County IRWM Region* (Disadvantaged Community Plan), has been incorporated into this IRWM Plan as Appendix P.

The Disadvantaged Community Plan addresses nitrate, and to a lesser extent, arsenic contamination in disadvantaged communities with small water systems (2-14 connections) and/or private wells in unincorporated areas of the county. The RWMG planning team identified over 20 disadvantaged and suspected disadvantaged communities with potential drinking water and/or wastewater problems. Of those communities, seven were selected for further in-depth investigation. The team worked in partnership with the Community Engineering Corps (CECorps), an alliance of the American Society of Civil Engineers, the American Water Works Association, and Engineers Without Borders-USA, to identify and evaluate solutions for each of the seven selected high priority communities. The plan describes the water problems and alternative long-term options for each of the seven communities, along with recommended solution(s), potential barriers, community preference (if any), and recommended next steps.

The planning team has been able to continue its work to identify drinking water problems and develop solutions for disadvantaged communities in the IRWM region with financial assistance from IRWM Proposition 1 Disadvantaged Community Involvement funds (beginning in 2018). These funds will enable the team to bring projects for several of the high priority communities closer to construction. It is anticipated that Proposition 1 IRWM Implementation Grant funds will be used, in part, to help implement the resulting solutions.

One of the outcomes of the Disadvantaged Community Plan planning effort was the development of a new data viewing platform. The Greater Monterey County Community Water Tool is a powerful tool for the Greater Monterey County RWMG, local agencies, and non-profit community assistance organizations to identify “hot spots” of contamination and to evaluate options for potential consolidation of small disadvantaged communities with nearby water utilities. The mapping tool includes water quality layers for chromium-6, arsenic, and nitrate. The RWMG anticipates using this mapping tool into the foreseeable future to identify disadvantaged communities with drinking water problems, and if funding permits, to work toward developing potential solutions. The Community Water Tool can be viewed at: <http://www.arcgis.com/apps/View/index.html?appid=1aea37e5150c425f987bd7129ad40a53>

4) Any additional efforts needed to address the impacts

The TAC and RWMG engaged in numerous discussions over the course of the 2017-2018 IRWM Planning Grant period to develop a “plan of action” for addressing AB 1249 requirements. Several possible “solutions” were considered, but given the complex nature of the problem and various obstacles associated with implementing solutions, no conclusive “plan of action” was developed to address this very pervasive public health problem. Nonetheless, one need was clearly identified: the need for a single entity (or “working group”) to either implement or coordinate the various funding, outreach, planning, design, permitting and construction activities required to achieve both interim and long-term drinking water solutions for disadvantaged communities, and to help facilitate ongoing operation and maintenance of drinking water systems. More often than not, disadvantaged communities lack the basic technical, managerial and financial (TMF) capacity and legal entity status to be eligible for funding opportunities, or operate and maintain a functional water system that is not contaminated. Therefore, a support network is desperately required to help disadvantaged communities develop the capacity needed to achieve safe and affordable drinking water solutions.

The TAC identified a gap between the regulation of drinking water and the implementation of solutions. Monterey County EHB regulates drinking water systems with 2-199 connections, the SWRCB regulates systems with 200+ connections, and the Central Coast RWQCB has regulatory authority over groundwater quality; there is currently no entity or group of entities that has an expressed mission to implement solutions to address identified drinking water problems for communities impacted by contaminated groundwater. This is particularly true for small communities in unincorporated areas of Monterey County.

At the January 2018 RWMG meeting, the project team presented the following recommendations: 1) the RWMG should make formal presentations to the County Board of Supervisors and to the RWQCB and SWRCB members and staff to highlight data and key conclusions from the Disadvantaged Community Plan and results of the AB 1249 work; and 2) the RWMG should request the County's support in coordinating a "Coalition of Entities" to develop and implement a plan of action to address the problem, along with a modest amount of funds to convene the working group and develop a general strategy for addressing the problem. Suggested agencies and organizations for a Coalition of Entities include:

- Monterey County EHB staff member
- Monterey County Public Works staff member
- State Board staff member
- Regional Board staff member
- Salinas Valley Basin Groundwater Sustainability Agency staff member
- Municipalities
- Water Purveyors
- EJCW
- Rural Community Assistance Corporation

In February 2018, the Disadvantaged Community Plan project team made a formal presentation to the RWQCB, highlighting key findings and recommendations of the Plan. Key findings included, among other things, the difficulty in finding qualified sponsors for drinking water projects for small disadvantaged communities. (The lack of project sponsorship poses a common and significant barrier to implementing drinking water solutions for small communities throughout the region, as well as statewide.) The project team requested that the RWQCB provide staff support to work with the project team to address problems with project sponsorship. The RWQCB was receptive to that request, and referred the recommendations to their staff for follow up.

The Monterey County Board of Supervisors has been informed about the health crisis associated with nitrate contaminated drinking water systems via communications with RWQCB staff, County EHB staff, and EJCW. While many feel the County should play a leading role in addressing the problem, County representatives have noted on numerous occasions that County resources are limited. It is also unclear which County division would have the capacity, or would be most appropriate, to take the lead. While EHB staff see their role clearly as "regulator" rather than "implementer of solutions," the County Public Works department has on occasion stepped in to help implement drinking water or wastewater solutions for small communities (though due to certain burdens associated with taking on that role, they are understandably reluctant to do so on a regular basis). The County Health Department, under the direction of the County Health Officer, may be a logical starting place for County involvement in developing a solution.

Members of the Disadvantaged Community Plan project team have engaged in conversations with individual members of the Board of Supervisors to discuss these issues. While viable options exist, no agreed upon path forward has been developed. The RWMG plans on pursuing communications with the

RWQCB as well as with the County Board of Supervisors to seek their assistance, where appropriate. Assistance may potentially include obtaining County or RWQCB support in seeking the assistance of the SWRCB or local legislators to provide State funding for implementing solutions.

B.6.5 Matching Water Quality to Water Use

Matching water quality to water use is a management strategy used to optimize the efficient use of water supplies. An example of matching water quality to water use is a water supplier choosing to use a deeper, cleaner aquifer for municipal water, which requires less treatment before delivery (resulting in potentially fewer disinfection byproducts and less energy), over a more shallow, more contaminated aquifer. Recycled water can also be treated to a wide range of purities that can be matched to different uses.

In the Greater Monterey County region, water is currently reclaimed and treated for agricultural irrigation purposes. A water recycling facility was constructed at the Regional Treatment Plant in 1998 along with a pipeline distribution system to provide recycled water for agricultural irrigation. The distribution of the recycled water occurs via CSIP. As noted above, the CSIP has successfully addressed a portion of the seawater intrusion problem in the Salinas Valley by providing reclaimed wastewater to approximately 12,000 acres of agricultural land surrounding Castroville, which greatly reduces groundwater extraction for crop irrigation.

In addition, two water suppliers within the region are preparing (or proposing) to use recycled water for municipal landscaping purposes. While the CSIP effort uses almost all the recycled water from the regional generating facility during the summer months, the Marina Coast Water District does have recycled water rights to a small fraction of the summer-time recycled water flows and is proposing to distribute that recycled water to regional golf courses, municipalities, and institutions (e.g., CSUMB) for the irrigation of large landscapes and public common areas. In addition, the City of Soledad is in the process of completing Phase II of the Soledad Water Reclamation Project (with support from Round 1 Proposition 84 IRWM Implementation Grant funds), which includes completion of design of a recycled water delivery system to both agricultural and recreation areas in and near the City of Soledad, and composting municipal sludge for reuse on City landscaping.

The potential exists to treat recycled water to a drinking water standard if the need should arise in the future, though this is not practiced currently.

B.7 MAJOR WATER-RELATED ISSUES AND CONFLICTS

The following list highlights the issues and conflicts related to water resource management that have the most regional significance within the Greater Monterey County IRWM region. This list was developed as a basis for developing the goals and objectives for the Greater Monterey County region for the purpose of IRWM planning (see Section D, Objectives).

The list of issues and conflicts was developed in several stages. A committee comprised of RWMG members was formed in May 2009 to investigate and identify the region's issues and conflicts. The committee interviewed 43 local experts in the areas of water quality, water supply, flood control, natural resources, and public health and safety. Based on those interviews, the committee developed a summary list of water-related issues and conflicts in the Greater Monterey County IRWM region. The list was expanded at a RWMG brainstorming session, and then presented to stakeholders for input at two public workshops held in Big Sur and Soledad in September 2009. After incorporating stakeholder input, a final list of "issues and conflicts" – outlined below – was approved by the RWMG in October 2009.

Water Quality

- Drinking water quality impairments, particularly in small communities in North and South County (including both private and municipal wells)
- Groundwater quality impairments due to seawater intrusion
- Surface and groundwater quality impairments due to runoff (agricultural and urban sources, including municipal outflows/stormwater), including:
 - Nitrates and other nutrients from agriculture, livestock management, septic system failures, and urban sources
 - Sediment (due to land use practices, including construction, agricultural practices, and poorly constructed/maintained roads)
 - Pesticides
 - Metals (e.g., mercury, arsenic, chromium, copper, zinc)
 - Bacteria
 - Salts
 - Trash
 - Unknown impairments in surface waters and ocean from emerging pollutants such as pharmaceuticals, personal hygiene products, etc.
- Agricultural food safety issues impacting water quality
- Impacts to marine environment
- Data gaps as outlined in the Strategic Plan for Central Coast Water Quality Monitoring Coordination and Data Synthesis (e.g., long-term data sets for trend analysis, improved dissemination of data results)
- Public recreation vs. water quality in reservoirs and rivers/creeks
- Challenges for small water system managers in complying with water quality regulations
- Need for increased public education about water quality issues
- Need for more enforcement of existing water quality regulations
- Lack of effective incentive structure (including economically feasible management practices) for protecting water quality from agricultural runoff

Water Supply

- Water supply problems associated with water quality impairments, particularly:
 - Seawater intrusion
 - Nitrates
- Problems with water storage and conveyance infrastructure (inadequate, leaky, or otherwise defective water systems, particularly in regard to small water systems)
- Overconsumption/overdraft
 - Irrigation
 - Municipal supplies (including landscaping)
- Water supply unreliable in certain areas, particularly in small communities

- Need/opportunities for increased water conservation (including gray water re-use, rainwater catchment)
- Environmental water needs (fisheries, wildlife)
- Drought management
- Need for increased public education about water supply issues

Watershed Management and Flood Management

- Data gaps (need for overall watershed resource assessments)
- Need for monitoring programs to assess effectiveness of projects and/or policies
- Regulatory and intergovernmental issues:
 - Interagency coordination
 - Conflicting mandates and regulations
 - Problems with regulatory compliance
 - Inconsistent enforcement of regulations
- Stormwater management/municipal drainage
- Impacts of wildfires (including water supply and water quality, debris flows)
- Need to protect and restore functioning watersheds
- Conflicts regarding flood control projects (particularly in regard to Salinas River Channel maintenance programs)
- Need to better educate rural landowners about land management/development practices that affect water resources)

Environmental Resources

- Hydrologic modifications of wetlands, streams, estuaries and lagoons impact the preservation and quality of habitat by affecting circulation (water quality), habitat structure (geomorphology), and the exchange of energy and nutrients.
- Food safety issues impacting wildlife and habitat protection
- Steelhead, specifically:
 - Sustaining flows
 - Fish passage
 - Habitat (including problems caused by erosion and invasive species, e.g., sticky eupatorium weed)
- Other special status species:
 - Protection
 - Habitat restoration
- Data gaps (while noting stakeholder concern for potential “regulatory creep” with collection of new data), including especially:
 - Surface water quality
 - Sources of erosion (especially in Big Sur)

- Environmental water needs
- Invasive species (i.e., Arundo, Cape ivy, zebra mussels)
- Upland riparian habitat

Climate Change

- Anticipated changes in rain patterns and intensity adding to the uncertainty of water supply and to creek instability
- Potential impacts from sea level rise and storm surges on coastal aquatic resources and water infrastructure
- Exacerbation in saltwater intrusion in groundwater basin from sea level rise
- Anticipated increase in number and severity of wildfire events, with subsequent erosion and water quality problems
- Potential increase in flooding due to climate change

Disadvantaged Communities

- Water quality and water supply reliability problems in certain small communities
- Inadequate wastewater treatment in some disadvantaged communities
- Need for increased public education in disadvantaged communities
- Flood impacts from small and large watersheds

Miscellaneous

- Need for increased academic training and job recruitment in local water resource management sectors

Section C: Flood Management

Flood management is an important part of Integrated Regional Water Management (IRWM) planning. The Proposition 84 IRWM Grant Program encourages implementation projects that improve flood management, particularly projects that support integrated flood management. Integrated flood management is one of the Statewide Priorities for the IRWM Grant Program. Preference is given to proposals that contain projects that promote and practice integrated flood management to provide multiple benefits including:

- Better emergency preparedness and response
- Improved flood protection
- More sustainable flood and water management systems
- Enhanced floodplain ecosystems
- Low Impact Development (LID) techniques that store and infiltrate runoff while protecting groundwater

A separate allocation of IRWM Grant Program funds also exists under Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act of 2006. To be eligible for grant funds under Proposition 1E, a project must be included in an adopted IRWM Plan, must be designed to manage stormwater runoff to reduce flooding, and must yield multiple benefits, including groundwater recharge, water quality improvement, ecosystem restoration and benefits, and/or reduction of instream erosion and sedimentation.

Flood management is considered to be an integral part of the collective water management system in the Greater Monterey County IRWM region. It is discussed briefly in the Region Description section (Section B.3.3.e Floodwater and Flood Management) and is discussed separately in this section to allow for a more in-depth review. This chapter describes the current framework for flood management in the Greater Monterey County IRWM region and identifies the potential for integrated flood management. *Note that most of the information in this chapter has been either excerpted or summarized from the Monterey County Floodplain Management Plan Update 2008 (MCWRA 2008).*

C.1 HISTORIC FLOODING

As population and urbanization increase in a region, so does flood risk. Increased impervious surfaces and channelization of streams results in increased runoff and intensified flood flows; and increased development in floodplains, including houses, buildings, and agricultural fields, puts more property and lives at risk for flooding. The damages caused by flooding in the Salinas Valley today—even with the construction of major flood control infrastructure—are far more substantial than they were a century ago. Along the Big Sur coast, streams and rivers draining the steep coastal mountains are subject to short, intense floods, capable of producing significant damage to property. Wildfires also exacerbate flood risk in Big Sur, denuding areas of vegetation, which can lead to increased sheet flow and greater velocities during subsequent rainstorms, and causing water quality problems in coastal waters.

Historic records from 1911-2007 show flooding and flood damage to have occurred on a fairly regular basis (every few years) within Monterey County. The County experienced severe damages in:

- 1969: Two distinct floods, each of which resulted in Monterey County being declared a disaster area;
- 1978: A series of storms emanating from a southerly direction, causing extensive beachfront and coastal damage;
- 1983: “El Niño” storms that brought an extremely unusual series of high tides, storm surges, and storm waves along the coast, and heavy rains causing extensive flooding and erosion in the

Salinas Valley;

- 1995: A second significant winter storm that brought devastating flooding and extensive damage throughout the County, and in particular the Pajaro community where life was lost and extensive damage occurred in both Santa Cruz and Monterey counties; and
- 1998: A series of “El Niño” winter storms that hit various parts of California. In Monterey County there were impacts to agricultural lands and to the City of Salinas. Several communities were evacuated and Monterey County was declared a disaster area by the Federal Emergency Management Agency (FEMA).

In the 1998 storm event, the Las Lomas area experienced severe damage of eight residential parcels. Monterey County acquired the parcels through the Federal Hazard Mitigation Grant Program and all structures were removed. Each parcel was subsequently rezoned to “open space” in perpetuity. Countywide losses from that storm were estimated at over \$38 million, with agriculture-related losses totaling over \$7 million and involving approximately 29,000 damaged acres.



Flooding on the Salinas River, March 1995, looking south toward Castroville. Used by permission from MCWRA.

C.2 FLOOD MANAGEMENT

The agency with primary responsibility for floodplain management in Monterey County is the Monterey County Water Resources Agency (MCWRA). The MCWRA also has responsibility for flood control in benefit assessment areas. Flood control also falls under the authority of municipalities throughout the region, which are responsible for storm drain maintenance and surface water disposal. In addition, several

other organizations—most notably the Resource Conservation District (RCD) of Monterey County and the Natural Resources Conservation Service (NRCS)—contribute significantly to flood control and floodplain management efforts in the region through sediment and erosion control programs and grant incentives, though they have no jurisdictional flood control authority per se.

The MCWRA employs both structural and non-structural approaches to flood control and floodplain management in the county.

C.2.1 Structural Approaches to Flood Management

The flood control infrastructure in the Greater Monterey County region is considered a critical component of the region's overall water management system, providing not only flood control protection but water supply and recreational benefits as well. Existing flood control infrastructure within the Greater Monterey County IRWM region includes the Nacimiento and San Antonio Dams, constructed in 1957 and 1967 respectively. Note that there are no federally constructed (i.e., U.S. Army Corps of Engineers) flood control structures in the Greater Monterey County IRWM planning region (though the Pajaro levee system, in northern Monterey County and located within the Pajaro River Watershed IRWM planning region, is a federally constructed system).

Nacimiento Dam is a large earthfill dam originally constructed for flood control, water conservation, water supply (including percolation into the Salinas Valley aquifer), and recreation. It also provides water supply and recreation activities to San Luis Obispo County. The dam is located in San Luis Obispo County but is owned and operated by MCWRA, and provides an important source of water supply for the Greater Monterey County IRWM region. The drainage basin for Nacimiento Reservoir covers 324 square miles with half the basin in Monterey County and half in San Luis Obispo County.

The Nacimiento Reservoir has a minimum pool volume of 22,300 AF and a conservation pool of 237,700 AF. Flood protection is provided by reserving storage capacity in the reservoir (known as the “flood pool”) to temporarily store flood water during the winter. The flood pool storage is 117,900 AF, and is located between elevation 777 feet and the top of the spillway, elevation 800 feet. Lake Nacimiento has spilled three times since its construction in 1957; spilling occurred in 1958, 1969, and 1983. The Nacimiento Spillway was modified as part of the Salinas Valley Water Project in 2009. Modifications to the spillway include lowering of the existing spillway, installation of an inflatable dam on the new spillway, and enlargement of the spillway chute. The modifications were necessary to enable the dam's spillway to release enough water in the event of a large storm event to ensure flood protection and safety of the dam. The adjustable spillway crest also allows for greater storage flexibility, which has resulted in an ability to store more water in the reservoir. Since modification of the spillway, Nacimiento has spilled one additional time in 2011—after which the reservoir was at full capacity on April 1.



Nacimiento Dam (used by permission from MCWRA)

San Antonio Dam is an earthfill dam that is also owned and operated by MCWRA. Like the Nacimiento Reservoir, the San Antonio Reservoir is a multi-use facility operated for flood control, water supply (including groundwater percolation), and recreation uses. The dam is located approximately 7 miles southwest of Bradley on the San Antonio River in Monterey County, and has a 330 square mile watershed. The reservoir has minimum pool storage of 23,000 AF. During the 1980s, the storage required by the Flood Rule Curve of the reservoir was increased to allow safe passage of the Probable Maximum Flood (PMF), resulting in less water conservation storage. More recent analysis of the PMF was performed using extensive data obtained during the March 1995 event, and showed that the San Antonio Dam spillway could safely pass the PMF. In July 2000, the MCWRA Board of Directors adopted a new Flood Rule Curve increasing the water conservation pool to 282,000 AF and reducing the flood pool storage to 30,000 AF. When the lake is full (spillway elevation 780 feet), it has a maximum storage capacity of 335,000 AF. The maximum elevation during flood stage is 802 feet, with a maximum temporary capacity of about 477,000 AF and a temporary surface area of about 7,500 acres. Almost 2,050 cubic feet/second (cfs) were discharged through the outlet works on March 4, 1971, and three small spills have since occurred (in 1982, 1983, and 2006).



San Antonio Dam (used by permission from MCWRA))

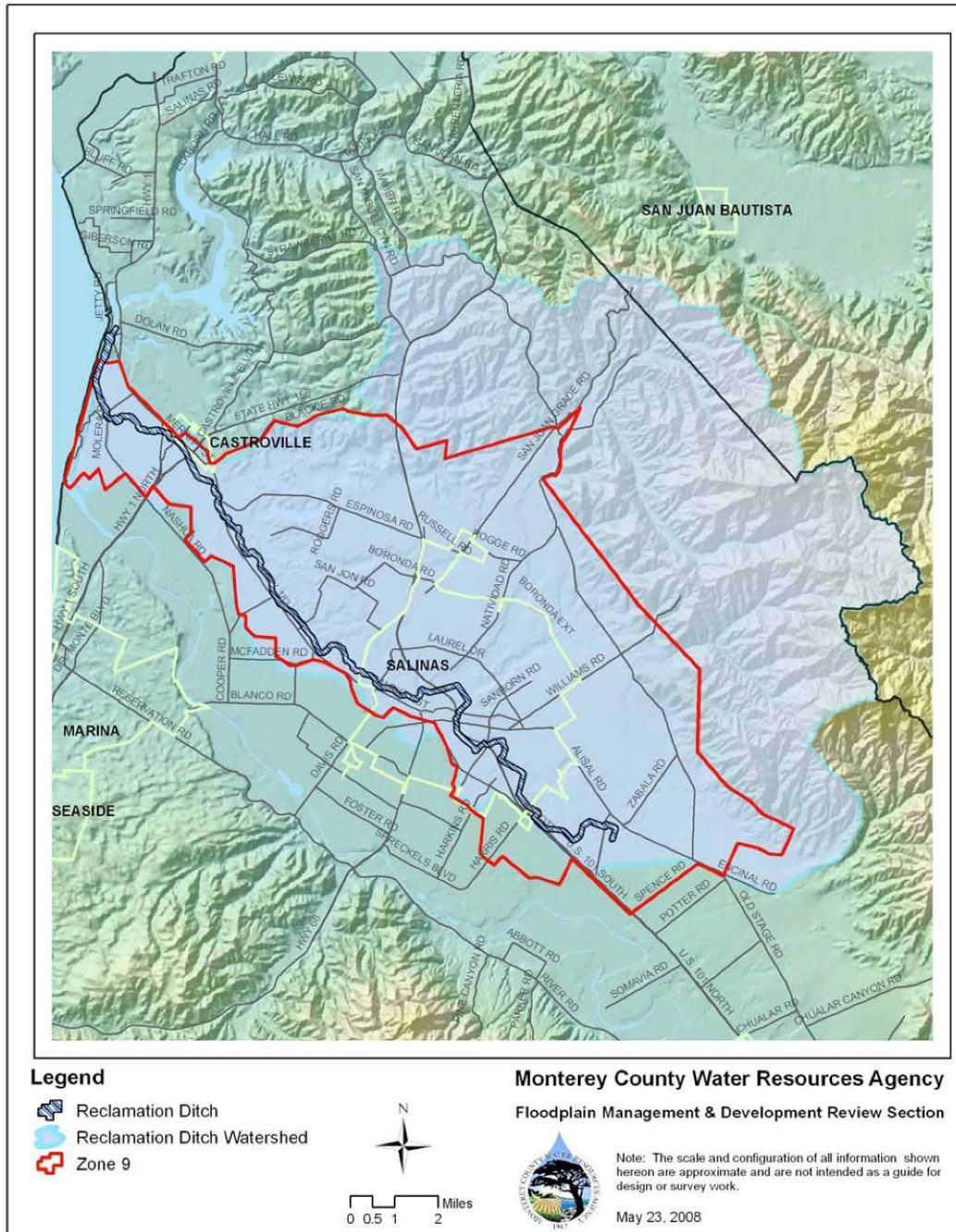
The Salinas Reclamation Ditch, originally named Reclamation Ditch District No. 1665, was constructed in 1917 to drain the marshlands in the northern Salinas Valley for agricultural use and urban development. The ditch connected a series of seven shallow lakes roughly between the City of Salinas and Castroville. The Reclamation Ditch watershed area covers approximately 157 square miles of rural, agricultural, and urban lands located in northern Monterey County and a small mountainous region in San Benito County, including the watersheds of Tembladero Slough, Merritt Lake, Santa Rita Creek, Espinosa Lake, Gabilan Creek, Natividad Creek, Alisal Slough, and Alisal Creek. The Ditch eventually joins Tembladero Slough near Castroville, then the Old Salinas River Channel, and eventually discharges into Moss Landing Harbor through tide gates at Potrero Road.

While the original purpose of the Reclamation Ditch was to reclaim lands, the Ditch came to be used and depended upon by local residents as a flood control channel. Rapid agricultural and urban development throughout the 1900s, however, significantly changed the hydrology of the watershed, causing a dramatic increase in the rate and amount of runoff from storms. Even just 24 years after completion of the Ditch, the County Surveyor began investigating the feasibility of enlarging the Ditch's drainage capacity to accommodate increased runoff. By the end of the 1950s it had become clear that the system lacked capacity to manage flooding from storms (which was not its original intent).

In 1967, the Monterey County Flood Control and Water Conservation District (now MCWRA) took over maintenance over portions of the Reclamation Ditch from the Northern Salinas Valley Mosquito Abatement District. After two major floods in the 1990s (March 1995 and February 1998) that resulted in substantial damage to agricultural lands west of Salinas, the MCWRA initiated an evaluation of the Reclamation Ditch and a committee was convened to assist MCWRA in planning for an improved drainage system. That committee, the Reclamation Ditch Improvement Plan Advisory Committee (RDIPAC), has made several recommendations for improvements and provided guidance during the development of several studies such as the Potrero Tide Gates study (September 2000) as a result of changes in the watershed. The implementation of those recommendations is included as a proposed project in this IRWM Plan.

Figure C-1 below provides a map of the Salinas Reclamation Ditch and its watershed.

Figure C-1: Present Location of Reclamation Ditch and its Watershed



Source: MCWRA Monterey County Floodplain Management Plan, used by permission.

C.2.2 Non-Structural Approaches to Flood Management

Non-structural approaches to flood management include land use management tools such as regulation and flood insurance, and emergency response systems.

The MCWRA first developed the *Monterey County Floodplain Management Plan* in 2002 with the goal of creating an action plan to minimize the loss of life and property in areas where repetitive losses have occurred, and to ensure that the natural and beneficial functions of the County's floodplains are protected. The Plan, updated in 2008, lists, describes, and assesses Repetitive Loss Properties (RLPs) in the County. A RLP is a property for which two or more claims of \$1,000 or more have been paid by the National Flood Insurance Program (NFIP) within any given 10-year period since 1978. Monterey County has 107 RLPs. The vast majority of these RLPs are located along the Carmel River, however, which is outside of the Greater Monterey County IRWM region. There are a total of 13 RLPs occurring within the Greater Monterey County IRWM region along 10 different waterways (including the Big Sur River, Carneros Creek, El Toro Creek, and Santa Rita Creek). There are no RLPs along the Salinas River.

The *Monterey County Floodplain Management Plan* also describes the County's flood control system (infrastructure), identifies flood zones defined by FEMA, including maps depicting RLPs and 100-year floodplains, provides a general hazard assessment (including atmospheric, geologic, hydrologic, seismic, fire, system failure, and general flood hazards), assesses the flood hazards of specific waterways in the county in terms of repetitive losses, and provides an implementation plan for flood mitigation and for mitigation of RLPs. The Plan also describes the County's emergency response system for flood events. In the late 1970s, Monterey County developed the first ALERT (Automated-Local-Evaluation-in-Real-Time) flood warning system. Recent enhancements to the ALERT system include the addition of a network of "satellite data concentrators and transmitters" which pass data, via satellite, to a system of secure servers. Now, in addition to accessing ALERT data from a base-station which receives radio or microwave signals directly from the monitoring stations, the system is designed so multiple operators can monitor rainfall and stream conditions throughout the county as storm events occur from anywhere internet access is available.

The *Monterey County Floodplain Management Plan* supports existing Monterey County Code floodplain management policies and objectives. Monterey County Code Chapter 16.16, Regulations for Floodplains in Monterey County, contains the minimum FEMA requirements necessary for participation in the regular phase of the NFIP, as well as the higher regulatory standards that are credited through the Community Rating System (CRS). The NFIP is a federal program, administered by FEMA that makes federally backed flood insurance available in communities that adopt and enforce floodplain management ordinances to help reduce future flood losses. Monterey County joined the NFIP in 1984. Compliance and ongoing participation in the NFIP ensures that all County residents can purchase flood insurance. The CRS is also a federal program that was implemented in 1990 to encourage communities to implement floodplain management activities beyond the minimum NFIP standards. Of the approximately 21,600 communities that participate in the NFIP, only about 1,100 participate in the CRS program. Monterey County has been a voluntary participant in the CRS since 1991. CRS allows for reductions in flood insurance premium rates according to the extent to which a community implements additional floodplain management activities. The County was upgraded in the CRS to "Class 5" in May 2007; of the 1,100 communities participating in the CRS program, only six have a higher rating than Monterey County (based on August 2009 CRS statistics).

Figure C-2 below illustrates FEMA-defined Special Flood Hazard Areas in Monterey County.

Figure C-2: Monterey County FEMA-Defined Special Flood Hazard Areas



Source: MCWRA Monterey County Floodplain Management Plan, used by permission.

C.3 INTEGRATED FLOOD MANAGEMENT

Both the *California Water Plan Update 2009* and the Proposition 84/1E IRWM Program Guidelines strongly support the concept of integrated flood management. Integrated flood management “does not rely on a single approach to flood management, but instead uses various techniques, including traditional (meaning structural) flood protection projects, nonstructural measures (such as land use practices), and reliance on natural watershed functions, to create an integrated flood management system” (DWR 2009b, vol. 1, p. 2-21). The importance of integrated flood management is explained in the *California Water Plan* as follows:

Floodplains are formed by periodic inundation and the deposition of sediment. Over time, the repeated process creates a landform that is favorable for human settlement, due to the relatively flat land, good soils, and easy access to water. Sparse settlements have grown into urban areas, greatly complicating the task of flood management, as many people now live in locations that are within historic floodplains.

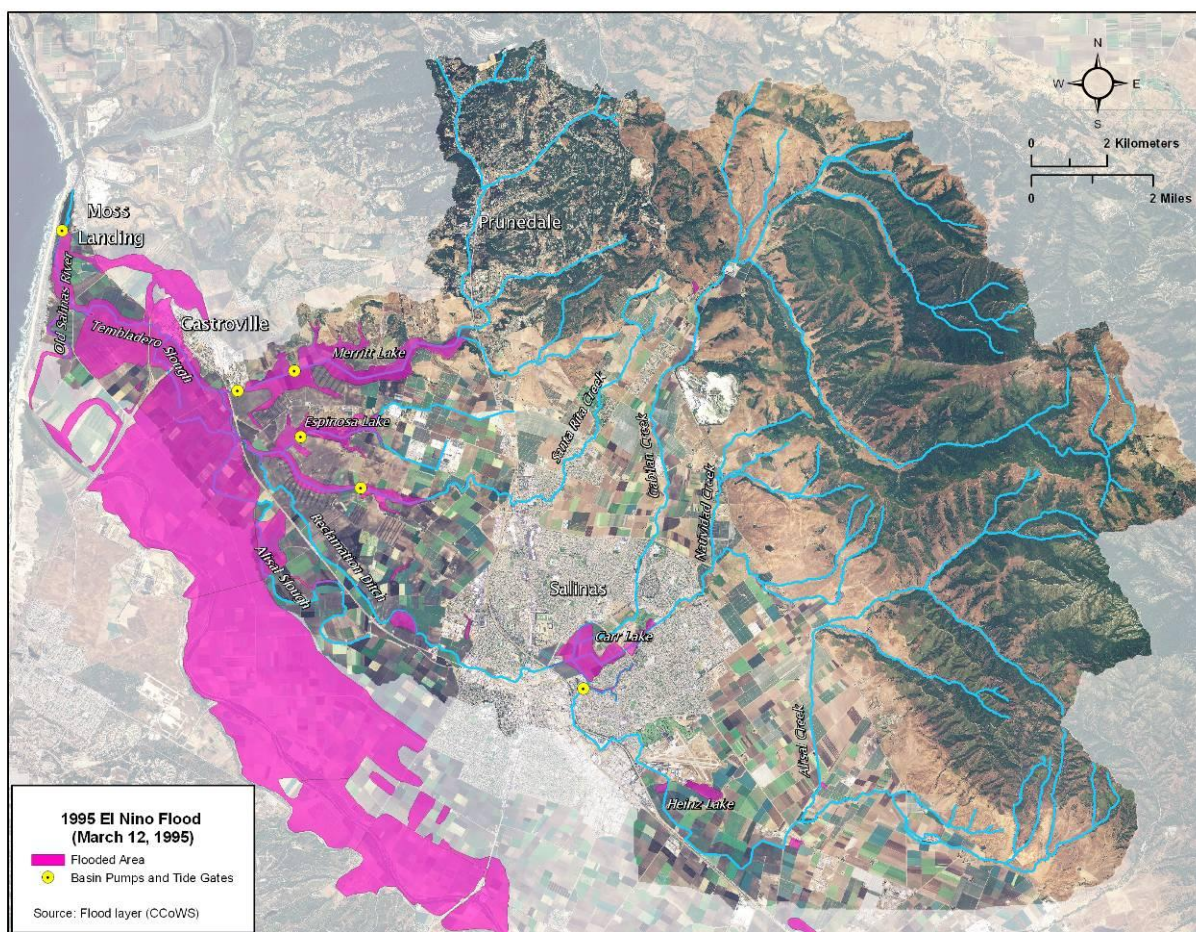
Traditionally, flood management practices largely focused on reducing flooding and susceptibility to flood damage through physical measures intended to store floodwaters, increase the conveyance capacity of channels, and separate rivers from adjacent populations. Although this approach may reduce the intensity and frequency of flooding, it limits the natural role of floodplains to reduce flooding in developed areas.

In recent years, flood managers have recognized the potential for natural watershed features to reduce the intensity or duration of flooding. Undeveloped floodplains can store and slowly release floodwaters. Wetlands can act as sponges, soaking up floodwaters, filtering runoff, and providing opportunities for infiltration to groundwater. Healthy forests, meadows, and other open spaces can slow runoff during smaller flood events, reducing peak flows, mudslides, and sediment loads in streams.

A challenge for flood managers is to integrate these natural functions with more traditional flood protection methods, thus reducing floodflow peaks and their subsequent impacts during small and frequent flood events, while simultaneously providing other water resource benefits. To address this integration, the FloodSAFE California initiative and this update of the Water Plan promote the concept of integrated flood management, a comprehensive approach to flood management that considers land and water resources at a watershed scale within the context of integrated water management; employs both structural and nonstructural measures to maximize the benefits of floodplains and minimize loss of life and damage to property from flooding; and recognizes the benefits to ecosystems from periodic flooding. (DWR 2009b, vol. 1, pp. 2-21 – 2-22)

The *Monterey County Floodplain Management Plan* recognizes the importance of protecting “the natural and beneficial functions of [the county’s] floodplains.” While substantial progress is being made to return natural floodplain function to some waterways in Monterey County (most notably the Carmel River system, which lies outside of the Greater Monterey County IRWM region), most of the waterways in the Greater Monterey County region, with the exception of the rivers and streams along the Big Sur coast, have been significantly altered. Perhaps the greatest challenges for integrated flood management in the region are the waterways in the Salinas Reclamation Ditch (Gabilan) watershed and the Salinas River. All sections of the lower watershed below, and most sections within, the City of Salinas are ditched and are at risk for flooding, as evidenced in the 1995 and 1998 floods. The map below shows flooding during the 1995 El Niño flood.

Figure C-3: 1995 El Niño Flood



Used by permission from CCoWS at the Watershed Institute, CSUMB.

Significant potential exists to improve riparian coverage and floodplain function along the Salinas River system and Arroyo Seco River, and along waterways in northern Monterey County, including Elkhorn Slough and its tributaries, and Moro Cojo Slough. The Salinas River system, in particular, is a challenge to approach from an integrated approach because of the adjacent agricultural lands and food safety concerns with flooding and agricultural production.

The Greater Monterey County RWMG supports integrated flood management as a desirable goal. The IRWM Plan’s Flood Protection and Floodplain Management goal is to “develop, fund, and implement integrated watershed approaches to flood management through collaborative and community supported processes.” IRWM Plan objectives that aim to achieve integrated flood management together include:

- Promote projects and practices to protect infrastructure and property from flood damage.
- Improve flood management infrastructure and operational techniques/strategies.
- Implement flood management projects that provide multiple benefits such as public safety, habitat protection, recreation, agriculture, and economic development.
- Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.

- Promote public education about local flood management issues and needs.

The RWMG is still in the early stages of considering how to promote integrated flood management in the region. One effort underway (and funded through the Proposition 84 IRWM Planning Grant) is the “Water Resource Project Coordination” process. The Water Resource Project Coordination process is a stakeholder outreach program that aims to bring together IRWM Plan project proponents and other stakeholders in the lower Gabilan/Reclamation Ditch watershed, to discuss and reconcile any significant conflicts between projects or project objectives, to coordinate and integrate the projects where possible, and to find new potential areas of collaboration. Through this process the RWMG also hopes to find additional opportunities for integrated flood management. Please see Section I Integration for a detailed description of the Water Resource Project Coordination process.

C.4 FLOOD MANAGEMENT AND CLIMATE CHANGE

Climate change is expected to have many serious impacts on water resources, and will pose significant challenges for water managers in the Greater Monterey County IRWM planning region. One of the anticipated impacts of climate change is increased flooding. Increased flooding is expected to occur in coastal areas due to sea level rise and storm events, as well as in upper watershed areas due to changes in precipitation patterns resulting in higher peak flood events.

A study conducted by the Pacific Institute (Heberger et al. 2009) evaluated and mapped areas of the California coast that are vulnerable to flooding with a 55-inch (1.4 meter) increase in sea level rise. Low-lying coastal areas of the Monterey Bay region will be exposed to a greater risk of major flooding events, and storm surge, high tides, and waves will travel farther inland (ibid.). Elevated sea levels combined with increases in winter storm intensity and wave heights will make coastal inundation a more serious risk (Storlazzi and Wingfield 2005; Wingfield and Storlazzi 2005). Monterey and Santa Cruz counties were identified in the Pacific Institute study as the two counties most vulnerable to flood-related risks of sea level rise in terms of population, due to the vast low lying areas of the Pajaro and Salinas valleys. The low-lying coastal location of many agricultural properties in this region increases the likelihood of significant loss of agricultural land due to storm-induced flooding and salinization with increasing sea level and long-term inundation. Loss of agricultural production in the region will have lasting consequences for the largest sector of the regional economy.

The Pacific Institute study also noted that a 1.4 meter sea level rise will put a wide range of critical infrastructure, such as roads, hospitals, schools, emergency facilities, wastewater treatment plants, and power plants, at risk. To help protect against the impacts of sea level rise, the study identified the need to construct, raise, or repair 53 miles of levees and seawalls in Monterey County.

Coastal inundation also poses a risk to local wetlands. The impact of sea level rise on wetlands is significant for the Greater Monterey County area, since the region contains several important wetland systems. If the rate of sea level rise exceeds the rate of wetland accretion, or if wetlands cannot transgress (migrate up and inland) large tracts of critically important habitat, such as Elkhorn Slough, will become permanently submerged (Heberger et al. 2009; Largier et al. 2010).

In the upper watersheds, natural creeks and managed conveyance will see higher flow rates leading to increased erosion and flooding. Regional river levees will provide less protection during higher storm flow events, and coastal levees and control structures will be undersized to manage the combined influences of higher river flows and sea level rise. According to *the California Water Plan Update 2009* (Volume 3), failure to take into account the impacts of climate change may lead to the underestimation of areas inundated by 100-year floods. Authors of the *California Water Plan* therefore advise that protection provided by flood control infrastructure should be raised to at least the 200-year level in order to

accommodate any inaccuracies in floodplain delineation on FEMA Flood Insurance Rate Maps and the challenges put forth by climate change.

Water managers, flood control managers, and other decision-makers in the Greater Monterey County IRWM region are in the early stages of analyzing and planning for the impacts of climate change on water resources in the region. The Greater Monterey County RWMG is working closely with scientists, government agencies, environmental and community organizations, and other leaders throughout the broader Monterey Bay and Central Coast region to obtain the most up-to-date scientific data and to refine the current analytical tools in order to develop climate change adaptation strategies. This IRWM Plan will incorporate the latest climate change information and regional planning efforts with each new Plan update.

Please see Section R Climate Change for a full discussion of climate change and its anticipated impacts in the Greater Monterey County IRWM region.

Section D: Goals and Objectives

The Integrated Regional Water Management (IRWM) Plan goals and objectives are at the very foundation of the IRWM planning process. The goals and objectives are the response to what the Regional Water Management Group (RWMG) perceives to be the major water resource issues in the region and as such, reflect the RWMG's water resource management values and overall priorities for the region. The objectives give focus to the Plan, provide the basis for determining which resource management strategies are appropriate for use in the region, guide project development, and are used to evaluate project benefits. In addition, the objectives are used to help the RWMG rank projects in the IRWM Plan (i.e., projects score higher to the extent that they address objectives in the Plan).

The following sections include: a description of the process for identifying the goals and objectives for the Greater Monterey County IRWM planning region; the list of approved goals and objectives; a matrix used to measure progress toward achieving each of the objectives; and an explanation of why the Greater Monterey County RWMG chose not to prioritize objectives.

D.1 PROCESS FOR IDENTIFYING GOALS AND OBJECTIVES

The development of goals and objectives was based directly on the water resource issues and conflicts in the region. A committee comprised of RWMG members was formed in May 2009 to investigate and identify the region's issues and conflicts. From May – July 2009, the committee interviewed more than 40 local experts in the areas of water quality, water supply, flood control, natural resources, and public health and safety. Based on those interviews, the committee developed a summary list of water-related issues and conflicts in the Greater Monterey County IRWM region. The list was expanded at a RWMG brainstorming session, and then presented to stakeholders for input at two public workshops held in Big Sur and Soledad in the Salinas Valley in September 2009. After incorporating stakeholder input, a final list of "issues and conflicts" was approved by the RWMG in October 2009. This list is printed in Section B.7, Major Water-Related Issues and Conflicts.

Once the issues and conflicts were identified, a committee comprised of RWMG members was formed to determine the goals and objectives for the Greater Monterey County IRWM planning region. While the committee based the development of goals and objectives mainly on the issues and conflicts, they also took into consideration, and worked to ensure consistency with, the following overarching goals for the region:

Basin Plan Objectives: The Central Coast Basin Plan is the water quality control plan formulated and adopted by the Regional Water Quality Control Board (RWQCB) for the Central Coast region. The objective of the Basin Plan is to show how the quality of the surface and ground waters in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The Basin Plan lists various water uses (Beneficial Uses), describes the water quality which must be maintained to allow those uses (Water Quality Objectives), and outlines an implementation plan for achieving those standards. In addition, the Central Coast RWQCB has established the following planning goals for water quality in the Central Coast Region (RWQCB 2016):

1. Protect and enhance all basin waters, surface and underground, fresh and saline, for present and anticipated beneficial uses, including aquatic environmental values.
2. The quality of all surface waters shall allow unrestricted recreational use.
3. Manage municipal and industrial wastewater disposal as part of an integrated system of fresh water supplies to achieve maximum benefit of fresh water resources for present and future beneficial uses and to achieve harmony with the natural environment.

4. Achieve maximum effective use of fresh waters through reclamation and recycling.
5. Continually improve waste treatment systems and processes to assure consistent high quality effluent based on best economically achievable technology.
6. Reduce and prevent accelerated (man-caused) erosion to the level necessary to restore and protect beneficial uses of receiving waters now significantly impaired or threatened with impairment by sediment.

The objectives for the Greater Monterey County IRWM region promote strategies to meet the water quality standards outlined in the Central Coast Basin Plan, and are consistent with the overarching planning goals promulgated by the Central Coast RWQCB.

20x2020 Goals: In February 2008, Governor Schwarzenegger set a goal of a 20 percent reduction in per capita urban water use by the year 2020 (20x2020). Actions toward the 20x2020 goal were furthered by the passage of SBx7-7, which amended the California Water Code (CWC) to contain provisions not only to improve urban water use efficiency but to improve agricultural water use efficiency as well. The planning objectives for the Greater Monterey County IRWM region promote both urban and agricultural water conservation and water use efficiency, and are therefore consistent with the 20x2020 goals.

Requirements of §10540(c): CWC §10540(c) states that, at a minimum, all IRWM Plans shall address all of the following:

- Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies.
- Identification and consideration of the drinking water quality of communities within the area of the plan.
- Protection and improvement of water quality within the area of the plan consistent with relevant basin plan.
- Identification of any significant threats to groundwater resources from overdraft.
- Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region.
- Protection of groundwater resources from contamination.
- Identification and consideration of water-related needs of disadvantaged communities in the area within the boundaries of the plan.

The planning objectives for the Greater Monterey County IRWM region encompass all of the objectives outlined above, and are therefore consistent with the requirements of CWC §10540(c), the minimum objectives that all IRWM Plans are required to address.

Local Plans: The IRWM Plan objectives reflect, and are consistent with, the objectives of local land use and water resource management plans. Consistency between the IRWM Plan and local plans is discussed in more detail in Section N, Relation to Local Water Planning.

The Goals and Objectives Committee, with consistent input from the RWMG, spent several months developing a draft list of goals and objectives based on the issues and conflicts identified for the region, ensuring consistency with the overarching regional goals outlined above. After an extended public comment period and much debate, a final list of goals and objectives was approved by the RWMG in March 2010.

In March 2011, following the release of the Proposition 84 and 1E IRWM Program Guidelines, the Goals & Objectives Committee was re-convened to reassess the goals and objectives in light of the new guidelines—specifically, to make the objectives more measurable and to reconsider the RWMG’s earlier decision not to prioritize the objectives—and to ensure that the objectives were still appropriate and relevant after a year of working with them. As a result of this process, some slight revisions were made to the objectives (mostly to eliminate redundancies), a “measurability matrix” was developed (see Section D.4 below), and the decision to not prioritize objectives was reaffirmed (see Section D.5 below). The revised goals and objectives were presented to stakeholders for a 30-day public comment period, and the final goals and objectives were approved by the RWMG in September 2011.

In response to the release of the Proposition 1 2016 IRWM Program Guidelines, the RWMG reviewed the objectives once again in early 2017 to ensure that the IRWM Plan objectives were consistent with the new IRWM Program standards. The review was conducted at a regularly scheduled RWMG meeting that was open to the public. As a result of this review, some slight revisions to the Climate Change objectives were made. The final goals and objectives were approved by the RWMG in February 2017.

D.2 THE GOALS AND OBJECTIVES

The goals and objectives are intended to guide regional efforts toward solving water resource problems. Goals are broad, simple statements of what the RWMG wishes to accomplish, while objectives are the more specific, tangible, and measurable activities that will help carry out the goals. The goals encompass seven categories that define the focus of this region’s IRWM planning effort. These categories are: water supply, water quality, flood protection and floodplain management, environment, regional communication and cooperation, disadvantaged communities, and climate change. Through the implementation of projects contained in the plan, the RWMG hopes to achieve the IRWM Plan objectives in order to attain the water resource goals. When implementing regional projects, project partners will strive to meet as many objectives as possible, while also recognizing that some objectives may not be fully achieved through the IRWM planning process.

Prior to developing the goals and objectives, the RWMG developed a set of “guiding principles” that outline the overall approach to IRWM planning in the Greater Monterey County region. The guiding principles might be thought of as “rules of conduct” for the overall IRWM planning effort. They are the overarching principles to which all of the objectives must adhere and help guide the RWMG’s decision-making throughout the planning process. Note that the second guiding principle, “Do not burden anyone unfairly or unnecessarily,” expresses an explicit understanding and agreement on the part of the RWMG that no IRWM Plan project can be put forward for grant funding without proof of support from the landowner(s) of the property(ies) on which the project is located.

Below are the guiding principles, goals, and objectives for the Greater Monterey County IRWM planning effort.

GUIDING PRINCIPLES

- Continue to provide localized solutions to regional water supply issues
- Do not burden anyone unfairly or unnecessarily
- Project results should be measured through monitoring
- Encourage projects with multiple benefits
- Support collaboration of agencies, organizations, stakeholders, and willing landowners on the development of projects that provide water resource benefits
- Minimize negative impacts to the environment and the local economy from water resource management projects
- Recognize, respect, and consider water rights and those who hold them
- Projects should be science based

GOALS AND OBJECTIVES

WATER SUPPLY

Goal:

- Improve water supply reliability and protect groundwater and surface water supplies.

Objectives:

- Increase groundwater recharge and protect groundwater recharge areas.
- Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.
- Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.
- Diversify water supply sources, including but not limited to the use of recycled water.
- Maximize water conservation programs.
- Capture and manage storm water runoff.
- Optimize conjunctive use where appropriate.
- Support research and monitoring to better understand identified water supply needs.
- Support the creation of water supply certainties for local production of agricultural products.
- Promote public education about water supply issues and needs.
- Promote planning efforts to provide emergency drinking water to communities in the region in the event of a disaster.

WATER QUALITY

Goal:

- Protect and improve surface, groundwater, estuarine, and coastal water quality, and ensure the provision of high-quality, potable, affordable drinking water for all communities in the region.

Objectives:

- Promote practices necessary to meet, or where practicable, exceed all applicable water quality regulatory standards (for drinking water, surface and groundwater quality).
- Promote projects to prevent seawater intrusion.
- Incorporate or promote principles of low impact development where feasible, appropriate, and cost effective.

- Protect surface waters and groundwater basins from contamination and the threat of contamination.
- Support research and pilot projects for the co-management of food safety and water quality protection.
- Improve septic systems, sewer system infrastructure, wastewater treatment systems, and manure management programs to prevent water quality contamination.
- Support research and other efforts on salinity management.
- Support monitoring to better understand major sources of erosion, and implement a comprehensive erosion control program.
- Promote programs and projects to reduce the quantity and improve the quality of urban and agricultural runoff and/or mitigate their effects in surface waters, groundwater, and the marine environment.
- Promote regional monitoring and analysis to better understand water quality conditions.
- Support research and utilization of emerging technologies (enzymes, etc.) to develop effective water pollution prevention and mitigation measures, and source tracking.
- Promote public education about water quality issues and needs.

FLOOD PROTECTION AND FLOODPLAIN MANAGEMENT

Goal:

- Develop, fund, and implement integrated watershed approaches to flood management through collaborative and community supported processes.

Objectives:

- Promote projects and practices to protect infrastructure and property from flood damage.
- Improve flood management infrastructure and operational techniques/strategies.
- Implement flood management projects that provide multiple benefits such as public safety, habitat protection, recreation, agriculture, and economic development.
- Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.
- Support research and monitoring efforts to understand the effects of flooding on transport and persistence of pathogens in food crop production areas.
- Support management of flood waters so that they do not contaminate fresh produce in the field.
- Promote public education about local flood management issues and needs.

ENVIRONMENT

Goal:

- Protect, enhance, and restore the region's ecological resources while respecting the rights of private property owners.

Objectives:

- Support science-based projects to protect, improve, enhance, and/or restore the region's ecological resources, while providing opportunities for public access and recreation where appropriate.
- Protect and enhance state and federally listed species and their habitats.
- Minimize adverse environmental impacts of water resource management projects.
- Support applied research and monitoring to better understand environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources.

- Implement fish-friendly stream and river corridor restoration projects.
- Reduce adverse impacts of sedimentation into streams, particularly from roads and non-point sources.
- Promote efforts to prevent, control, reduce, and/or eradicate high priority invasive species.
- Promote native drought-tolerant plantings in municipal and residential landscaping.
- Consider opportunities to purchase fee title or conservation easements on lands from willing sellers that provide integrated water resource management benefits. Ensure adequate funding and infrastructure to manage properties and/or monitor easements.
- Support research and monitoring efforts to understand the effects of wildfire events on water resources.

REGIONAL COMMUNICATION AND COOPERATION

Goal:

- Promote regional communication, cooperation, and education regarding water resource management.

Objectives:

- Facilitate dialogue and reduce inconsistencies in water management strategies/regulations between local, regional, state, and federal entities.
- Promote dialogue between federal and state regulators and small water system managers to facilitate water quality regulation compliance.
- Foster collaboration between regional entities to minimize and resolve potential conflicts and to obtain support for responsible water supply solutions and improved water quality.
- Build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects.
- Increase stakeholder input and public education about the need, complexity, and cost of strategies, programs, plans, and projects to improve water supply, water quality, flood management, coastal conservation, and environmental protection.

DISADVANTAGED COMMUNITIES

Goal:

- Ensure the provision of high-quality, potable, affordable water and healthy conditions for disadvantaged communities (DACs).

Objectives:

- Seek funding opportunities to ensure all communities have a water system with adequate, safe, high-quality drinking water.
- Seek funding opportunities to ensure all communities have adequate wastewater treatment.
- Ensure that DACs are adequately protected from flooding and the impacts of poor surface and groundwater quality.
- Provide support for the participation of DACs in the development, implementation, monitoring, and long-term maintenance of water resource management projects.
- Promote public education in DACs about water resource protection, pollution prevention, conservation, water quality, and watershed health.

CLIMATE CHANGE

Goal:

- Adapt the region's water management approach to deal with impacts of climate change using science-based approaches, and minimize regional causal effects.

Objectives:

- Plan for potential impacts of future climate change.
- Support increased monitoring and research to obtain greater understanding of long-term impacts of climate change in the Greater Monterey County region.
- Support efforts to research alternative energy and to diversify energy sources appropriate for the region, and consider options for using renewable energy where such options are integrally tied to supporting IRWM Plan objectives.
- Seek long-term solutions to reduce energy consumption, especially the energy embedded in water use, with a goal to reducing greenhouse gas (GHG) emissions.
- Seek long-term solutions to maintain and protect existing pristine natural resources from the impacts of climate change.
- Address adapting to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.
- Consider the effects of sea level rise on water supply conditions and identify suitable adaptation measures.
- In considering ways to address IRWM Plan objectives and implement the Plan, consider where practical the strategies adopted by California Air Resources Board (CARB) in its AB 32 Scoping Plan.
- Support research and/or implementation of land-based efforts such as carbon-sequestration on working lands and wildlands in the Greater Monterey County region.
- Promote public education about impacts of climate change, particularly as it relates to water resource management in the Greater Monterey County region.

D.3 MEASURING THE OBJECTIVES

The Objectives Standard in the 2016 Proposition 1 IRWM Guidelines requires that objectives be measurable. A measurable objective means there must be some metric the RWMG can use to determine if the objective is being met as the IRWM Plan is implemented. Since the IRWM Plan is implemented through projects, the metric applies to the projects, which then relate back to the IRWM Plan objectives.

The table below lists both qualitative and quantitative measures that can be used to determine the extent to which projects implemented through the Greater Monterey County IRWM Plan carry out the various IRWM planning objectives. Note that the measurement standards provided in the table are intended to be examples and are not inclusive of all measures that could potentially be used.

As projects get implemented and data is generated, a Plan Performance Matrix will be developed that lists the projects and shows how (and the extent to which) each project carries out each objective, using the numerical and/or qualitative measures listed in the table below. Please see Section J, Plan Performance and Monitoring, for a more detailed description of this process.

Table D-1: Measuring IRWM Plan Objectives

OBJECTIVE	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
WATER SUPPLY OBJECTIVES		
Increase groundwater recharge and protect groundwater recharge areas.		Measurable increase in groundwater recharge. Acres of open space conserved for recharge areas. Number of recharge basins built and rates of infiltration.
Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.		Number of infrastructure enhancements and/or improved operational techniques to optimize the use of groundwater storage.
Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.	Identification of water storage and conveyance infrastructure needs.	Number of projects and practices designed and/or implemented to increase and optimize water storage and conveyance capacity. Measurable increase (acre feet) in water storage and conveyance capacity.
Diversify water supply sources, including but not limited to the use of recycled water.	Identification of ways and opportunities to diversify water supply sources. Increased diversity of water supply sources for the region (as compared to 2010).	Measurable increase in water supply source diversification, e.g., plans designed or implemented for new recycled water facilities or increased use/production of recycled water, desalination, cloud seeding, or other alternatives.
Maximize water conservation programs.		Number of new and/or enhanced water conservation programs designed or implemented for agricultural and urban water users.
Capture and manage storm water runoff.	Identification of needs and opportunities. Design/development of projects.	Number of projects and practices implemented to capture and manage storm water runoff. Rate of infiltration/pumping of storm water in a groundwater recharge program. Low Impact Development (LID) measures.
Optimize conjunctive use where appropriate.	Identification of opportunities to increase conjunctive use.	Number of projects designed, planned, or implemented to optimize conjunctive use.
Support research and monitoring to better understand identified water supply needs.	Identification of water supply needs in the region. Coordination of existing research and monitoring efforts. Improvements in data monitoring network and data analysis.	Number of research/monitoring projects implemented, and/or monetary investment.
Support the creation of water supply certainties for local production of agricultural products.	Demonstrated efforts toward ensuring an adequate water supply for local agricultural production.	

OBJECTIVE	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
Promote public education about water supply issues and needs.	Implementation of programs to educate the public about water supply issues and needs.	Number of presentations and outreach events, etc. to increase public education about water supply issues and needs.
Promote planning efforts to provide emergency drinking water to communities in the region in the event of a disaster.	Demonstrated planning efforts.	
WATER QUALITY OBJECTIVES		
Promote practices necessary to meet, or where practicable, exceed all applicable water quality regulatory standards (for drinking water, surface and groundwater quality).	Implementation of projects and programs to reduce pollutants in water bodies. Progress demonstrated in meeting drinking water objectives in groundwater.	Measurable decrease in pollutant concentrations (or loads) in 303d listed water bodies, or in the frequencies of exceedance.
Promote projects to prevent seawater intrusion.	Implementation of practices, programs, and projects to prevent seawater intrusion.	Measurable reduction in chloride levels in intruded groundwater wells. Less extraction of groundwater relative to 2010 rates. Measurable increase in use of recycled water.
Incorporate or promote principles of low impact development where feasible, appropriate, and cost effective.	Implementation of outreach events, distribution of educational materials, and communications to raise awareness about LID.	Number of LID projects implemented. Number of acres improved. Amount of runoff contained.
Protect surface waters and groundwater basins from contamination and the threat of contamination.	Implementation of innovative and effective solutions to address critical surface and groundwater contamination or threat of contamination.	Number of practices and projects identified, designed, and/or implemented to protect surface waters and groundwater basins from contamination and the threat of contamination.
Support research and pilot projects for the co-management of food safety and water quality protection.	Identification of research gaps. Outreach events disseminating co-management research results (tracking number of participants).	Number of co-management research and/or pilot projects developed and/or implemented to address research gaps.
Improve septic systems, sewer system infrastructure, wastewater treatment systems, and manure management programs to prevent water quality contamination.	Implementation of practices, projects, and programs to prevent water quality contamination from waste management systems.	Number of septic or sewer systems improved. Progress demonstrated toward meeting the water quality criteria for beneficial uses.
Support research and other efforts on salinity management.	Identification of extent of problems and potential solutions. Development of salt and nutrient management plans. Implementation of salinity management outreach programs.	Number of research projects funded (and/or monetary investment in research projects). Number of practices and programs implemented to reduce salinity.

OBJECTIVE	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
Support monitoring to better understand major sources of erosion, and implement a comprehensive erosion control program.	Increased understanding of sources and impacts of erosion, including identification of high priority areas. Establishment of erosion control program(s). Incorporation of turbidity analysis into monitoring programs for both existing and new projects where appropriate.	Number of monitoring programs funded to better understand major sources of erosion (and/or monetary investment in monitoring programs).
Promote programs and projects to reduce the quantity and improve the quality of urban and agricultural runoff and/or mitigate their effects in surface waters, groundwater, and the marine environment.	Implementation of programs and projects to reduce the quantity and improve the quality of urban and agricultural runoff, including Irrigation Nutrient Management program, Livestock and Lands program, storm water best management practices (BMPs), mobile lab. Implementation of regional monitoring program, including GIS layer of practices.	Number of projects/programs created. Measured improvements in water quality attributed (at least in part) to the implementation of new projects/programs.
Promote regional monitoring and analysis to better understand water quality conditions.	Implementation of regional monitoring program, including identification of long-term monitoring sites and annual assessment of water quality data. Improved understanding of water quality conditions.	
Support research and utilization of emerging technologies (enzymes, etc.) to develop effective water pollution prevention and mitigation measures, and source tracking.	Assessment of local research. Analysis of latest technologies. Application of new technologies. Implementation of demonstration projects.	Number of new research projects developed and/or implemented to explore or investigate emerging technologies.
Promote public education about water quality issues and needs.	Implementation of programs to educate the public about water quality, with an emphasis on high priority geographic areas or demographic groups. Implementation of annual IRWM Plan regional symposium.	Number of presentations and outreach events, etc. to increase public education about water quality issues and needs.
FLOOD PROTECTION OBJECTIVES		
Promote projects and practices to protect infrastructure and property from flood damage.	Progress demonstrated in averting potential flood damage (e.g., maintaining or increasing Community Rating Service score).	Number of projects, programs, or practices implemented to protect infrastructure and/or property.
Improve flood management infrastructure and operational techniques/strategies.	Progress shown towards improving flood management and/or operational techniques.	Number of improved techniques/strategies implemented. Monies expended.
Implement flood management projects that provide multiple benefits such as public safety, habitat protection, recreation, agriculture, and economic development.	Identification of multiple benefit projects.	Number of flood projects, programs, or practices implemented to provide multiple benefits.

OBJECTIVE	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.	Identification of natural ecological and hydrological functions of water courses in flood-prone areas.	Number of projects, programs, or practices implemented to protect, restore, or enhance the natural functions of water courses in flood-prone areas.
Support research and monitoring efforts to understand the effects of flooding on transport and persistence of pathogens in food crop production areas.	Improved understanding of flooding effects on transportation and persistence of pathogens in food-crop production areas.	Number of research/monitoring programs implemented to document effects of flooding on pathogens in food-crop production areas.
Support management of flood waters so that they do not contaminate fresh produce in the field.		Number of flood management projects, programs, or practices implemented to reduce or prevent contamination of fresh produce in the fields.
Promote public education about local flood management issues and needs.	Increased awareness among public stakeholders regarding flood management issues and needs.	Number of presentations and outreach events, etc. to increase public education about flood management issues and needs.
ENVIRONMENT OBJECTIVES		
Support science-based projects to protect, improve, enhance, and/or restore the region's ecological resources, while providing opportunities for public access and recreation where appropriate.	Identification of needs and opportunities. Design/development of projects.	Number of projects implemented to protect, improve, enhance, and/or restore the region's ecological resources. Acres of wetlands restored. Miles of public paths and other recreational amenities installed. Number of public outreach diaramas installed. Monetary investment in projects.
Protect and enhance state and federally listed species and their habitats.	Identification of needs and opportunities. Design/development of projects.	Number of projects implemented to protect and enhance state and federally listed species and their habitats. Number of listed species' enhancement plans addressed. Acres of essential habitat protected or restored.
Minimize adverse environmental impacts of water resource management projects.	Demonstrable measures taken by project proponents to minimize adverse environmental impacts of water resource management projects.	Quantifiable measurement will be project-specific: Mitigation measures implemented as needed or appropriate.

OBJECTIVE	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
Support applied research and monitoring to better understand environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources.	Improved understanding of environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources as demonstrated by project/research findings, analyses, reports, etc. Identification of actions to address environmental needs. Identification of cost-effective strategies to reduce adverse impacts on ecological resources.	Number of research/monitoring programs designed, funded, and/or implemented to document environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources. Physical measurement of area researched and/or monitored, e.g., number of acres researched, number of stream miles monitored.
Implement fish-friendly stream and river corridor restoration projects.	Identification of needs and opportunities. Design/development of projects.	Number of fish-friendly stream and/or river corridor restoration projects implemented. Miles of stream opened to fish migration. Miles of stream corridor restored. Measured increase in fish populations.
Reduce adverse impacts of sedimentation into streams, particularly from roads and non-point sources.	Identification (and prioritization) of problem areas in the region, and of opportunities for improvements. Tracking and documentation of BMPs related to sedimentation.	Number of projects or practices implemented to reduce adverse impacts of sedimentation into streams. Miles of rural roads taken out of commission or enhanced to reduce erosion. Measured increase in rural road RAM (Rapid Assessment Method) score. Measured reduction in turbidity in high-sediment streams.
Promote efforts to prevent, control, reduce, and/or eradicate high priority invasive species.	Identification of problem areas and opportunities. Design/development of projects to reduce the effects of invasive species in the region.	Number of projects implemented to reduce invasive species. Acres surveyed. Acres treated. Acres/linear feet/river miles of invasive species eradicated.
Promote native drought-tolerant plantings in municipal and residential landscaping.		Number of projects designed, funded, and/or implemented that include planting of drought tolerant plants.
Consider opportunities to purchase fee title or conservation easements on lands from willing sellers that provide integrated water resource management benefits. Ensure adequate funding and infrastructure to manage properties and/or monitor easements.	Identification of opportunities. Identification of funding sources and attainment of adequate funding to manage properties and/or monitor easements.	Acres of land converted into conservation.
Support research and monitoring efforts to understand the effects of wildfire events on water resources.	Improved understanding of effects of wildfire events on water resources.	Number of research/monitoring programs implemented to document effects of wildfire events on water resources.

OBJECTIVE	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
REGIONAL COMMUNICATION OBJECTIVES		
Facilitate dialogue and reduce inconsistencies in water management strategies/regulations between local, regional, state, and federal entities.	Meetings convened between local, regional, state, and federal entities to resolve noted problem areas. Implementation of strategies in MBNMS Ag Action Plan in "Regulatory Coordination and Streamlining" section. Programs to proactively coordinate strategies and regulations, such as permit coordination.	
Promote dialogue between federal and state regulators and small water system managers to facilitate water quality regulation compliance.	Meetings convened and/or partnerships developed between federal and state regulators and small water system managers for this purpose.	
Foster collaboration between regional entities to minimize and resolve potential conflicts and to obtain support for responsible water supply solutions and improved water quality.	Meetings convened between regional entities and stakeholders to resolve water-related conflicts (including those implemented through Water Resource Project Coordination [WRPC] process). Positive indication of public support for implementation of water-related projects and/or programs.	Number of new water-related projects designed, funded, and/or implemented as a direct result of WRPC (or related) process.
Build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects.	Meetings convened and agreements reached between federal, state, and local regulatory agencies, other water agencies, and project proponents to facilitate the permitting, planning, and implementation of water-related projects.	Number of projects successfully designed, permitted, and implemented as a result of improved communication.
Increase stakeholder input and public education about the need, complexity, and cost of strategies, programs, plans, and projects to improve water supply, water quality, flood management, coastal conservation, and environmental protection.	Implementation of annual IRWM Plan regional symposium.	Number of presentations and outreach events, etc. to increase stakeholder participation and public awareness about the need, complexity, and cost of strategies, programs, plans, and projects to improve water supply, water quality, flood management, coastal conservation, and environmental protection. Number of "hits" to the Greater Monterey County IRWM Plan website.
DISADVANTAGED COMMUNITIES OBJECTIVES		
Seek funding opportunities to ensure all communities have a water system with adequate, safe, high-quality drinking water.	List of potential funding opportunities including non-IRWM grants and other State and Federal funds. Commitment from an organization to help DACs submit applications and follow through with grant application process for future project solicitations.	Number of grant proposals submitted on behalf of DACs for drinking water system improvements.

OBJECTIVE	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
Seek funding opportunities to ensure all communities have adequate wastewater treatment.	List of potential funding opportunities including non-IRWM grants and other State and Federal funds. Commitment from an organization to help DACs submit applications and follow through with grant application process for future project solicitations.	Number of grant proposals submitted on behalf of DACs for wastewater system improvements.
Ensure that disadvantaged communities are adequately protected from flooding and the impacts of poor surface and groundwater quality.	Communication/meetings between RWMG (or partners) and DAC representatives to discuss needs regarding protection against flooding and the impacts of poor surface and groundwater quality.	Number of grant proposals submitted on behalf of DACs for protection against flooding and the impacts of poor surface and groundwater quality. Number of measures implemented to protect DACs against flooding and the impacts of poor surface and groundwater quality.
Provide support for the participation of disadvantaged communities in the development, implementation, monitoring, and long-term maintenance of water resource management projects.	Outreach to DACs to encourage their participation in the IRWM planning process (via personal communication, individual meetings, email). Assistance to DACs by RWMG (or partner organization) in writing grant proposals for water-related projects. Development of grant proposals that include DAC involvement in monitoring and maintenance of water resource management projects. Identification and provision of resources needed for DAC leaders to organize their communities.	Monetary investment toward DAC support for water management projects.
Promote public education in disadvantaged communities about water resource protection, pollution prevention, conservation, water quality, and watershed health.	Outreach efforts, including: Working with organizations that have frequent interaction with DACs (church organizations, radio, TV) and providing those organizations with educational materials as appropriate; "house meetings" and small community meetings; encouraging DAC members to attend IRWM public workshops; translation into Spanish of existing educational brochures and literature (re: watersheds, conservation programs, etc.); development of new literature as needed and appropriate, and distribution of educational materials. Demonstrable increase in understanding and awareness of these issues on the part of DAC members.	Number of events held. Number of DACs and DAC members reached.
CLIMATE CHANGE OBJECTIVES		
Plan for potential impacts of future climate change.	List of identified impact sites. Identification of management measures to be integrated into site-specific response efforts.	

OBJECTIVE	QUALITATIVE MEASUREMENT	QUANTITATIVE MEASUREMENT
Support increased monitoring and research to obtain greater understanding of long-term impacts of climate change in the Greater Monterey County region.	Compiled data reports on current science, documenting trends in climate changes (rain fall, temperature, sea level rise, river flows). List of proposed additions for current monitoring programs to increase understanding of climate change impacts.	Number of research/monitoring programs implemented to obtain greater understanding of long-term impacts of climate change in the Greater Monterey County region, and/or monetary investment in research and monitoring programs.
Support efforts to research alternative energy and to diversify energy sources appropriate for the region, and consider options for using renewable energy where such options are integrally tied to supporting IRWM Plan objectives.	Compilation of research within the region on alternative energy options. Change in energy use portfolios toward greater use of renewable energy and greater diversification of energy sources in the region.	Number of research projects considered, designed, and/or implemented to investigate alternative energy. Number of IRWM Plan projects that use renewable sources of energy.
Seek long-term solutions to reduce energy consumption, especially the energy embedded in water use, with a goal to reducing greenhouse gas (GHG) emissions.	List of energy efficiency and conservation strategies, and other recommendations for reducing greenhouse gases.	GHG reduction estimates from implementing energy efficiency and conservation strategies in IRWM Plan projects.
Seek long-term solutions to maintain and protect existing pristine natural resources from the impacts of climate change.	Reports and plans defining new management efforts and policies to maintain and/or protect existing pristine natural resources from the impacts of climate change.	Acreage under new or expanded planning and conservation efforts.
Address adapting to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.	Reports, plans, and projects that address adapting to these changes (e.g., Storm Water Resource Plan).	Number of projects that include strategies to adapt to these changes.
Consider the effects of sea level rise (SLR) on water supply conditions and identify suitable adaptation measures.	Compilation of research on the effects of SLR on water supply conditions in the region. List of adaptation measures.	Number of research/planning efforts that consider effects of SLR on water supply conditions. Number of projects that implement adaptation measures.
In considering ways to address IRWM Plan objectives and implement the Plan, consider where practical the strategies adopted by California Air Resources Board (CARB) in its AB 32 Scoping Plan.	List of IRWM Plan projects that implement strategies adopted by CARB in its AB 32 Scoping Plan.	Number of IRWM Plan projects that implement strategies adopted by CARB in its AB 32 Scoping Plan, or number of strategies implemented.
Support research and/or implementation of land-based efforts such as carbon-sequestration on working lands and wildlands in the Greater Monterey County region.	Compilation of research on these topics.	Number of projects implemented and/or monetary investment in this research.
Promote public education about impacts of climate change, particularly as it relates to water resource management in the Greater Monterey County region.	Implementation of programs to educate the public about impacts of climate change. Implementation of annual IRWMP regional symposium.	Number of presentations and outreach events to increase public education about impacts of climate change. Number of reports and publications produced and/or distributed on climate change.

D.4 PRIORITIZING THE OBJECTIVES

After much debate and careful consideration, the RWMG has made a decision not to prioritize objectives. The rationale for this decision is as follows. The Greater Monterey County IRWM region is a broad geographic area made up of a very diverse group of stakeholders. The RWMG itself reflects that diversity. The RWMG has aimed to be as inclusive as possible of all stakeholders in the region, encouraging their active participation in the IRWM planning process and promising serious consideration of their concerns and needs.

The 60 objectives included in the IRWM Plan were based on the “issues and conflicts” perceived to exist throughout the region, as described by different groups of stakeholders in all corners of the region. The RWMG therefore recognizes that each of the objectives carries special weight and significance for at least some groups of stakeholders. By prioritizing some objectives over others, the RWMG feels they would effectively be prioritizing the needs of certain stakeholders over others. In order to maintain inclusivity, and to avoid the possibility of alienating certain groups of stakeholders or discouraging their participation in the IRWM planning process, the RWMG has therefore decided not to prioritize objectives. The project ranking system reflects that decision.

Section E: Resource Management Strategies

E.1 RESOURCE MANAGEMENT STRATEGIES INCLUDED IN THE PLAN

The Integrated Regional Water Management (IRWM) Program requires Regional Water Management Groups (RWMGs) to consider certain resource management strategies for potential use in their regions and for possible inclusion in their IRWM Plans. The intention behind the “resource management strategy” standard in the IRWM Plan Guidelines is to encourage regions to diversify their water management portfolios in order to become more resilient to, and to mitigate for, uncertain future circumstances (such as climate change). The RWMG is required to consider all of the resource management strategies listed in the *California Water Plan Update 2013* for possible inclusion in the plan, but other strategies may be considered as well.

The process for selecting resource management strategies was based primarily on the region’s goals and objectives, i.e., the strategies needed to achieve the objectives of the Plan. In 2010, the RWMG discussed the resource management strategies over the course of two RWMG meetings, and at the March 2010 RWMG meeting approved an initial list of 37 resource management strategies for inclusion in the IRWM Plan. The RWMG met again in February 2017 to review the resource management strategies as part of an IRWM Plan update to comply with 2016 IRWM Plan standards, and opted to include three additional strategies. The final list consists of 40 resource management strategies, 31 of which are listed in the *California Water Plan Update 2013*.

The selected strategies “make sense” for this region, and many of the strategies are already included in Urban Water Management Plans, Stormwater Management Plans, Storm Water Resource Plans, Watershed Management Plans, Land Use Plans, and other local water resource plans developed by entities throughout the region. The IRWM Plan resource management strategies are outlined below, including a brief explanation as to why each strategy was chosen for inclusion in the Plan. Note that some of the descriptions of the resource management strategies have been excerpted directly from the *California Water Plan Update 2013*.

Strategies chosen from the *California Water Plan Update 2013* include the following (organized according to general category):

Reduce Water Demand:

- **Agricultural Water Use Efficiency:** Water use efficiency and conservation measures serve to reduce water use, reduce energy consumption and therefore emissions of pollutants and greenhouse gasses, reduce wastewater and potentially polluted runoff, and reduce the economic and environmental costs associated with water use and water treatment. This strategy is also listed as an important strategy in the California Air Resources Board (CARB) AB 32 Scoping Plan (2014 Update). Agricultural water use efficiency is already common practice throughout the region. Common water conservation best management practices (BMPs) implemented in the Salinas Valley include, for example, use of a time clock/pressure switch, water flowmeters, leakage reduction, sprinkler improvements, pre-irrigation reduction, reduced sprinkler spacing, micro irrigation systems, land leveling/grading, and soil moisture sensors. Since agriculture occupies more than 1.4 million acres of land and accounts for approximately 90 percent of groundwater use in the Salinas Valley, promoting agricultural water use efficiency is considered absolutely critical for helping the region meet its goal of improved water supply reliability, as well as reduced greenhouse gas (GHG) emissions.

- **Urban Water Use Efficiency:** Like agricultural water use efficiency, urban water use efficiency is considered an important strategy for the region. Urban water use efficiency measures are already widely practiced throughout the region, including, for example, plumbing retrofits, large landscape surveys and the development of water efficient landscape guidelines, washing machine rebates, public information campaigns, school programs, residential ultra low-flush toilet replacement programs, commercial, industrial, and institutional audits to identify water conservation opportunities, and internal water distribution system audits. Although urban use accounts for significantly less water use than agriculture in the region, the potential benefits of urban water use efficiency and conservation are substantial. This strategy is considered an important means for helping the region meet its water supply objectives.

Improve Operational Efficiency and Transfers:

- **Conveyance – Regional/Local:** Conveyance includes both natural watercourses (including groundwater aquifers) and constructed facilities. The Monterey County Water Resources Agency (MCWRA) uses natural watercourses for conveyance to the extent possible and man-made structures where appropriate. The Salinas River channel is the primary means for conveyance of water in the region and to percolate water into the Salinas Valley Groundwater Basin. The MCWRA regulates water flows from the Nacimiento and San Antonio Reservoirs in order to maximize groundwater recharge, maintain in-stream flows for steelhead and other aquatic life, and manage floodwaters. The MCWRA also uses the Salinas River channel as a means to transfer water from the southern part of the Salinas Valley to the northern coastal portion of the groundwater basin in an effort to reduce seawater intrusion (as part of the Salinas Valley Water Project). Constructed components of the conveyance system include the reservoirs, pumping plants, pipelines, diversion structures, and a fish ladder. Improvements to this infrastructure are needed on a continual basis to ensure the optimal conveyance of water for urban/industrial, agricultural, and environmental uses. This strategy is considered a foundational part of the region's water management portfolio.
- **System Re-operation:** System re-operation entails changing existing operation and management procedures for reservoirs and conveyance facilities in order to increase benefits from these facilities. An example of system re-operation in the Greater Monterey County region is the Salinas Valley Water Project, which involves re-operation of the Nacimiento and San Antonio Reservoirs along with modification of the Nacimiento spillway and construction of an inflatable dam diversion structure to allow the diversion of Salinas River water into the existing Castroville Seawater Intrusion Project (CSIP) distribution system. System re-operation enables the MCWRA to move more water through the Salinas Valley via the Salinas River. That additional water is percolated into the Salinas Valley Groundwater Basin and impounded at the diversion facility, and then blended with recycled water for irrigation use on 12,000 acres of farmland in the Castroville area. The blended water replaces groundwater pumping in the northern coastal portion of the groundwater basin, thereby helping to reduce seawater intrusion. The MCWRA along with other water providers in the region continue to consider ways of re-operating the water supply systems in order to maximize water supplies, water quality, flood control, and benefits to environmental resources.
- **Water Transfers:** A water transfer is defined in the Water Code as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer or exchange of water or water rights. Water transfers typically occur in five ways (though not all of these are practiced in this region): 1) transferring water from storage that would otherwise have been carried over to the following year; 2) pumping groundwater instead of using surface water delivery and transferring the surface water rights; 3) transferring previously banked groundwater

either by directly pumping and transferring groundwater or by pumping groundwater for local use and transferring surface water rights; 4) making water available by reducing the existing consumptive use through crop idling or crop shifting or by implementing water use efficiency measures; or 5) making water available by reducing return flows or seepage from conveyance systems that would otherwise be irrecoverable.

Water transfers are limited in the Greater Monterey County region because under current law, water supply from the Salinas Valley Groundwater Basin cannot be exported to customers in other basins; any connections made must be for emergency use only or of a “zero-balance type” (volume added must equal volume withdrawn). In 2006 the Marina Coast Water District (MCWD) investigated the possibility of interconnecting with the Seaside Municipal Water System, with water from the Seaside Groundwater Basin, proposed as an emergency-only connection. Although not constructed at the time, the possibility of a future emergency connection still exists.

Additional transfer opportunities exist within the Salinas Valley Groundwater Basin itself. For example, MCWD could purchase the rights to existing groundwater supplies currently used elsewhere in the Salinas Valley and transfer the water to the District service area. Such transfers would have to be performed on a willing-seller, willing-buyer basis and with the cooperation of the MCWRA. The use of water transfers as a resource management strategy is more evident in this region in the broad implementation of water use efficiency measures both in agricultural and urban systems, as well as in the transfer of water from surface storage to groundwater and from one end of the groundwater basin to another. This strategy has potential for expansion in the region.

Increase Water Supply:

- **Conjunctive Management and Groundwater Storage:** Conjunctive management and groundwater storage are part of standard practice in the Salinas Valley. Conjunctive management is the coordinated use of surface water and groundwater to maximize water use in order to meet various management objectives. The Nacimiento and San Antonio reservoirs capture and store water from winter rains, and that water is systematically released into the Salinas River according to protocols that aim to produce maximum percolation into the Salinas Valley Groundwater Basin. The water is stored in the groundwater basin and used throughout the year and over the course of many years, wet or dry, to provide a consistent source of water to virtually all water users in the Salinas Valley area.
- **Desalination:** Monterey County is a coastal county, and as such provides opportunity for desalination as a viable resource management strategy. One small desalination plant currently exists in the Greater Monterey County IRWM region. The plant is owned by the MCWD and has a capacity of 300 acre-feet/year (AFY). The facility has been idle for several years (due to the expense of operation). Proposals exist, however, for the construction of at least two new major desalination facilities in Monterey County.

California American Water (Cal Am) is proposing a series of projects, called “Monterey Peninsula Water Supply Project,” that will serve its customer base in Monterey Peninsula and Carmel Valley. The Project consists of three components: 1) a desalination facility; 2) groundwater replenishment project, which will apply advanced treatment to recycled water currently being produced by Monterey One Water’s (formerly called the Monterey Regional Water Pollution Control Agency) treatment plant, resulting in 3,500 AFY; and 3) expansion of its existing aquifer storage and recovery, which captures excess winter flows from the Carmel River for storage in the Seaside Aquifer and withdrawal during the dry summer months. Depending on

the availability of water from the groundwater replenishment project, the desalination plant will be sized at either 9.6 million gallons per day (MGD) or 6.4 MGD.

A second desalination facility, referred to as “DeepWater Desal,” has been proposed by a group of private investors. The proposed 25-MGD facility would be located in Moss Landing and would consist of a seawater reverse osmosis desalination facility, co-located data center, power substation, intake and outfall facilities, and a hydroacoustic monitoring system.

- **Precipitation Enhancement:** Precipitation enhancement, commonly called “cloud seeding,” artificially stimulates clouds to produce more rainfall than they would naturally. Cloud seeding injects special substances, typically silver iodide, into the clouds to enable the raindrops to form more easily. Cloud seeding has been practiced in California since the 1950s. The MCWRA used precipitation enhancement as a resource management strategy from 1990-1995 and again in 2004. MCWRA retains this strategy in its portfolio as an option for future implementation.
- **Municipal Recycled Water:** The municipal recycled water resource management strategy addresses the recycling of municipal wastewater treated to a specified quality to enable it to be used again. This strategy specifically refers to treated wastewater primarily from domestic (household) sources, but it can include commercial, industrial, and institutional wastewater discharged to a sanitary sewer; the strategy does not address other types of water recycling, such as agricultural wastewater, gray water, or industrial wastewater. The quality of the reclaimed water determines how it can be used, for example for agricultural or landscape irrigation, or even in some cases for potable water.

Two water reclamation plants currently exist in the Greater Monterey County IRWM region. Monterey One Water owns and operates a regional wastewater treatment plant at the northern end of the City of Marina. Wastewater from the Monterey Peninsula, Salinas, Marina, Moss Landing and the Ord Community is conveyed to the plant for processing. The plant has the capacity to generate approximately 21,600 AFY of recycled water. Of that amount, 13,300 AFY of tertiary treated recycled water is currently delivered by the MCWRA to farmers in the Castroville region for irrigation during the irrigation season. The City of Soledad also owns and operates a water recycling facility, which treats wastewater from residents and businesses within the City limits, as well as wastewater from the Salinas Valley State Prison Soledad Prison and Salinas Correctional Facility. The City upgraded its water recycling facility in 2010. The upgraded facility has the peak capacity of 5.5 million gallons per day (MGD) and produces disinfected tertiary recycled water in conformance with Title 22. Currently the plant is operating at approximately 2.3 MGD average daily flow. The City plans to provide tertiary treated water for agricultural and urban and landscape irrigation.

- **Surface Storage – Regional/Local:** Surface storage uses reservoirs to collect water for later release and use. The Nacimiento and San Antonio reservoirs, built in 1957 and 1965 respectively, are examples of surface storage in the Greater Monterey County IRWM region. The reservoirs play a central role in the region’s water system. The MCWRA owns and operates both of these reservoirs and uses them for seasonal storage, flood control, hydropower generation, conjunctive use (i.e., coordinating surface water with groundwater storage and use), recreation, and operates the dams to meet environmental water needs (mainly for steelhead) in coordination with other water supply uses. No other surface storage facilities exist in the region, though the potential exists for surface storage facilities in the Big Sur region.

Improve Water Quality:

- **Drinking Water Treatment and Distribution:** Providing a reliable supply of safe drinking water is the primary goal of public water systems in the region. Critical to achieving that goal is ensuring a safe raw water supply and well-maintained water treatment facilities. Beyond the treatment plant, a high level of water quality must be maintained as the water passes through the distribution system to customer taps. Contaminants can enter the distribution system, or water quality may deteriorate within the distribution system, for example, as a result of microbial growth and biofilm, nitrification, corrosion, water age, effects of treatment on nutrient availability (contributing to microbial growth and biofilm), and sediments and scale within the distribution system. Improvements to water treatment and distribution facilities are continually needed as infrastructure ages, populations grow, water quality stressors increase (such as seawater intrusion and chemical contaminants), and water quality standards become more stringent. This is considered an ongoing and critical resource management strategy for the region.
- **Groundwater Remediation/Aquifer Remediation:** Groundwater remediation removes contaminants that affect beneficial uses of groundwater. Passive groundwater remediation allows contaminants to biologically or chemically degrade or disperse in situ over time, while active groundwater remediation involves either treating contaminated groundwater in situ or extracting contaminated groundwater from the aquifer and treating it. Since groundwater is the primary water supply source for most of the region, and since the groundwater basin is stressed by both natural and human-caused contaminants, including nitrate and seawater, groundwater remediation is considered an important resource management strategy for the region.
- **Matching Water Quality to Use:** An example of matching water quality to use is a water supplier choosing to use a deeper, cleaner aquifer for municipal water, which requires less treatment before delivery, rather than a more shallow, more contaminated aquifer or a surface supply. Benefits would include a reduced need for treatment and potentially fewer disinfection byproducts for the water user. Recycled water can also be treated to a wide range of purities that can be matched to different uses. In the Greater Monterey County IRWM region, water is currently reclaimed and treated for agricultural and landscape irrigation purposes. The potential exists to treat water to a drinking water standard if the need should arise in the future.
- **Pollution Prevention:** Pollution prevention protects water at its source and therefore reduces the need and cost for other water management and treatment options. An important pollution prevention strategy is implementation of proper land use management practices to prevent sediment and pollutants from entering the source water. Numerous pollution prevention programs exist in the Greater Monterey County IRWM region, including agricultural management measures, stormwater public education campaigns, construction best management practices, and vegetated treatment systems (including created wetlands). Pollution prevention is cost-effective and ultimately results in a cleaner, safer water supply and healthier environment. The potential always exists to improve and expand pollution prevention efforts in the region.
- **Salt and Salinity Management:** Salts are materials that originate from dissolution or weathering of the rocks and soil, including dissolution of lime, gypsum and other slowly dissolved soil minerals. “Salinity” describes a condition where dissolved minerals of either natural or anthropogenic origin and carrying an electrical charge (ions) are present. Salt is ubiquitous throughout the environment. It is never destroyed, just concentrated or diluted and transported. Salt moves with water. Historical strategies for mitigating the impacts of excess salinity include desalination as well as salt dilution and displacement. Since 2009, the State Water Resources Control Board (SWRCB) has been urging (and requiring) water managers and stakeholders to

take a more regional approach to salt management via the development of salt and nutrient management plans. Salt and nutrient management plans are intended to go beyond historical strategies that essentially address localized impacts, by evaluating the initial sources and loading of salts and nutrients in a groundwater basin, and attempting to manage excessive loading on a regional scale. Salt and salinity management occurs in the Greater Monterey County region currently on a localized scale; development of a salt and nutrient management plan would enable water managers and other stakeholders in the region to consider a more regionalized approach.

- **Urban Runoff Management:** Urban runoff management consists of a broad series of activities to manage both storm water and dry-weather runoff in urban areas. A watershed approach for urban runoff management aims to emulate and preserve the natural hydrologic cycle that is altered by urbanization. This watershed approach consists of a series of BMPs designed to reduce the pollutant loading and reduce the volumes and velocities of urban runoff discharged to surface waters. BMPs may include facilities to capture, treat, and recharge groundwater with urban runoff, conducting public education campaigns to inform the public about storm water pollution and the proper use and disposal of household chemicals, and providing technical assistance and storm water pollution prevention training. Urban runoff management is already common practice for most municipalities in the region, but potential does exist for improvement and expansion of urban runoff programs.

Note that under Proposition 1, in order for a storm water or dry weather runoff capture project to receive State grant funds, the project must be included in a Storm Water Resource Plan (SWRP) or equivalent document. Chapter N, Relation to Local Water Planning, describes the current SWRPs that have been developed, or that are under development, in the region.

Practice Resource Stewardship:

- **Agricultural Lands Stewardship:** Agricultural lands stewardship broadly means the conservation of natural resources and protection of the environment on agricultural lands. Examples of agricultural lands stewardship include windbreaks, irrigation tailwater recovery, filter strips, grassed waterways, contour buffer strips, conservation tillage, noxious weed control, riparian buffers, streambank protection, and the use of cover crops and other soil-building and stabilization practices. Many farmers in the Greater Monterey County region actively pursue agricultural lands stewardship either on an individual basis or as part of collective groups. A group called the Agriculture Water Quality Alliance (AWQA) is a regional collaboration of agriculture industry groups, federal, state, and local agencies, technical experts, environmental organizations and university researchers working together to help farmers and ranchers along the Central Coast attain technical assistance and funding, navigate the permitting process, and implement the management strategies outlined in the Monterey Bay National Marine Sanctuary's *Agriculture and Rural Lands Action Plan*. Since agriculture is such a dominant land use in Monterey County, agricultural lands stewardship is considered to be a vital resource management strategy for the region.
- **Ecosystem Restoration:** This strategy focuses on restoration of aquatic, riparian and floodplain ecosystems because they are the natural systems most directly affected by water and flood management actions, and are likely to be affected by climate change. Future water and flood management projects that fail to protect and restore their ecosystems will face reduced effectiveness, sustainability, and public support. Restoration usually emphasizes recovery of at-risk species and natural communities. Successful restoration of aquatic, riparian, and floodplain species and communities ordinarily depends upon at least partial restoration of physical processes that are driven by water. These processes include the flooding of floodplains, the natural patterns

of erosion and deposition of sediment, the balance between infiltrated water and runoff, and substantial seasonal variation in stream flow. Many organizations throughout the region, including nonprofit environmental organizations and watershed groups as well as many individual farmers, ranchers, and private landowners, are actively working to restore ecosystems in rivers, streams, and other waterways, riparian areas, floodplains, and wetlands in order to achieve both habitat and water quality benefits.

- **Forest Management:** The Greater Monterey County region contains vast tracts of forestlands, much of which is under the jurisdiction of the U.S. Forest Service (including the magnificent Los Padres National Forest), California State Parks, and the U.S. Army (including Fort Hunter Liggett and Camp Roberts). The national forests in California were established under the Organic Act of 1897, which states that a primary purpose of these lands is to “secure favorable conditions of water flow.” Forest management as a resource management strategy focuses on forest management activities that are designed to improve the availability and quality of water. Strategies include, among others, meadow restoration (for increased groundwater storage), riparian forest restoration, fuels/fire management, and road management. Urban forestry is also discussed as an important management strategy.

Climate change is expected to directly affect forests through increased drought stress, making trees more vulnerable to insect attack; wildfires are also likely to increase in frequency, size, and severity as climate warms. These stresses on forests will affect their capacity to naturally regulate streamflow and buffer water quality. Many streams that are now perennial are likely to become intermittent with the resulting loss of riparian zones, aquatic habitats, and other beneficial uses of water that depend on perennial flows. The RWMG has made efforts to include the U.S. Forest Service and other forest managers in the IRWM planning process (with limited success), and will continue to extend these invitations when appropriate.

- **Land Use Planning and Management:** Land use directly affects water supply and water quality, and water supply and water quality should at a minimum inform, if not dictate, land use decisions. Integrating land use decisions with water and watershed management consists of sustainably planning for the housing and economic development needs of a growing population while keeping in mind the carrying capacity and other limits of the water system and watershed ecosystem. This strategy will naturally call for more sustainable land use practices, including intelligent site design, source control (e.g., low-impact development), and land use decision-making that aims to both reduce and mitigate the potential impacts of climate change. Land use planning and water management planning are still treated largely as separate functions in the Greater Monterey County region, though integration does occur to some extent on both a county and municipal level. In 2016, the RWMG invited the Monterey County Resource Management Agency to become a member of the RWMG, with the intention of bringing a greater land use perspective to the group. The RWMG is continuing its efforts to better coordinate and integrate these inextricably linked aspects of regional planning.
- **Recharge Area Protection:** The goals of recharge area protection are to 1) ensure that areas suitable for recharge continue to be capable of adequate recharge rather than covered by urban infrastructure, such as buildings and roads; and, 2) prevent pollutants from entering groundwater in order to avoid expensive treatment that may be needed prior to potable, agricultural, or industrial beneficial uses. There are currently no areas within the Greater Monterey County IRWM region that are specifically designated as “recharge protection areas,” though most of the Salinas Valley, which sits atop the Salinas Valley Groundwater Basin, could be considered areas of natural recharge. Certain sub-basins of the Salinas Valley Groundwater Basin are more permeable than others, and the land areas that overlie those basins may be considered candidates

in the future for recharge protection. The Storm Water Resource Plan for the Greater Monterey County region, currently under development, will help inform the RWMG of the best geographic areas for groundwater recharge, and will identify projects to make use of those opportunities. In the meantime, many agencies, organizations, farmers and ranchers in the region employ non-point source pollution management practices that, in effect, help protect groundwater recharge areas by preventing or reducing pollutants and nutrients in urban and agricultural runoff from seeping into the groundwater basin.

- **Sediment Management:** Sediment and sediment movement is an important function of the watershed contributing to many positive outcomes, such as beach restoration and renewal of wetlands and stream habitat. Flood deposits of fine-grained sediment into floodplains are the source of the Salinas Valley's rich farmland. However, the potential impacts of *excessive* sediment are many, and include (among other things) degraded surface water quality and wildlife habitat, barriers to navigation, and reduced storage capacity in reservoirs, which affects flood protection and water supply. In addition, pollutants may be absorbed onto fine-grained sediments, potentially impairing water quality and aquatic life if they are remobilized.

Sediment management is critical for the entire watershed, beginning with the headwaters and continuing into the coastal shores. Sediment can be managed in three ways: 1) *Source management* involves preventing soil loss from land use activities that may, without proper management, cause erosion. 2) *Sediment transport management* involves managing the speed and flow of the sediment conveyance and the natural or built structures to achieve a properly distributed balance of sediment types in the habitat. 3) *Sediment deposition management* aims to achieve optimum benefits from sediment deposits, and prevent and mitigate negative impacts.

Many agencies, organizations, and individuals throughout the Greater Monterey County region – from growers, to natural resource managers, to water supply managers – regularly engage in sediment management activities. Sediment management is and will continue to be a critical resource management strategy for the region.

- **Watershed Management:** Watershed management is the process of creating and implementing plans, programs, projects and activities to restore, sustain and enhance watershed functions. Ensuring healthy ecosystems and properly functioning watersheds is important not only for wildlife and sensitive plant species, but for maintaining good water quality, a safe water supply, and flood management. Enhancing watershed function will also help mitigate and increase resiliency to future impacts of climate change.

Several watershed management plans and restoration plans have been developed within the Greater Monterey County region: the Big Sur River Watershed Management Plan (January 2015), the San Antonio and Nacimiento Rivers Watershed Management Plan (October 2008), the Garrapata Creek Watershed Assessment and Restoration Plan (July 2006), the Reclamation Ditch Watershed Assessment and Management Strategy (2005, this includes the watersheds of Tembladero Slough, Merritt Lake, Santa Rita Creek, Espinosa Lake, Gabilan Creek, Natividad Creek, Alisal Slough, and Alisal Creek), Moro Cojo Slough Management and Enhancement Plan (February 1996), Northern Salinas Valley Watershed Restoration Plan (January 1997), Elkhorn Slough Watershed Conservation Plan (August 1999), and the Elkhorn Slough Wetland Management Plan (December 1989).

Improve Flood Management:

- **Flood Management:** Flood management aims to maximize the benefits of floodplains, and minimize the loss of life and damage to property from flooding. Proper flood management

recognizes the benefits to ecosystems from periodic flood events. The MCWRA is the primary flood management agency in Monterey County. Monterey County participates in the National Flood Insurance Program (NFIP) and has been a voluntary participant in the Community Rating System (CRS) since 1991. The CRS recognizes and encourages community floodplain management activities that exceed NFIP standards, and allows for reduced flood insurance premium rates based on the implementation of activities “over and above” that reduce flood risk. Flood risk management includes both structural approaches and land use management approaches. Structural approaches in the Greater Monterey County region include the San Antonio and Nacimiento dams and reservoirs (constructed in 1957 and 1967, respectively) and a well-coordinated Emergency Action Plan, including an automated alert system. Land use management approaches include floodplain function restoration, floodplain regulation, development and redevelopment policies, and housing and building codes. Monterey County is highly proactive in flood risk management, though significant potential still exists to enhance natural floodplain function within the region.

People and Water:

- **Economic Incentives (Loans, Grants, and Water Pricing):** Economic incentives include financial assistance, water pricing, and water market policies intended to influence water management. Examples of economic incentives include water rates and rate structures, free services, rebates, and the use of tax revenues to partially fund water services. As opposed to incentives, fines are a type of economic disincentive that can be used to discourage undesirable water user behavior. Economic incentives, such as plumbing retrofits, washing machine rebates, and residential ultra low-flush toilet replacement programs, have been used and continue to be used at different times by water suppliers in the region. This strategy is a particularly good option for encouraging urban water use efficiency and for assisting disadvantaged communities in attaining water services, facilities, and appurtenances.
- **Outreach, Engagement, and Education:** Public education is considered such an important tool that it is included as an objective in six out of the seven goal categories in the region’s goals and objectives (“promoting public education” appears as an objective for water supply, water quality, flood protection and floodplain management, regional communication and cooperation, disadvantaged communities, and climate change). Many local agencies and organizations sponsor public education and outreach programs to educate citizens about such issues as water conservation, nonpoint source pollution prevention, and the importance of healthy watersheds. Public outreach and engagement involves community members in decision-making and can also help garner community support for projects.

The Greater Monterey County RWMG engages in extensive outreach and engagement with disadvantaged communities in the region to support improved drinking water and wastewater management. The need for outreach and education will become all the more critical throughout the region as new data and information become available regarding climate change. Supporting education, outreach, and engagement efforts is considered one of the higher priorities for the region.

- **Water and Culture:** “Water and Culture” is a new resource management strategy as of the 2013 Update of the California Water Plan, and presents the emerging thinking of the State and other stakeholders regarding the importance of linking cultural considerations to water management. Increasing the awareness of how cultural values, uses, and practices are affected by water management, as well as how they affect water management, will help inform policies and decisions. “Culture” in this context includes mindsets, spirituality, lifeways (including, for

example, fishing towns and villages, ranching and agricultural communities, the surfing and beach culture, the environmental movement), creation stories, livelihoods, personal and community histories, and artistic and other practices that represent the diversity of California's social fabric. Cultural practices and perspectives may result in special management needs. For example, a food supply based on subsistence fishing may expose a community to high levels of contaminants. In addition to ensuring compliance with relevant legal mandates to consider culture (for example, consultation with Native American Tribes), the consideration of culture and cultural activities can help frame and ensure sustainable management decisions. The Greater Monterey County RWMG recognizes the importance of cultural values and practices in regard to water resource management, and supports the consideration of "culture" to the extent practicable in water resource decision-making.

- **Water-Dependent Recreation:** Providing for water-dependent recreation in water projects is part of California law and also part of the Public Trust Doctrine (California State Lands Commission). Demand for water-dependent recreation opportunities in California is so great that it exceeds the capacity of the current infrastructure. As a result, many of these facilities are overused, jeopardizing natural and cultural resources and degrading the recreational experience. This is evident in Big Sur, where, for example, visitor use in some of the State Parks has resulted in litter and trampling in sensitive wilderness or riparian areas. By incorporating planning for water-dependent recreation activities in water projects, water managers play a critical role in ensuring that residents and visitors are able to enjoy water-dependent activities today and into the future.

Water managers in the region do encourage water-related recreation, for example at Nacimiento and San Antonio reservoirs where thousands of local residents and visitors each year enjoy boating, fishing, camping, swimming, picnicking, and hiking. However, the MCWRA staff must balance water supply and water quality needs with recreational opportunities (for example, allowing recreational boating in the reservoirs while protecting the water supply against the non-native, highly invasive zebra and Quagga mussels), just as the State Parks staff must balance recreation in the forests and on the beaches with maintaining good water quality, healthy habitat, and natural stream functioning. Through implementation of the IRWM Plan, the RWMG intends to actively encourage opportunities for recreation while protecting water supply, water quality, healthy ecosystems, and the property rights of landowners.

Other:

- **Dewvaporation or Atmospheric Pressure Desalination:** Dewvaporation is a specific process of humidification-dehumidification desalination. Brackish water is evaporated by heated air, which deposits fresh water as dew on the opposite side of a heat transfer wall. The energy needed for evaporation is supplied by the energy released from dew formation. Heat sources can be combustible fuel, solar or waste heat. The technology of dewvaporation is still being developed, and thus far the basic laboratory test unit is capable of producing up to 150 gallons per day. The technology for dewvaporation is still too new to be of significant value for the Greater Monterey County region, but the RWMG remains open to its potential use as a resource management tool in the future.
- **Fog Collection:** There has been some interest in fog collection for domestic water supply in some of the dry areas of the world near the ocean where fog is frequent. Some experimental projects have been built in Chile, including the El Tofo project which yielded about 10,600 liters per day from about 3,500 square meters of collection net (i.e., about 3 liters per day per square meter of net). Because of its relatively small production, fog collection is limited to producing domestic

water where little other viable water sources are available. Monterey County's coastal location is ideally suited for fog collection; however, as long as other viable water sources exist, fog collection will be considered a low-priority strategy for the region. However, like dewvaporation, the RWMG remains open to its potential use as a resource management tool in the future.

- **Rainfed Agriculture:** Rainfed agriculture is when all crop consumptive water use is provided directly by rainfall on a real time basis. Rainfed agriculture has both water supply and water quality benefits. Land that is tilled and left fallow after harvest can cause the soil surface to seal with the first and second rainfall and increase runoff and erosion; planting more acreage for production of winter crops will reduce runoff flowing into the surface water systems and to ocean outflows. Improved tillage practices, no-till or minimum-till, may also improve water infiltration into soil root zone, thus increasing soil-water storage and could contribute to water supply by eliminating the first seasonal irrigation. Although the RWMG accepts this strategy as a viable, potential resource management tool, it is realistically of limited value to farmers and ranchers in the region, given rain patterns and the types of crops that are prevalent. However, the RWMG will continue to consider this strategy as a potential tool for the region.

The following additional resource management strategies, which were not in the *California Water Plan Update 2013*, were also selected by the RWMG to help implement the objectives in the IRWM Plan:

Practice Resource Stewardship:

- **Environmental and Habitat Protection and Improvement:** The RWMG chose to add "environmental and habitat protection and improvement" as a complementary strategy to "ecosystem restoration," with the intention of not just restoring but also protecting and improving habitats and natural resources where possible. As noted earlier, this work is already being carried out by numerous organizations and agencies, as well as by many farmers, ranchers, and other private landowners in the region. The rationale for including it as a resource management strategy is to emphasize the RWMG's commitment to implementing projects through the IRWM Plan that not only improve water supply, water quality, and flood management, but that also protect, improve, and restore the region's environmental resources, as reflected in the region's goals and objectives.
- **Wetlands Enhancement and Creation:** Studies have reported loss rates of up to 90 percent of wetlands in California (Dahl and Johnson 1991), with some wetland types, including coastal wetlands, riparian areas, and vernal pools, experiencing a disproportionately higher rate of loss than others. In the Greater Monterey County IRWM region, the reclamation of wetlands for agricultural use over the past century has significantly reduced wetland cover. The Salinas Reclamation Ditch, completed in 1920, drained a series of seven shallow lakes in the northern Salinas River watershed, between Salinas and Castroville, in order to increase the acreage of productive agricultural lands. A proposal exists to convert one of those drained lakes, Carr Lake, into a regional multi-use flood control basin and park, which would include re-created wetland areas and enhanced riparian corridors. Benefits of the project would include water quality improvements, stormwater capture and detention, increased and enhanced wildlife habitat, flood control benefits for downstream agricultural and community lands, and open space and recreation. In 2017, the Big Sur Land Trust purchased a 73-acre parcel within the 480-acre Carr Lake with the seed of this larger vision in mind.

Another area with great potential for the creation of new wetlands in the Greater Monterey County region is in the lower Salinas River watershed, along the Monterey Bay from Elkhorn Slough to the Salinas River mouth, addressing the loss of coastal wetlands in the region. The

Greater Monterey County RWMG has opted to include “wetlands enhancement and creation” as a separate resource management strategy to complement “ecosystem restoration” due to the special importance of wetlands in this region.

Increase Water Supply:

- **Storm Water Capture and Management:** Storm water refers to all runoff produced by rainfall events. The vast amount of impermeable surfaces in urban areas not only prevents storm water from seeping into the ground and replenishing the groundwater supply like it does in more natural landscapes, but it accelerates flow patterns, causing potential flooding downstream or overflows at water treatment plants, and introduces harmful chemicals and pollutants that then get carried into the watershed environment and coastal waters. The traditional approach to runoff management views urban runoff as a flood management problem in which water needs to be conveyed as quickly as possible from urban areas to waterways in order to protect public safety and property. Consequently, precipitation-induced runoff in urban areas has been viewed as waste, and not a resource.

Recently there has been significant interest in storm water capture and management by water resource managers in the region. Storm water can be captured and allowed to filter into the ground or injected directly into the aquifers, either with or without treatment; or alternatively, it can be recycled along with wastewater and used for such purposes as agricultural or landscape irrigation. As noted above, the Greater Monterey County RWMG is in the process of developing a Storm Water Resource Plan for the IRWM region, which will consider opportunities for capturing stormwater for beneficial water supply use. The Storm Water Resource Plan will identify opportunities and encourage the implementation of storm water projects throughout the region.

Improve Water Quality:

- **Water and Wastewater Treatment:** Water and wastewater treatment as a supply option, through groundwater recharge and/or other means, is an important resource management strategy that holds much potential for the Greater Monterey County IRWM planning area. This potentially includes integration of agricultural and domestic wastewater into the water supply equation.

The Monterey Peninsula Water Management District and MRWPCA are partnering to implement a project called “Pure Water Monterey,” which will use treated wastewater to offset use of existing water supplies in the Salinas and Carmel Valleys. Pure Water Monterey will recycle municipal wastewater and other source waters diverted into the MRWPCA’s regional collection system after treatment by the existing primary and secondary treatment system at the Regional Treatment Plant (RTP). After secondary treatment, the existing municipal wastewater and new source waters will be treated further when demand exists, or will be discharged to the existing MRWPCA ocean outfall. If the treated effluent is to be recycled, it will be treated further by either: (1) the Salinas Valley Reclamation Project tertiary treatment plant at the RTP prior to distribution to the Castroville Seawater Intrusion Project for agricultural irrigation demands; or (2) a new advanced water purification facility (AWPF) that includes ozone pre-treatment, membrane filtration, reverse osmosis, and oxidation with ultra violet light and hydrogen peroxide. The resulting purified recycled water from the AWPf will then be stabilized to minimize its corrosivity (pH-adjustment/mineral addition) and conveyed to the aquifer recharge area in the Seaside Groundwater Basin. It will be recharged in the upper “vadose” zone of the groundwater basin or injected deeper into the aquifer. There, the purified recycled water will mix with established groundwater for later extraction (at minimum, six months later, but typically more than one year later). Due to use of the groundwater basin as an “environmental buffer,” the

project is considered an indirect potable reuse project and meets the requirements of the State of California's Groundwater Replenishment with Recycled Water regulations (California Code of Regulations, Title 22, Sections 60301 and 60320).

People and Water:

- **Regional Cooperation:** Regional communication and cooperation is included as a goal of the IRWM Plan, and is recognized as one of the “foundational” resource management strategies chosen for the region. Cooperation between water management entities and other stakeholders in the region is absolutely necessary if integrated regional water management is to be achieved. Cooperation forms the foundation for collaboration and allows for the possibility of true problem solving. The 18 entities that form the Greater Monterey County RWMG have developed a process and framework for IRWM planning that is meant to encourage cooperation, communication, and collaboration and to facilitate an open, region-wide conversation with all stakeholders about water resource management in the Greater Monterey County region as well as in the broader Central Coast region.
- **Recreation and Public Access:** This strategy is a complement to the “water-dependent recreation” strategy noted above. It is included as a separate resource management strategy in order to emphasize the RWMG's commitment to providing opportunities for recreation and public access through the implementation of IRWM Plan projects, where appropriate and while respecting the rights of private property owners. This strategy is reflected in the region's goals and objectives as part of both the environmental and flood management objectives.

Improve Operational Efficiency and Transfers:

- **Infrastructure Reliability:** The RWMG chose to include this as a resource management strategy in order to recognize the importance of maintaining and upgrading infrastructure for water supply, treatment, and distribution, wastewater collection, treatment, and disposal, and recycled water treatment and distribution. Infrastructure improvements are continually needed as facilities age, demands on their use increase (due to population growth, degraded water quality, or increased water quality standards), and new technologies are introduced.

Other:

- **Monitoring and Research:** Monitoring and research are recognized by the RWMG as crucial to ensuring effective water resource management. Monitoring is considered so important that it is included as a “Guiding Principle” in the IRWM Plan. Support for research and monitoring is also included as specific objectives in the water supply, water quality, flood protection and floodplain management, environment, and climate change goal categories. Research enables local water resource managers to understand the causes of problems and to develop and implement management measures to address those problems. Monitoring helps managers gauge the effectiveness of those management measures as well as the various projects implemented through the IRWM Plan. Monitoring and research provide the scientific foundation needed for objective decision-making and help guide the implementation of effective management practices throughout the region, and as such, are considered primary tools for integrated regional water management in the Greater Monterey County region.

The strategies listed below from the *California Water Plan Update 2013* were considered but were not chosen for inclusion in the Greater Monterey County IRWM Plan. The reason for omitting each of these strategies is as follows:

- **Conveyance–Delta:** Not applicable in the Greater Monterey County IRWM region.
- **Surface Storage–CALFED:** Not applicable in the Greater Monterey County IRWM region.
- **Crop Idling for Water Transfers:** There is no financial incentive for growers to employ this strategy in Monterey County (like there might be in the Central Valley).
- **Irrigation Land Retirement:** Like the preceding strategy, there is no financial incentive for growers to employ this strategy in Monterey County (like there might be in the Central Valley). Also, this strategy would meet with great resistance from the agricultural community.
- **Snow Fences:** Not applicable in the Greater Monterey County IRWM region.
- **Waterbag Transport/Storage Technology:** The RWMG did not consider this to be an appropriate option. Also, this strategy would meet with great resistance from stakeholders in the region.

E.2 HOW RESOURCE MANAGEMENT STRATEGIES ARE IMPLEMENTED IN THE PLAN

Projects chosen for inclusion in the IRWM Plan represent a broad mix of the resource management strategies listed above. The RWMG encourages stakeholders to develop projects that employ a diverse mix of resource management strategies by offering additional points to projects that demonstrate such diversity as part of the project ranking process. In future IRWM Plan project solicitations, projects will continue to be proactively sought to ensure a diverse mix of resource management strategies for the region's water management portfolio. A strong diversification of resource management strategies will not only ensure robust solutions to current water management issues but will provide resiliency to help the region deal with uncertain future circumstances.

The table on the following pages demonstrates how projects included in the IRWM Plan (out of 38 projects total) will implement resource management strategies. The resource management strategies most widely used include:

- Environmental and Habitat Protection and Improvement: 35 projects
- Regional Cooperation: 33 projects
- Watershed Management/Planning: 32 projects
- Outreach, Engagement, and Education: 31 projects
- Monitoring and Research: 31 projects
- Pollution Prevention: 26 projects
- Sediment Management: 23 projects

The resource management strategies least often used by projects in the IRWM Plan include:

- Dewvaporation or Atmospheric Pressure Desalination: 0 projects
- Fog Collection: 0 projects
- Precipitation Enhancement: 0 projects
- Rainfed Agriculture: 0 projects
- Desalination: 1 project
- Forest Management: 1 project

For this region it makes sense that Dewvaporation, Fog Collection, Precipitation Enhancement, and Rainfed Agriculture are seldom-used strategies for water resource projects. However, Forest Management is a resource management strategy that the RWMG will seek for future project solicitations, and Desalination is currently being considered for significantly broader use in the region.

Table E-1: How 2016 IRWM Plan Projects Implement Resource Management Strategies

Resource Management Strategies/ Projects	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance – Regional/Local	System Re-operation	Water Transfers	Conjunctive Management and Groundwater Storage	Desalination	Precipitation Enhancement	Municipal Recycled Water	Surface Storage – Regional/Local	Drinking Water Treatment and Distribution	Groundwater Remediation/Aquifer Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Urban Runoff Management	Agricultural Lands Stewardship	Economic Incentives	Ecosystem Restoration	Forest Management	Land Use Planning and Management	Recharge Area Protection	Water-Dependent Recreation	Watershed Management/Planning	Flood Management	Dewvaporation or Atmospheric Pressure Desalination	Fog Collection	Rainfed Agriculture	Environmental and Habitat Protection and Improvement	Recreation and Public Access	Stormwater Capture and Management	Wetlands Enhancement and Creation	Water and Wastewater Treatment	Infrastructure Reliability	Regional Cooperation	Outreach, Engagement, and Education	Monitoring and Research	Sediment Management	Water and Culture		
Big Sur Land Trust and City of Salinas: Carr Lake Riparian Habitat Restoration Plan													x	x		x			x		x	x		x						x	x	x		x	x	x	x	x	x		
California State Parks: Big Sur River Steelhead Enhancement Project																			x				x	x						x	x						x				
Castroville Community Services District: Well 2B Treatment Project		x	x			x					x																										x				
Central Coast Wetlands Group: Coastal Wetland Erosion Control and Dune Restoration												x			x					x		x	x	x	x							x			x	x	x	x			
Central Coast Wetlands Group: Development and Evaluation of Climate Change Response Strategies in the Elkhorn Slough, Gabilan and Salinas River Watersheds			x	x	x										x						x	x		x	x									x	x	x	x	x			
Central Coast Wetlands Group: Ecosystem Condition Profile for the Lower Salinas River Watershed using Level 1-2-3 Framework																	x				x															x	x	x			
Central Coast Wetlands Group, MBNMS, Monterey Bay Aquarium Research Institute, Elkhorn Slough Reserve: Expansion of a Coastal										x			x		x	x	x	x	x		x			x	x										x	x	x				

Resource Management Strategies/ Projects	Resource Management Strategies/ Projects																																								
	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance – Regional/Local	System Re-operation	Water Transfers	Conjunctive Management and Groundwater Storage	Desalination	Precipitation Enhancement	Municipal Recycled Water	Surface Storage – Regional/Local	Drinking Water Treatment and Distribution	Groundwater Remediation/Aquifer Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Urban Runoff Management	Agricultural Lands Stewardship	Economic Incentives	Ecosystem Restoration	Forest Management	Land Use Planning and Management	Recharge Area Protection	Water-Dependent Recreation	Watershed Management/Planning	Flood Management	Dewvaporation or Atmospheric Pressure Desalination	Fog Collection	Rainfed Agriculture	Environmental and Habitat Protection and Improvement	Recreation and Public Access	Stormwater Capture and Management	Wetlands Enhancement and Creation	Water and Wastewater Treatment	Infrastructure Reliability	Regional Cooperation	Outreach, Engagement, and Education	Monitoring and Research	Sediment Management	Water and Culture		
Confluence Water Monitoring System to support the Greater Monterey IRWMP																																									
Central Coast Wetlands Group: Northern Gabilan Mountain Watershed Management Project	x	x										x		x		x	x		x		x	x		x	x					x	x	x	x			x	x	x	x	x	
Central Coast Wetlands Group: Implementation of the Moro Cojo Slough Management and Enhancement Plan – Restoration of the Upper Slough												x		x					x					x						x		x	x	x			x	x	x	x	x
Central Coast Wetlands Group: Study of Environmental Services from Nutrient Reducing BMPs													x	x			x	x			x		x	x						x						x	x	x			
Central Coast Wetlands Group: Water Quality Enhancement of the Tembladero Slough Phase II													x			x	x		x		x			x	x						x	x	x	x			x	x	x	x	
Central Coast Wetlands Group: Tembladero Restoration and Castroville Community Public Access			x										x	x		x			x				x	x	x					x	x	x	x	x		x	x	x	x	x	x
City of Salinas: Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements									x						x																				x						

Resource Management Strategies/ Projects	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance – Regional/Local	System Re-operation	Water Transfers	Conjunctive Management and Groundwater Storage	Desalination	Precipitation Enhancement	Municipal Recycled Water	Surface Storage – Regional/Local	Drinking Water Treatment and Distribution	Groundwater Remediation/Aquifer Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Urban Runoff Management	Agricultural Lands Stewardship	Economic Incentives	Ecosystem Restoration	Forest Management	Land Use Planning and Management	Recharge Area Protection	Water-Dependent Recreation	Watershed Management/Planning	Flood Management	Dewvaporation or Atmospheric Pressure Desalination	Fog Collection	Rainfed Agriculture	Environmental and Habitat Protection and Improvement	Recreation and Public Access	Stormwater Capture and Management	Wetlands Enhancement and Creation	Water and Wastewater Treatment	Infrastructure Reliability	Regional Cooperation	Outreach, Engagement, and Education	Monitoring and Research	Sediment Management	Water and Culture		
City of Salinas and MRWPCA: Stormwater Diversion Implementation and Water Supply			x	x	x	x			x			x		x		x								x						x		x		x				x			
City of Soledad: Multi-benefit Storm Water Projects		x	x	x		x				x		x		x		x					x			x	x					x	x		x	x		x	x		x	x	
City of Soledad: Water Recycling/Reclamation Distribution System		x	x			x			x				x																					x	x	x					
City of Soledad: Soledad Recycled Water Project		x	x						x				x		x								x								x			x	x	x	x	x			
Ecology Action: Monterey Bay Green Gardener Training & Certification Program		x											x	x		x		x	x		x				x						x		x			x	x		x	x	
Ecology Action: Drought Response: Achieving Water Demand Reduction and LID BMP Implementation through Expanded Incentive Programs		x											x	x		x		x													x		x			x	x				x
Elkhorn Slough Foundation: Integrated Restoration – Beneficial Reuse of Sediment to Restore Tidal Marsh and Agricultural Stormwater Treatment by a Native Grassland Buffer														x			x		x				x	x	x											x	x	x	x		

Resource Management Strategies/ Projects	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance – Regional/Local	System Re-operation	Water Transfers	Conjunctive Management and Groundwater Storage	Desalination	Precipitation Enhancement	Municipal Recycled Water	Surface Storage – Regional/Local	Drinking Water Treatment and Distribution	Groundwater Remediation/Aquifer Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Urban Runoff Management	Agricultural Lands Stewardship	Economic Incentives	Ecosystem Restoration	Forest Management	Land Use Planning and Management	Recharge Area Protection	Water-Dependent Recreation	Watershed Management/Planning	Flood Management	Dewvaporation or Atmospheric Pressure Desalination	Fog Collection	Rainfed Agriculture	Environmental and Habitat Protection and Improvement	Recreation and Public Access	Stormwater Capture and Management	Wetlands Enhancement and Creation	Water and Wastewater Treatment	Infrastructure Reliability	Regional Cooperation	Outreach, Engagement, and Education	Monitoring and Research	Sediment Management	Water and Culture	
Elkhorn Slough Foundation: Ridgeline to Tideline – Water Resource Conservation in Elkhorn Slough	x					x								x	x		x		x	x		x	x	x	x											x	x	x		
Marina Coast Water District: Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP)		x	x						x				x																					x						
Monterey Bay Sanctuary Foundation: Making Monitoring Count													x	x			x		x		x			x											x	x	x			
Monterey Bay Sanctuary Foundation: Watershed Approach to Water Solutions	x													x		x	x		x				x												x	x	x	x		
Monterey County Redevelopment & Housing Office: Well Replacement and Pipeline – San Lucas Water District			x								x	x	x				x				x	x											x	x						
Monterey County Water Resources Agency: Aquatic Invasive Species Inspection Project																							x	x													x			
Monterey County Water Resources Agency: Coastal Dedicated Monitoring Well Drilling	x	x										x	x	x	x							x		x														x		

Resource Management Strategies/ Projects	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance – Regional/Local	System Re-operation	Water Transfers	Conjunctive Management and Groundwater Storage	Desalination	Precipitation Enhancement	Municipal Recycled Water	Surface Storage – Regional/Local	Drinking Water Treatment and Distribution	Groundwater Remediation/Aquifer Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Urban Runoff Management	Agricultural Lands Stewardship	Economic Incentives	Ecosystem Restoration	Forest Management	Land Use Planning and Management	Recharge Area Protection	Water-Dependent Recreation	Watershed Management/Planning	Flood Management	Dewvaporation or Atmospheric Pressure Desalination	Fog Collection	Rainfed Agriculture	Environmental and Habitat Protection and Improvement	Recreation and Public Access	Stormwater Capture and Management	Wetlands Enhancement and Creation	Water and Wastewater Treatment	Infrastructure Reliability	Regional Cooperation	Outreach, Engagement, and Education	Monitoring and Research	Sediment Management	Water and Culture		
Monterey County Water Resources Agency: Dedicated Monitoring Well Expansion Project													x	x	x							x															x				
Monterey County Water Resources Agency: Granite Ridge Regional Water Supply Project		x	x	x		x					x		x					x			x													x							
Monterey County Water Resources Agency: Ground Water Conservation and Extraction Monitoring Expansion Project	x	x				x																															x	x			
Monterey County Water Resources Agency: Nacimiento Dam Low Level Outlet Works Rehabilitation			x			x				x													x		x						x	x	x		x			x			
Monterey County Water Resources Agency: Salinas River Flood Risk Reduction and Habitat Improvement Project			x			x											x		x		x				x	x					x					x	x	x	x	x	
Monterey County Water Resources Agency: Salinas Valley Water Project, Phase II			x		x	x					x	x																								x					
Monterey County Water Resources Agency: San Antonio Dam Butterfly Valve Project			x	x						x		x											x		x						x	x	x			x					
Monterey County Water Resources Agency: Water Supply Reliability Project			x			x			x	x		x	x		x	x	x				x		x	x	x						x	x	x		x			x	x		

Resource Management Strategies/ Projects	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance – Regional/Local	System Re-operation	Water Transfers	Conjunctive Management and Groundwater Storage	Desalination	Precipitation Enhancement	Municipal Recycled Water	Surface Storage – Regional/Local	Drinking Water Treatment and Distribution	Groundwater Remediation/Aquifer Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Urban Runoff Management	Agricultural Lands Stewardship	Economic Incentives	Ecosystem Restoration	Forest Management	Land Use Planning and Management	Recharge Area Protection	Water-Dependent Recreation	Watershed Management/Planning	Flood Management	Dewvaporation or Atmospheric Pressure Desalination	Fog Collection	Rainfed Agriculture	Environmental and Habitat Protection and Improvement	Recreation and Public Access	Stormwater Capture and Management	Wetlands Enhancement and Creation	Water and Wastewater Treatment	Infrastructure Reliability	Regional Cooperation	Outreach, Engagement, and Education	Monitoring and Research	Sediment Management	Water and Culture		
Monterey County Water Resources Agency: Salinas River Fisheries Enhancement Project																							x						x								x				
Monterey County Water Resources Agency: Salinas River Flood Risk Reduction Project			x	x													x						x							x					x				x		
Monterey County Water Resources Agency: Test Well for Regional Desalination Project – Slant Well		x		x			x				x																									x					
Monterey Regional Water Pollution Control Agency: Blanco Drain Diversion to MRWPCA Regional Treatment Plant			x		x	x							x	x	x							x		x						x		x		x	x				x		
Monterey Regional Water Pollution Control Agency: Stormwater Return Facilities from the Salinas Industrial Wastewater Facility to the MRWPCA Salinas Pump Station			x	x	x	x			x	x			x	x	x	x						x									x			x	x						
Nacimiento Regional Water Management Advisory Committee: Interlake Tunnel between Lake Nacimiento and Lake San Antonio			x		x	x				x		x			x	x							x	x	x					x	x	x			x	x					
Pajaro/Sunny Mesa Community Services District: Springfield Water System		x	x		x	x				x	x	x	x		x						x													x			x	x			

Resource Management Strategies/ Projects	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance – Regional/Local	System Re-operation	Water Transfers	Conjunctive Management and Groundwater Storage	Desalination	Precipitation Enhancement	Municipal Recycled Water	Surface Storage – Regional/Local	Drinking Water Treatment and Distribution	Groundwater Remediation/Aquifer Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Urban Runoff Management	Agricultural Lands Stewardship	Economic Incentives	Ecosystem Restoration	Forest Management	Land Use Planning and Management	Recharge Area Protection	Water-Dependent Recreation	Watershed Management/Planning	Flood Management	Dewvaporation or Atmospheric Pressure Desalination	Fog Collection	Rainfed Agriculture	Environmental and Habitat Protection and Improvement	Recreation and Public Access	Stormwater Capture and Management	Wetlands Enhancement and Creation	Water and Wastewater Treatment	Infrastructure Reliability	Regional Cooperation	Outreach, Engagement, and Education	Monitoring and Research	Sediment Management	Water and Culture						
Resource Conservation District of Monterey County: Livestock and Land														x			x	x	x			x		x																					
Resource Conservation District of Monterey County: Monterey County Farm Water Quality Assistance Program	x											x		x			x					x		x																					
Resource Conservation District of Monterey County: Salinas River Watershed Invasive Non-native Plant Control and Restoration Program			x			x								x			x					x		x		x																			
Rural Community Assistance Corporation: Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program		x										x		x		x	x	x						x																					
San Jerardo Cooperative: Disadvantaged Community Water Quality and Conservation Program		x							x		x	x	x			x										x							x		x	x	x	x							
San Jerardo Cooperative: San Jerardo Wastewater Project		x							x			x		x																					x	x									
Save Our Shores: Watershed Protection Program – Annual Coastal Cleanup Day in Monterey County														x																															

Resource Management Strategies/ Projects	Agricultural Water Use Efficiency	Urban Water Use Efficiency	Conveyance – Regional/Local	System Re-operation	Water Transfers	Conjunctive Management and Groundwater Storage	Desalination	Precipitation Enhancement	Municipal Recycled Water	Surface Storage – Regional/Local	Drinking Water Treatment and Distribution	Groundwater Remediation/Aquifer Remediation	Matching Water Quality to Use	Pollution Prevention	Salt and Salinity Management	Urban Runoff Management	Agricultural Lands Stewardship	Economic Incentives	Ecosystem Restoration	Forest Management	Land Use Planning and Management	Recharge Area Protection	Water-Dependent Recreation	Watershed Management/Planning	Flood Management	Dewvaporation or Atmospheric Pressure Desalination	Fog Collection	Rainfed Agriculture	Environmental and Habitat Protection and Improvement	Recreation and Public Access	Stormwater Capture and Management	Wetlands Enhancement and Creation	Water and Wastewater Treatment	Infrastructure Reliability	Regional Cooperation	Outreach, Engagement, and Education	Monitoring and Research	Sediment Management	Water and Culture	
The Nature Conservancy: Salinas Multi-Benefit Floodplain Management	x		x			x				x				x			x	x	x		x	x		x	x				x	x		x	x		x	x	x	x	x	
UC Davis Marine Pollution Studies Lab: Evaluation of Potential for Stormwater Toxicity Reduction by Low Impact Development (LID) Treatment Systems														x		x					x			x						x							x	x		
Number of Projects that Implement Resource Management Strategies	7	16	22	8	7	17	1	0	9	9	7	15	20	26	13	16	18	8	18	1	18	16	12	32	19	0	0	0	0	35	15	22	12	16	19	33	31	31	23	12

Projects highlighted in green: These projects were funded and implemented through Proposition 84 Implementation IRWM Grant funds (Round 1), or in the case of the MRWPCA project, through Proposition 1 Storm Water Implementation Grant funds (Round 1).

E.3 RESOURCE MANAGEMENT STRATEGIES AND CLIMATE CHANGE

The RWMG has selected resource management strategies based primarily on IRWM Plan goals and objectives. Climate change adaptation and mitigation is one of the seven goals of the Plan, and as such, was explicitly factored in to the RWMG's selection of resource management strategies.

The RWMG supports and encourages the implementation of so-called “no regret” adaptations to general effects of climate change. Such adaptations are those that make sense in light of the current water management context for the region and also help in terms of effects of climate change. Examples of “no regret” strategies include increasing water use efficiency, practicing integrated flood management, and enhancing natural ecosystems. Several of the resource management strategies chosen by the RWMG may be considered “no regret” strategies, and include both climate change adaptation strategies (e.g., dewvaporation and fog collection) and mitigation strategies (e.g., strategies that decrease GHG emissions, such as water use efficiency strategies). These include strategies that:

Increase water supply through water use efficiency:

- Agricultural Water Use Efficiency
- Urban Water Use Efficiency

Increase water supply by developing “new” sources of water:

- Municipal Recycled Water
- Desalination
- Dewvaporation or Atmospheric Pressure Desalination
- Fog Collection
- Rainfed Agriculture

Increase (or maintain) water supply by protecting and replenishing groundwater:

- Stormwater Capture and Management
- Pollution Prevention
- Salt and Salinity Management
- Recharge Area Protection
- Groundwater Remediation/Aquifer Remediation
- Agricultural Lands Stewardship

Encourage integrated flood management:

- Flood Management

Encourage the protection and enhancement of natural systems:

- Ecosystem Restoration
- Forest Management
- Watershed Management/Planning
- Environmental and Habitat Protection and Improvement
- Wetlands Enhancement and Creation

Encourage collaboration in order to understand and address the impacts of climate change:

- Land Use Planning and Management
- Regional Cooperation
- Monitoring and Research
- Outreach, Engagement, and Education

The Climate Change chapter of this IRWM Plan (Section R) presents an in-depth overview of climate

change and its expected consequences for the Greater Monterey County region. The chapter includes a vulnerability analysis and an adaptation strategy based on the results of climate change risk assessments conducted by the Central Coast Wetlands Group at Moss Landing Marine Laboratories (CCWG) – in partnership with a Climate Task Force comprised of local scientists, land use managers, water resource managers, and coastal policy experts – on behalf of the RWMG. The following climate risks were identified as being top priority for the RWMG and other water managers in the Greater Monterey County IRWM region:

- ***Decreased water supply*** due to changes in precipitation, more frequent and severe droughts, increased surface and groundwater consumption, and increased seawater intrusion (due to sea level rise affecting coastal aquifers). Note, water infrastructure (wastewater and recycled water), which provides a significant secondary water supply to agriculture within the lower Salinas Valley, is vulnerable to sea level rise and storm impacts. Climate hazards may jeopardize this infrastructure, resulting in potential loss to future water supply resiliency.
- ***Increased flooding and erosion of creeks and rivers*** due to more intense storm events (higher river flow rates), and overburdening of conveyance systems, levees, and culverts.
- ***Coastal inundation of urban development and other land uses, and impacts to river and wetland ecosystems*** due to changes in rainfall patterns, storm intensity, storm surges (due to increased storm intensity) and sea level rise.

The Climate Change chapter provides an initial evaluation of adaptation options that can be implemented by IRWM partners to increase local water resource resiliency. Adaptation and response strategies are listed in Table R-7 beginning on p. R-37 of that chapter. The recommended adaptation and response strategies address, among other things, impacts of sea level rise on coastal resources and coastal groundwater basins, impacts to water supply due to changes in rainfall, and the potential for increased flooding due to higher storm flow events. Adaptation and response strategies include, for example:

- Prepare a regional sea level rise adaptation strategy
- Manage watersheds, habitat, and vulnerable species
- Implement adaptation strategies to conserve California's biodiversity
- Habitat/ecosystem monitoring and adaptive management
- Implement water conservation and supply management efforts
- Integrate land use and climate adaptation planning
- Support essential data collection and information sharing
- State recommendations suggest no new critical facilities be built within the 200-year flood plain
- Provide guidance on protecting critical coastal ecosystems and development
- Promote community resilience to reduce vulnerabilities
- Educate, empower, and engage citizens regarding risks and adaptation

The resource management strategies selected by the RWMG for this Plan, in particular the “no regret” strategies listed above, are consistent with and will help carry out these adaptation and response recommendations for addressing climate change impacts.

In addition to addressing climate change impacts, the IRWM Plan supports GHG emissions reduction and climate change mitigation activities, as reflected in the following IRWM Plan objectives:

- Support efforts to research alternative energy and to diversify energy sources appropriate for the region, and consider options for using renewable energy where such options are integrally tied to supporting IRWM Plan objectives.

- Seek long-term solutions to reduce energy consumption, especially the energy embedded in water use, with a goal to reducing greenhouse gas emissions.
- Support research and/or implementation of land-based efforts such as carbon-sequestration on working lands and wildlands in the Greater Monterey County region.
- In considering ways to address IRWM Plan objectives and implement the Plan, consider where practical the strategies adopted by California Air Resources Board (CARB) in its AB 32 Scoping Plan.

The “Land Use Planning and Management” resource management strategy addresses these objectives. The strategy calls for more sustainable land use practices, including land use decision-making that aims to both reduce and mitigate the potential impacts of climate change, e.g., learning how to reduce GHG emissions through energy efficient and more sustainable development practices.

The Climate Change chapter of this IRWM Plan provides an in-depth discussion regarding climate change mitigation and GHG emissions reduction. A full GHG emissions reduction strategy for the region is currently under development by Monterey County to meet State mandates (AB 32, CEQA). The Monterey County Climate Action Plan is expected to take aim at reducing emissions to state-mandated levels, including a 15 percent reduction from 2005 levels by 2020 and an 80 percent reduction by 2050. The community-wide plan, which is required by the 2010 county general plan, will also target emissions from major commercial and industrial uses, agricultural production, transportation, residential and more. While that plan is being developed, several key strategies and actions are recommended in Section R.8.1, “GHG Reduction Strategies,” for project proponents, water resource managers, land use managers, and other stakeholders in the region based on strategies listed in the *Climate Change Handbook for Regional Water Planning* (US EPA Region 9 and DWR 2011). The recommended GHG reduction and climate mitigation actions will be further evaluated by the RWMG, with substantial input from the Climate Task Force, to define possible next steps, responsible entities, and funding resources.

Section F: Project Review Process

The projects included in this IRWM Plan are meant to implement the Plan and achieve Plan objectives. All projects submitted for inclusion in the IRWM Plan must undergo a review process. The IRWM Grant Program Guidelines require that certain factors be used in the review process. These factors include (per the 2016 Proposition 1 IRWM Program Guidelines):

- ❑ How the project contributes to IRWM Plan objectives
- ❑ How the project is related to resource management strategies selected for use in the IRWM Plan
- ❑ Technical feasibility of the project
- ❑ Special benefits to critical disadvantaged community water issues
- ❑ Special benefits to critical water issues for Native American Tribal communities (Note: While members of the Ohlone Costanoan Esselen Tribal Nation inhabit the region, there are no federally recognized Tribes or California Tribal Trust Lands within the region.)
- ❑ Environmental justice considerations
- ❑ Project costs and financing
- ❑ Economic feasibility, including water quality and water supply benefits and other expected benefits and costs
- ❑ Project status
- ❑ Strategic considerations for IRWM Plan implementation
- ❑ Contribution of the project in adapting to the effects of climate change in the region
- ❑ Contribution of the project in reducing greenhouse gas emissions as compared to project alternatives
- ❑ Whether the project proponent has adopted or will adopt the IRWM Plan

With each new project solicitation for the IRWM Plan, a Project Review Committee, comprised of Regional Water Management Group (RWMG) members, is convened to review each of the projects. The committee: 1) ensures that projects meet “minimum standards” for inclusion in the Plan, 2) seeks opportunities for integration, and 3) prioritizes the projects according to how well they meet the IRWM Plan objectives, as well as how well they meet certain objectives and priorities of the IRWM Grant Program. The result of this process is a ranked Project List, vetted and approved by the RWMG. All projects on the Project List are eligible for IRWM grant funds.

The project review process has undergone several changes since the IRWM Plan was first adopted in April 2013. In 2017, as part of a plan update to ensure compliance with the 2016 Proposition 1 IRWM Grant Program requirements, the project review process was significantly revised. The revised process attempts to make it easier for project proponents to submit projects to the IRWM Plan, while ensuring the RWMG will be provided the information it needs to decide which projects to put forward in an IRWM application. The following sections describe the project review process as approved by vote of the RWMG at a regularly scheduled RWMG meeting in July 2017.

F.1 PROCEDURES FOR SUBMITTING A PROJECT FOR INCLUSION IN THE IRWM PLAN

Projects are solicited from stakeholders for inclusion in the IRWM Plan typically once every year or every other year, depending on the IRWM Grant Program cycle. Project solicitations for the IRWM Plan are planned to anticipate the IRWM Implementation Grant Program schedule, in order to ensure that the

Project List included in the Plan is as current as possible prior to an IRWM Implementation Grant solicitation.

Both implementation projects and concept proposals are accepted. Concept proposals are accepted for several reasons: to encourage stakeholders to come up with new projects that will address IRWM Plan objectives; to enable all water resource managers and planners in the region to see what ideas are “out there”; and to help project proponents bring their concept proposals to implementation by providing information for alternative funding sources. The submission of concept proposals is also encouraged to enhance project integration, enabling certain concept proposals (or components thereof) to be “added on” to an existing implementation project. This may not only provide multiple benefits to the existing implementation project but may help that concept proposal get implemented. One example of this is a concept proposal submitted by The Return of the Natives at California State University Monterey Bay (CSUMB) to add native plant restoration to any implementation project, as appropriate. Note that concept proposals are not ranked along with the implementation projects, and are not eligible for submission to the State for IRWM grant funding.

An email notification is sent to all stakeholders announcing each new project solicitation for the IRWM Plan approximately two months prior to the expected release of an IRWM Implementation Grant application solicitation (called a “Proposal Solicitation Package,” or PSP) from the Department of Water Resources (DWR). Application forms for implementation projects and concept proposals are forwarded with the email and are also available on the Greater Monterey County IRWM website (in both English and Spanish; see Appendix F1 for an example of the application forms). Public workshops to explain the project submission process and to answer any questions may be conducted around the time the project solicitation is announced. In 2010, for example, three public workshops were held at different times of day and in different locations (Salinas, Big Sur, and King City, with Spanish language translation available at the latter workshop). In 2011, two public workshops were held, in Salinas and King City. In 2017, as stakeholders have become more familiar with the process, just one workshop was held in Salinas.

F.2 PROCEDURES FOR REVIEW OF PROJECTS TO IMPLEMENT THE IRWM PLAN

F.2.1 Initial Project Review

The first step in the project review process is ensuring that projects (including concept proposals) meet the minimum standards to be included in the IRWM Plan. Minimum standards consist of the following:

1. The project must be located within the boundaries of the Greater Monterey County IRWM region, or otherwise directly benefit the region.¹
2. The project must be an “eligible project” per Proposition 1 IRWM Grant Program Guidelines. Projects may include, but are not limited to, the following elements (Water Code §79743 (a – j)):
 - Water reuse and recycling for non-potable reuse and direct and indirect potable reuse
 - Water-use efficiency and water conservation
 - Local and regional surface and underground water storage, including groundwater aquifer cleanup or recharge projects
 - Regional water conveyance facilities that improve integration of separate water systems

¹ An example of eligible projects located outside of the Greater Monterey County IRWM regional boundaries is projects located at Lake Nacimiento and along the Nacimiento River from the reservoir to the Salinas River. The Nacimiento reservoir is located in San Luis Obispo County, but is owned and operated by the Monterey County Water Resources Agency, and is an important water supply and groundwater recharge source for the region.

- Watershed protection, restoration, and management projects, including projects that reduce the risk of wildfire or improve water supply reliability
- Stormwater resource management, including, but not limited to, the following:
 - Projects to reduce, manage, treat, or capture rainwater or stormwater
 - Projects that provide multiple benefits such as water quality, water supply, flood control, or open space
 - Decision support tools that evaluate the benefits and costs of multi-benefit stormwater projects
 - Projects to implement a stormwater resource plan developed in accordance with Part 2.3 (commencing with Section 10560) of Division 6 including Water Code §10562 (b)(7)
- Conjunctive use of surface and groundwater storage facilities
- Water desalination projects
- Decision support tools to model regional water management strategies to account for climate change and other changes in regional demand and supply projections
- Improvement of water quality, including drinking water treatment and distribution, groundwater and aquifer remediation, matching water quality to water use, wastewater treatment, water pollution prevention, and management of urban and agricultural runoff
- Regional projects or programs as defined by the IRWM Planning Act (Water Code §10537)

According to Proposition 1 IRWM Program Guidelines, eligible projects must also:

- Provide multiple benefits
- Advance the purpose of Proposition 1 Chapter 7, Regional Water Security, Climate, and Drought Preparedness (Water Code §79707 (c) and §79740), which are, as follows:
 - Assist water infrastructure systems adapt to climate change
 - Provide incentives for water agencies throughout each watershed to collaborate in managing the region's water resources and setting regional priorities for water infrastructure
- Be consistent with Division 7, commencing with Section 13000 of the Water Code (Water Quality) and Section 13100 of the Government Code (Infrastructure Plan)
- Promote State planning priorities and sustainable community strategies, consistent with Government Code §65041.1 and §65080 (Water Code §79707 (i))
- Wherever possible, preserve California's working agricultural and forested landscapes (Water Code §79707 (j))

3. The project must address IRWM Plan objectives.

After projects are reviewed for minimum standards, the Project Review Committee conducts a more thorough review to identify potential problems or conflicts (either with IRWM Plan objectives or with other projects), to identify possibilities for integration with other projects, and finally, to assess each project according to the project ranking criteria (see below). In addition, all projects, including concept proposals, are screened for potential environmental justice impacts or impacts to disadvantaged communities. The following section describes the process for prioritizing projects in the IRWM Plan.

F.2.2 Project Ranking Process

The IRWM Grant Program Guidelines stipulate that RWMGs must prioritize the projects included within their IRWM Plans. This is not an easy process, and different IRWM regions throughout the state have come up with different systems for prioritizing their projects. The idea is to develop a project ranking system that is objective and fair, and that can be systematically applied with the end result being an objectively ranked numerical listing of projects.

An initial project ranking process for the Greater Monterey County IRWM region was approved by the RWMG by vote in September 2011. Since then, significant revisions have been made in order to both simplify the initial project application process for project proponents and to tie the project ranking more closely to how well a project addresses IRWM Plan objectives. The following describes the project ranking process as approved by the RWMG in July 2017. The project ranking criteria may continue to be revised with subsequent project solicitations as deemed appropriate, with the approval of the RWMG. Note that stakeholders were given an opportunity to provide input into the project ranking process when the process was first developed in 2011 (via a 30-day public comment period) and invited again to provide input when the process was revised in 2018, via a public comment period for the full plan update.

Note, all implementation projects included in the Greater Monterey County IRWM Plan are ranked. Concept proposals are not ranked (and are not eligible for grant funding). It is important to keep in mind that *the final ranked Project List does not necessarily dictate which projects get submitted for funding through the IRWM Grant Program or through other funding sources* but is merely a tool to help the RWMG and the State evaluate the many projects within the Greater Monterey County IRWM region.

The project ranking process takes into consideration the following factors:

1. *Goals and Objectives*: How well a project addresses the goals/objectives of the Greater Monterey County IRWM Plan. The IRWM Plan has seven goal categories and a total of 60 objectives. A project can receive a total of four points for each goal category addressed, according to the number of objectives addressed and the extent to which the project addresses those objectives within that goal category. The maximum number of points possible is 28. Projects can receive points as follows:
 - 4 = strongly addresses that goal category
 - 2 = moderately addresses
 - 0 = slightly addresses, or does not address at all
2. *Resource Management Strategies (RMS)*: How well a project contributes to diversifying the region's portfolio of RMS. The maximum number of points possible in this category is 4. Projects can receive points as follows:
 - 4 points = addresses 11 or more RMS
 - 2 points = addresses 5 – 10 RMS
 - 0 points = addresses 0 – 4 RMS
3. *Climate Change Adaptation*: How well a project contributes to climate change adaptation. This includes consideration of the following:
 - To what extent does the project contribute to climate change adaptation?
 - Does the project specifically address adaptation strategies outlined in the Climate Change chapter (i.e., contribution of project to adapting to identified system vulnerabilities to climate change effects in the region)?
 - Does the project consider the effects of sea level rise on water supply conditions and identify suitable adaptation measures?
 - Does the project take into consideration changes in the amount, intensity, timing, quality and variability of runoff and recharge?

The maximum number of points possible in this category is 2. Projects can receive points as follows:

- 2 points = fully addresses
- 1 point = partially addresses

- 0 points = inadequate consideration of climate change impacts
4. *Greenhouse Gas (GHG) Emissions Reduction:* How well a project contributes to the reduction of GHG emissions. This includes consideration of the following:
- To what extent does the project help reduce GHGs, compared to project alternatives?
 - To what extent will it help the region reduce GHGs over the next 20 years?
 - To what extent does the project help reduce energy consumption, especially the energy embedded in water use, and ultimately reducing GHG emissions?

The maximum number of points possible in this category is 2. Projects can receive points as follows:

- 2 points = fully addresses
- 1 point = partially addresses
- 0 points = inadequate consideration of GHG emissions reduction

The following table summarizes the project ranking criteria and scoring (with 36 being the total maximum number of points possible):

Table F-1: Project Ranking - Summary of Points

Criteria	Explanation of Scoring	Maximum Potential Points
Addresses Goals and Objectives	For each goal category (there are 7 goals): 4 = strongly addresses that goal category 2 = moderately addresses 0 = slightly addresses or does not address	28
Addresses RMS	4 points = 11 or more RMS 2 points = 5 – 10 RMS 0 points = 0 – 4 RMS	4
Contributes to climate change adaptation	2 points = fully addresses 1 point = partially addresses 0 points = inadequate consideration	2
Contributes to reduction in GHG emissions, compared with project alternatives	2 points = fully addresses 1 point = partially addresses 0 points = inadequate consideration	2
TOTAL		36

The result of this process is a ranked Project List, which is then approved by the RWMG and officially incorporated into the IRWM Plan. The ranked Project List for 2012 IRWM Plan projects is provided, as an example, in Section G. The most current ranked Project List is posted on the Greater Monterey County IRWM website: <http://www.greatermontereyirwmp.org/projects/proposed/>.

Finally, if the RWMG finds that the project ranking system falls short, the RWMG will re-evaluate the project ranking system to address the discrepancy. Any revisions made to the project ranking system will need to be formally approved by vote of the RWMG.

F.2.2.a A Note about Climate Change Review Factors

Two of the required project review factors contained in the IRWM Program Guidelines concern climate change:

- ❑ Contribution of the project in adapting to the effects of climate change
- ❑ Contribution of the project in reducing GHG emissions as compared to project alternatives

In 2012, IRWM Planning Grant funds were used to address the Proposition 84 IRWM program standards for climate change in this IRWM Plan, including three broad focuses: (1) analysis and assessment of regional vulnerabilities to climate change, (2) identification of adaptation strategies for the projected effects of climate change in the region, and (3) identification of mitigation strategies for GHG emissions. In 2017-2018, IRWM Planning Grant funds were used again to update the Climate Change chapter according to 2016 Proposition 1 IRWM Program Guidelines, including climate change vulnerabilities in the Greater Monterey County IRWM region. Please see Section R of this IRWM Plan for an overview of anticipated climate change impacts for the Greater Monterey County region.

The extent to which a project contributes to climate change adaptation and GHG reduction is factored into the project ranking process both directly (as shown in Table F-1 above) and indirectly, by the extent to which the project addresses Climate Change objectives of the IRWM Plan. To assist project proponents in estimating GHG emissions, project proponents are encouraged to use the California Emissions Estimator Tool (CalEEMod), which can be accessed on the Greater Monterey County IRWM website: <http://www.greatermontereyirwmp.org/performance/>.

F.2.3 Selecting Projects for IRWM Grant Funds

Whenever an IRWM grant solicitation is announced, the RWMG must decide which projects to put forward in a grant application package on behalf of the Greater Monterey County region. Only a limited number of projects can be submitted in any one round. To help make this decision, the RWMG has established the following procedures.

Rules of the Game

1. *Project Selection Committee:* The entire RWMG will act as the “Project Selection Committee.” To avoid a conflict of interest, no project proponent who is also a RWMG member will be allowed to vote on their own project when selecting projects for an IRWM Grant application.
2. *Deadlines:* During the grant application process, internal deadlines will be established for submitting various pieces of the application (e.g., Work Plan, Budget, Schedule, Cost Effectiveness Analysis, Physical Benefits, etc.). If a project proponent does not meet a deadline, that project will be disqualified.
3. *Presentation of Projects to the RWMG:* All project proponents wishing to have their projects considered for inclusion in an IRWM grant application will be required to attend the RWMG meeting in which their project is discussed in order to answer questions and/or present additional information, as needed.

Call for Projects

When DWR releases a Draft PSP, the RWMG will ask project proponents whether they are interested in applying for IRWM grant funds in that round. Eligible projects include:

- Projects that are ready to proceed.

- Projects that are eligible for that particular funding opportunity.
- Projects whose project proponents have adopted, or have expressed a commitment to adopt, the IRWM Plan (the IRWM Program Guidelines stipulate that each project proponent named in an IRWM Grant application must adopt the IRWM Plan).

Project proponents will have 4-6 weeks to submit a detailed project proposal for the RWMG to review. The intent is to obtain this information ahead of the Final PSP being released. The application will include:

- Work plan
- Budget, with documented basis of cost estimates
- Schedule
- Project status, in terms of CEQA/NEPA, permitting, feasibility/engineering/design percent complete
- Annual physical benefits (quantified in table format)
- Whether the project has multiple benefits
- Whether or not the project addresses disadvantaged community needs, and/or the Human Right to Water Policy
- Whether or not the project addresses critical water issues for Native American Tribal communities
- Whether or not the project addresses nitrate, arsenic, hexavalent chromium, and/or perchlorate contamination (per AB 1249)
- Cost effectiveness analysis (or economic screening tool)
- How the project assists in meeting the IRWM Program and Statewide Priorities

In addition, project proponents will be asked to score themselves using the evaluation criteria provided in the Draft PSP.

Project Selection

As part of the project selection process, the RWMG will take into consideration the following criteria:

1. How well the project addresses statewide priorities and specific criteria/preferences of that particular funding opportunity
2. How well the project addresses IRWM Plan objectives, resource management strategies, and climate change (i.e., how it ranks in the IRWM Plan Project List)
3. Project cost, and how projects can be combined within the grant funding limit
4. Direct benefits to disadvantaged communities or Native American Tribes, or the extent to which a project addresses environmental justice concerns
5. The extent to which the project benefits are regional, or have broad impact (e.g., by population affected, geographic area restored, etc.)
6. Results of a cost effectiveness analysis
7. Project need/urgency
8. Amount of match available (unless waived due to disadvantaged community status, projects are required to have 50% non-State match)
9. How well a project scores against DWR's evaluation criteria

The RWMG will take all of these factors into consideration when selecting projects to put forward in the application package, though the exact method by which they do so will be decided at that time. The RWMG may opt to assign points to each of these criteria, or to weigh these factors in some other way. The end result will be a mix of projects that help carry out IRWM Plan objectives, provide multiple benefits, are cost effective and technically feasible, and that address IRWM Program preferences and statewide priorities.

F.2.3.a Preliminary Economic Analysis

The RWMG must consider the economic effects of a project when selecting projects to put forward for any particular grant solicitation. Preparing a full benefit-cost analysis or cost-effectiveness analysis can be time consuming and prohibitively expensive, particularly for smaller organizations; so rather than requiring a full economic analysis from each project proponent, the RWMG has developed a “preliminary” economic analysis that may be used as a tool to help select projects for inclusion in an IRWM grant application.

To assist project proponents in preparing a preliminary economic analysis, the RWMG hired an economic consultant (with Proposition 84 IRWM Planning Grant funds) to develop an “economic screening tool.” The economic screening tool is not intended to serve as a benefit-cost analysis, but is designed to solicit preliminary information about the types of benefits and costs the projects are likely to generate. The economic screening tool consists of a spreadsheet template that guides project proponents through identifying the effects of their project. The categories of effects include the following:

- *Water supply*, including: additional water produced, saved or recycled, distinguishing between impacts on groundwater and surface water; increased water supply reliability; increased storage or system capacity; or decreased variability in water supply.
- *Water quality*, including: a description of how the project will improve water quality; water quality constituents affected; reduced costs associated with improvements in water quality; reduced likelihood of water quality violations; or reduction, if any, in sediment deposition.
- *Environmental quality*, including: acres of habitat restored, protected, or enhanced; plants and animal species the project affects, with special attention on threatened or endangered species; or potential increases in carbon sequestration.
- *Flood reduction*, including: description of how the project will reduce risks of flooding; description and quantification of infrastructure, land uses, and/or lives protected from flooding; alteration of FEMA flood maps or reduction in flood insurance premiums.
- *Recreation*, including: improvements to existing recreational areas or facilities and/or quality of recreational opportunities; or increases in recreational use.
- *Energy*, including: increases in renewable energy production; or reduced energy use.
- *Other community and social benefits*, including: increased education or training opportunities, which may result in benefits not captured in the other benefit categories; new technology or new data produced; the avoidance, reduction, or resolution of an existing resource conflict; or promotion of social health or safety not otherwise captured in the other benefit categories.
- *Other sustainability benefits*, including: whether the project will improve the overall long-term management of California’s groundwater resources; or whether the project will provide a long-term solution in place of a short-time one.

Other questions in the economic screening tool intended to establish the project’s overall benefits include:

- *General project information*, including project alternatives proposed and whether the project serves a disadvantaged community.

- *Evidence of demand for the project's effects*, including: whether the project will produce effects that address documented problems related to scarcity of a resource; whether the project is likely to create or enhance goods or services for which there are no nearby or adequate substitutes; whether the project is likely to result in reduced risk of loss of life or damage to property; or whether the project is likely to result in reduced risk of disruption or restoration of critical services.
- *Distribution and equity considerations*, including whether the project will produce benefits for a disadvantaged community.

The economic screening tool also provides a cost worksheet, which includes: the cost estimate; whether the cost estimate includes operation and maintenance costs and if not, the average annual O&M costs; other costs required to generate the benefits described but not included in the cost estimate, including in-kind donations, land acquisitions, and volunteer time; potential costs for other individuals, not reflected in the total project cost; and whether the project might be controversial, or otherwise generate conflict.

Finally, the economic screening tool provides a summary page to assist the RWMG in a preliminary assessment of the benefits and costs each project is likely to generate. The RWMG can then use this information to help select which projects to put forward in any grant solicitation round.

The economic screening tool is attached as Appendix F2 (Instructions for Project Proponents) and Appendix F3 (Economic Screening Tool Template), and can be downloaded from the Greater Monterey County IRWM website at: <http://www.greatermontereyirwmp.org/documents/solicitation/>.

F.3 PROCEDURES FOR COMMUNICATING THE IRWM PLAN PROJECT LIST

The ranked Project List for 2012 IRWM Plan projects, along with a brief summary of each project, is provided in Section G as an example. As described earlier, the IRWM Plan Project List will naturally evolve with each new project solicitation. Updating the Project List will not entail formal re-adoption of the Plan, but just the approval (i.e., simple majority vote) of the RWMG. The Project Lists (and updates) will be announced to stakeholders via email, and will also be available for download on the Greater Monterey County IRWM website at: <http://www.greatermontereyirwmp.org/projects/>.

Section G: Projects

The Project List included in this Integrated Regional Water Management (IRWM) Plan represents the implementing element of the Plan. The projects are intended to carry out the goals and objectives of the Plan, and reflect the collaborative spirit of the IRWM planning effort.

Note that the process for soliciting projects from stakeholders and for ranking the projects is described in the previous section (Section F, Project Review Process). The process for tracking the implementation of projects, along with associated monitoring data, is described in Section K, Data Management. The process for evaluating progress made toward achieving Plan objectives, via project implementation, is described in Section J, Plan Performance and Monitoring.

This section lists the projects included in the IRWM Plan through 2014. Three separate lists of projects are shown in Tables G-1, G-2, and G-3 on the following pages:

- *Proposed Implementation Projects:* Projects proposed by stakeholders in the region for grant funding. This is what we typically refer to as the “Project List” for the IRWM Plan. Projects have been ranked according to an approved ranking process. The Regional Water Management Group (RWMG) will choose from this list when applying for IRWM grant funds and other grant funds. This list is shown as Table G-1 below.
- *Funded IRWM Plan Projects:* Implementation projects that were previously included on the IRWM Plan Project List but have been funded either through the IRWM Grant Program or other source of funds (i.e., projects from previous IRWM Plan Project Lists that have “graduated” and are now implementing the Plan). This list is shown as Table G-2 below.
- *Concept Proposals:* Concept proposals are ideas submitted by stakeholders for projects that are not quite far enough along in their development to be submitted for grant funding. It is the intention that concept proposals will eventually grow into “full-fledged” implementation projects. This list is shown as Table G-3 below.

The projects listed in the tables below consist of all projects that have been submitted for inclusion in the IRWM Plan through April 2014. These project lists will change over time as projects get implemented and new projects are included in the Plan. The most current project lists are available on the Greater Monterey County IRWM website at <http://www.greatermontereyirwmp.org/projects/>.

G.1 PROPOSED IMPLEMENTATION PROJECTS (“THE PROJECT LIST”)

Table G-1 below constitutes the official ranked “Project List” for the IRWM Plan—the list from which the RWMG will choose when applying for IRWM grant funds. The 2014 Project List consists of 38 implementation projects. These projects have undergone a full project review and have been prioritized according to an approved project ranking process. The projects are ranked according to how well they address both the IRWM Plan objectives and the priorities of the State IRWM Grant Program (as described in Section F, Project Review Process). Table G-1 includes a brief summary of each project and project costs.

It is important to note that the Project List is a continually evolving element of the IRWM Plan. Projects will be removed from the list as they get implemented, and new projects will be added to the list with every new IRWM Plan project solicitation (which is expected to occur approximately every two years or with each new IRWM grant solicitation). Thus, the Project List printed in this section should be considered more of a “sample” Project List rather than a fixed list for the IRWM Plan.

Table G-1: Ranked Project List for 2014 IRWM Plan Implementation Projects

Ranking	Project Proponent & Project Title	Score (out of 100)	Project Summary	Requested Amount	Local or Federal Matching Funds	Other State Funds	Total Project Cost
1	The Nature Conservancy: Salinas Multi-Benefit Floodplain Management	80	The Multi-Benefit Salinas River Management Project is a collaborative partnership with growers, water resource managers, county, state and federal agencies, conservation groups and other stakeholders to develop an adaptive approach to flood risk reduction, groundwater recharge, community health and safety, and riparian and coastal biodiversity. Partners will organize into “management neighborhoods” to model flood risk, nutrient fate and transport, and water balance to design integrated management strategies to build consensus on existing conditions, costs of different management strategies, and how to optimize benefits. Strategies will include off-channel flood attenuation and storage areas (e.g., ponds, bypasses, compound channels), coordinated passive and active management of native vegetation for enhanced habitat, flood conveyance, and water quality treatment; and removal of Arundo. Market mechanisms and tools, such as risk pools, cost shares, and benefits transfers, will be developed in coordination with regulatory agencies, industry and other partners to maximize positive outcomes across socioeconomic and ecological benefits.	\$866,053	\$288,684		\$1,154,737
2	San Jerardo Cooperative, Inc: Disadvantaged Community Water Quality and Conservation Program	75	The program will address severe water supply and water quality needs for three disadvantaged communities. The Alpine Court and San Vicente Road communities in rural south Monterey County have drinking water wells with samples testing in excess of public health standards for nitrates. Septic systems on sites are aging and one has been deemed in need of complete replacement. The contaminated wells and failing septic systems will be replaced with new, deeper well installations and upgraded wastewater systems. These improvements qualify as meeting critical water supply and critical water quality needs of two disadvantaged communities. The Wastewater Treatment Plant at the San Jerardo Cooperative will be upgraded to meet state guidelines and county code requirements to allow recycled treated water to be used for on-site irrigation. In addition, storm water improvements will be installed at the entrance to the Cooperative to divert storm-related flows and prevent seasonal flooding of public roadways. Finally, a water conservation program consisting of installation of “water saver” plumbing fixtures, grey water connections, rainwater collection features	\$2,500,000			\$2,500,000

			and low water use landscaping will be included for all three projects participating in the Disadvantaged Community Program. The program will include workshops with training provided by Ecology Action.				
3	Central Coast Wetlands Group: Water quality enhancement of the Tembladero Slough Phase II	73	This project is Phase II of <i>Water quality enhancement of the Tembladero Slough and Coastal Access for the Community of Castroville</i> , Phase I of which has been funded by an IRWM Round 1 Implementation Grant. During Phase I, CCWG is working with county agencies, agricultural landowners and the community of Castroville for design and permitting of a select set of water quality/wetland management structures. These projects will utilize a variety of water quality management innovations including the treatment train approach (i.e., detention/sedimentation features, pollutant filtration/biological degradation of pollutants and water polishing areas). During Phase II of this project, 20 acres in total (approximately six projects) will be constructed based on the plans from Phase I that support and integrate the multiple objectives of the Greater Monterey County IRWM Plan, emphasizing urban and agricultural water quality enhancement, flood management, habitat restoration and support of various watershed planning and permit processes. Features are selected based on available space, hydrologic requirements, and adjacent landowner concerns, but preferentially support projects that enhance habitat and open space as well as improve water quality.	\$727,650	\$242,550		\$970,200
4	Central Coast Wetlands Group: Northern Gabilan Mountain Watershed Management Project	69	The project consists of three phases to restore a sub-watershed within the upper Gabilan watershed, and serve as a model for restoration of watersheds within the Central Coast. Phase I provides the foundational watershed characterization and process analysis necessary to develop meaningful and effective watershed management. It includes a review of previous relevant studies and preparation of original analysis along with a compilation of spatial data and key watershed processes. Analysis will be integrated with research and planning projects done by others. The synthesis of this information will be used to target planning and restoration for one sub-watershed. This will be accomplished by addressing the changes in the watershed functions and processes (physical, chemical and biological) that are caused by agriculture and urban activity that affect watershed health. Additionally, we will conduct a community-based engagement process to review Phase I information and watershed management options. Phase I will result in a management methodology and a master restoration plan for one of three sub-watersheds. Phase II will develop site design for prioritized restoration locations within the chosen sub-watershed and Phase III will implement those designs.	\$841,961	\$280,654		\$1,122,615

5	Resource Conservation District of Monterey County: Monterey County Farm Water Quality Assistance Program	67	The RCD of Monterey County, in close partnership with University of California Cooperative Extension Crop Advisors and USDA Natural Resources Conservation Service, will provide a bilingual on-farm erosion, irrigation, and nutrient management evaluation program for Monterey County farmers. The service will 1) evaluate erosion potential, irrigation system and application efficiency, and nutrient budgeting; 2) develop recommendations as needed for field configuration, soil stabilization, and refined water and nutrient applications; and 3) assist growers' voluntary implementation of those recommendations to help reduce excess soil, water and nutrient movement off area farms while optimizing farm productivity. This work is already underway on a smaller scale, and incorporation into the Greater Monterey County IRWM Plan and the requested funding would support development of a full program for the next three years.	\$583,000	\$191,000		\$774,000
6	City of Salinas and Monterey Regional Water Pollution Control Agency: Drought Relief through Stormwater Diversion for Water Supply	66	This project focuses on stormwater management and water reclamation/water supply. The project will divert dry weather urban surface water discharge from south Salinas into the City's Blanco Detention Basin. Water from the Detention Basin will then be sent to the MRWPCA regional wastewater treatment plant. Once reclaimed, diverted water could be used for dry-season water supply (e.g., as agricultural irrigation water). In Phase II, wet weather and dry weather surface water runoff from the City's northern neighborhoods will be similarly diverted for reuse. Surface water runoff that currently flows into the Reclamation Ditch will be diverted and reclaimed. After treatment, MRWPCA will direct the recycled water to where it will mitigate seawater intrusion and provide additional water for agriculture in the northern Salinas Valley as part of the Castroville Seawater Intrusion Project (CSIP). This project will reduce pollution to downstream receiving waters and add to recycled water supplies.	\$730,000	\$366,000		\$1,096,000
6	Elkhorn Slough Foundation & ESNER: Ridgeline to Tideline: Water Resource Conservation in Elkhorn Slough	66	Ridgeline to Tideline is a comprehensive approach to addressing water resource issues in an estuarine watershed. The project area encompasses 427 acres of Elkhorn Slough and uplands set in a 4,000-acre block of protected lands. The three phases of this work include: 1) increasing tidal range and circulation in part of the Slough with consistently poor water quality and greatly reduced estuarine function, coupled with restoration of an adjacent upland buffer, 2) acquiring two adjacent farmland properties that are chronic sources of Slough degradation, and 3) re-contouring and stabilizing their steep eroding slopes and restoring native vegetation. Reduced groundwater extraction on these lands will improve water balance in the basin, resist seawater intrusion, prevent	\$6,178,438	\$2,050,694		\$8,229,132

			nitrate pollution and promote freshwater spring re-emergence. Over the past three decades we have demonstrated these integrated actions can measurably improve ecological function, tidal, freshwater and groundwater quantity and quality, and provide habitat for a diverse array of plants and animals. We have demonstrated a statistically significant drop in nitrate in receiving waters subsequent to restoration of similar lands, which techniques we will apply to this work.				
6	Monterey County Redevelopment & Housing Office: Well Replacement and Pipeline - San Lucas Water District	66	The community of San Lucas is an impoverished, predominately Hispanic, farmworker village. The San Lucas Water District operates the community's drinking water and wastewater systems, and has approximately 90 service connections. The District's water supply is derived from a single groundwater well located in the center of an agricultural field. The District has very limited financial capacity and operational capacity. The County of Monterey Redevelopment and Housing Office has been providing on-going assistance with the goal of supporting the existing community. Since March 2011 all customers of the Water District have been on an indefinite "Do Not Drink" order from the Monterey County Division of Environmental Health (DEH) due to excessive levels of nitrates in water being pumped from the District's single well. The DEH has directed the Water District to implement a new source of water that meets all public water quality requirements as soon as possible. In addition, the RWQCB has been unable to certify approval of the District's recently upgraded wastewater treatment and disposal system due to high TDS in the treated effluent, which is a direct result of high TDS in the community's water source. As a result, the District cannot approve any new service connections to the sewer system until this issue is resolved. Studies recommend relocation of the well to a location about 1,800 feet west of the existing well. The first phase of implementation will be to acquire a temporary construction easement and drill a test well at the indicated location. A comprehensive sampling and testing regime will then be undertaken. If the testing program indicates the selected location is appropriate for a long-term reliable public water source, the next steps will be to prepare a Project Description, conduct CEQA environmental review, acquire permanent easements for the production well and pipeline, prepare final engineering plans and specifications, advertise for bids, and construct the improvements.	\$465,000			\$465,000
7	Central Coast Wetlands Group: Implementation of	65	This project will involve restoration of 120-acres of the Moro Cojo Slough containing tidal and brackish water marsh that receive fresh water inputs from agricultural lands. The project will restore the	\$1,450,636	\$483,545		\$1,934,181

	the Moro Cojo Slough Management and Enhancement Plan: Restoration of the Upper Slough		hydrologic connectivity of the upper, middle, and lower reaches of the Moro Cojo Slough by linking multiple marsh areas with new lands previously lost to agriculture. This effort addresses a critical action defined within the Moro Cojo Management Plan that until now has been left incomplete. Because of new interest by farmers to provide access to restorable marshlands we are able to move forward to implement this key action outlined in the Management Plan. The result of this project will be to reestablish hydrologic connectivity and ecosystem function, enhance wildlife habitat, reestablish wetland habitat that supports endangered species, and improve water quality flowing out of the watershed into several state marine reserves and the Monterey Bay National Marine Sanctuary. This will be a four-year project with three major outcomes: 1) protection of wetland marsh and adjacent upland habitats through easement or acquisition, 2) filtration of agricultural runoff with sediment basins and treatment wetlands prior to water entering the main slough 3) restoration of the main slough to increase open water habitat and overall system complexity, and 4) regain wetland habitat continuity between the three main sections of the Moro Cojo Slough.				
8	Nacimientto Regional Water Management Advisory Committee: Interlake Tunnel between Lake Nacimientto and Lake San Antonio	62	The project is to build an interlake tunnel between Lake Nacimientto and Lake San Antonio. The project would explore various options for size, type, input and exit structures of the tunnel. Additionally numerous technologies for alternative energy generation will be evaluated, specifically in-line hydro-electric power generation and solar power for pumping and other systems. With the recent changes in allowed water storage derived from the modification of the Lake Nacimientto dam spillway due to the completion of the Salinas Valley Water Project there has been a renewed interest in capturing all of the rainwater run-off. This past year (2012), despite the increased storage capacity of Lake Nacimientto, tens of thousands of acre feet of water were released for flood control, ultimately flowing to the ocean as wasted water. Over the same period Lake San Antonio had a minimum of 20% of its storage capacity available - twice what was needed to store the extra runoff from Lake Nacimientto. During the winter season, this tunnel would transfer the extra rainwater that would be released. The water from these two lakes would then be used downstream for groundwater recharge, abatement of saltwater intrusion, and the promotion of fish habitats. Increasing the total available supply of water will benefit all of these uses, industries and communities.	\$8,600,000	\$2,150,000		\$10,750,000

8	Resource Conservation District of Monterey County: Livestock and Land: Rangeland and Livestock Facility Water Quality, Vegetation Management and Wildlife Enhancement Program	62	The purpose of this program is to achieve immediate and lasting reductions in nutrient, sediment and pathogen pollution to surface and ground waters and enhance wildlife habitat through implementation of best management practices on livestock facilities and rangelands in the Greater Monterey County IRWM region. The proposed program utilizes an incentives-based approach to achieve the cultural change needed for livestock facilities to voluntarily adopt management measures that improve the healthy functioning of watersheds. Projects are implemented in high priority areas identified by TMDLs and other regional and local plans. Water quality and wildlife goals will be achieved through implementation of projects, project design, technical assistance, recruitment and training. We will employ a systematic evaluation process to measure program effectiveness through participant surveys, before and after site load reduction modeling and site-specific erosion and runoff assessments.	\$899,852	\$293,000		\$1,192,852
9	Pajaro/Sunny Mesa Community Services District: Springfield Water Project	61	Funds are requested for construction of a new well, storage tank, and associated distribution system in order to comply with the nitrate maximum contamination level (MCL) and saltwater intrusion regulations for the Springfield water system. The Springfield water system is made up of 35 connections supplying water to about 165 low-income farmworkers. The system has exceeded the nitrate MCL since at least 1986. The District took over the Springfield water system in 2004. Water containing nitrates in excess of 45 ppm present a risk to the health of humans when continually used for drinking or culinary purposes; the current level of nitrates is 293 ppm into Springfield. The project proposes that a new well be drilled on a site next to the Moss Landing Middle School on Springfield Road. The District obtained title to the site in 2006 and drilled a test well. The test well meets regulatory standards and can provide sufficient water for the Springfield water system and the Moss Landing Mobile Manor located within a mile of the water system. The Springfield water system could consolidate the Moss Landing Mobile Manor water system with this project. The project also consists of constructing a 210,000-gallon storage tank on the same site. The system is currently on a demand basis without water storage. The tank constructed at this site would be at a higher elevation than the distribution system, allowing the system to be gravity fed.	\$3,000,000			\$3,000,000

10	Marina Coast Water District: Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP)	58	RUWAP is the urban water augmentation project developed by MCWD in cooperation with Fort Ord Reuse Authority (FORA). The Recycled Water element of RUWAP consists of the backbone facilities needed for a recycled water distribution system that will provide up to 3,000 AFY of recycled water to urban users in the MCWD service areas, specifically including the former Fort Ord, and potentially the Monterey Peninsula. The Recycled Water element of RUWAP includes the following specific features: 1) A connection to the SVRP that includes a pump station referred to as the Water Augmentation Pumping Plant. 2) A new distribution pipeline system consisting of approximately 40,000-LF of ductile iron and plastic pipe installed within existing roadway right-of-ways and easements. Thousands of linear feet of Recycled Water conveyance pipelines have already been installed throughout the community, in particular a small section of backbone facility within CSUMB and an approximately 3-mile extension of the backbone facility southerly down General Jim Moore Boulevard. 3) One intermediate pump station referred to as the Fifth Avenue Pump Station located in the City of Marina. 4) One storage tank referred to as the Blackhorse Reservoir will provide more than 1.5-million-gallons of operational storage. The Blackhorse Reservoir will be located at an existing MCWD storage tank site just east of General Jim Moore Boulevard. 5) The installation of a variety of appurtenant features.	TBD	TBD	TBD	TBD
11	Resource Conservation District of Monterey County: Salinas River Watershed Invasive Non-native Plant Control and Restoration Program	57	Wildlife habitat, flood control and water availability on the Salinas River and its tributaries are compromised and threatened by invasive nonnative plants, including the second-largest invasion in California of the noxious weed, <i>Arundo donax</i> . <i>Arundo</i> is a nonnative aggressive perennial grass that has overtaken approximately 2,500 acres of the Salinas River, forming enormous monocultures with virtually no food or habitat value for native wildlife. Aerial GPS-linked photo reconnaissance of the Salinas River and several tributaries by the RCDMC in May 2011 identified Tamarisk (<i>Tamarix ramosissima</i>) as another major invasive plant that is displacing native vegetation and actively migrating into the Salinas River from several tributaries. The project proposal is for the first 3-year stage of treatment (of a 10+ year program) and will target arundo and tamarisk and other invasive weeds in the channel, floodplain and terraces of the Salinas River between King City and Soledad. All non-native invasive weeds present in these areas will be treated using a combination of physical, chemical and biological techniques, and selected sites will be revegetated with native plants as appropriate to the site (considering flood risk, natural	\$1,215,500	\$419,000		\$1,634,500

			recruitment potential, and landowner interest). The methods and approach of this program are based on successful riparian noxious weed eradication efforts conducted throughout California, as well as at the headwaters of the Salinas River in northern San Luis Obispo County and at Camp Roberts in southern Monterey County.				
12	Monterey County Water Resources Agency: Salinas River Flood Risk Reduction Project	55	The project will fund the preparation of a combined NEPA/CEQA document for the Salinas River Flood Risk Reduction Project, which allows channel maintenance activities on the mainstem of the Salinas River. MCWRA has partially funded this effort but additional funding is requested to complete the work, allowing the Salinas River Flood Risk Reduction Project to be implemented. Flooding of agricultural lands within the Salinas Valley, adjacent to the river, has occurred during conditions when in-channel sandbars and riparian vegetation including invasive plants impede high flows. Additionally, limited flood flow capacity in high rainfall years has caused damage or destruction to public infrastructure and private property. As such, MCWRA developed and administers the Salinas River Flood Risk Reduction Project to enhance flood protection, improve riparian habitat and reduce flood damage.	\$420,000	\$140,000		\$560,000
13	Central Coast Wetlands Group: Study of environmental services from nutrient reducing BMPs	48	State agencies have identified management measures to address agricultural nonpoint sources of pollution that affect state waters. These include practices and plans installed under various programs in California, called best management practices (BMPs). These BMPs range in action from on-farm nutrient management to cover crops to constructed treatment wetlands. To be effective, BMPs should be targeted by location and type; however, we currently lack the information necessary for precise targeting. This project is intended to fill existing economic and ecological gaps in knowledge about select nutrient load reducing BMPs, supporting current conservation programs, and to explore innovative Payment for Environmental Services (PES) potential. Tasks include an ecosystem service assessment to identify the location and size of existing nutrient reducing BMPs; nutrient reduction research to address gaps in the understanding of the effectiveness of selected BMPs at load reduction; ecosystem service valuation to economically assess the multiple benefits of BMPs; and an ecosystem services analysis to determine if PES is feasible. The results of the project will be beneficial to many different users. In particular, the ecosystem service valuation will have widespread utility in cost benefit assessments of environmental projects, and the load reduction study will help farmers, conservation groups and regulators.	\$372,000	\$124,000		\$496,000

13	Ecology Action: Monterey Bay Green Gardener Training & Certification Program/ Monterey Bay Friendly Landscaping Program	48	The Monterey Bay Green Gardener Certification Program provides bilingual, hands-on training in ecological landscaping methods for landscaping industry professionals, public agency landscape maintenance staff, and home gardeners. Green Gardener graduates are trained to be watershed stewards who are actively reducing landscape water demand and preventing urban non-point source pollution. In partnership with California Water Service Company, the Mission Trails Regional Occupation Program, and Hartnell College Center for Sustainable Construction, the project would: 1) Expand Green Gardener training beyond the Gabilan watershed and City of Salinas to the communities of Gonzales, Soledad, and King City. 2) Incorporate hands-on training experiences at water-wise demonstration sites on both public and private properties. In addition, property owners will be offered additional financial incentives (over local rebates) to implement Monterey Bay Friendly Landscaping practices. The Monterey Bay Friendly Landscaping Program provides public recognition and financial incentives for property owners, property managers, and landscape contractors who implement ten required ecological landscape practices and an ecological landscape maintenance agreement. Practices include, e.g., turf replacement with climate appropriate landscaping, rainwater harvesting, run-off redirection to Low Impact Development features, and impervious surface removal. The project aims to provide rebates for, certify and publicly recognize 20 commercial landscapes, 20 civic landscapes, and 20 residential landscapes for achieving Monterey Bay Friendly Landscaping Certification.	\$178,975	\$47,685		\$226,660
13	Monterey County Water Resources Agency: Aquatic Invasive Species Inspection Project	48	The purpose of this project is to provide an inspection process at the Agency-owned lakes that assesses and manages the risks of aquatic invasive species (AIS) without shutting the waters to all recreational boating. MCWRA and/or its partners will monitor incoming vessels at the entry gates and the public launch ramps at Lake Nacimiento and Lake San Antonio. All vessels will be screened and/or inspected prior to launch to determine if the vessel, trailer, etc. poses high risk of carrying AIS. Upon completing the screening or inspection process, it will be determined if the vessel is clean, drained and dry and therefore eligible to launch. The transport of AIS vectors by trailered, recreational boaters is not the only way such vectors may enter a watershed, but as a controllable point of entry, vehicle inspection programs have proven useful in reducing the spread of AIS in other regions of the country.	\$471,000	\$160,000		\$631,000

14	Monterey County Water Resources Agency: Granite Ridge Regional Water Supply Project	47	MCWRA is proposing to implement the Granite Ridge Regional Water Supply Project (Water Supply Project) to alleviate existing water supply and water quality deficiencies in the Granite Ridge area of northern Monterey County. Groundwater is the single source of water supply for the Granite Ridge area and is highly limited due to an underlying granitic formation. As a result, Monterey County and the MCWRA are proposing the project to serve existing lots of record experiencing water supply problems in the Granite Ridge area. The Water Supply Project will enable MCWRA to provide potable water service in a way that complies with US EPA and California Department of Public Health drinking water standards. The Water Supply Project will enable MCWRA to improve the reliability of water supply by interconnecting existing smaller systems into a consolidated water supply system with a new groundwater well to improve supply reliability.	\$6,625,000	\$19,875,000		\$26,500,000
15	Monterey County Water Resources Agency: Coastal Dedicated Monitoring Well Drilling	46	The project will drill 12 dedicated monitoring wells. The wells will be drilled under the oversight of a Professional Geologist (PG). The 4" diameter wells will be drilled using a sonic drilling method that allows discrete evaluation of geology to determine where well perforations will be placed. The wells will be strategically placed in Monterey County right-of-way locations with the goal to fill water quality and water level data gaps in front of and behind the 2009 500 mg/L chloride seawater intrusion fronts for the Pressure 180-Ft. and Pressure 400-Ft. aquifers.	\$691,200	\$230,400		\$921,600
16	Monterey County Water Resources Agency: Ground Water Conservation and Extraction Monitoring Expansion Project	44	This Project will fund the expansion of the Ground Water Conservation and Extraction Program (GWCE) into MCWRA Zone 2C. The MCWRA maintains a GWCE that provides critical data about water conservation practices and groundwater extractions (withdrawals) in Zones of Benefit. "Zones of Benefit" are geographic areas that receive hydrologic benefit from managed conservation releases from the dams at the Nacimiento and San Antonio reservoirs. The current GWCE Program has operated successfully within the boundaries of Zones 2, 2A, and 2B since 1993. In 2003, MCWRA designated a new Zone of Benefit – Zone 2C, which encompasses a larger geographic area than the original areas of Zones 2, 2A, and 2B. The GWCE Program ordinances require agricultural and urban well operators (and ultimately well owners) to submit annual reports of monthly groundwater pumped from each of their wells with a discharge pipe having an inside diameter of three inches or greater. Conservation Plans describe water conservation practices that will be implemented in the upcoming year, and which practices were implemented in the previous year. The Agricultural Plans include an additional form, the Water and Land Use Form, which asks	\$400,702	\$133,568		\$534,270

			agricultural water users for the amount of water applied and the number of irrigated acres for each crop category.				
16	Monterey County Water Resources Agency: Nacimiento Dam Low Level Outlet Works Rehabilitation	44	The Low Level Outlet Works (LLOW) at the Nacimiento Dam consists of a concrete intake structure, penstock and a downstream control structure. The downstream control structure is the focus of this proposed upgrade. Many of the valves have become harder to operate, corrosion of varying degrees has occurred on the gooseneck discharge diffusers, and erosion of the concrete stilling basin has occurred over time. Rehabilitation to the existing downstream control structure would include the following. Replacement of all six 24" valves, five of which would be replaced with plug type valves and one would be upgraded to a new energy dissipating, multi-orifice (MOV) type valve. Replacing/upgrading existing valves will increase operational integrity and flexibility in that regulation of normal discharge flows could occur in one of the six valves. All new valves shall be electronically and/or hydraulically actuated to increase efficiency in implementing reservoir release changes. New gooseneck discharge diffusers will be installed adjacent to associated valves, and designed to reduce erosion within the concrete stilling basin. The concrete stilling basin will be structurally reinforced to prevent further erosion. Protective steel covers/grating above the stilling basin has deteriorated and need to be replaced along with security fencing around the perimeter of the downstream control structure. The project will safely allow bypass of the hydroelectric power plant for increased releases and maintenance activities.	\$384,000	\$128,000		\$512,000
16	Monterey County Water Resources Agency: San Antonio Dam Butterfly Valve Project	44	The project will rehabilitate the Butterfly Valve Operator System at San Antonio Dam. The purpose of this project is to update/modify an existing 56-year-old facility to enhance reliability, efficiency, and safety. The associated butterfly valve is operated via its original hydraulic operator system. Since its installation in 1965, the butterfly valve and associated operator/control systems have been subject to normal operational wear and tear. However the butterfly valve's operator appears to be experiencing difficulty in effecting complete valve closure in a desired time period. Rehabilitation to the existing butterfly valve system would include installation of a new hydraulic operator system, including hydraulic control panel, ram, latching system, and associated mechanical appurtenances. The new hydraulic operator system will have the capability to operate/exercise the butterfly valve locally (in the valve chamber) as well as remotely (in the control house). Remotely augmenting the associated butterfly valve will not only increase operational flexibility, but will also provide an added layer of safety.	\$200,000	\$80,000		\$280,000

16	Monterey County Water Resources Agency: Water Supply Reliability Project	44	The Water Reliability Project is designed to address the deferred maintenance and improvement of MCWRA facilities used in its operations. The age of many of the facilities critical to the operation of the MCWRA are 20-60 years old. While operational, most of these older facilities have had maintenance or improvements, due to new requirements, deferred. This project consists of several discrete maintenance tasks and improvements at several facilities including the Nacimiento Dam and Hydroelectric Facility, San Antonio Dam, Rec Ditch, Castroville Seawater Intrusion Project, and Salinas River Diversion Facility. Performing these maintenance tasks and improvements are critical to MCWRA's operations that provide conservation, flood control, recreation, fight seawater intrusion, and increase water source diversity.	\$2,605,800	\$868,600		\$3,474,400
17	Central Coast Wetlands Group: Coastal Wetland Erosion Control and Dune Restoration	43	The proposed project will enhance and restore wetland and sand dune ecosystems in central Monterey Bay, and control erosion in salt marshes directly behind the dunes around Moss Landing. These marshes are critical buffers to prevent salt water from entering surrounding farmland, especially the Salinas Valley, yet they are eroding away at accelerating rates. Sand dunes help retain fresh water at the coast, recharge groundwater, retard saltwater intrusion, and minimize storm damage from the sea. Currently much of the physical dune structure around Monterey Bay is fairly intact, but is also highly degraded with invasive non-native plants, which continue to spread. Monterey Bay is the largest indentation widely open to the sea on the Pacific Coast of the US, with correspondingly large and ecologically important dune systems, and is the core area of the Monterey Bay National Marine Sanctuary. The target area for this project, the central Monterey Bay, has the lowest and most degraded sand dunes in the region. They will be the first to fail as sea level rises from storms, El Nino cycles, and climate change. Should they fail, salt water will overflow into the Salinas Valley, compromising one of the nation's most productive agricultural centers.	\$1,070,164	\$356,721		\$1,426,885
18	Central Coast Wetlands Group: Development and Evaluation of Climate Change Response Strategies in the Elkhorn Slough, Gabilan and	42	This project implements key steps in climate change planning outlined by the DWR 2011 Climate Change Handbook for Regional Water Planning. This project will further and more accurately investigate regional climate change impacts and seeks to recommend adaptation response strategies (a priority action defined within the TAC-driven climate adaptation chapter of the Greater Monterey County IRWM Plan) to address the impacts of sea level rise, storm surge, coastal inundation and coastal erosion for the Elkhorn Slough, Gabilan, and Salinas River watersheds. The first phase of the project focuses on collecting and	\$392,300	\$106,450		\$498,750

	Salinas River Watersheds		compiling data to further evaluate coastal inundation threats and responses in these watersheds. This data includes an inventory of water control structures that manage current flood control conveyance and topographic data using Light Detection and Ranging technology (LiDAR). The second phase of this project focuses on creating a climate change adaptation and response strategy plan followed by an economic evaluation of these different strategies. The outcome of this project will be a comprehensive report recommending feasible and long-term adaptation and response strategies to climate change impacts, necessary to prepare for future threats rather than respond to emergencies. This project will help support the climate change planning efforts of multiple stakeholders in the Greater Monterey County IRWM planningh region. We intend to seek separate grant funds for climate planning.				
19	Monterey County Water Resources Agency: Dedicated Monitoring Well Expansion Project	41	This project will fund the expansion of the Dedicated Monitoring Well Program (DMW) within the Salinas Valley Ground Water Basin (Basin). The current DMW program consists of 35 wells located throughout the Basin but does not provide enough coverage for a robust data analysis and extrapolation. Up to 100 wells, 25 per subarea (Pressure, East Side, Forebay, and Upper Valley) will be drilled under the oversight of a Professional Geologist (PG). Geology during the drilling process will be evaluated for each well to determine where perforations will be placed. The wells will be strategically placed in Monterey County right-of way locations with the goal to fill water quality and water level data gaps throughout the entire Basin and to provide sufficient data to complete a robust analysis and extrapolation to the remaining areas of the Basin and the subareas. Water quality and water level data will be provided to CEDEN and CASGEM, respectively, at the end of each monitoring event.	\$8,525,010	\$2,841,670		\$11,366,680
20	Ecology Action: Drought Response: Achieving water demand reduction and LID BMP implementation through expanded incentive programs	40	To address overdraft in groundwater basins and oversubscription of surface water supplies in the Greater Monterey County region, a watershed-wide approach to water demand reduction will be implemented that provides enhanced incentives and assistance to accelerate water conservation and low impact development (LID) BMP retrofits. The project will target high priority commercial sites and expand residential direct install/rebate programs beyond water district boundaries. For key BMP rebates that are not provided by water suppliers, this program will provide a drought specific rebate within service areas. As a first step, top commercial water users in the area will be identified and offered a consistent and enhanced commercial direct install retrofit incentive program. As a second priority to commercial	\$750,000	\$200,000		\$950,000

			retrofits, residential sites outside water district areas within overdrafted aquifers will be offered rebate programs consistent with current local rebate programs. Where possible the project will leverage LID opportunities.				
20	Monterey County Water Resources Agency: Test Well for Regional Desalination Project – Slant Well	40	The Monterey area has had long-standing difficulties with its water supply. The area has no imported water sources and local supplies have sometimes been insufficient to provide the expected amount of water. Over the past several decades, local sources have been further constrained due to legal decisions, and several proposed projects meant to increase the region's water supply have been rejected by local voters. In response to the Seaside Basin overdraft and to address the 2006 State Board's Division of Water Rights Cease-and Desist Order to Cal-Am to reduce its Carmel River well water withdrawals, an alternative "Regional Water Project, Phase I" was proposed. This alternative proposed using vertical and slant wells to produce and treat brine water by reverse osmosis, and then deliver the potable water for use on the Monterey Peninsula to remove the State Board Cease and Desist Order. This proposal would fund the slant test well drilling component of the abovementioned project to determine project feasibility. The project includes four sets of monitoring wells to be located at the project site within about 200 feet of the surface of the slant well. The proposed wells would be constructed and tested over a period of about one year.	\$3,000,000	\$1,000,000		\$4,000,000
21	California State Parks: Big Sur River Steelhead Enhancement Project	38	The Big Sur River provides spawning and rearing habitat for the federally threatened South-Central California Steelhead (<i>Onchorhynchus mykiss</i>). Six and a half of the 8½ miles (75%) of the river that are passable to steelhead are within Andrew Molera State Park (AMSP) and Pfeiffer Big Sur State Park (PBSSP). For this reason, California State Parks authorized development of the Big Sur River Steelhead Enhancement Plan (BSRSEP), which was completed in 2003. The project is made up of the following components: 1) Constructing a clear-span bridge to replace an existing double squashed culvert crossing at Post Creek in PBSSP campground. Permitting and design has already been funded. 2) Conducting riparian re-vegetation, exclusionary fencing and bank stabilization in degraded riverside campsites and the day use picnic area within PBSSP. 3) Relocating a portion of the Beach Trail in AMSP away from the river. 4) Installing steelhead lifecycle and regulation interpretive displays. 5) Removing invasive, non-native plant species and re-vegetation with natives along the riparian corridor in AMSP.	\$400,738			\$400,738

22	Monterey Bay Sanctuary Foundation: Making Monitoring Count	37	This project is necessary to document the IRWM Plan efforts and their effectiveness throughout the Greater Monterey County region. The project will implement the tracking system developed to inventory projects designed to address the goals of improved water quality, water supply, flood control and environmental protection outlined in the IRWM Plan. The Monterey Bay National Marine Sanctuary's Synthesis, Analysis and Management (SAM) program initiated this effort in 2006 by conducting an initial compilation and assessment of water quality data collected on the Central Coast. This effort led to the development of the <i>Strategic Plan for Central Coast Water Quality Monitoring Coordination and Data Synthesis</i> . This project will further the tasks described in that plan by developing a framework for improving regional capacity to coordinate monitoring, synthesize information, communicate more effectively between key groups, understand environmental changes, and respond to changes and new knowledge with adaptive management. Water quality data have historically been stored in disparate formats at diffuse locations throughout the region, making them difficult to use collectively. Combining this with tools developed in the Tahoe Basin to measure effectiveness of practices and load reductions will be extremely valuable to the IRWM process.	\$324,000	\$81,000		\$405,000
23	Central Coast Wetlands Group: Ecosystem Condition Profile for the Lower Salinas River Watershed using the Level 1-2-3 Framework	36	The goal of this project is to provide cost-effective, scientifically based, and integrated information on stream ecosystem condition in the Salinas River watershed to inform management decisions and optimize ecological monitoring activities. To address this goal, the EPA's 1-2-3 Framework will be used and tailored to the region's interests. The 1-2-3 part of the Framework relates to three different levels of data collection that address different types of resource management questions. <i>Landscape Assessments (Level 1)</i> are inventories of streams in a watershed. They generate a base map of the extent and distribution of stream ecosystems in each watershed and help determine what role the organizations can take to maintain or improve stream conditions. <i>Rapid Assessments (Level 2)</i> evaluate the overall, or ambient, condition of riverine wetlands inexpensively and in a comparatively short timeframe. <i>Intensive Assessments (Level 3)</i> provide finer resolution field data to evaluate the performance of mitigation sites, establish baseline conditions, and help to understand the cause of declines in habitat conditions. The information at the three levels will be synthesized into an integrated report of stream condition within the main stem of the Salinas River and in two smaller sub-watersheds watershed. Profiles also identify the stressors affecting condition, risks and consequences of	\$517,875	\$172,625		\$690,500

			unmitigated stressors, and recommended actions to maintain or improve condition. Because a majority of the land ownership or control over streams relative to the vast drainage network in each watershed is in private hands, the assessments help to clarify what role public agencies and regional organizations can take to protect stream condition and how to engage others to help implement solutions.				
23	Monterey County Water Resources Agency: Salinas River Flood Risk Reduction and Habitat Improvement Project	36	The project provides long-term guidance and outlines maintenance procedures that will be used by the participants along the Salinas River mainstem and portions of San Lorenzo Creek, Bryant Canyon Channel, and Gonzales Slough to conduct stream maintenance activities (i.e., non-native and native vegetation treatment, sediment management) on a voluntary basis to maximize flood flow capacity and minimize bank erosion, while minimizing environmental effects, helping to protect against flooding during and after major storm events. As conditions change or are updated, or as environmental regulations evolve, the project would also evolve to keep pace. MCWRA proposes to administer the project for up to 10 years. The central tenet of the project is that maintenance activities are conducted using an informed and systematic approach to minimize stream impacts while providing improved flow conveyance.	\$787,500	\$262,500		\$1,050,000
23	Rural Community Assistance Corporation (RCAC): Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program	36	The Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program will form a collaboration of experts, students, community leaders and local government to implement an Inspection and Monitoring program of community onsite wastewater systems. This program will include creating a local entity to manage multiple systems to ensure the systems are operating properly. The program will create an on-going operation and maintenance program, including groundwater monitoring, for selected disadvantaged communities that are served by individual septic systems that may not be able to afford traditional sewer systems. The project will help disadvantaged communities limit public health hazards and environmental pollution through better wastewater management.	\$677,000	\$12,000		\$689,000
23	Save Our Shores: Save Our Shores Watershed Protection Program - Annual Coastal Cleanup Day in Monterey County	36	Save Our Shores (SOS) has been coordinating Annual Coastal Cleanup Day (ACC) in Santa Cruz since 2007 and has grown the event from 1,929 volunteers and 42 beach sites to 3,800 volunteers and 52 beach and river sites, in just two years. While SOS has been running ACC in Santa Cruz, California State Parks had been running ACC in Monterey since 2001 and no longer had the staff or resources to continue running this event after 2009. Because of the success that SOS has had in expanding the event in Santa Cruz, State Parks and the Coastal	\$12,000	\$12,000		\$24,000

			Commission asked SOS to take over this responsibility in Monterey in 2010. SOS ran the program in Monterey based on best practices from Santa Cruz and increased the number of volunteers from the previous 1,400 average to over 2,000 the first year and increased the number of sites by including river cleanups through our partnership with Return of the Natives, and involving businesses through sponsorship and employee participation. In the coming years, volunteers will continue to gain a valuable experience in understanding the problem of marine debris and learning ways that they can help solve the problem, and the thousands of visitors that Monterey beaches attract will benefit by experiencing cleaner beaches.				
24	Monterey County Water Resources Agency: Salinas River Fisheries Enhancement Project	35	The SRFEP is a culmination of the fisheries-related work that is necessary for the implementation of the Salinas Valley Water Project (SVWP). There are three main purposes for the SRFEP: (1) population monitoring to quantify the presence of the Endangered Species Act listed <i>Oncorhynchus mykiss</i> (steelhead trout) in the lower Salinas River system; (2) monitor river flows to ensure adequate water for fish passage (migration monitoring); (3) monitor water quality to determine habitat suitability. Tasks that identify the presence and/or enhance the population of <i>O. mykiss</i> will be performed within the Salinas River Watershed in the Salinas River, the Salinas River Lagoon, the Nacimiento River and the Arroyo Seco River.	\$867,000	\$290,000		\$1,157,000
25	Central Coast Wetlands Group: Expansion of a Coastal Confluence Water Monitoring System to support the Greater Monterey IRWM Plan	34	We anticipate that the cumulative results of regional water quality enhancement efforts will lead to improvements in water quality of receiving waters. However, we currently do not have the robust monitoring systems in place to successfully document these improvements. This project aims to expand the coverage of the continuous monitoring LOBO (Land/Ocean Biogeochemical Observatory) buoy monitoring array from the current location at the end of the Gabilan/Old Salinas River Channel (and several within the Elkhorn receiving waters) to the two additional priority coastal confluence locations that drain significant portions of the Salinas Valley (the Moro Cojo Slough and Salinas River mouth). Additional less costly nutrient monitoring equipment will be installed at the confluence of multiple sub-drainages in order to further document the cumulative effects of nutrient management strategies within the sub-drainages of each watershed. Funds will support the construction of a new LOBO buoy for the Salinas River and the refurbishment of a buoy currently being used within the Elkhorn Slough, which will be redeployed within the Moro Cojo Slough. Funds will also support three years of half-time	\$599,130	\$216,153		\$815,283

			staff and student support for the LOBO system including one station currently deployed within the Elkhorn Slough. This will document the enhancement of water quality within receiving waters due to watershed management practices.				
26	City of Salinas: Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements	33	This project will include new gravity sewers with capacity to collect more of the City's industrial wastewater and convey it to the IWTF, upgrades to the IWTF to treat increased industrial flows (expanded electrical system and aeration treatment and related upgrades), and a system to filter the IWTF effluent through soil at the IWTF. After extraction the water would be available for reuse. New monitoring points around the soil bed filtration system will monitor system efficiency and assess its performance and success, such as producing high quality water with low suspended solids. The City has identified multiple potential beneficial uses for treated water including the following: 1) Encourage groundwater re-charge. 2) Combat saltwater intrusion. 3) Transfer to the Monterey Regional Water Pollution Control Agency for high quality diluent in its groundwater recharge project. 4) Use as low-salt feed water for potential upgrade to potable water for the City of Salinas. 5) Use after some desalting for agricultural irrigation or without desalting for non-agricultural irrigation water (golf course, playing fields, etc.). 6) Discharge to the Salinas River for reuse by others when withdrawn at the inflatable dam. The potential quantity of water now exceeds about 2,500 acre feet annually and could increase to several times that amount as the IWS grows. The water quality would be substantially improved since the effluent will have filtered through the soil column, removing algae and other suspended solids and some trace constituents. For the IWS, such withdrawal would enhance both disposal pond and the percolation bed percolation rate, effectively increase effluent disposal capacity, and hence, treatment capacity.	\$10,720,000	\$7,190,000		\$17,910,000

G.2 FUNDED IRWM PLAN PROJECTS

Seven implementation projects included in the Greater Monterey County IRWM Plan were awarded grant funds from Round 1 of the Proposition 84 IRWM Implementation Grant Program (in 2011). Table G-2 below provides a brief summary of these seven projects, along with the award amounts and each project's primary resource areas. The Greater Monterey County IRWM region received a total of \$4,139,009 in Implementation Grant funds from Round 1. The seven projects that received support from this round are currently being implemented.

Table G-2: IRWM Plan Projects funded through Round 1 IRWM Implementation Grant Program (in 2011)

Project Proponent & Project Title	Project Summary	Awarded Amount	Primary Resource Area(s)
City of Soledad: Soledad Water Recycling/ Reclamation Project	The City of Soledad is designing and constructing, in fundable phases, the balance of the Soledad Water Reclamation Project. The 5.5 million-gallon/day (MGD) Water Reclamation Facility was substantially complete on February 24, 2010. This project includes completion of design of a recycle water delivery system to both agricultural and recreation areas in and near the City of Soledad. The project also includes research on the use of recycled water for agricultural uses. The entire project costs an estimated \$45M. The first phase, which is being implemented through this grant, is to construct the recycled water pump station and to design and construct the transmission mains needed to connect the recycled water transmission mains already constructed to the pump station. Completion of this phase will enable delivery of recycled water to multiple landscaped areas currently being irrigated with potable water. This first phase will also include a feasibility study and preliminary conceptual design for the neighboring communities of Gonzales and Greenfield for delivery of their cities' wastewater to the Soledad Water Reclamation Facility for processing.	\$904,480	water supply
Castroville Community Services District: Castroville CSD Well 2B Treatment Project [DAC project]	The project consists of construction of a well pump and arsenic removal treatment system for an existing well in Castroville, CA. This is a water supply enhancement project. Castroville's wells are in the 180/400-Foot Aquifer of the Salinas Valley Groundwater Basin, and were experiencing increased salinity due to seawater intrusion. The overall project is to construct a new well in the deeper 900-Foot Aquifer and reduce pumping from the shallower aquifers. In 2007, Castroville Water District (now the Castroville Community Services District) drilled a new well, No. 2B, into the 900-Foot Aquifer. Water quality testing indicated that arsenic levels in the new well (17 parts per billion [ppb]) exceeded the maximum contaminant level (MCL) for drinking water (10 ppb). The District has designed the well pump and treatment system for the new well, but has not initiated construction.	\$581,000	water supply + water quality
San Jerardo Cooperative, Inc.: San Jerardo Wastewater Project [DAC project]	This project consists of construction to upgrade the wastewater facility at San Jerardo Cooperative, a farm-worker housing collective. San Jerardo is a DAC that is confronted with serious drinking water, wastewater, and human health concerns. The community runs its own wastewater system in the form of four ponds, leach fields, and a machine room. The area's groundwater, and hence the community's drinking water, is threatened by nitrate contamination and other issues. The community urgently needs to upgrade the wastewater system to prevent further water quality deterioration. In addition, the current system is at capacity, and the proposed repairs and upgrade are necessary to ensure compliance with the Central Coast Regional Water Quality Control Board's (RWQCB) Waste Discharge Requirement Order No. R3-2003-0054 and to prevent further groundwater contamination in the Salinas Valley - East Side aquifer. The project is in close collaboration with a number of entities, including: Monterey County; the Central Coast RWQCB; Rural Community Assistance Corporation; Engineers Without Borders; and the Environmental Justice Coalition for Water.	\$924,455	water quality

Elkhorn Slough Foundation: Integrated Ecosystem Restoration in Elkhorn Slough	In this project, the Elkhorn Slough Foundation, in partnership with the Elkhorn Slough National Estuarine Research Reserve, the Moss Landing Harbor District, the Monterey County Water Resources Agency and the County of Santa Cruz, will restore up to 90 acres of tidal salt marsh and a 30-acre native grassland buffer to provide habitat and reduce non-point source pollution in Elkhorn Slough. The marsh will be restored through the placement of sediment to be removed from Moss Landing Harbor and benches along the Pajaro River, making harbor maintenance and flood protection projects more effective and with fewer impacts on the environment. The project will address these specific problems through a collaborative approach and using a phased implementation approach. Prior phases included property acquisition and establishment of a buffer between farmland and the estuary. The next phase, the focus of this grant, includes: planning to finalize the project description and conduct California Environmental Quality Act (CEQA) compliance, engineering to a 30% design, establishment of native grassland in portions of the vegetated buffer, and site preparation for receiving sediment.	\$822,242	natural resource enhancement + flood management + water quality
Central Coast Wetlands Group at Moss Landing Marine Labs through San Jose State Research Foundation: Water Quality Enhancement of the Tembladero Slough and Coastal Access for the Community of Castroville	This project aims to enhance the thoroughly degraded Tembladero Slough, a water body that currently has 14 303(d) listed pollutants, which flows untreated into the Monterey Bay National Marine Sanctuary (MBNMS). Enhancement will be achieved through a collaborative effort between County planners, farmers, scientific researchers, and the community. In this first phase of the project, the Coordination Team will redesign the form and function of the lower drainage to include wetland enhancement projects, water quality treatment areas, and public access, while addressing agriculture discharge permits, the Castroville Redevelopment Plan, and the County Flood Control Program. In the second phase, the Coordination Team will improve water quality through the purchase of easements and creation of treatment wetlands in strategic locations along the slough, improve flood plain open space areas, create enhanced habitat, and construct public access trails where possible.	\$341,698	flood/watershed management + natural resource enhancement + water quality
Monterey Bay National Marine Sanctuary, Central Coast Wetlands Group, and the Resource Conservation District (RCD) of Monterey County: Watershed Approach to Water Quality Solutions	This project will take a watershed approach to improve water quality in Santa Rita Creek, an impaired water body located within the Lower Salinas River Watershed. This approach will address impacts from agriculture and urban areas and will incorporate creek restoration while engaging the community. Santa Rita Creek flows into the Salinas Reclamation Ditch, Tembladero Slough and ultimately to the MBNMS. These water bodies are considered the most polluted water bodies on the Central Coast with 37 Total Maximum Daily Load (TMDL) listings, 7 of them on Santa Rita Creek. Agricultural efforts will focus outreach and referrals to leverage existing programs and funding for implementation of irrigation and nutrient management practices and the Livestock and Lands program. In addition, management measures will control erosion from strawberry crops. Two restoration projects along Santa Rita Creek will promote environmental stewardship, reduce illegal dumping, stabilize banks and increase biofiltration of pollutants through revegetation of native plants. This holistic approach will inform resource managers on the geographic scale at which we can see improvements to water quality and habitat.	\$372,413	water quality + flood/watershed management
University of California, Davis (Granite Canyon Marine Pollution Studies	In order to protect the beneficial uses of aquatic habitats, many cities are now mandating LID treatment systems such as bioswales. Information on the ability of urban bioswales to reduce toxicity is an important component for evaluating impacts of regional urban stormwater runoff.	\$192,721	water quality

Laboratory): Evaluation of Potential for Stormwater Toxicity Reduction by Low Impact Development (LID) Treatment Systems	This project will evaluate the efficacy of bioswales in reducing the concentrations of contaminants that contribute to stormwater toxicity in the City of Salinas. Looking at four sites in the City of Salinas, the project will: 1) assess toxic effects of stormwater runoff to aquatic organisms prior to treatment by bioswales; 2) evaluate efficacy of bioswales to reduce toxicity to aquatic organisms; 3) determine stormwater and pollutant load reduction through bioswales; and 4) provide data to stormwater agencies, water quality managers, LID engineers, and others to be incorporated into future land-use planning and management decisions.		
TOTAL AWARD AMOUNT		\$4,139,009	

G.3 CONCEPT PROPOSALS

Table G-3 below lists the 2014 concept proposals included in the Greater Monterey County IRWM Plan. As noted previously, the concept proposals are not ranked, but have been reviewed and vetted for inclusion in the Plan. The Project Review Committee reviewed concept proposals according to the following criteria:

- Does the project meet the minimum IRWM Plan standards (as described in Section F.2.1, Project Review Process)?
- Are there potential environmental justice impacts or impacts to disadvantaged communities (DACs)?
- Do there appear to be potential problems or conflicts either with IRWM Plan objectives or with other projects?
- Are there possibilities for integration with other projects?

All of the 37 concept proposals included in this IRWM Plan meet the minimum IRWM Plan standards. None of the projects appear to present potential environmental justice impacts or impacts to DACs (as of the writing of this Plan); and several of the projects show potential opportunity for integration with other IRWM Plan projects. The RWMG will encourage those project proponents to consider combining projects or project elements with other IRWM Plan projects, as appropriate. The RWMG will also consider opportunities to develop regional programs that would efficiently combine individual projects.

Table G-3: 2014 Concept Proposals

Project Proponent & Project Title	Project Summary	Primary Resource Area(s)
Big Sur Land Trust, City of Salinas, CSUMB Watershed Institute and Return of the Natives: Carr Lake Property Acquisition	The goal of this project is the acquisition of the 450-acre Carr Lake basin, and its conversion into parkland for the multiple uses of recreation, restored wetlands and riparian wildlife habitat, stormwater detention, open space, and water quality enhancement for downstream areas including the Reclamation Ditch and the MBNMS. The restored Carr Lake Regional Park will connect via trails to Natividad Creek Park, which lies immediately upstream. Re-creation of wetlands and floodwater detention areas will provide reduction of flood impacts to the City of Salinas and to downstream agricultural and community lands. Water quality will also improve due to restored wetlands and natural vegetation, via sediment capture and the biological treatment of constituent chemicals.	natural resource enhancement + flood control + water quality#
Central Coast Regional Water Quality Control Board: Healthy Functioning Watersheds: Green Infrastructure and the Preservation and Protection of Hydrologic Processes	The RWQCB's Vision of Healthy Watersheds calls for watershed protection in part through the use of green infrastructure. Green infrastructure is the set of practices that mimic natural processes to retain and use stormwater. Through infiltration, evapotranspiration, and harvesting stormwater throughout the landscape, green infrastructure preserves and restores the natural water balance of a watershed. Environmental benefits include reducing flooding, improving water quality, providing habitat, reducing the urban heat island effect, mitigating global warming and increasing groundwater recharge. Healthy sustainable watersheds supported by green infrastructure use less energy for imported water, have fewer greenhouse gas emissions, and a lesser carbon footprint than unhealthy watersheds. With this concept proposal the RWQCB is encouraging organizations to implement green infrastructure projects.	flood control + water quality + natural resource enhancement + water supply
Central Coast Regional Water Quality Control Board: Healthy Functioning Watersheds: Irrigation Efficiency and Nutrient Management on Agricultural Lands	With this concept proposal the RWQCB is encouraging organizations to work with farmers to implement irrigation and nutrient management projects. The RWQCB's Vision of Healthy Watersheds calls for watershed protection through the implementation of irrigation efficiency, and nutrient as well as pesticide and sediment management on agricultural lands. This includes conducting irrigation evaluations and corresponding actions designed to address pollutant loading from tailwater, creating un-farmed buffers that improve water quality (e.g., filter and infiltrate runoff), and protecting or improving habitat (e.g., stabilize streambanks and shade streams) between intensive agriculture and wetland/riparian areas. The Central Coast Water Board has prioritized implementation in the Salinas watershed and other impaired waterbodies included in the Greater Monterey County region. Irrigation and Nutrient Management, especially related to protection of shallow domestic drinking water wells, continues to be one of the RWQCB's highest priorities. Implementation would be carried out via various partnering organizations in collaboration with growers.	water quality
Central Coast Regional Water Quality Control Board: Safe and Affordable Drinking Water for Disadvantaged Communities	This concept proposal is focused on prioritizing projects that address the immediate drinking water needs of disadvantaged communities (DACs) and is in alignment with the RWQCB's highest priority of preventing and correcting threats to human health. Nitrate pollution of groundwater is one of the most significant threats to human health in our region. Domestic wells and small water system wells within or adjacent to intensive agricultural areas are the most at-risk of nitrate pollution in the Salinas Valley, and DACs generally shoulder a disproportionately higher share of the health and economic-related cost associated with nitrate pollution. In many cases DACs can't afford to address drinking water pollution, don't qualify for available funding, and have	water quality + water supply

	difficulty navigating the myriad of drinking water related funding and regulatory programs. This concept proposal is focused on a three-pronged strategy to address the immediate needs of DACs who currently do not have a safe and affordable drinking water supply. The three-pronged strategy includes: 1) comprehensively and uniformly identify the drinking water problems and associated needs of DACs with the Greater Monterey County IRWM funding area; 2) the provision of interim safe water supplies (e.g. bottled water, etc.) to residents until more permanent solutions are implemented; 3) the evaluation and implementation of long-term safe and affordable drinking solutions (e.g. treatment, new water supply, consolidation, etc.). This concept proposal is focused on prioritizing projects that resolve drinking water contamination problems with an emphasis on, but not limited to, nitrate pollution and DACs.	
Central Coast Wetlands Group: Historic and Existing Drainage Network Mapping Project: Phase 1	This project proposes to utilize available public domain digital elevation models and orthophotography as a base for a GIS based mapping of drainage networks in the Salinas River, Elkhorn Slough, and Moro Cojo watersheds with two primary goals. The first, to recreate the pre-development drainage network of the subject area watersheds based on existing topography, historical records and field verification to determine historical surface drainage conditions. Secondly, to map the existing drainage network of the subject watersheds based on existing topography and drainage infrastructure.	flood control + natural resource enhancement + water quality
Central Coast Wetlands Group: Sustainable Agriculture and Sustainable Development - Field Station and Demonstration Area	This project proposes to establish a large acreage (100-640 acres) sustainable agriculture and sustainable development field research station to develop innovative sustainable land use practices for agriculture, residential, and commercial development on a landscape scale. The site will provide continuous monitoring of practices to ensure that the desired outcomes are achieved, establish long-term data sets and allow for new innovations and practices to be developed. The field station will also provide a demonstration area that can be reviewed and studied by other landowners and land managers to determine applicability to their individual projects or farms. The primary goal of this project is to improve water resources on and offsite in the context of modern land use.	water quality
City of Salinas: Replacement Raw Sewage Pipeline to Monterey Regional WWTP and City of Salinas Industrial Wastewater Treatment System Expansion	The City has identified two potential projects at a conceptual development level—expanding the City’s capacity to treat and reuse industrial wastewater and increasing conveyance capacity for transferring raw sewage from the City to the MRWPCA wastewater treatment plant (WWTP), for treatment, followed by reuse or disposal.	water quality + water supply
Coastal Watershed Council: Community-Based Water Research and Education	This project involves Community-Based Participatory Research (CBPR) with a goal of engaging diverse individuals and groups in future discussions of water supply, water quality, and other environmental issues. This approach lends greater legitimacy to future plans and actions by ensuring community involvement. Outcomes from this research will help elected officials and water agency boards to best serve their constituents and establish connections that will benefit all future planning and implementation efforts. This process further benefits the entire region, as it empowers and engages the public in crucial water issues where they might not otherwise be informed or active. The Coastal Watershed Council will lead the efforts to administer the CBPR on a specific watershed-by-watershed basis. Ultimately, this approach could foster the creation of specific watershed	flood control + water quality + natural resource enhancement + water supply

	management and/or restoration plans, filling a noticeable void within the region. The holistic approach of this CBPR project would also address numerous objectives in all seven goals outlined in the region's IRWM Plan.	
Coastlands Mutual Water Company & Big Sur Land Trust: Post Creek Water Supply and Watershed Restoration Project	The Post Creek Water Supply and Watershed Restoration Project includes two objectives: (1) securing a water supply system and (2) restoring watershed function to a degraded coastal stream and its receiving watershed. The water supply system portion of the project will include the rehabilitation of the Coastlands Mutual Water Supply Company spring box intake and 3000 feet of the company's water supply distribution line servicing 60 customers in Big Sur. The water supply system is the only supply for the 60 water customers and was destroyed in the Basin Complex Fire of 2008. The project's other objective is to work to restore geomorphic function back to the Post Creek drainage and to rehabilitate the watershed from the effects of the Basin Complex Fire. Currently the Post Creek watershed is drained through a 24-inch culvert located within the creek bed at Coast Ridge Road. Due to the presence of debris from the Basin Complex Fire and the continual source of sediment and materials coming from the burned watershed, the undersized culvert fills with sediment and debris and results in road failure and sediment deposition in Post Creek and ultimately to the Big Sur River. The project proposes the placement of a box culvert at the location of the existing culvert to provide proper drainage and for a more natural sediment flow through the drainage without road failures and debris flows as in the current conditions.	water supply + natural resource enhancement + water quality
CSUMB Return of the Natives: Return of the Natives Restoration Education Project—An IRWMP partner	The Return of the Natives Restoration Education Project (RON) is the education and outreach branch of Watershed Institute of the California State University Monterey Bay. For this concept proposal, RON would like to present their organization as a partner to other IRWM Plan projects. They offer to bring the marriage of native plant restoration and community engagement, which has become known as “community based habitat restoration” to IRWM Plan projects. RON's social goal is to bring people and nature together on restoration and garden projects in the watersheds of the Monterey Bay. RON's partnership has the capacity to bring tens of thousands of native grasses, forbs, shrubs, and trees to restoration projects. The plants grown by volunteers and RON staff and CSUMB students are eventually planted by these same volunteers on restoration sites. RON has the capacity to grow and out-plant from 25,000 to 50,000 native plants annually.	natural resource enhancement
CSUMB Watershed Institute: Monitoring Water Quality Improvements with BMPs	The Watershed Institute is offering to conduct monitoring for IRWM Plan projects, as requested and as needed, to test water quality as a result of urban, suburban, rural, and agricultural management practices.	water quality
Marina Coast Water District: Monterey Bay Regional Desalination Project	The Regional Desalination Project will provide approximately 10,500 AFY of potable water on an average annual basis to both the California American Water Company (CalAm) and MCWD service areas. The Regional Desalination Project generally consists of a reverse osmosis desalination plant to treat a mix of seawater and brackish groundwater water extracted from the seawater-intruded 180-Foot Aquifer of the Salinas Valley Groundwater Basin to produce 10 million gallons per day of product water. Intake facilities include intake wells and an intake pipeline that will convey the extracted water to the desalination plant for treatment. The desalination facilities will include a pretreatment system, the RO system, a post-treatment system, clearwell tanks, and brine disposal. The brine from the desalination plant will be blended with treated effluent from the MRWPCA's Regional Treatment Plant and disposed of via MRWPCA's existing ocean outfall. Distribution	water supply

	pumping and a transmission pipeline will convey the desalinated (product) water to MCWD's and CalAm's service area for potable use. The existing Aquifer Storage and Recovery system operated by Monterey Peninsula Water Management District (MPWMD) will be expanded as part of the project to provide additional storage capacity for the desalinated water produced by the Regional Desalination Project. A portion of the facilities will be powered by Monterey Regional Waste Management District's cogeneration facility, reducing the carbon footprint of the Regional Desalination Project and GHG emissions.	
Monterey Coastkeeper/ The Otter Project: Maintenance and Flood Control Planning for the Old Salinas River Channel and Reclamation Ditch	A facilitated stakeholder process is proposed to bring people together to find common ground in regard to maintenance and flood control planning for the Old Salinas River Channel and Reclamation Ditch. Various visions for these highly modified waterways may require iterative review by consultants knowledgeable about the area and skilled in hydrology and geomorphology. Agencies such as the US EPA, RWQCB, MCWRA, NMFS, and California Department of Fish and Game (DFG) should be involved. Growers and landowners should be involved. And stakeholders such as Sierra Club, Surfrider Foundation, CA Native Plant Society, Audubon, and Monterey Coastkeeper should be involved. Such a process is the only way to bring people together, find common ground, maintain the waterways, and provide flood control. Deliverables from the process will be a 401 permit application and a Channel Maintenance Technical Memorandum.	flood control
Monterey Coastkeeper/ The Otter Project: Finding a Common Ground Approach to Salinas River Flood Management	A number of groups and agencies resisted grower and Monterey County Water Resource Agency plans to undertake bulldozing projects in the Salinas River channel without an environmental impact study. The US EPA designated the Salinas River an Aquatic Resource of National Importance (ARNI) essentially stopping the Army Corps of Engineers 401 permit process. The MCWRA has now funded environmental review. While the review may satisfy CEQA requirements, the study may do little to balance the value conflicts of growers, fish, water quality, and other users. Environmental review will certainly not address the ARNI designation. A facilitated stakeholder process is proposed to bring people together to find a common ground approach to flood management in the Salinas River.	flood control
Monterey County Public Works: Boronda County Sanitation District Guide Rail Upgrade Project	The goal of the Boronda County Sanitation District Guide Rail Upgrade Project is to replace the T-rail system and replace it with dual tube guide rail system. This project is through the beginning stage. Planning is underway between the Wastewater Collection crew and the Bridge crew to complete the project in a timely manner. This guide rail project will significantly improve performance. It is an effective way to ensure that the pump has a good seal and the flow is diverted with out seepage. Estimated project completion is within 90 days with proper funding. This project will minimize the pump seepage and reduce the amount of Sewer System Overflow occurrences.	water quality
Monterey County Public Works: Chualar Wastewater Collection and Treatment System Upgrade Project	Chualar Ponds operate as a percolation system which requires dredging, diskling the ponds on an annual basis. This project requires the following repairs and items to be implemented: 1) <u>Valve replacement</u> : Each pond has a valve to allow ponds to divert flow from one pond to another. Without the pond rotation we cannot operate the ponds successfully. The Department of Public Works will also develop a way to tie in to a water supply in the area to obtain potable water. 2) <u>Monitoring</u> : Monitoring constituents in the ponds will require meters, including a dissolved oxygen meter and a pH meter. 3) <u>Back-up generators</u> : Back-up generators will be rented or purchased to ensure that the public is protected from Sanitary Sewer Overflows. 4) <u>Guide rail project for CSA-75</u> : The 30-year-old infrastructure which has the old T-rail system will be replaced. This includes replacing the base in some	water quality

	of the lift stations and replacing the T-rail system with the guide rails. 5) <u>Plan of Action</u> : This includes the process of communicating with other districts and agencies to form a one-time fee for confined space training for additional County employees. 6) <u>CSA-75 SSMH</u> : The Public Works Department will elevate three manholes to reduce the amount of water intrusion in the Sanitary Sewer System.	
Monterey County Public Works: County Service Area 72 - Las Palmas Monitoring Wells	In order to operate the wastewater facilities and to discharge recycled water via irrigation systems, a Waste Discharge Requirement (WDR) is required. The RWQCB issued a WDR Order to meet this requirement for the Las Palmas Ranch Residential Development. On December 1, 2006, the RWQCB issued Master Reclamation Requirements (MRR) that required a Groundwater Monitoring Well Work Plan. That Monitoring Plan was prepared by Schaaf & Wheeler and submitted to the RWQCB on May 31, 2007. That plan called for the installation of additional monitoring wells at an estimated cost (in 2007 dollars) of \$130,000. There are insufficient funds within the CSA 72 accounts to pay for the full costs of the plan. Grant funding consideration is requested for the installation of groundwater monitoring wells to implement the submitted Work Plan.	water quality + water supply
Monterey County Public Works: Moss Landing County Sanitation District Wastewater System Upgrade Project	The goal of the Moss Landing County Sanitation District Guide Rail Upgrade project is to improve the T-rail system and replace it with the guide rail system. This project is already in process however it is at the beginning stage. Planning is underway between the Wastewater Collection crew and the Bridge crew to complete the project in a timely manner. This guide rail system will last as long as the T-rail system is properly maintained. This project will minimize the pump seepage and reduce the amount of Sewer System Overflow occurrences.	water quality
Monterey County Public Works: SCADA Project	This concept proposal is to implement a Supervisory Control And Data Acquisition (SCADA) program for all County Sanitation Systems, which will ensure accurate monitoring for the Sanitary Sewer System. Implementing this project will be an effective way to reduce the amount of man hours as well as to efficiently monitor system performance and avoid emergency events.	water quality
Monterey County Water Resources Agency: Granite Ridge Expansion Project (tentative name)	The project described in this concept proposal represents a sustainable solution to water supply in the Highlands South/Granite Ridge subareas of the northern portion of Monterey County. The project consists of a conveyance pipeline that starts near Castroville and runs along Castroville Boulevard and ties in to the Granite Ridge Distribution System (which for the purposes of this project is assumed to be built). Along the conveyance pipeline alignment, there are laterals/spurs that would provide water to smaller areas along the pipeline route. This project would build upon the success of the Granite Ridge Distribution Project (GRDP), which provides water to an area of Monterey County that is in great need of a sustainable water supply solution. The GRDP is listed as another project in this IRWM Plan. The GRDP utilizes water from two wells and distributes the water via pumps, storage tanks, and pipelines. Conversely, the GREP utilizes the existing infrastructure from the GRDP and augments the water supply of surrounding areas, with a different source of water.	water supply
Monterey County Water Resources Agency: Implement Reclamation Ditch Improvement Plan Advisory Committee	The Reclamation Ditch Improvement Plan was developed by the Reclamation Ditch Improvement Plan Advisory Committee (RDIPAC) to address the flooding, erosion, and sediment issues impacting the Reclamation Ditch system, a 157 square mile watershed. The desired project types submitted here will implement recommendations by the RDIPAC. Some of the recommendations include the following: replace Potrero Tide Gates, increase channel capacity and embankment stabilization (various locations), conduct bridge replacements (12), modify Main Street box culvert, increase pumping capacity at pump stations (2), conduct a comprehensive watershed	flood control + water quality

Recommendations	assessment and management plan, and conduct survey of existing right-of-ways.	
Monterey County Water Resources Agency: MCWRA Reservoir Roads Assessment and Upgrade Project	This project will assess the water quality impacts of approximately 40 miles of unpaved roads that are located on land owned by the MCWRA and will create a plan to address these impacts. These roads drain directly or indirectly into either the San Antonio Reservoir in Monterey County or the Nacimiento Reservoir located in San Luis Obispo County. The majority of the land owned by the MCWRA around the reservoirs has historically been used for cattle grazing leases; many of these roads have delivered a significant amount of sediment into the reservoirs. The excess sediment impairs water quality and may be a means of carrying other pollutants such as Mercury into these water bodies. The need for this project was first documented in the San Antonio and Nacimiento River Watershed Management Plan (known as the Nacitone Plan); it was listed as a high priority project.	water quality + water supply
Monterey County Water Resources Agency: Monterey County Water Supply Augmentation Program	This project is an over-arching effort to augment the current water supply for Monterey County. It incorporates new surface water storage facilities, as well as surface water treatment, distribution systems for both agriculture and urban uses, and expanded utilization of recycled water.	water supply + water quality + flood control
Monterey County Water Resources Agency: Nacimiento Dam Hydroelectric Plant Upgrade	This proposal entails the upgrading of hydroelectric power generator unit No.2 at the Nacimiento Dam Hydroelectric Plant. The MCWRA recently completed the construction of the Salinas Valley Water Project (SVWP). This project has changed the way MCWRA schedules releases from Nacimiento Dam due to conditions dictated by state and federal regulatory agencies. In the past MCWRA typically released 25 cfs for conservation releases and/or fish passage flows. Unit No.2 was originally designed to generate power at this low-flow conservation release condition. As a result of the implementation of the SVWP, this low-flow conditional parameter has been increased from 25 to 60 cfs. Upgrading Unit No.2 to operate in and round this new conditional flow parameter shall allow for an increase in hydro-power generation efficiency.	water supply
Monterey County Water Resources Agency: Potrero Road Tide Gates Construction Project	The Reclamation Ditch Improvement Plan by the RDIPAC addresses the flooding, erosion, and sediment issues impacting the Reclamation Ditch system. The Potrero Road Tide Gates Project submitted here will implement recommendations by the RDIPAC. The Potrero Road Tide Gates Project will reduce the risk of flooding in the City of Salinas and surrounding areas from current and future flow rates in the system, minimizing crop damage and reducing erosion and sedimentation from widened channel sections in the Reclamation Ditch watershed.	flood control
Monterey County Water Resources Agency: Salinas River Diversion Facility Expansion	The project described in this concept proposal asks the question, "Can the Salinas River Diversion Facility's functionality be expanded?" The need comes from the desire to utilize the water in Monterey County with increasing effectiveness. Monterey County receives no water from sources outside of itself, therefore needs to be both effective and efficient with the resources it does have. The MCWRA proposes to develop this concept as a feasibility analysis that would evaluate possible alternatives that could increase Salinas River Diversion Facility functionality. Increased functionality could potentially be found with: 1) develop an urban water supply component, 2) expand the availability of water for agricultural use, and 3) other alternatives that may come from an alternatives identification analysis.	water supply
Monterey County Water Resources Agency:	The Salinas River Diversion Facility Solar Enhancement Project will consist of a solar energy field located on property owned by the MCWRA around Lake Nacimiento in relatively near proximity to the substation that	water supply

Salinas River Diversion Facility Solar Energy Enhancement Project	currently serves the hydroelectric project. The Salinas River Diversion Facility consists of four 300 horsepower pumps that will extract water from the Salinas River that will, after treatment, be added into the recycled water storage pond for delivery to the 12,000 acres of agricultural fields in the project. Providing solar power into the grid to offset the power requirements of these large pumps will add to the combined benefits of all of these projects.	
Monterey County Water Resources Agency: Salinas River Lagoon Fisheries Enhancement Project	During minimum flows in the Salinas River, the Old Salinas River Channel (OSRC) outlets through a slide gate into the Pacific Ocean, in Monterey Bay. This outlet is seasonally disconnected from the Pacific Ocean by a naturally forming sandbar at the mouth of the river forming the Salinas River Lagoon. The OSRC was constructed to provide flood protection for adjoining farmland and controlling water surface elevations in the lagoon when flows to the ocean are not possible. South-central California coast steelhead, a federally threatened species, uses the lower Salinas River as a migration corridor between the ocean and their upstream spawning grounds. When seasonally closed to the ocean, the Lagoon may serve as rearing habitat for juvenile steelhead. An existing slide gate is opened to allow Lagoon discharges to the OSRC. Steelhead may be entrained into the OSRC (drawn into the water diversion by hydraulic forces). To protect steelhead and other fish entrainment into the OSRC, MCWRA proposes to install fish screens at the slide gate. The proposed fish screen facility is also designed to prevent back flow from the OSRC to the Lagoon, which would eliminate influxes of agricultural runoff that currently contributes to the degradation of water quality in the Lagoon. The proposed project would enhance the Salinas River Lagoon as steelhead migration and rearing habitat, limit the ability of fish to leave the closed Salinas River Lagoon while allowing an outlet for flood management, and decrease debris loading in the channel approach.	natural resource enhancement + water quality
Monterey County Water Resources Agency: San Antonio Dam Hydro Electric Power Plant	In the last 20 years the concept of constructing a hydroelectric power plant at San Antonio Dam had been considered as a green source of electrical power to sell to PG&E at a premium kW/hr rate. The concept of a San Antonio Dam hydroelectric power plant would be structurally similar to that which exists at Nacimiento Dam. The power plant structure would be an all-weather type facility and would house turbines, generators, controls and electrical equipment. The San Antonio power plant would also work in concert with the controlled releases for groundwater recharge to the lower Salinas River Valley. It is anticipated that the controlled releases from San Antonio Dam will continue to be less than that of Nacimiento Dam and therefore the San Antonio power plant would potentially have a lower production rate of electricity than the Nacimiento power plant. Even though the San Antonio power plant may have less production capacity of electricity than the Nacimiento power plant, there would be an added source for green electrical energy.	water supply
Monterey Regional Waste Management District: Monterey Regional Waste Management District Renewable Energy Facility	The Monterey Regional Waste Management District (MRWMD) is evaluating plans to construct an additional 6,000 kW cogeneration plant on the southern side of its landfill site, immediately adjacent to the proposed Regional Desalination Project facilities. The combined power from both the existing and new MRWMD cogeneration facilities would be sufficient to provide all of the power needed for operation of the Regional Desalination Project facilities, specifically the desalination water treatment plant and distribution pumping. The power would be delivered to the Regional Desalination Project through a new power transmission line running directly from the MRWMD cogeneration facilities to a substation at the desalination plant. Powering the Regional Desalination Project from the MRWMD Cogeneration Facility provides the following benefits:	water supply

	Reduced greenhouse gas emissions and carbon footprint for the Regional Desalination Project; power potentially provided at a cost lower than buying from PG&E; and power would not be required from PG&E on a regular basis.	
Nacimientto Regional Water Management Advisory Committee: Interlake Tunnel between Lake Nacimientto and Lake San Antonio	The purpose of the project is to plan, engineer, permit, construct and operate of an interlake tunnel between Lake Nacimientto and Lake San Antonio. Lake Nacimientto and Lake San Antonio are manmade reservoirs within the Salinas River Basin that provide a number of vital functions to the area. These functions consist of flood control, water supply and recreation. Rainwater and runoff from the surrounding watershed is typically stored during winter months and then released in a controlled fashion during the dry summer months. The water supply is used for groundwater recharge in the Salinas Valley via releases from both lakes which combine in the upper Salinas River. Flood control is achieved by retaining water and limiting flow in the Nacimientto and San Antonio rivers during winter storm events. This captured water stored in the two lakes would be used later in the dryer seasons as release water which would flow downstream for groundwater recharge, abatement of salt water intrusion, and the promotion of fish habitats. Increasing the total available supply of water will benefit all of these uses, industries, and communities.	water supply
Resource Conservation District of Monterey County: Monterey County Integrated Watershed Restoration Program	The Integrated Watershed Restoration Program (IWRP) for Monterey County is modeled after the IWRP pioneered in Santa Cruz County. The flagship component of IWRP is the creation of an interagency process to identify, design, and permit high priority water quality, fish passage, and wetland restoration projects. The Santa Cruz County IWRP partner organizations and agencies recognized that implementing the recommendations of multiple assessments and plans is best accomplished by bringing together federal, state, and local resource and permitting agencies to identify the highest priority projects and assisting with locating funding sources, providing technical assistance, and facilitating permitting. While in many ways this sounds potentially redundant with the mission of the Greater Monterey County (GMC) IRWM Plan, the key distinctions with IWRP are: 1) the focus on restoration projects, 2) the closely involved role of regional Coastal Conservancy staff in supporting the IWRP process and projects, and 3) the participation of state and federal (along with local) agency representatives in the IWRP Technical Advisory Committee for a more vertically-integrated approach to facilitating, directing and supporting selected projects. As such, IWRP can be a critical asset for supporting GMC IRWM Plan restoration-focused projects, and it could facilitate coordination between neighboring IRWM regions. Typical IWRP restoration projects can include rural road erosion reduction, fish passage improvement, and wetland and lagoon restoration. The individual watershed projects will be identified by the IWRP Technical Advisory Committee based on recommendations in local watershed plans, including the Coho and steelhead recovery plans developed by DFG and the National Marine Fisheries Service (NMFS), or otherwise supported by state or federal resource agencies or local watershed groups. The IWRP will also support a number of potential projects recommended in other Monterey County IRWM Plans for the Pajaro River and the Carmel Valley and Monterey Peninsula.	natural resource enhancement + water quality
Resource Conservation District of Monterey County: Rural Roads Erosion Assistance Program for Monterey	RCD of Monterey County will serve as the program lead with regular guidance from a Rural Roads Technical Advisory Committee (TAC), in providing education and training on rural roads drainage techniques, on-site technical assistance, and funding for road erosion assessments, project design and permitting, and road drainage project implementation. The outreach aspects of the program will include demonstration workshops and trainings, outreach material development and public communications. The TAC will help to develop and review criteria to	water quality

County	select road association projects that will receive funding as well as assess program success. Road association projects that are selected will require 50% of the project costs to be contributed by the road association. This match share will be from in-kind services and/or cash contributions. In addition to the match share, a long-term maintenance agreement will be required as part of the project. Success will be measured by the amount of reduction in sedimentation coming from rural unsurfaced roads and from surfaced roads that are not maintained.	
Ventana Wilderness Alliance: Arroyo Seco Wild and Scenic River Recreational and Habitat Enhancement	The Arroyo Seco River is the only major tributary of the Salinas River that remains undammed. The purpose of this concept proposal is to demonstrate the willingness of the nonprofit Ventana Wilderness Alliance (VWA) to collaborate with the US Forest Service and other agencies to enhance the outstanding recreational and habitat values of the Arroyo Seco River. With proper funding, VWA is prepared to initiate projects on the designated Wild and Scenic sections of the Arroyo Seco River either before or after H.R. 4040 is passed. Potential projects to be initiated in conjunction with the Forest Service include: <u>Implementation Monitoring</u> : Ensure visitor information/education material is available; provide Wilderness Ranger personnel to assist in public education and help maintain the outstanding values of the river). <u>Effectiveness Monitoring</u> : Annual review of patrol logbooks for overall river corridor condition, including but not limited to amount of trash, development of fire rings, cutting of live vegetation, invasive weeds, overcrowding of campgrounds, number of dogs off-leash. <u>Adaptive Management</u> : If annual review of monitoring indicates repetitive documentation of excessive trash, development of fire rings, cutting of live vegetation, spread of invasive weeds, overcrowding of campgrounds, and dogs off-leash, then site specific environmental analysis will be conducted as appropriate and an approved process will be used to determine the appropriate corrective action.	natural resource enhancement + water quality
Ventana Wilderness Alliance: Big Sur Wild and Scenic River Monitoring and Adaptive Management	The purpose of this concept proposal is to secure funding for a collaborative approach to Monitoring and Adaptive Management along the Wild and Scenic Big Sur River. The VWA is prepared to work with the US Forest Service to conduct implementation monitoring and effectiveness monitoring as outlined in the Comprehensive River Management Plan (CRMP). Due to budget constraints, little if any of these activities have taken place since the adoption of the CRMP in 2003. The project includes Implementation Monitoring, Effectiveness Monitoring, and Adaptive Management as described above.	natural resource enhancement + water quality
Ventana Wilderness Alliance: Los Burros Abandoned Mine Survey and Remediation	Literally hundreds of abandoned gold mines and at least one mercury mine litter the southern Big Sur coast. These relics of the former Los Burros Mining District discharge liquid runoff into watersheds known to harbor spawning populations of Federally Endangered southern steelhead. Further downstream, this effluent enters the Monterey Bay National Marine Sanctuary. Prior to the VWA's Los Burros Abandoned Mine Survey project, the chemical composition of such runoff was completely unknown. Initial testing at one of the sites revealed effluent with highly elevated levels of mercury, flowing out of an abandoned adit (i.e., horizontal mine shaft) and directly into a tributary of San Carpoforo Creek. Agency officials at Los Padres National Forest have been aware of this situation for decades, but have yet to allocate funding for testing or remediation. The VWA's solution has been to address these conditions so that remediation efforts can be undertaken. Phase I of the Silver Peak/Los Burros Abandoned Mine Project has begun with testing of the most suspect sites for the presence of heavy metals, and the scheduling of biological surveys for sensitive species habitat. Future phases will pursue remediation of any toxics found and the installation of bat gates at mine openings as needed to protect sensitive species and forest users, and to deter vandalism.	natural resource enhancement + water quality

Ventana Wilderness Alliance: Milpitas Special Interest Area and San Antonio River - Grazing Allotment Monitoring	The Milpitas Special Interest Area (SIA) contains approximately 9500 acres, located in the upper watershed of the San Antonio River, much of which is within the Ventana Wilderness. Within the Milpitas SIA is the Milpitas Grazing Allotment. Together these two entities cover virtually the entire headwaters region of the San Antonio River watershed, which is the major contributor to San Antonio Reservoir. In the Los Padres National Forest Management Plan of 2005, the US Forest Service recognized the unique aspects of the area and designated the Milpitas SIA. Due to decreases in funding and personnel, the Forest Service has been unable to develop a management plan for the SIA to achieve the desired condition. The VWA has facilitated and funded an agreement between Los Padres National Forest and Mountain Heritage Associates to create a comprehensive management plan for the area with input from the Salinan tribes, recreational users, and the local community. A key Management Objective of the management plan is to “provide forage for cattle in a way that complements ethnobotanical management objectives.” One objective is the development of a “new allotment management plan with grazing prescriptions that complement ethnobotanical resources, maintains functional riparian areas, and uses infrastructure as needed to reduce cattle grazing impacts on heritage sites.” To achieve this objective, funding is necessary to monitor grazing, study its impacts and test and assess the water quality of the San Antonio River and its tributaries. It is the VWA’s hope that this concept proposal will lead to a cooperative and collaborative Implementation Project to develop a new grazing allotment management plan on the Milpitas Special Interest Area.	water quality
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Section H: Impacts and Benefits

Implementation of projects in this Integrated Regional Water Management (IRWM) Plan will result in significant water resource and environmental benefits for the Greater Monterey County planning region. The Greater Monterey County IRWM Plan includes the following types of projects:

- *Water supply projects*, including construction of an interlake tunnel between Lake San Antonio and Lake Nacimiento; an urgently needed water supply system for the Granite Ridge area; a test well for a proposed desalination project for the Monterey Bay area; and an aquatic invasive species inspection project for Lake San Antonio and Lake Nacimiento.
- *Water recycling projects*, including facilities needed for recycled water distribution in the City of Soledad and for recycled water distribution in the Marina Coast Water District (MCWD) service areas.
- *Water supply infrastructure improvement projects*, including arsenic removal for the drinking water supply in Castroville (a disadvantaged community [DAC]); construction of a new well, storage tank, and distribution system to provide a potable water supply for the communities of Springfield and Moss Landing Mobile Manor (DACs) to comply with Nitrate Maximum Contamination Level and saltwater intrusion regulations; a new well and pipeline to replace the single existing well for San Lucas; and the lining of reservoirs and canals at San Bernabe Vineyards.
- *Groundwater improvement and protection projects*, including coastal dedicated monitoring wells to help monitor seawater intrusion, and urban and agricultural runoff water quality improvement projects, such as the UC Davis low impact development (LID) research project, the Monterey Bay Sanctuary Foundation's best management practice (BMP) implementation project in Santa Rita Creek Watershed, and the Resource Conservation District (RCD) of Monterey County's farm water quality assistance programs.
- *Wastewater facility improvements*, including upgrade of the wastewater facility in San Jerardo (a DAC); industrial wastewater conveyance and treatment facility improvements in the City of Salinas; an Inspection and Monitoring pilot program for DAC onsite wastewater systems; and storm drain improvements in Las Lomas.
- *Water quality improvement programs*, including farm water quality assistance, on-farm erosion control, irrigation and nutrient management evaluation, and implementation of BMPs on livestock facilities and rangelands (led by the RCD of Monterey County); BMP implementation in Santa Rita Creek (led by the Monterey Bay Sanctuary Foundation, RCD of Monterey County, and Central Coast Wetlands Group); implementation of a Green Gardener Program (led by Ecology Action and the RCD of Monterey County); and a regional project tracking program to monitor progress in addressing the goals of improved water quality, water supply, flood control and environmental protection outlined in the IRWM Plan (led by the Monterey Bay National Marine Sanctuary).
- *Major wetland and dune restoration projects* in Tembladero Slough, Moro Cojo Slough, and the dunes near Moss Landing (all led by the Central Coast Wetlands Group), and in Elkhorn Slough (led by the Elkhorn Slough Foundation).
- *Watershed management programs*, including watershed restoration activities in Santa Rita Creek Watershed; watershed planning and management in the Northern Gabilan Watershed (led by the Central Coast Wetlands Group); invasive non-native plant removal in the Salinas River Watershed (led by the RCD of Monterey County); and an annual coastal river and beach litter

removal program (led by Save Our Shores).

- *Steelhead enhancement projects*, including the Salinas River Fisheries Enhancement Project (led by the Monterey County Water Resources Agency [MCWRA]), and implementation of the Big Sur River Steelhead Enhancement Plan (led by California State Parks).
- *Flood protection projects*, including flood risk reduction for the Salinas River (consisting of National Environmental Policy Act/California Environmental Quality Act [NEPA/CEQA]) preparation and led by MCWRA), and several wetland/watershed restoration projects that will produce significant flood protection benefits.

Together these projects are anticipated to achieve the following regional goals, as outlined in this IRWM Plan:

- Improve water supply reliability and protect groundwater and surface water supplies
- Protect and improve surface, groundwater, estuarine, and coastal water quality, and ensure the provision of high-quality, potable, affordable drinking water for all communities in the region
- Develop, fund, and implement integrated watershed approaches to flood management through collaborative and community supported processes
- Protect, enhance, and restore the region's ecological resources while respecting the rights of private property owners
- Promote regional communication, cooperation, and education regarding water resource management
- Ensure the provision of high-quality, potable, affordable water and healthy conditions for disadvantaged communities
- Adapt the region's water management approach to deal with impacts of climate change using science-based approaches, and minimize the regional causal effects

Some adverse environmental impacts may also be expected from implementation of the IRWM Plan, though projects are purposefully developed to minimize environmental impacts. Construction-related impacts may include temporary and localized disturbances to air and water quality, habitat, and other physical factors including the following:¹

- *Water Resources.* Construction of proposed projects may result in increased erosion and sediment delivery to waterways in the vicinity of project sites, temporary changes in the watershed's hydrograph, or other impacts associated with construction activities that may degrade water resources.
- *Air Quality.* Construction-related increases in PM10 (particulate matter on the order of ~10 micrometers or less) and ozone precursor emissions may result from operation of construction equipment, vehicles, and airborne dust during site grading and/or excavation.
- *Noise.* Construction noise and vibration impacts may result from construction equipment, vehicles, and activities.
- *Hazardous Materials.* Project construction could result in spills of fuel, lubricants, pesticides, or other substances used in construction equipment.
- *Biological Resources.* Construction associated with proposed projects may result in the direct loss

¹ Thanks to the San Francisco Bay Area IRWM Plan for outlining these potential construction-related impacts.

or indirect disturbance of special-status plants and wildlife species that are known to or could occur in the region. Construction-related impacts may also include temporary unavailability and/or degradation of wildlife habitat, and short-term disturbance of wildlife as a result of construction noise. These impacts may result in a reduction in local population size, lowered reproductive success, and/or habitat fragmentation.

- *Transportation.* Construction of proposed projects may result in temporary lane closures, detours, closure of transit stops, and the addition of construction trucks and equipment on the surrounding roadway system. Construction may potentially increase delays and congestion.

This chapter describes the anticipated benefits and potential impacts that will result from the implementation of this IRWM Plan, both on a project-specific level and in terms of how the projects will help achieve regional goals. Potential impacts and benefits to DACs specifically are also discussed.

H.1 HOW PROJECTS ACHIEVE IRWM PLAN OBJECTIVES

There is inherent value in the IRWM planning process in providing a systematic method for defining, and then achieving, regional water resource management goals.

Table H-1 on the following pages illustrates how projects in the IRWM Plan, including those currently being implemented, will contribute toward addressing regional objectives. The table shows both the number of projects (out of 38 total) that will address each objective, and then the extent, on average, to which those projects are expected to address the objectives (on a scale from 0-5).²

Of the resource-specific goals, the table indicates that the goal category “best addressed” by projects currently in the IRWM Plan is Water Quality, followed by Environment, then Water Supply, then Flood Protection/Management. Most of the projects in the Plan address the Regional Communication and Cooperation goal. More than half of the projects address DAC objectives, either directly or indirectly.

Note that every objective is addressed at least to some extent by projects in the IRWM Plan. With every Plan review and update, the objectives will be reviewed to assess the extent to which they are being achieved (see Section J, Plan Performance and Monitoring). As the IRWM planning process continues, new projects will be developed, either as concept proposals or as full implementation projects, to address the gaps in achieving the goals and objectives of this IRWM Plan.

² Methodology: Each project was reviewed for how likely it was to achieve IRWM Plan objectives. For each project, a score of 0-5 was given for each IRWM Plan objective (these scores were first provided by the project proponents themselves, and then adjusted if deemed necessary by the Project Review Committee). Then for each objective, an average score was determined based on the projects that scored between 1-5 for that objective.

Table H-1: Number of Projects that will Implement the Plan Objectives

OBJECTIVES	# of projects that address each objective (total = 38 projects)	Extent to which those projects address objective (avg. 0-5)
Water Supply		
Increase groundwater recharge and protect groundwater recharge areas.	18	3.2
Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.	8	3.3
Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.	11	3.6
Diversify water supply sources, including but not limited to the use of recycled water.	10	3.3
Maximize water conservation programs.	12	3.8
Capture and manage storm water runoff.	13	3.2
Optimize conjunctive use where appropriate.	6	3.7
Support research and monitoring to better understand water supply needs.	7	3.9
Support the creation of water supply certainties for local production of agricultural products.	6	2.8
Promote public education about water supply issues and needs.	7	2.6
Promote planning efforts to provide emergency drinking water to communities in the region in the event of a disaster.	4	4.0
Water Quality		
Promote practices necessary to meet, or where practicable, exceed all applicable water quality regulatory standards (for drinking water, surface and groundwater quality).	28	3.9
Promote projects to prevent seawater intrusion.	13	3.6
Incorporate or promote principles of low impact development where feasible, appropriate, and cost effective.	9	2.8
Protect surface waters and groundwater basins from contamination and the threat of contamination.	25	3.9
Support research and pilot projects for the co-management of food safety and water quality protection.	9	3.3
Improve septic systems, sewer system infrastructure, wastewater treatment systems, and manure management programs to prevent water quality contamination.	8	3.6
Support research and other efforts on salinity management.	4	3.8
Support monitoring to better understand major sources of erosion, and implement a comprehensive erosion control program.	11	3.4
Promote programs and projects to reduce the quantity and improve the quality of urban and agricultural runoff and/or mitigate their effects in surface waters, groundwater, and the marine environment.	17	4.3
Promote regional monitoring and analysis to better understand water quality conditions.	16	3.9
Support research and utilization of emerging technologies (enzymes, etc.) to develop effective water pollution prevention and mitigation measures, and source tracking.	8	3.3
Promote public education about water quality issues and needs.	24	3.7
Flood Protection/ Management		
Promote projects and practices to protect infrastructure and property from flood damage.	12	3.4
Improve flood management infrastructure and operational techniques/strategies.	9	2.8

Implement flood management projects that provide multiple benefits such as public safety, habitat protection, recreation, agriculture, and economic development.	13	3.1
Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.	16	3.7
Support research and monitoring efforts to understand the effects of flooding on transport and persistence of pathogens in food crop production areas.	5	1.8
Support management of flood waters so that they do not contaminate fresh produce in the field.	10	2.9
Promote public education about local flood management issues and needs.	11	2.7
Environment		
Support science-based projects to protect, improve, enhance, and/or restore the region's ecological resources, while providing opportunities for public access and recreation where appropriate.	21	3.6
Protect and enhance state and federally listed species and their habitats.	21	3.4
Minimize adverse environmental impacts of water resource management projects.	16	3.1
Support applied research and monitoring to better understand environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources.	17	4.0
Implement fish-friendly stream and river corridor restoration projects.	10	3.9
Reduce adverse impacts of sedimentation into streams, particularly from roads and non-point sources.	17	3.6
Promote efforts to prevent, control, reduce, and/or eradicate high priority invasive species.	15	4.2
Promote native drought-tolerant plantings in municipal and residential landscaping.	4	3.5
Consider opportunities to purchase fee title or conservation easements on lands from willing sellers that provide integrated water resource management benefits. Ensure adequate funding and infrastructure to manage properties and/or monitor easements.	7	4.3
Support research and monitoring efforts to understand the effects of wildfire events on water resources.	2	2.0
Regional Communication and Cooperation		
Facilitate dialogue and reduce inconsistencies in water management strategies/regulations between local, regional, state, and federal entities.	26	3.4
Promote dialogue between federal and state regulators and small water system managers to facilitate water quality regulation compliance.	11	2.2
Foster collaboration between regional entities to minimize and resolve potential conflicts and to obtain support for responsible water supply solutions and improved water quality.	29	3.3
Build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects.	22	3.2
Increase stakeholder input and public education about the need, complexity, and cost of strategies, programs, plans, and projects to improve water supply, water quality, flood management, coastal conservation, and environmental protection.	26	3.3
DAC		
Seek funding opportunities to ensure all communities have a water system with adequate, safe, high-quality drinking water.	4	4.3
Seek funding opportunities to ensure all communities have adequate wastewater treatment.	4	4.0
Ensure that disadvantaged communities are adequately protected from flooding and the impacts of poor surface and groundwater quality.	18	3.1

Provide support for the participation of disadvantaged communities in the development, implementation, monitoring, and long-term maintenance of water resource management projects.	14	3.6
Promote public education in disadvantaged communities about water resource protection, pollution prevention, conservation, water quality, and watershed health.	20	3.3
Climate Change		
Plan for potential impacts of future climate change.	16	2.9
Support increased monitoring and research to obtain greater understanding of long-term impacts of climate change in the Greater Monterey County region.	6	3.3
Support efforts to research alternative energy and to diversify energy sources appropriate for the region.	3	3.0
Seek long-term solutions to reduce greenhouse gas producing energy use.	10	2.3
Seek long-term solutions to maintain and protect existing pristine natural resources from the impacts of climate change.	8	2.9
Support research and/or implementation of land-based efforts such as carbon-sequestration on working lands and wildlands in the Greater Monterey County region.	5	2.2
Promote public education about impacts of climate change, particularly as it relates to water resource management in the Greater Monterey County region.	9	2.3

H.2 IMPACTS AND BENEFITS TO DACS AND ENVIRONMENTAL JUSTICE CONCERNS

All projects included in the IRWM Plan are reviewed for potential impacts to DACs and for potential environmental justice concerns as part of the regular project review process. If a potential impact to a DAC or an environmental justice concern is found, the project will not necessarily be eliminated from the Plan, but the issue will be discussed with the project proponent, mitigating factors will be considered, and a decision will then be made as to whether or not the project should remain in the Plan. Thus far, no potential impacts to DACs or environmental justice concerns have been found in any of the projects submitted for inclusion in the IRWM Plan.

On the other hand, numerous benefits to DACs are expected to result from implementation of the IRWM Plan. Several projects included in the Plan promise DAC benefits, including (an asterisk means the project is currently being implemented through Round 1 of the IRWM Implementation Grant Program):

- San Jerardo Cooperative: San Jerardo Wastewater Project*
- Castroville Community Services District: Well 2B Treatment Project*
- Rural Community Assistance Corporation: Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program
- Pajaro/Sunny Mesa Community Services District: Springfield Water System
- Monterey Bay Sanctuary Foundation: Watershed Approach to Water Quality Solutions*
- Elkhorn Slough Foundation: Integrated Ecosystem Restoration in Elkhorn Slough*
- Central Coast Wetlands Group: Tembladero Restoration and Castroville Community Public Access, Phase I*
- Central Coast Wetlands Group: Northern Gabilan Mountain Watershed Management Project
- Central Coast Wetlands Group: Implementation of the Moro Cojo Slough Management and Enhancement Plan: Restoration of the Upper Slough
- Central Coast Wetlands Group: Study of Environmental Services from Nutrient Reducing BMPs
- Central Coast Wetlands Group: Water Quality Enhancement of the Tembladero Slough, Phase II
- RCD of Monterey County: Monterey County Farm Water Quality Assistance Program
- Central Coast Wetlands Group: Coastal Wetland Erosion Control and Dune Restoration
- Monterey County Water Resources Agency: Salinas River Flood Risk Reduction Project
- Ecology Action: Monterey Bay Green Gardener Training & Certification Program
- RCD of Monterey County: Livestock and Land: Rangeland and Livestock Facility Water Quality, Vegetation Management and Wildlife Enhancement Program
- RCD of Monterey County: Salinas River Watershed Invasive Non-native Plant Control and Restoration Program
- Elkhorn Slough Foundation: Ridgeline to Tideline: Water Resource Conservation in Elkhorn Slough
- Save Our Shores: Watershed Protection Program - Annual Coastal Cleanup Day in Monterey County

The first four projects listed above directly address critical water resource needs in DACs, specifically: construction of a new wastewater facility at the San Jerardo farm worker community; water treatment to remove arsenic from the drinking water supply for the community of Castroville; an innovative pilot program to involve DAC community members throughout the region in creating inspection and monitoring programs for their onsite wastewater systems; and a water supply project for the communities of Springfield and Moss Landing Mobile Manor, which has not had potable water since 1986. Each of the other projects listed above provides water resource management assistance to a broader geographic area that also includes DACs (such as farm water quality assistance, rangeland and livestock facility water quality assistance, or Green Gardener training), or alternatively, provides important water resource improvements or environmental enhancements to broader geographic regions that will also benefit DACs

(for example, watershed restoration, wetlands restoration, or elimination of invasive non-native species in waterways).

H.3 PROJECT-SPECIFIC IMPACTS AND BENEFITS

The anticipated impacts and benefits of individual projects in the Greater Monterey County IRWM Plan differ greatly. Some projects will provide local benefits (perhaps critical to a local population), others regional benefits. Some will focus in just one resource area, for example, water supply, while other projects will integrate different resource areas, such as water supply, water quality, environmental restoration, and recreation. However, together and over time, the projects implemented through the IRWM Plan will provide multiple benefits across the entire Greater Monterey County planning region—including water supply, water quality, flood management, environmental enhancement, regional coordination, recreational benefits, and special benefits for disadvantaged communities—while achieving the overarching goals and objectives of the Plan.

The tables below describe the impacts and benefits anticipated from each of the projects included in the Greater Monterey County IRWM Plan. Table H-2 includes the projects that were awarded grant funds through Round 1 of the IRWM Implementation Grant Program, and that are currently in the early stages of implementation. Table H-3 includes the projects proposed for implementation in the IRWM Plan. Note that the impacts and benefits listed in the tables are generally descriptive rather than quantitative, and are intended to give the reader a general understanding of the types of impacts and benefits to be expected. An in-depth impact and benefit analysis will be required for every project that is included in an IRWM grant application package, prior to submitting an IRWM grant proposal to the State.

Since this IRWM Plan is still in the early stages of development and project implementation has only just begun, these lists serve as a general benchmark. Over time, as more and more projects are implemented, the impacts and benefits will be reviewed and this section of the IRWM Plan will be updated as part of the normal plan management activities. These updates will reflect changes to the Impacts and Benefits section from any data gathered, and any additions or changes to the implementation projects listed in the IRWM Plan.

The following tables summarize the impacts and benefits anticipated from each of the 2010-2012 projects included in the Greater Monterey County IRWM Plan.

Table H-2: Impacts and Benefits: Projects Currently being Implemented through Round 1 IRWM Implementation Grant Funds

Project Proponent & Project Title	Anticipated Benefits	Anticipated Impacts
City of Soledad: Soledad Water Recycling/Reclamation Project	This project includes completion of design of a recycled water delivery system to both agricultural and recreation areas in and near the City of Soledad. The benefits of this project entail taking the wastewater generated and produced by three DACs and re-routing them to the already built wastewater treatment plant in Soledad, allowing for their treatment and recycling for re-use within the city and surrounding agricultural areas that will benefit from this resource. The project also includes research on the use of recycled water for agricultural uses. Completion of project will enable delivery of recycled water to multiple landscaped areas currently being irrigated with potable water. The project will have the benefit of taking wastewater currently being treated in secondary pond systems to Title 22 recycle water, thus improving the groundwater quality in the Salinas River aquifer.	Possible impacts of this project include dust, noise, and other impacts related to the use of heavy equipment for installation of the conveyance pipes, as well as an increase in greenhouse gas (GHG) emissions.
Castroville Community Services District: Castroville CSD Well 2B Treatment Project	Construction of a new well pump and treatment facility will increase the overall water system capacity for Castroville, achieving the primary benefit of a new water supply facility. Pumping water from the Deep (900-Foot) Aquifer instead of the 180/400-Foot Aquifer will reduce the migration rate of seawater-intruded groundwater in the shallow aquifer. The use of the Well 2B will alleviate the need for a pipeline from the Salinas Valley River Diversion facility. Water quality benefits include: improvements related to protecting, restoring, or enhancing beneficial uses; avoided water treatment costs; avoided wastewater treatment costs; and water quality improvements related to providing water supplies and avoided public safety and health impacts.	Possible impacts may occur from construction activities, including dust, noise, erosion, sedimentation, and increased GHG emissions.
San Jerardo Cooperative, Inc.: San Jerardo Wastewater Project	The proposed project will provide critical public health benefits to the San Jerardo community by both ensuring adequate wastewater treatment systems and by reducing nitrate and 1,2,3-trichloropropane discharge into the underlying aquifer system. It will provide additional air quality benefits as expansion of the system's capacity will reduce noxious odors from the overtaxed ponds. By upgrading the wastewater system, it will help prevent the cycle of contamination and recontamination between the ponds and the underlying aquifer. This is expected to provide water quality benefits, which will extend to the surrounding area, including nearby residential uses. It also includes a potential reduction in the amount of treatment needed for the community's drinking water supply from the nearby well. Water supply benefits include the provision of an alternate source of water for grounds upkeep and year-round soccer field irrigation through the reuse or recycling of treated wastewater, thus reducing water supply demand. Future economic benefits are expected to result from the planning component of the grant, which include the substitute of recycled water for water from the new well site for secondary uses, reducing operating costs to pump, store and maintain the water system. The project will have energy savings by using solar-powered aerators and other solar technology where feasible. Implemented water conservation efforts also potentially have large energy saving implications.	Construction during the project could impact the habitat of two endangered species, the California tiger salamander and the California red-legged frog. Careful biological monitoring during the project will ensure that no endangered species are harmed. To date, the potentially impacted species have not been discovered in the construction zone for the drinking water project, indicating the likelihood that they will not be in the construction zone for the wastewater project.
Elkhorn Slough Foundation: Integrated Ecosystem Restoration in	This project will result in the direct restoration of up to 90 acres of salt marsh in Elkhorn Slough. Over the last 150 years approximately 50% of Elkhorn's marshes have been lost due to human modifications, and their restoration is critical for the long-term health of the estuary. Raising the marsh elevation in lower Elkhorn Slough will reduce the volume of water moving in and out of the estuary each day, decreasing the system's overall tidal prism and helping to reduce erosion of the slough's benthic	Possible impacts from this project include temporary disturbance of habitat from the restoration effort and other construction-related impacts, including increased GHG emissions.

Elkhorn Slough	habitats and tidal creeks. Salt marsh degradation in Elkhorn Slough is associated with the local extirpation of the federally endangered California clapper rail in the 1980s; this project is a first step to recovering critical habitat for this species. Raising the marsh elevation with sediment addition will protect them from drowning due to future sea level rise. The permanent establishment of a native perennial vegetated buffer will reduce agricultural pollution of tidal marshes, increase native grassland habitat, and reduce invasion by non-native upland weeds. The native grass buffer will complete a comprehensive erosion control program for the farm. The establishment of a kayak landing and educational signs will increase public access and enhance recreational use of Elkhorn Slough's waters. As part of a research reserve, the project will enable an ideal laboratory for the study of food safety issues and carbon sequestration in restored tidal marshes.	
Central Coast Wetlands Group at Moss Landing Marine Labs through San Jose State Research Foundation: Water Quality Enhancement of the Tembladero Slough Phase I	During Phase I, CCWG will work with County agencies, agricultural landowners and the community of Castroville for design and permitting of a select set of water quality/wetland management structures. These projects will utilize a variety of water quality management innovations including the treatment train approach (i.e., detention/ sedimentation features, pollutant filtration/biological degradation of pollutants and water polishing areas). This project will provide numerous environmental and social benefits. Vegetating the banks will reduce erosion in the channel and prevent upland sediment from being washed into the Slough. Flooding is a serious risk in this area. The majority of the farms adjacent to the Slough are partially or entirely in the Federal Emergency Management Agency (FEMA) 100-year floodplain, and flooded during the strong storms of 1995 and 1998. This flooding poses a serious food safety risk along with the financial burden to landowners. The project is designed to allow for some flood waters to spread in defined areas (i.e., Floodplain Improvement and Open Space areas), increasing flood management of adjacent areas. These areas will provide an important buffer to farms from flooding and bank erosion. This project will further reduce nutrients and reduce sediment loads to Moss Landing Harbor and Elkhorn Slough. In addition, Castroville will benefit from improved tourist visitation once the slough systems are restored and visitors have greater access to wetland and beach areas.	No negative impacts are expected to occur as a result of this project.
Monterey Bay National Marine Sanctuary, Central Coast Wetlands Group, and the Resource Conservation District (RCD) of Monterey County: Watershed Approach to Water Quality Solutions	This project will take a watershed approach to improve water quality in Santa Rita Creek, an impaired water body located within the Lower Salinas River Watershed. This approach will address impacts from agriculture and urban areas and will incorporate creek restoration while engaging the community. Three Total Maximum Daily Loads (TMDLs) are under development for the area: nutrients, pesticides, and fecal coliform. Though reductions are clearly imminent, it is not yet possible to estimate how the load reductions from this project will compare to the yet to be developed TMDL goals. Manure and associated nutrients and pathogen movement into Santa Rita Creek can be reduced by over 80% through pasture and manure management practices supported by this project. In terms of load reduction, on a poorly managed 2 acre parcel holding 2 horses, pasture and manure management coupled with a vegetated swale could keep nearly 200 lbs of nitrogen and 75 lbs of phosphorous from entering the creek. There are approximately 300 acres of rural residential and ranchette acreage draining to the creek that could host such improvements. Sediment load reductions of as much as 20 tons/acre/year from hillside strawberry farms into an adjacent waterway can be achieved with a combination of furrow alignment, road seeding and furrow cover crops. Based on aerial map and review, there are over 600	No significant negative impacts are expected to occur as a result of this project.

	acres in strawberry production along Santa Rita Creek, approximately half of which are on sloped ground draining directly to the creek with potential for significant soil stabilization opportunities. In addition to improvements in water quality, the restoration projects along Santa Rita Creek will create new and enhance existing community green space by converting what is now an unattractive waterway, bare dirt in some places and overgrown with weeds in others, into a thriving creek and riparian environment that will improve habitat that people can easily access and enjoy.	
University of California, Davis (Granite Canyon Marine Pollution Studies Laboratory): Evaluation of Potential for Stormwater Toxicity Reduction by Low Impact Development (LID) Treatment Systems	This project will evaluate the efficacy of bioswales in reducing the concentrations of contaminants that contribute to stormwater toxicity in the City of Salinas. Looking at four sites in the City of Salinas, the project will: 1) assess toxic effects of stormwater runoff to aquatic organisms prior to treatment by bioswales; 2) evaluate efficacy of bioswales to reduce toxicity to aquatic organisms; 3) determine stormwater and pollutant load reduction through bioswales; and 4) provide data to stormwater agencies, water quality managers, LID engineers, and others to be incorporated into future land-use planning and management decisions. The primary benefit of this project is information leading to aquatic life protection in freshwater streams and the downstream estuary, which provide critical habitat for many commercially important fish species, migratory birds, threatened and endangered species, and other wildlife. Improved water quality is key to maintaining and restoring habitat for area wildlife.	No environmental impacts are anticipated from this project.

Table H-3: Impacts and Benefits: Proposed Projects Included in the IRWM Plan

Project Proponent & Project Title	Anticipated Benefits	Anticipated Impacts
California State Parks: Big Sur River Steelhead Enhancement Project	This project will implement the most important recommendations of the Big Sur River Steelhead Enhancement Plan by improving in-stream steelhead habitat and overall water quality in the lower portion of the watershed. The project, although specifically intended to address degraded steelhead habitat, will result in protecting all of the beneficial uses listed by the Central Coast Regional Water Quality Control Board (RWQCB) in the Central Coast Basin Plan. Wildlife and aquatic habitat is protected by moving activities that impact the stream corridor farther away from the river, and by removing invasive species and conducting revegetation activities. Some of the federally or state listed threatened, endangered or special status animal species benefiting from this project are California red-legged frog, south-western pond turtle, yellow-breasted chat, yellow warbler, and white-tailed Kite. The Big Sur River riparian zone in which the project is located is composed of the following three special vegetation community types (California Natural Diversity Database designation): Central Coast Arroyo Willow Riparian Forest, Central Coast Cottonwood-Sycamore Riparian Forest, and Central Coast Riparian Scrub. Migration and spawning beneficial uses are addressed by removing the primary migration barrier on Post Creek and replacing it with a crossing which will allow significantly higher flows on one of two tributaries that support steelhead. Overall water quality improvement will also be obtained by significantly reducing fine sediment input to the channel by upgrading stream crossings and relocating trails, and through bank stabilization. The Big Sur River is specifically called out in the draft South-Central California Coast DPS Recovery Plan as a critical watershed to protect steelhead; this project will be important to the goal of species recovery.	Potential impacts will be minimal but include temporary disturbance of in-stream and/or riparian habitat during the construction and restoration work.
Central Coast Wetlands Group: Coastal Wetland Erosion Control and Dune Restoration	The proposed project will enhance and restore wetland and sand dune ecosystems in central Monterey Bay, and control erosion in salt marshes directly behind the dunes around Moss Landing. The project will benefit water quality and flood control by controlling erosion in wetlands and dunes that buffer the coastline from storm impacts and flooding. Once erosion is minimized the natural wetland ecosystem will flourish and provide a filter for impaired water quality. This project will indirectly benefit water supply by preventing saltwater intrusion into the Salinas Valley Groundwater Basin, which is a major source of water for agricultural and municipal uses. Special status species that will benefit from this project include: California legless lizard, black subspecies (<i>Anniella pulchra nigra</i>); sand gilia (<i>Gilia tenuiflora ssp. arenaria</i>); Monterey spineflower (<i>Chorizanthe pungens var. pungens</i>); tidewater goby (<i>Eucyclogobius newberryi</i>); brackish water snail (<i>Tryonia imitator</i>); Smith's blue butterfly (<i>Euphilotes enoptes smithi</i>); Globose dune beetle (<i>Coelus globosus</i>); and the snowy plover (<i>Charadrius alexandrinus</i>)	Potential impacts will be minimal but include temporary impacts from weed control activities. Impacts will be minimized by installing sediment fencing to prevent erosion while native dune communities are established.
Central Coast Wetlands Group: Development and Evaluation of Climate Change	This project has components of Watershed Enhancement, Water Quality, Habitat Improvement, and Flood Management projects. The following are identified project benefits: Flood management: natural resources preservation and restoration, reduced risk to life and property including agricultural land, and decreased flood insurance costs. Watershed enhancement: enhanced public safety. Habitat improvement: reduced flood risks. Water quality: decreased chance of sea water intrusion.	There are no anticipated impacts with this project as its focus is on data collection and forming a strategy for responding to climate change.

Response Strategies in the Elkhorn Slough, Gabilan and Salinas River Watersheds		
Central Coast Wetlands Group: Ecosystem Condition Profile for the Lower Salinas River Watershed using Level 1-2-3 Framework	This project will use the US EPA's 1-2-3 Framework to provide cost-effective, scientifically-based, and integrated information on stream ecosystem condition in the Salinas watershed in order to inform management decisions and optimize ecological monitoring activities. The development of a master stream ecosystem condition profile integrates all of the separate efforts to address water quality, supply, and environmental management into one comprehensive plan. Therefore, one of the project's chief benefits is its comprehensive approach and the integration of information into one overarching, easily accessible, management document. The framework includes recommendations for how to establish Levels of Service (LOS, numeric performance targets) for stream ecosystems. These numeric performance targets will allow our regional partners to periodically assess progress towards meeting environmental/habitat objectives and the appropriateness of associated strategies and measurable objectives. These LOS can be established in each watershed by analyzing results of ambient surveys of stream ecosystem conditions.	There will be no negative impacts because the project consists of primarily research and watershed planning.
Central Coast Wetlands Group, MBNMS, Monterey Bay Aquarium Research Institute, Elkhorn Slough Reserve: Expansion of a Coastal Confluence Water Monitoring System to support the Greater Monterey IRWMP	<i>Water Quality Projects:</i> The region will have the level of water quality data prescribed in the SAM document to effectively quantify small changes in load reduction and help attribute those changes to water quality program implementation. These data will provide the stakeholders with the data necessary to document the long-term capacity of the region to improve water quality impacts of the past century. <i>Watershed Enhancement Projects:</i> We will provide the necessary data to report on the cumulative effects of watershed management efforts necessary to fully adopt a watershed approach to water quality management and load reduction attainment. <i>Habitat Improvement Projects:</i> We will be able to help document the water quality value of habitat restoration projects including erosion control of drainage banks, treatment wetland installation and reestablishment of drainage floodplains. <i>Flood Management Projects:</i> This monitoring will include flow metering that will quantify real time flow measurements that can be made available on line for multiple users. Real time flow at coastal confluence and the resulting loading data will help IRWMP partners to improve their understanding of watershed processes and better model rainfall driven flow patterns of these drainages.	<i>Water Quality Projects:</i> Some regional groups may have concerns regarding the generation of more accurate pollutant loading estimates for these drainages. There have been no negative results of the LOBO data from the Old Salinas River Channel, so we anticipate that these concerns can be addressed through proper interpretation of the generated data. <i>Watershed Enhancement Projects:</i> Will document when programs are not being implemented at a scale to produce significant water quality enhancements to the greater watershed. <i>Habitat Improvement Projects:</i> None. <i>Flood Management Projects:</i> None.
Central Coast Wetlands Group: Northern Gabilan Mountain Watershed Management	The project consists of three phases to restore a sub-watershed within the upper Gabilan watershed, and serve as a model for restoration of watersheds within the Central Coast. One of the project's chief benefits is its comprehensive approach and the integration of information into one overarching, easily accessible, management document. The project will provide a benefit by synthesizing historically separate management approaches and responsibilities into one cohesive approach. In addition, where data gaps are found, the project will fill them, and as a result, improve decision-making. The intent is to	There will be no negative impacts of Phases I or II because they consist of primarily background research, watershed planning, engineering plans and permitting. The potential for impacts exists in Phase III during the

Project	provide an “early warning system” to reduce surface water pollution, protect natural ecosystems, and to direct activities to areas that will enable natural systems, such as percolation. Not only will the project result in standards, policies and criteria, and a master site plan, it is a step towards load reductions (helping reach TMDL goals), enhancements to the ecosystem, and the public’s greater knowledge and appreciation of their watershed. Phase II and III will result in multiple watershed benefits. One main outcome of this project is to improve water quality. Additionally this project seeks to create a public access trail that will provide recreational opportunities throughout the sub-watershed and may aid in reducing greenhouse gas emissions by providing bike access for commuters to downtown Salinas.	construction work; however, those impacts cannot be quantified without knowing the types and locations planned.
Central Coast Wetlands Group: Implementation of the Moro Cojo Slough Management and Enhancement Plan – Restoration of the Upper Slough	The project will involve the restoration of 120 acres of the Moro Cojo Slough containing tidal and brackish water marsh (a State marine reserve) that receive fresh water inputs from agricultural lands above. Many of the problems that are now associated with most of California’s waterways stem from the fact that natural watershed functions which once served to maintain high water quality and wildlife – by filtering pollutants, recharging aquifers, providing flood storage capacity, and providing habitat – have been disrupted. By impounding water that is now allowed to flow off the land into the ocean, we will allow it to percolate into the substrate and eventually into the aquifers, reversing a 50-year trend of seawater intrusion into the coastal aquifers. Even the most persistent pesticides break down more rapidly in shallow marsh habitats through anaerobic bacterial degradation and photo-degradation from sunlight. Ponds will allow for the finest sedimentary particles (which transport pesticides, metals, and other pollutants) to settle out of the water column, preventing the concentration of these materials at single locations such as the Moss Landing Harbor. Restored wetland vegetation will clean water by removing nutrients. Microbial processes in wetland substrates will break down nitrates into harmless forms of nitrogen through denitrification. Threatened or endangered species that should benefit from the completion of this project include: Bells vireo (<i>Vireo bellii</i>), red-legged frog (<i>Rana aurora draytonii</i>), Santa Cruz long-toed salamander (<i>Ambystoma macrodactylum croceum</i>), California tiger salamander (<i>Ambystoma californiense</i>), tidewater goby (<i>Eucyclogobius newberryi</i>), and the brackish water snail (<i>Tryonia imitator</i>).	Possible impacts could include short-term, site-specific impacts related to site grading and construction, loss of some agricultural land production, and the associated revenue.
Central Coast Wetlands Group: Study of Environmental Services from Nutrient Reducing BMPs	This project is intended to fill existing economic and ecological gaps in knowledge about select nutrient load reducing BMPs, supporting current conservation programs, and to explore innovative Payment for Environmental Services (PES) potential. Tasks include an ecosystem service assessment to identify the location and size of existing nutrient reducing BMPs; nutrient reduction research to address gaps in the understanding of the effectiveness of selected BMPs at load reduction; ecosystem service valuation to economically assess the multiple benefits of BMPs; and an ecosystem services analysis to determine if PES is feasible. In many cases, growers can only receive funding assistance for BMPs that have been proven effective. This project will explore the effectiveness of two BMPs that growers may be interested in installing. Efforts that lead to the better understanding and more widespread implementation of the most effective BMPs will result in water quality benefits. In addition to the benefit of BMP implementation, gaining an understanding of the economic value of the environmental services that many different BMPs provide can help with grant and project budget justifications to make implementation projects more competitive. Finally, PES is an innovative mechanism for improving water quality, which if feasible can have incalculable benefits for this region and others.	There may be some impact from the installation of BMPs, depending on the type of BMP. Any BMP that involves dirt-moving has the potential to release small amounts of sediment into the air or water. These impacts are expected to be minimal, temporary, and far outweighed by the project benefits.

Central Coast Wetlands Group: Water Quality Enhancement of the Tembladero Slough Phase II	During Phase II of this project, 20 acres in total (approximately six projects) will be constructed based on the plans from Phase I that support and integrate the multiple objectives of the IRWM Plan, emphasizing urban and agricultural water quality enhancement, flood management, habitat restoration and support of various watershed planning and permit processes. This project will support numerous IRWM Plan objectives including watershed enhancement, improved water quality, flood protection, and habitat improvement, as well as an enhancement of public open space and urban/agricultural boundaries. The construction of these systems will integrate numerous efforts that have occurred with local landowners together to address water quality, supply, and environmental management into one comprehensive project. The project will provide a benefit by synthesizing historically separate management approaches and responsibilities into one cohesive approach. Main outcomes of this project are to improve water quality, help to meet various regulatory objectives, create wetland habitat, and reintegrate the community of Castroville with its coastal wetland resources. The project proponents anticipate that Castroville residents will embrace the multiple values made evident through this Phase II project and will direct county leaders to adopt wetland restoration objectives as primary criteria for the redevelopment of the community of Castroville.	Impacts include the following: resources directed to this project will not be available for other regional needs; there may be some loss of low-quality agricultural lands for construction of these systems; construction phase GHG emissions will occur, and will be mitigated (through biofuels, carpooling, sequestration).
City of Salinas: Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements	This project will include new gravity sewers with capacity to collect more of the City's industrial wastewater and convey it to the Industrial Wastewater Treatment Facility (IWTF), upgrades to the IWTF to treat increased industrial flows (expanded electrical system and aeration treatment and related upgrades), and a system to filter the IWTF effluent through soil at the IWTF. Project benefits include improved water resources management, job creation through opening of new industries, improved markets for local farmers, and enhanced energy efficiency (and hence lower GHG emissions) at the Industrial Wastewater Treatment Facility. Depending on the final selected water reuse scheme, groundwater over-drafting and /or seawater intrusion would be reduced.	Potential impacts would be transitory ones such as dust, noise, stormwater runoff, and traffic congestion associated with construction. The City would mitigate those impacts through normal City requirements such as enforcement of noise restrictions, traffic control measures, and a project stormwater pollution prevention plan.
City of Salinas and Monterey Regional Water Pollution Control Agency: Dry Weather Runoff Diversion Program	For Phase 1, the benefits include both water supply and water quality. The diverted water will assist MRWPCA in responding to water demands from its agricultural customers. Routing less urban runoff to the Salinas River will decrease release of potentially deleterious constituents—oil and grease, nutrients, trace metals and synthetic organics, and pathogenic organism. For Phase 2, the chief benefit will be to determine if more stormwater diversion is feasible and quantify potential diversions.	For Phase 1, the only impact on water supply would be slightly decreased flow to the Salinas River in the dry season. The project will have minor construction impacts but work will take place in an area where surface disturbances have occurred for over 70 years. The City will require that all work be performed in conformance with appropriate environmental controls such as stormwater pollution prevention and emissions controls on construction equipment. The Phase 2 study will have de minimis impacts on the environment.
Delicato Family Vineyards: San	The project consists of lining canals and reservoirs at the San Bernabe Vineyard. Significant water loss due to percolation results in increased water pumped from the well field, and significant increase in	Impacts could include temporary, short-term, and site-specific impacts

Bernabe Lining Project	energy usage. Completion of lining would result in immediate benefits of reduced water usage and reduced energy consumption. With past lining installations, the vineyard managers have seen a 99% reduction in water loss which results in reduced energy use, both electrical and diesel, due to reduced pumping both at the wells and lift stations. Lining the structures not only prevents percolation and required pumping, but can provide habitat for waterfowl 365 days per year. All the structures are fenced to prevent accidental entry by hoofed animals such as deer and wild pigs, but permit the entry of waterfowl and small species. In addition, linings allow the pumping of water during non-peak hours, reducing power demands to the grid; and in most cases, the water is gravity flowed into the system with no power demand.	associated with installation of the linings.
Ecology Action: Monterey Bay Green Gardener Training & Certification Program	The Monterey Bay Green Gardener Certification Program provides bilingual, hands-on training in ecological landscaping methods for landscaping industry professionals, public agency landscape maintenance staff, and home gardeners. Benefits of the Green Gardener Certification Program are an increased technical capacity within the local landscape industry to realize the goals of the Greater Monterey County IRWM Plan relating to enhancing water supply, protecting water quality, improving stormwater retention and flood control, and fostering stewardship of watersheds and natural resources. The Green Gardener Program also serves as a conduit for government agencies to communicate new ordinances, regulations, and conservation incentives to an audience that may be hard to reach due to language and cultural barriers. Ecological landscaping practices also reduce the use of fossil fuels and improve air quality through reduced mowing, blowing, and hauling of green waste. Public health is improved via reduced exposure to potential carcinogens in the urban landscapes where people live, work, and play.	There are no negative impacts associated with this project.
Elkhorn Slough Foundation: Ridgeline to Tideline – Water Resource Conservation in Elkhorn Slough	“Ridgeline to Tideline” is a comprehensive approach to addressing water resource issues in an estuarine watershed. The project area encompasses 427 acres of Elkhorn Slough and uplands set in a 4,000-acre block of protected lands. The three phases of this work include: 1) increasing tidal range and circulation in part of the Slough with consistently poor water quality and greatly reduced estuarine function, coupled with restoration of an adjacent upland buffer, 2) acquiring two adjacent farmland properties that are chronic sources of Slough degradation, and 3) re-contouring and stabilizing their steep eroding slopes and restoring native vegetation. Benefits include improved estuarine water quality, improved flood protection of a railroad and roads, reduced offensive odors, decreased sediment, nutrient, salt and chemical pollution of surface and groundwater, decreased groundwater pumping, increased groundwater recharge, increased estuarine, freshwater wetland and upland wildlife habitat, increased listed species habitat, increased carbon sequestration, and reduced need for mosquito control.	Possible impacts include temporary construction-related effects, reduced farmland acreage and associated tax revenue.
Marina Coast Water District: Recycled Water Element of the Regional Urban Water Augmentation Project	The Recycled Water element of RUWAP is a local water supply source for the MCWD service area and potentially the Monterey Peninsula that will provide a non-potable offset to potable water currently used for irrigation. The Recycled Water element of RUWAP will contribute to the following regional benefits and beneficiaries: • Development of a reliable, high quality water supply for a large Monterey County region; • Optimization of the use of current water supply resources within Monterey County at a relatively low cost; • Improved water supply reliability through diversification of the developed water supply	All of the environmental impacts that would result from implementation of the Recycled Water element of RUWAP are considered less than significant, or will be reduced to less than significant with mitigation. The following was noted in the environmental documentation: Construction and operation of the project

(RUWAP)	portfolio; • Delivery of water to the Ord Community, allowing implementation of the Fort Ord Base Reuse redevelopment plan; • Creation of new jobs for construction, implementation, and operation and maintenance of the facility and associated appurtenances, contributing to economic sustainability of the region; • Reduced nutrient discharge to Monterey Bay National Marine Sanctuary; • Reduced groundwater pumping in support of Seaside Groundwater Basin Adjudication requirements; and • Sustainment of local water resources by putting this resource to its highest and best use.	would require grading, excavation, and other activities that could result in loss or disturbance to special-status species and their habitats. The potential exposure of employees and public to hazards due to discovery of unknown unexploded ordnance during pipeline trenching is a potentially significant impact. Construction activities and operation have the potential to affect air quality, which will be mitigated by efforts to reduce fugitive dust. The project proponent anticipates no significant impacts related to hydrology and water quality, and no significant negative impacts related to water supply.
Monterey Bay Sanctuary Foundation: Making Monitoring Count	This project will implement the tracking system developed to inventory projects designed to address the goals of improved water quality, water supply, flood control and environmental protection outlined in the IRWM Plan. The project will ultimately benefit the IRWM Plan process because the RWMG will have better knowledge of where practices are being implemented and how effective they are at their intended purpose. An inventory of the projects mapped on a Google interface for easy access and contact information will be created. Tools will be developed that will determine pollutant load reductions and potential for meeting beneficial uses. There will be multiple benefits associated with these tracking and assessment tools that may improve habitat and increase efficiencies. This project will also help to direct future efforts of the MBNMS Water Quality Protection Program by implementing the strategies outlined in the MBNMS Regional Monitoring, Data Access, and Interagency Coordination Action Plan. It addresses the need for a continuous and coordinated strategy for regional monitoring of water quality, compilation of data and effectiveness of practices. It is a goal of the MBNMS to make this information more accessible to the public, resource managers and especially researchers with the scientific and technical expertise to tackle unanswered questions related to effects of runoff into fresh water systems and the marine environment. In addition, further data analysis will help to determine where the IRWM process can focus environmental protection efforts.	No negative impacts are expected.
Monterey County Public Works: Las Lomas Drive Storm Drain Improvements Project	The project proposes to improve 0.25 miles of Las Lomas Drive. The project involves constructing new curb, gutter and sidewalks, Class II bicycle lanes, storm drains, a water treatment system, and rehabilitating the existing roadway. The project will provide water quality benefits by incorporating design features that will result in a reduction of pollutants and sedimentation prior to discharge into the Elkhorn Slough. Additionally, these improvements will capture and manage stormwater runoff, and improve and implement flood management thus adequately protecting and reducing risk to life and property to flooding.	The project will be constructed during the dry season and may have a short-term impact of traffic delays during the construction phase that will mostly affect the residents of Las Lomas Drive. The project may have potential environmental impacts in terms of air quality, biological resources, hydrology

		and water quality, and noise. However, mitigation measures have been identified to reduce these impacts, including: dust control measures; a spill abatement plan; preparation of a Stormwater Pollution Prevention Plan that includes BMPs to control runoff, erosion and sedimentation from the site during grading activities; and noise reduction measures.
Monterey County Redevelopment & Housing Office: Well Replacement and Pipeline – San Lucas Water District	Since March 2011 all customers of the Water District have been on an indefinite “Do Not Drink” order from the Monterey County Division of Environmental Health due to excessive levels of nitrates in water being pumped from the District’s single well. The project will replace the existing well with a new production well. Project benefits include: the lifting of the “Do Not Drink” order issued by the Monterey County Health Department in March 2011; enhancement of the security of the public water supply by providing a newly constructed well to serve as the District’s primary water source, while retaining the existing well as an emergency backup source (the District presently does not have an emergency back-up water source for fire protection in the event the existing well has a mechanical failure); ability to approve new water service connections for planned affordable housing projects, something that is much needed in this overcrowded farmworker community; and bringing the Water District’s wastewater treatment facility into compliance with its Discharge Permit, which will further allow the District to approve new sewer service connections for the above reasons.	Potential impacts include possible temporary, short-term, site specific inconvenience to portions of the existing agricultural operation on the property from dust, erosion, sedimentation, or construction equipment during construction of the test well, test pumping and sampling of the test well, construction of the production well and pipeline, and development pumping of the production well.
Monterey County Water Resources Agency: Aquatic Invasive Species Inspection Project	This project benefits water supply by protecting the drinking water infrastructure that is present in Lake Nacimiento from infestation by quagga and zebra mussels, and protecting the Salinas River system from invasion of aquatic invasive species (AIS). Once introduced into a waterway, the mussels reproduce prolifically. If just a few zebra or quagga mussels get into a fresh water system, they could multiply into hundreds of thousands, within months, and eventually decimate native aquatic populations, change water clarity, increase toxic algal blooms and undesirable vegetation, cripple water system infrastructure, including critical agricultural water delivery systems, disrupt recreational boating, and can potentially cost state and local water and recreation agencies and the agricultural industry millions of dollars annually in monitoring, maintenance, containment, infrastructure restoration, and eradication efforts. In addition, it is likely that the recreational value of the lakes would be greatly reduced if AIS were found in either Lake.	There are no expected negative impacts.
Monterey County Water Resources Agency: Coastal Dedicated Monitoring Well Drilling	Twelve dedicated monitoring wells will be drilled under the oversight of a Professional Geologist. The four-inch diameter wells will be drilled using sonic drilling method that allows discrete evaluation of geology to determine where well perforations will be placed. The wells will be strategically placed in Monterey County right-of-way locations with the goal to fill water quality and water level data gaps in front of and behind the 2009 500 mg/L chloride seawater intrusion fronts for the Pressure 180-Foot and Pressure 400-Foot Aquifers. An important benefit of this project is that it will fill data gaps for continued comprehensive seawater intrusion monitoring. The project will also enable coastal water	Possible impacts associated with the drilling of the wells may occur.

	users, urban and agricultural, to understand potential impacts to their source water. In addition, the project will facilitate strategic planning for alternative water solutions by providing information about the health of the groundwater aquifers.	
Monterey County Water Resources Agency: Granite Ridge Regional Water Supply Project	MCWRA is proposing to implement the Granite Ridge Regional Water Supply Project to alleviate existing water supply and water quality deficiencies in the Granite Ridge area of northern Monterey County. The project will provide significant benefits in water supply reliability, increased water quality, and enhanced local fire protection. All parcels within the zone of benefit are susceptible to water shortages or loss, and will receive an increased level of water supply reliability including: greater supply reliability in the alluvial aquifer material of the greater East Side subarea; and greater reliability provided through the utilization of two wells, one for normal service, and one as a backup in the event the primary well is out of operation. There are two water quality issues in the Granite Ridge region: nitrate and arsenic concentrations that exceed Federal drinking water standards. Water quality where the supply wells will be located is generally good; all identified customers within the zone of benefit will obtain a uniform level of access to an improved water quality benefit. In addition, the project will improve the fire protection of the region and may result in reduced fire insurance rates for some parcels.	Impacts could include temporary, short-term, and site-specific impacts from dust, erosion, sedimentation, or construction equipment during construction of the water supply system. Possible impacts could also include impacts to air quality related to site grading and operation of heavy equipment, and increase in GHG emissions.
Monterey County Water Resources Agency: Salinas River Fisheries Enhancement Project	The implementation of the migration monitoring component of this project will provide a flow regime for steelhead trout in the Salinas River. This flow prescription calls for flows to be released from Nacimiento and San Antonio Reservoirs that are aimed at providing suitable habitat in the lower Nacimiento River for steelhead rearing, suitable conditions in the Salinas River for upstream migration of the adult steelhead, outmigration of steelhead smolt, and juvenile steelhead passage to the Salinas River Lagoon. It will also provide a procedure to improve water quality and fish habitat conditions in the Salinas River Lagoon by maintaining a fresh water flow into the Lagoon. The implementation of the habitat monitoring component means that water quality parameters that are critical for fish survival will be monitored with a new level of consistency. While not a direct goal of this project, the increased releases from the reservoirs and resultant river flows will force greater groundwater recharge, improving groundwater quality. The facilities and water quantity will be monitored to ensure that conditions exist for safe steelhead migration. The implementation of the population monitoring will evaluate steelhead response to management actions through behavioral parameters or abundance parameters.	There are no expected negative impacts.
Monterey County Water Resources Agency: Salinas River Flood Risk Reduction Project	The project will fund the preparation of a combined NEPA/CEQA document for the Salinas River Flood Risk Reduction Project, which allows channel maintenance activities on the mainstem of the Salinas River. Benefits may include reduced flood risk to public infrastructure and land adjacent to the Salinas River and select tributaries including highly productive agricultural land, homes, utilities and infrastructure such as bridges and wastewater treatment plants. This would have a direct benefit on the local economy as agriculture plays a key role in the local economy. Benefits also may include long-term sediment reduction and decreased in-stream erosion, increased aquifer recharge, improved fish and wildlife habitat and passage, decreased quantities of non-native invasive species, natural resources preservation and restoration of the floodplain. Additionally the program could offer enhanced public safety by reducing the risk to life and property.	Possible impacts could include short-term, site-specific impacts to air quality related to site grading and operation of heavy equipment, increase in greenhouse gas emissions, and could result in a loss of riparian and/or wetland acreage.

Monterey County Water Resources Agency: Test Well for Regional Desalination Project – Slant Well	In response to the Seaside Basin overdraft and to address the 2006 State Board’s Division of Water Rights Cease and Desist Order to Cal-Am to reduce its Carmel River well water withdrawals, an alternative “Regional Water Project, Phase I” was proposed. This alternative proposed using vertical and slant wells to produce and treat brine water by reverse osmosis, and then deliver the potable water for use on the Monterey Peninsula to remove the State Board Cease and Desist Order. This proposal would fund the slant test well drilling component of the abovementioned project to determine project feasibility. The proposed project includes four sets of monitoring wells to be located at the project site within about 200 feet of the surface of the slant well. The Monterey Bay Regional Desalination Project will supply water to meet the immediate regulatory needs of the Monterey Peninsula and the demands of the Ord Community. Specifically, the project will: meet the requirements of the State Water Resources Control Board (SWRCB) Order 95-10 and offset the reduced diversion from the Carmel River; respond to the adjudication of the Seaside Groundwater Basin and provide additional supply necessary to offset reductions in allowable pumping from the Seaside Groundwater Basin; and meet the approved redevelopment needs of the Ord Community as documented in the Fort Ord Reuse Plan. In addition to meeting regulatory requirements for water supply, the desalination project will help reduce and remediate seawater intrusion, which is an ongoing water quality issue in the region.	Possible impacts may include construction-related issues including short-term specific impacts related to site grading and construction. Construction-related impacts may include increased traffic and noise, and increased GHG emissions.
Nacimientto Regional Water Management Advisory Committee: Interlake Tunnel between Lake Nacimientto and Lake San Antonio	The project is to build an interlake tunnel between Lake Nacimientto and Lake San Antonio. The Nacimientto–San Antonio Interlake Tunnel Project will ensure the reliability of the water supply, conserve additional water, and assist with flood control. Tens to nearly a hundred thousand AF of water could be captured (the 2011 rain year was estimated at 33,000 acre-ft) and stored for use in dryer months or years. This additional water supply would benefit all downstream users throughout the Salinas River Basin for agricultural, industrial, commercial, recreational and drinking water purposes. The water is conveyed via the Salinas River, whose flow is directly over the groundwater basin and is the primary source of recharge, thereby benefiting those downstream needs such as groundwater recharge and the resistance of seawater intrusion. The water from the reservoir will be used to naturally replenish the 180 and 400-Foot Aquifers below the Salinas Valley. Thus the water would increase the water supply by capturing tremendous amounts of rainwater, improve the overall water quality (less reliance on recycled water), and increase the recreational opportunities at both reservoirs with higher water levels. Water released from the Nacimientto and San Antonio Dams provides a consistent habitat for endangered fish such the steelhead trout, which are alleged to have once inhabited the area. An increase in stored water at both Lake Nacimientto and San Antonio will ensure more stable habitat. In addition, the Nacimientto–San Antonio Interlake Tunnel Project will facilitate the transfer of water from Lake Nacimientto to Lake San Antonio. It will allow for more varied operational dynamics and flood control options as the tunnel provides another outlet in which to store water during a storm event.	Possible impacts may include construction-related issues within the lakebeds including short-term specific impacts related to site grading and construction. Construction-related impacts may include increased traffic and noise. Additionally, a temporary increased turbidity with the reservoir bodies may affect water quality. Longer term aesthetics of the intake structures may degrade the natural beauty of the manmade reservoirs.
Pajaro/Sunny Mesa Community Services District: Springfield Water Project	The proposed project will benefit the disadvantaged community of Springfield and the Moss Landing Mobile Manor by providing them with an increase in potable water supply. The Springfield system is currently on a demand basis without storage. The project includes providing the system with sufficient storage for both Struve Road and the Moss Landing Mobile Manor. Also the proposed project will benefit the water system by reducing the pump cost. The well will no longer be on a demand basis and will have time to shut off and turn on when the tanks call for water, not every time the user opens the	The Springfield water system will be impacted by short-term construction. The community will be facing the inconvenience that construction crews bring: noise, traffic, and momentary water shut off.

	water faucet. In addition, the only access to the Springfield water system is through dirt roads. During the rainy season it is impossible to drive on the muddy roads, and the well site must be checked by foot. The well operator must walk to the well site daily until the roads have dried. The proposed well site is accessible all year long. This will benefit the system by reducing operation costs. The project will benefit all the Struve Road community by providing potable water and reducing the travel time and expense of purchasing bottled water for drinking and cooking. The community will have potable water in their homes, something this community has not had since at least 1986.	
RCD of Monterey County: Livestock and Land	The purpose of this program is to achieve immediate and lasting reductions in nutrient, sediment and pathogen pollution to surface and ground waters and enhance wildlife habitat through implementation of BMPs on livestock facilities and rangelands in the Greater Monterey County IRWM region. The proposed program utilizes an incentives-based approach to achieve the cultural change needed for livestock facilities to voluntarily adopt management measures that improve the healthy functioning of watersheds. This project has water quality, watershed enhancement, habitat improvement, and water conservation benefits. Benefits include strengthening of public/private partnerships to address environmental challenges, reduced surface water nutrient and bacteria concentrations (improved water supply quality), improved fish and wildlife habitat with emphasis on stockpond-associated amphibians (such as the California red-legged frog and tiger salamanders), animal health and public safety, site-specific improved flood protection, and educational opportunities.	Possible impacts are extremely localized temporary soil disturbance and noise associated with site preparation or grading.
RCD of Monterey County: Monterey County Farm Water Quality Assistance Program	The RCD of Monterey County, in close partnership with University of California Cooperative Extension Crop Advisors and USDA Natural Resources Conservation Service, will provide a bilingual on-farm erosion, irrigation, and nutrient management evaluation program for Monterey County farmers. The main intended benefits of this project are more efficient use of agricultural irrigation water and nutrients, improved water quality and availability downstream for other beneficial uses in the subject watersheds, and reduced grower input costs relative to crop productivity and quality. Additional potential benefits include: decreased sedimentation of downstream waterways, wetlands, and structures; decreased reliance on imported water; reduced pumping costs; decreased groundwater overdraft; reduced surface water nutrient and bacteria concentrations; and improved fish and wildlife habitat.	Potential project impacts include: short-term, site-specific impacts related to site grading and construction, loss of summer drainage flow to downstream water users, and summer in-stream flow loss due to reduced irrigation runoff.
RCD of Monterey County: Salinas River Watershed Invasive Non-native Plant Control and Restoration	The project proposal is for the first 3-year stage of treatment (of a 10+ year program) and will target <i>Arundo spp.</i> and <i>Tamarix spp.</i> and other invasive weeds in the channel, floodplain and terraces of the Salinas River between King City and Soledad. All non-native invasive weeds present in these areas will be treated using a combination of physical, chemical and biological techniques, and selected sites will be revegetated with native plants as appropriate to the site (considering flood risk, natural recruitment potential, and landowner interest). Anticipated benefits include: enhancement of riparian habitat, increased aquifer recharge due to reduced evapo-transpirative demand from removed non-native plants, erosion prevention, improved surface water quality and reduced flood risk from sediment reduction, stream shading and temperature improvements for steelhead, enhanced navigability and fish passage, public safety and food safety from reduced flood risk, decreased flood insurance costs, and education opportunities for youth and land managers.	Possible impacts are primarily short-term, site-specific impacts related to mechanical and chemical weed treatment, namely: noise, possible spray drift on adjacent non-target vegetation, and soil disturbance from heavy equipment. All of these are considered in the Programmatic Mitigated Negative Declaration for CEQA currently under public review.
Rural Community Assistance	The Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program will form a collaboration of experts, students, community leaders and local government to implement an	Possible impacts may include the discovery of failed systems in need of

Corporation: Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program	Inspection and Monitoring program of community onsite wastewater systems. The program will create an on-going operation and maintenance program, including ground water monitoring, for selected disadvantaged communities that are served by individual septic tanks that may not afford traditional sewer systems. Possible benefits include decreases in contaminated groundwater, more sanitary living conditions for community residents, decreases in environmental health hazards, and overall improvement to water quality and conservation. An additional benefit is the local job creation of two certified Service Providers. Economic benefit will also occur for local plumbers and excavators. Lastly, partnerships with the two universities will increase the community presence for both schools, provide the students with hands-on projects and decrease the cost to the DACs in implementing the project.	replacement or immediate repair. This may pose an increased financial hardship for community residents.
Save Our Shores: Watershed Protection Program – Annual Coastal Cleanup Day in Monterey County	At a minimum of 30 sites annually, 2,000 volunteers will remove and prevent 10,000 pounds of trash from entering the MBNMS. River cleanups will result in improved fish passages due to the removal of debris. Beaches will be cleaner, which will be more inviting for tourists and safer due to less glass and other sharp objects in the sand. The annual cleanup will protect endangered species by preventing dangerous trash from entering coastal waters. In particular, the MBNMS is home to four species of endangered turtles as well as the endangered California sea otter, which can easily mistake plastic bags for jellyfish. Save Our Shores has prevented 27,000 plastic bags from entering the ocean in the past four years through the annual coastal cleanup days. In addition, recreational activities that take place daily in the Sanctuary such as kayaking, surfing and swimming will be more enjoyable due to less trash in the water.	No negative impacts are expected.

H.4 THE INTANGIBLE BENEFITS OF IRWM PLAN IMPLEMENTATION

The benefits of this IRWM planning effort go well beyond the on-the-ground water resource and environmental benefits that will accrue through the implementation of projects. One of the great benefits of the IRWM planning process is that it provides water resource managers with a *framework* for effectively integrating water management programs and projects within the region and for achieving regional water resource goals. Through the IRWM planning process, the RWMG endeavors:

- To improve and maximize coordination of individual public, private, and non-profit agency plans, programs and projects for mutual benefit and optimal gain within the region;
- To help identify, develop, and implement collaborative plans, programs, and projects that may be beyond the scope or capability of individual entities, but which would be of mutual benefit if implemented in a cooperative manner;
- To foster coordination, collaboration and communication between stakeholders and other interested parties, to achieve greater efficiencies, enhance public services, and build public support for vital projects; and
- To realize regional water management objectives at the least cost possible through mutual cooperation, elimination of redundancy, and enhanced regional competitiveness for State, Federal, and private sources of grant funding.

The IRWM planning process fosters a spirit of positive collaboration among public, private, and non-profit agencies and organizations within the region, promotes communication, encourages new partnerships and programs, and ultimately results in increased efficiencies and cost savings. These more “intangible” benefits of the IRWM planning effort should be recognized equally alongside the numerous, significant, on-the-ground environmental and water resource benefits of project implementation.

Section I: Integration

The intent of the Integration standard in the Integrated Regional Water Management (IRWM) Program Guidelines is to ensure that Regional Water Management Groups (RWMGs) intentionally create a system where integration can occur. The IRWM Plan must demonstrate that the RWMG is forming, coordinating, and integrating separate efforts in order to function as a unified effort. Integration may occur on many levels. This section discusses three types of integration: 1) stakeholder/institutional integration, 2) resource integration, and 3) project integration. The processes, structures, and procedures that foster integration are also described, sometimes implicitly, in other sections of this IRWM Plan (including the Governance, Stakeholder Outreach, Data Management, and Project Review sections).

I.1 STAKEHOLDER/INSTITUTIONAL INTEGRATION

IRWM Plans are required to contain governance structures and processes that enable diverse groups of stakeholders to participate in all levels of the IRWM planning effort. The California Water Code (CWC) §10541(h)(2) refers to ensuring that IRWM plans are developed collaboratively in a manner that balances interests and engages a variety of stakeholders regardless of their ability to contribute financially. This type of integration has been ensured in the Greater Monterey County IRWM planning region through the governance structure, including composition of the RWMG and the process for stakeholder participation.

I.1.1 Governance

Eighteen organizations have come together to form the Greater Monterey County RWMG for the purposes of IRWM planning and project implementation within the Greater Monterey County IRWM region. These entities include government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests, as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Resource Management Agency
- Monterey County Water Resources Agency
- Monterey One Water (formerly, Monterey Regional Water Pollution Control Agency)
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

The Greater Monterey County RWMG is made up of diverse organizations with differing expertise, perspectives, and authorities of various aspects of water management, representing all major geographic areas within the region. There is no one leadership position on the RWMG, and no hierarchy of decision-

making. All major IRWM planning decisions are decided by vote at the regularly scheduled RWMG meetings. Each RWMG member organization is allowed one vote regardless of whether or not they have contributed financially to the Plan or to other RWMG activities. As such, in both its composition and rules of governance, the RWMG lays the foundation for an integrated approach to IRWM planning in the Greater Monterey County region.

I.1.2 Stakeholder Involvement

Outreach efforts to include stakeholders in the development of the IRWM Plan have targeted specific entities as well as the general public. An initial stakeholder email list, with about 175 names, was developed by the RWMG by brainstorming every known organization that might be affected by and/or interested in the IRWM Plan process. The current list includes about 250 individuals representing over 150 agencies, organizations, and interest groups. The list continues to expand and evolve as new stakeholders are introduced to the process.

Stakeholders have played an important role in the decision-making process throughout the development of this IRWM Plan. Together, stakeholders and the RWMG represent all of the major water resource management authorities in the region—as well as water resource management authorities and stakeholders from neighboring IRWM regions—and provide broad and fair representation of water supply, water quality, wastewater, stormwater, flood control, watershed, municipal, environmental, agricultural, and regulatory interests throughout all geographic areas of the planning region. Stakeholder organizations include such entities as the following:

- Water suppliers and water service districts
- Wastewater agencies
- Water quality regulatory entities
- Watershed groups
- Flood control agencies
- Federal, state, county and municipal governments
- Environmental non-profit organizations
- Agricultural organizations
- Business organizations
- Disadvantaged communities
- Other community organizations
- Universities and research institutions
- Elected officials
- Other interested individuals

All of the stakeholder groups necessary to meet the objectives of the IRWM Plan are included on the stakeholder list. Please see Appendix D for the full list of stakeholder organizations in the Greater Monterey County region (also posted on the website, <http://www.greatermontereyirwmp.org/documents/>).

The RWMG ensures public involvement in its decision-making processes through various means, including regular email updates to stakeholders on the IRWM planning process, a regularly updated website, public comment periods on all major IRWM Plan “milestones,” and occasional public workshops. In addition, stakeholders are always invited to participate in the monthly RWMG meetings, with locations and meeting times announced on the website each month. Meeting minutes are posted on the IRWM website following each RWMG meeting.

Through these efforts to develop as broad, diverse, and inclusive a stakeholder base as possible and to promote the active participation of all stakeholders in the planning effort, the Greater Monterey County RWMG ensures stakeholder/institutional integration in the IRWM planning process.

I.2 RESOURCE INTEGRATION

Resource integration can have multiple meanings. It can refer to the combining of multiple participant/agency resources to aid the regional planning effort, including the sharing of data or of differing expertise or technical capacity. Resource integration can also mean the consideration of different resources or resource management strategies—including both man-made and natural water resource infrastructure—as components of the water system being managed in the IRWM planning effort. This section describes how the RWMG promotes integration in both of these ways.

I.2.1 Sharing of Information and Expertise

Between the RWMG members and stakeholders, the combined knowledge, expertise, and technical capacity within the Greater Monterey County IRWM planning region is truly immense. The RWMG members lend their expertise and unique perspectives through the ongoing planning process, and call in outside expertise from stakeholders as needed. For example, in the early stages of IRWM Plan development, water management and natural resource specialists from throughout the Greater Monterey County IRWM planning region were asked to provide their knowledge and opinions about the water resource “issues and conflicts” that existed in the region. Outside experts are also asked to provide input on technical aspects of project applications during the project review process, as needed. The RWMG expects to involve outside experts and specialists to an even greater extent in the IRWM planning process as part of a Climate Change Task Force, with the intent of forming a sort of “hub” for climate change planning in the broader Monterey County and Monterey Bay region.

Another way in which the RWMG promotes integration in the IRWM planning process is through the sharing of data. Section K of this IRWM Plan describes the data management system for the Greater Monterey County region. Because the Greater Monterey County IRWM Plan does not have an ongoing secure funding source for data management, the RWMG has opted to utilize existing State database frameworks including, for surface water quality, those developed by the California Surface Water Ambient Monitoring Program (SWAMP) and by the California Environmental Data Exchange Network (CEDEN). Wetland and riparian habitat conditions will be measured and documented using the California Rapid Assessment Methods (CRAM), and groundwater data will reside in GeoTracker using the Groundwater Ambient Monitoring and Assessment (GAMA) database. The intent and design of the Greater Monterey County IRWM Plan data management system thus focuses on a localized approach to data collection and management with uploading of data into statewide databases. The statewide databases include web tools for dissemination, which will easily allow for the sharing of data between stakeholders and project proponents in the planning region.

The RWMG is also making use of a new online data tool to track IRWM Plan implementation projects. The Conservation Action Tracker database, described in the Plan Performance and Monitoring Section of this Plan, is a data system for tracking land-use management improvements in the Central Coast region. It is an online tool that will allow project proponents to register and update information on conservation projects across the region in order to track efforts and improve stakeholders’ ability to evaluate collective impacts and effectiveness. The Conservation Action Tracker is being implemented by the Central Coast Resource Conservation Districts and project partners of the Greater Monterey County IRWM Plan.

I.2.2 Integration of Resource Strategies

Implementing projects that utilize a diverse mix of resource management strategies and that promote the full capacity of the water management system in the IRWM planning region, including both natural and man-made water resource infrastructure, is yet another way in which the RWMG promotes integration in the IRWM planning process. Section E of this IRWM Plan lists and describes the resource management strategies chosen by the Greater Monterey County RWMG for inclusion in the Plan. The resource management strategies include both natural watershed systems and drinking water distribution systems as components of the water system being managed in the IRWM planning effort, and as such, reflect a recognition on the part of the RWMG that the proper and “healthy” functioning of both systems are equally important.

The projects included in the IRWM Plan utilize a broad and diverse mix of resource management strategies (see Table E-1 in Section E, which demonstrates how the various projects utilize resource management strategies). The RWMG encourages stakeholders to develop projects that employ a diverse mix of resource management strategies by offering additional points to projects that demonstrate such diversity as part of the project ranking process. The integration of resource management strategies not only ensures robust solutions to current water management issues but will enable the region to become more resilient to, and to mitigate for, uncertain future circumstances, including the impacts of climate change.

I.3 PROJECT INTEGRATION

One advantage of regional planning lies in the ability to address similar objectives of local organizations with regional programs. IRWM planning decisions can lead to existing projects being combined or replaced by new projects. The resources to implement multiple smaller efforts (e.g., personnel, finance, equipment) may benefit from economy of scale when similar local interests can be met with a regional project.

I.3.1 How the RWMG Promotes Project Integration

The RWMG encourages stakeholders in the Greater Monterey County IRWM planning region to form partnerships and to collaborate on projects that meet regional needs and produce regional benefits. The RWMG also promotes project integration during the project review process for each IRWM Plan project solicitation. During every project solicitation, a Project Review Committee comprised of RWMG members reviews each project (both implementation projects and concept proposals) for potential integration opportunities, with an aim of combining discrete project elements or combining entire projects to create regional programs. Through this integration process, the RWMG helps coordinate activities within the IRWM planning region in order to avoid redundancies, increase efficiencies, and to create projects with multiple benefits.

Note that for future IRWM Plan project solicitations, the RWMG has considered the idea of hosting informal “mixers” for project proponents and other stakeholders where they can discuss current projects and brainstorm new project ideas. The concept behind the mixers is to bring individuals together in a casual setting that is conducive to “mingling” and to an easy exchange of ideas. The intent is to increase integration of projects and to enhance opportunities for coordination of activities, collaboration, and partnerships throughout the region.

I.3.2 Water Resource Project Coordination Process

One important effort that has resulted from the project integration process described above is the Water Resource Project Coordination (WRPC) process. The WRPC process represents an innovative approach aimed at addressing and resolving water-related conflicts in the region, while promoting stakeholder collaboration and project integration.

Historically, water issues and related solutions in the Greater Monterey County region have been developed without a great deal of interaction among the various parties that would be affected by the solutions. Moving into the future, with the call for integrated projects through the IRWM process, project proponents who have not historically interacted with one another will find themselves working together to develop or jointly advocate water-related projects. The IRWM planning process calls for issues and conflicts to be identified and solutions brought forth by the region, through collaborative efforts and project integration. However, projects cannot be integrated and collaboration cannot easily occur as long as underlying mistrust, isolation, and conflicts continue to exist among stakeholders in a region.

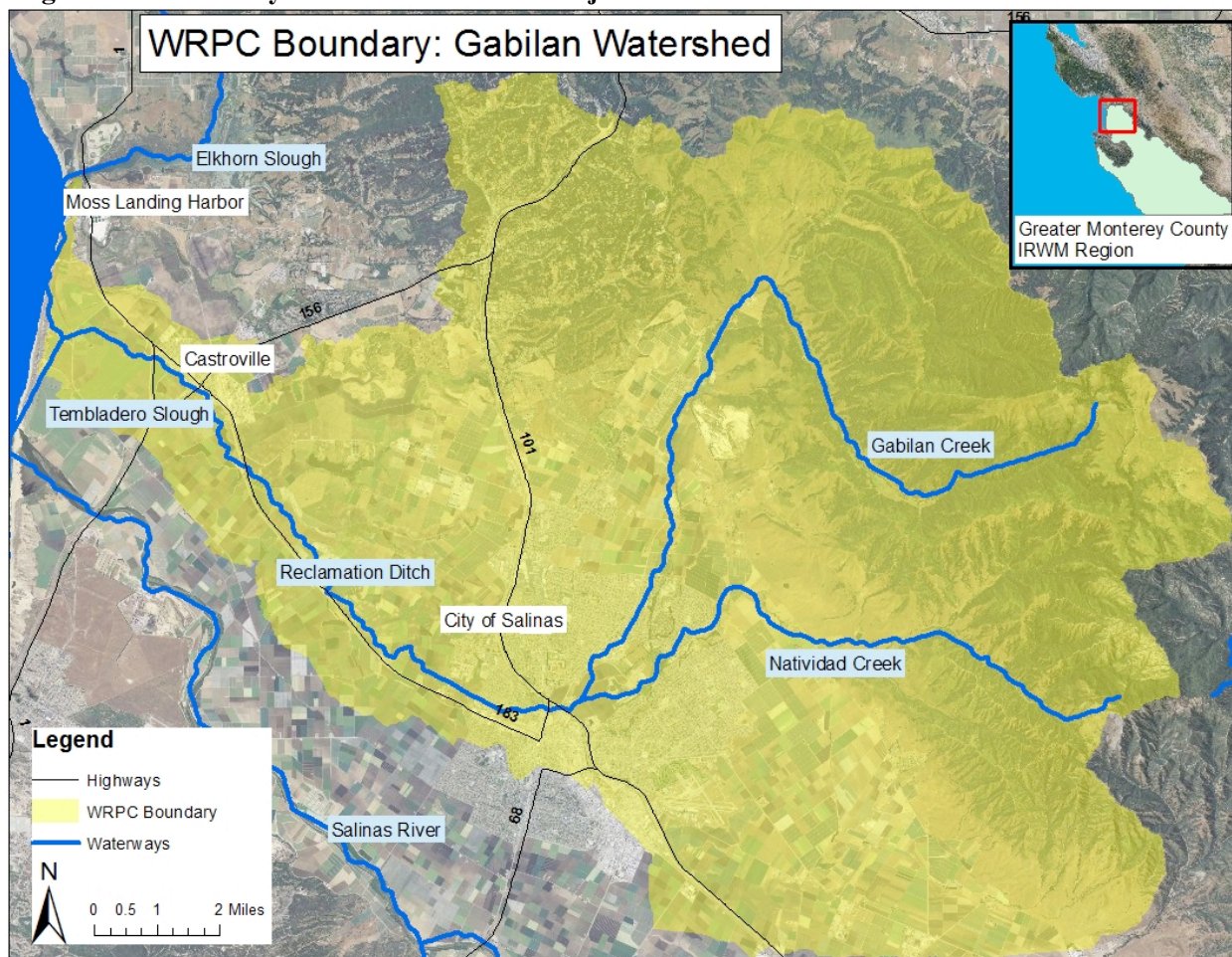
While many attempts at traditional conflict resolution in Monterey County have been made in the past, most of these attempts have failed. The RWMG concluded that a new approach was needed to foster collaboration and enable project integration to occur. In response to this need, the RWMG developed the “Water Resource Project Coordination” concept. The WRPC was initially conceived as a fact-finding process in which parties would discuss what factual questions they believed to be relevant to a decision, exchange information, and identify where they agreed and where they disagreed, then seek additional information to fill gaps, address hurdles, or resolve areas of disagreement. The goal of the WRPC process was to alleviate areas of mistrust and confusion and increase collaborative dialogue so that mutual solutions could be achieved. Beginning from a solutions-based platform, stakeholders share data, experiences, concerns, and viewpoints to develop a result that all involved can support.

The RWMG decided to test the WRPC process as a pilot project in one subwatershed area of the region, to see how well this type of process might facilitate coordination, collaboration, and project integration within the region. With this process, the RWMG hoped to proactively move to a paradigm of cooperation and reconciliation, and to create an open consensus-seeking process that would ensure the use of good science in water resource decision-making within the Greater Monterey County region.

WRPC Pilot Project: The Gabilan Watershed

The RWMG requested and received grant funds through the Proposition 84 IRWM Round 1 Planning Grant to test the WRPC process as a pilot project in one watershed area of the Greater Monterey County region. The Gabilan Watershed was selected as the focus area for this pilot project (see map below). Out of the 64 projects included in the IRWM Plan at the time that the WRPC pilot process was being developed, 35 were located within the Gabilan Watershed. The sheer number of projects located within this one watershed presented some unique opportunities for collaboration; however, some of the projects appeared to have potentially conflicting goals, which would need to be resolved or somehow reconciled for those projects to comfortably co-exist in the IRWM Plan, as well as for project integration to occur.

Figure I-1: Boundary for the WRPC Pilot Project: Gabilan Watershed



To begin, a subcommittee of the RWMG (the WRPC Committee) collaborated to develop an “invitee” list of stakeholders to invite to participate in the process. The list included all IRWM Plan project proponents who had projects located in the Gabilan Watershed, as well as all key interest groups. These interest groups included agricultural representatives and industry groups, environmental organizations, academic research institutions, municipalities, water districts, and government agencies with interests or regulatory authority in the Gabilan Watershed.

The first stakeholder meeting was conducted in January 2012, with 20 individuals in attendance. The purpose of that meeting was to set the stage for the WRPC process, to discuss what the end goals were, and to begin the process by selecting a facilitator. It was important to the stakeholders that the chosen facilitator would be seen by all parties to be absolutely neutral.

Determining the desired outcomes of the WRPC process for the Gabilan Watershed prompted significant discussion. The WRPC Committee emphasized the potential benefits of the process, namely, that by agreeing on *shared principles* for the watershed, stakeholders could maximize project integration and the competitive advantage of regional projects, ultimately bringing in more funding to the region. There was some question as to whether the goal should be to strengthen shared values between projects or to tackle the areas of disagreement. One stakeholder commented: “Finding shared values should be Plan A. ...There’s a difference between advancing shared values and advancing individual values without stepping

on toes. If we are clear about this process we can get both and advance coordination.” Facilitator qualifications and attributes were discussed at the meeting and a list of potential facilitators was agreed upon. In May 2012, the WRPC hired a facilitator.

The facilitator chosen for the Gabilan Watershed WRPC pilot project began by interviewing key stakeholders individually to get a comprehensive perspective on the various issues in the watershed. Some of their observations included the following:

- ***Ag Waiver:*** The Central Coast Regional Water Quality Control Board’s Conditional Waiver of Waste Discharge Requirements For Discharges From Irrigated Lands (known as the “Ag Waiver”) and related legal actions was identified as contributing to increasing the challenge for solution-seeking collaboration between people and organizations in this region. Trust between environmental, agricultural, and governmental stakeholders had eroded substantially as a result of the impacts of the Ag Waiver process and associated outcomes. The pervasive uncertainty about the future course of the Ag Waiver and fear of litigation was seen as a barrier to participation in project development and implementation. Many growers were struggling with the difficulty and costs of complying with the regulations. Many growers, at this point, were reluctant to take available government funds for projects as they were uncertain of the unexpected outcomes/consequences in terms of additional scrutiny and management complexity in light of the Ag Waiver. This polarized climate seemed to have fundamentally shifted the local collaborative environment.
- ***Outcomes of the “Spinach Scare”:*** In 2006, an outbreak of illness from spinach contaminated by *E. coli* resulted in significant public relation, legal, and regulatory impacts. This event, known locally as the “spinach scare,” resulted in growers ceasing ten years of work on conservation practices and removing acres of installed projects due to industry buyers’ food safety demands. This reversal was initially perceived as potentially souring interest in future such projects. Nonetheless, subsequent collaborative efforts between conservation and agricultural organizations and individuals created a standardized, transparent process for identifying safe wildlife habitat management practices and for adding management practices based on scientific evidence. This positive step suggested the potential for proactively engaging with industry partners across the supply-demand chain – despite the outcome of the “spinach scare.”
- ***Existing Local Collaborations:*** The richness and diversity of existing and emerging collaborative projects was considered impressive and hopeful. The facilitator found significant interest and support from academic and agency partners for collaborative projects to develop, demonstrate, and expand adoption of best management practices and other conservation innovations, and a strong record of grower collaboration. Additionally, it was clear that while recent regulatory actions had disrupted local collaboration, all of the individuals interviewed by the facilitators indicated an interest in seeking new options, while struggling to find a way forward within this complex regulatory framework.

Given the outcomes of the interviews, the facilitators expressed concerns that a formal joint fact-finding process, as initially planned, would not be the most effective approach given the significant regulatory hurdles and a general climate of mistrust in the region. Therefore, rather than a formal joint fact-finding process, the facilitators suggested that the WRPC Committee use an alternative approach. A decision was made to focus on identifying “shared values” in the Gabilan Watershed rather than moving directly to trying to find solutions to areas of disagreement.

The second stakeholder meeting, which was an all-day meeting held in January 2013, relied strongly on the use of graphic facilitation (“visioning”) as a tool to raise the participants’ sights beyond the immediate conflicts, and to identify a common image for the watershed over the long term. The hope was that ideas

for new or improved projects and collaboration could emerge during the workshop and be developed in follow-up small working group sessions.

The January 2013 meeting began with the participants sharing their understanding of the challenges facing the region, including social, economic, and environmental issues and trends, by placing anonymous sticky notes on a map. In this way the “elephants in the room” were brought out into the open without individuals needing to self-identify as proponents or opponents. After discussion about the challenges, the participants were divided into “affinity groups,” including agriculture, research, conservation, and government. Each group was asked to discuss amongst themselves their priorities for the watershed. Each participant was asked to create a visual image of their “desired future” for the watershed, its characteristics, and what they saw to be the key obstacles and opportunities for success. After everyone completed their images, the participants were led on a “gallery walk” and given the opportunity to view the other affinity groups’ images. The participants reassembled into their original affinity groups to discuss what they saw as common ground between the various images, what they saw as significant and/or irreconcilable differences, and finally to brainstorm possible opportunities to move things forward in new ways. The opportunities were posted on the wall charts via sticky notes.

After lunch, several stakeholders were asked to discuss “emerging collaborative efforts,” highlighting newly formed collaborative stakeholder initiatives that were currently addressing some of the issues in the watershed. The discussion returned to the visioning process within the context of these emerging efforts, synthesizing what the affinity groups had reported as “common ground,” as “tough spots” (i.e., significant or irreconcilable differences, or barriers to progress), and finally, as emerging solutions that should be explored further. From the groups’ images and discussion, it became clear that there was actually more common ground amongst stakeholders than anticipated.

After the workshop, a “Wordle” was generated based on the number of times certain words were used during the graphic imaging process by the different affinity groups (i.e., the more often the word was used, the larger it appears in the Wordle). The most commonly used words in order of frequency were as follows: water, clean, healthy, people, connected, community, agriculture, recreation, and nature. This constellation of key words suggested many options for collaboration. The Wordle is shown below.

drawings were then reviewed with ten members of different stakeholder groups in the watershed: farmers, water managers, municipalities, urban/rural residents, community groups and academia. Preparation for and follow-up from these discussions (mostly one-on-one) was vetted through a working group of five people from the Resource Conservation District of Monterey County (RCD), Monterey County Water Resources Agency (MCWRA), Central Coast Wetlands Group (CCWG), California Rural Legal Assistance (CRLA), and The Nature Conservancy (TNC).

Based on the interviews with the different stakeholder groups, a final set of conceptual drawings was produced. These drawings, included in the final Gabilan Watershed Blueprint document, distill the themes expressed in the January 2013 stakeholder drawings – flood control, water quality, habitat restoration, public access to parks and natural areas, safe community, and productive agriculture – along with the following *shared ideals*:

- Residents of Salinas will enjoy and have good access to green places, and ample outdoor education and activities will engage children and other community members in maintaining local environmental quality.
- Within city boundaries, urban runoff management practices and facilities will minimize the impact of urban impervious surfaces on storm flows to regional waterways.
- Area farms will host a variety of farm runoff water quality management techniques reflective of individual approaches and needs and innovations, resulting in cleaner waterways amidst a thriving agricultural economy.
- The Reclamation Ditch/creek system will be able to safely and effectively convey storm flows while protecting or enhancing water quality as flows are conveyed to Elkhorn Harbor. Where possible, wetlands and other wildlife habitat will be incorporated into the system's function.
- Pedestrian and bike-friendly paths connecting Salinas to regional path systems will be developed along acceptable routes.

While the hoped-for outcome of the Landscape Strategy was a depiction of a single, common vision for the watershed, it became evident through interviews with the different stakeholder groups that developing such a vision would require a much more intensive, comprehensive, and extensive stakeholder process. Nonetheless, the conceptual drawings included in the Blueprint document represent a significant and positive step towards informing or structuring a more rigorous effort to bring forward good work in the region. The graphics will be used for continued outreach and education in the watershed.

2. On-Farm Solutions

Some of the challenges voiced at the January 2013 stakeholder meeting were the “barriers” to implementing on-farm sustainable management practices. One barrier was a simple lack of technical information regarding certain practices, such as nutrient management practices, and no industry-led approach to address the issue. In response to this challenge, a decision was made to allocate some WRPC funds to help growers answer some of those questions (fill data gaps) in order to help build capacity within the local grower community for implementing sustainable management practices in the Gabilan Watershed.

WRPC funds were provided to help kick-start a new effort called On-Farm Solutions. The idea for On-Farm Solutions was first developed at a Grower-Shipper Association (GSA) meeting in the fall 2012, at which time the GSA’s Water Committee had identified a few priority needs for grower assistance in terms of water quality improvement. One of those needs was a focus on better understanding Nitrate Quick-Tests, including how to use them, compile them, and interpret them, and their true cost benefit to the

organization. From that conversation and subsequent meetings with a group of growers and assistance providers, the GSA created the On-Farm Solutions Committee and began working on funding to assist growers in using Nitrate Quick-Tests on a larger scale.

The GSA, in association with researchers at the Watershed Institute of California State University Monterey Bay, purchased and distributed Nitrate Quick-Test kits (not funded by the Planning Grant) to growers in the Salinas Valley, and then tracked their use. The results of this effort were compiled into a document (Standard Operating Procedures) intended to provide growers with a comprehensive, Spanish-translated guide on how to perform and use soil Nitrate Quick-Tests as a diagnostic tool for fertilizer management decisions. The guide is regionally specific, and addresses differences in soil sampling, frequency of testing, and interpreting nitrate results based on crop types (general categories, such as shallow-rooted vs. not, cool season crops, longer season crops) and growing environments (e.g., soil type, irrigation system, fertilizer application methods). An appendix to the guide includes an economic overview of the cost-benefit of the Nitrate Quick-Tests that are commercially available and those that growers create from multiple sources. The final On-Farm Solutions Nitrate Quick-Test Standard Operating Procedures is included in the Gabilan Watershed Blueprint. In addition to creating the guide, a website was developed to provide Nitrate Quick-Test information for growers in the Salinas Valley, along with a database for storing the results of the testing. The website will be continually updated, with new information based on grower requests.

3. Corporate Social Responsibility

Like “On-Farm Solutions,” the goal of this Blueprint section was to advance agricultural sustainability in the Gabilan Watershed. With “On-Farm Solutions” working on the individual grower level, the Corporate Social Responsibility (CSR) part of the Blueprint was intended to address the next level of the agriculture industry. SureHarvest, a private consulting company that provides solutions to growers and agrifood companies pursuing sustainability strategies, was hired to lead this effort.

The goal of the effort was to initiate greater dialogue within the agricultural industry about social/environmental responsibility programs, and to encourage agricultural leaders to take a greater role in funding sustainability practices. In March 2014, SureHarvest convened an industry-focused working session in the City of Salinas to bring together CSR leaders in the agricultural community to initiate an action-oriented discussion focused on advancing business models for stewardship of Monterey Bay watersheds. While the workshop focused on the general theme of sustainability in all arenas and was not watershed-specific, the dialogue was initiated for further discussion in this area. The workshop was co-sponsored by Central Coast Grower-Shipper Association, Western Growers, and Monterey County Sustainability Working Group.

Twenty-two industry leaders, company executives, and CSR/sustainability directors on California’s Central Coast and beyond participated in the workshop, a very large showing for a workshop in this region for this constituency. In large and small group discussion, participants shared experience and knowledge about a number of locally relevant sustainability topics and initiatives, including the following:

- Industry sustainability update and trends
- Self-assessment initiatives
- Performance-based initiatives
- Certification programs
- Other sustainability tools and initiatives
- Regional projects

Together, the group discussed and attempted to answer a number of questions, such as: In a future with more people to feed, fewer resources, and less predictable weather, what initiatives and tools hold the most promise to benefit people, planet, and profit (the “triple bottom line”)? How can we collaborate to build and scale-up locally relevant sustainability initiatives? What roadblocks stand in our way? How can we clear those hurdles to do more to enhance our local economy and environment? Can we leverage the region’s uniqueness and natural diversity in the marketplace, and vice versa?

Participants identified values, challenges, and opportunities for collaborative action across three broad categories: market and regulatory compliance; program design and core elements; and data collection, confidentiality, and information sharing. At the highest level the group expressed interest in and support for taking an industry-led proactive approach to advance sustainability for agriculture, community, and environment.

The following next steps were identified:

- Support the continued development and expansion of existing tools and initiatives
- Improve coordination amongst industry groups, resource agencies, and nonprofits
- Educate buyers and consumers on ag conservation/sustainability efforts in the region
- Create a roadmap for the development of a collaborative sustainability program

A summary report of the CSR workshop is included in the Blueprint document.

4. Agency Coordination

One of the major challenges to project implementation identified during the January 2013 stakeholder workshop was permitting and regulatory compliance. Hurdles to project implementation brought about by lack of interagency coordination and difficult and confusing regulation were voiced time and time again at the January 2013 meeting. Examples cited included confusion over which agency had control over waterways, coordination with and between permitting agencies, the practical and legal effects of differing biological opinions, and a general confusion over which agency managed what resources. The goal of this section of the Blueprint was to identify the regulatory constraints and challenges that projects in the Gabilan Watershed might encounter, and identify possible options for coordinating agency review and consultation.

The consulting facilitator also led this section of the Blueprint. The process involved internet research and phone interviews with agencies regarding permitting requirements and documents/materials, as well as meetings with key agency staff to discuss permitting processes and requirements. As a result of those conversations, a matrix summarizing primary permitting and regulatory oversight was developed. At the suggestion of various agency staff, the matrix is a linked document which gets the project sponsor or member of the public to the official website of the agency. This strategy was adopted as a result of the following realities: Requirements change frequently – sometimes in response to emerging conditions or issues, other times in response to political or local pressures or ballot initiatives. Staff turnover can result in subtle but significant changes in interpretation or review process, while agency budget changes can dictate new procedures and processes, as well as staff availability. The specific attributes of a project can result in multiple departments or staffers being involved in any given permitting action. The consensus was that presenting a matrix of applicable permits would result in the need for frequent and careful update and would not embody the nuanced complexity of permitting processes.

Additional discussions with agency staff were conducted to determine general willingness/ability to collaborate during project development and permitting. In general, while each agency staffer expressed a genuine willingness to collaborate, few of those contacted indicated having the allocated or available time

to do so on a project-by-project basis. While individual effort was clearly desired, institutional parameters frequently proved a barrier to such collaboration.

The interviews highlighted a significant difference between the actual specifics of moving a particular project through the regulatory process and the general process shown in the matrix. Without a specific project on which to comment, the contacted agencies could only direct the consultants to the general permitting processes, resulting in the matrix simply showing which agency to obtain permits from and the general process of applying, without much insight into the subtleties of interagency coordination, permitting agency/project sponsor communications, specific mitigation or project re-design that might be required by the agency, or other factors involved in actually get the permits issued. This difference is due in part to diverse layers of staff inside the agencies which are focused on separate components or aspects of a project; inability of staff to provide design-level assistance with the resulting “fine tuning” once projects enter the permitting system; and an increasing tendency of agencies to use permit applications as a vehicle for gathering baseline data and other technical data resulting in sometimes substantial permitting delays and/or increased expense. The consultants’ conclusion: “The reality is that this process will always be complicated and expensive.” However, the tools created will serve to help project proponents navigate that complicated system. The regulatory matrix and summary of this section of the Blueprint is attached in Appendix L.

Integrating Projects in the Gabilan Watershed

As the final product of the WRPC process, the facilitators led an effort to integrate projects within the Gabilan Watershed. The project integration process proceeded in two phases: 1) review of all existing projects in the IRWM Plan that were located in the Gabilan Watershed to identify integration options, and 2) discussions with project proponents to identify possible partners and integrated project components. The review of existing projects resulted in “groupings” of projects, organized by integrative themes or “integratable” places, e.g., Moro Cojo or the City of Salinas (where diverging projects could all be implemented in the same place, addressing different objectives). Following this initial project review, a series of one-on-one meetings were held across the region to discuss possible projects with the various proponents and stakeholders with respect to integration options. The outcome of this process was the development of six preliminary integrated project options, containing components of 18 previous IRWM Plan projects. For each of these project options, the facilitators identified an initial assessment of possible permitting constraints or coordination challenges, as well as potential funding options. These options are undergoing continued refinement as several stakeholders within the region will need to reach consensus as to the specific characteristics of the possible projects. The six possible integrated projects are briefly outlined below. Individual projects are identified by project number, name, and sponsor in the table that follows.

- Principal creek systems (Santa Rita, Natividad, Tembladero, Gabilan, Salinas River, Rec Ditch):
 - Applicable projects: 1-5
 - Possible narrative: These projects are general enough to be tailored to any of the six major waterways within the watershed. An integrated project might consist of reducing septic leakage in disadvantaged communities (1) along urban waterways to address one major source of water pollution. At the same time, combining that effort with projects to restore watersheds with native plants (2), constructed wetlands (3) and improvements to engineered flood-control channels (4) would address down-stream water quality. Finally, funding a research partnership with CSUMB to study water quality best management practices (5) would provide longitudinal data on the health of the watershed.
- Moss Landing:
 - Applicable projects: 6-8

- Possible narrative: MCWRA and Monterey County Public Works could integrate three physical infrastructure projects proposed for the Moss Landing area, consisting of improvements to the Potrero Road Tide Gates (6), the guide rail at the sanitation district (7) and the SCADA project (8). Together, these projects promise to reduce flooding and accidental sewage releases.
- Elkhorn Slough:
 - Applicable projects: 9-11
 - Possible narrative: Combining these three projects in or adjacent to the Elkhorn Slough would yield a holistic approach to wetland health. A sustainable agriculture demonstration station (9) next to the slough would develop and disseminate knowledge about best management practices; restoring coastal dunes and wetlands in the slough (10) would improve habitat quality and ecosystem services; and mapping drainages within the slough would improve understanding of nutrient and sediment flows (11).
- Southwest Salinas:
 - Applicable projects: 12-14
 - Possible narrative: The City of Salinas has proposed three similar, related infrastructure projects in the southwest part of the city, near Davis Road, which are ideal candidates for integration. They would consist of replacing a sewage pipeline (12), improving treatment facilities (13) and diverting urban run-off to detention ponds (14), which would reduce pollutant load entering the Salinas River.
- Boronda:
 - Applicable projects: 1, 8 and 15
 - Possible narrative: The Boronda district of Salinas, currently on the city's outskirts, is a high growth sector of the city which may facilitate the addition of 50,000 residents in coming decades. The City has proposed to improve the sanitation district's guide rail system (15) and implement the SCADA program there (8). Combined with assistance for disadvantaged communities to address septic leakages (1), these projects present a holistic strategy to reduce water contamination from both point and non-point sources.
- Coastal zone:
 - Applicable projects: 10, 16-18
 - Possible narrative: These projects are geographically specific to the coastal zone where the Gabilan watershed drains into Monterey Bay. If partnerships between the proposing organizations could be formed, the result might be a stronger alliance for the health of coastal ecosystems through projects such as planning for sea level rise (16), monitoring water quality with buoys (17), restoring dunes (10) and cleaning up beaches (18).

Table I-1: Individual Projects for Possible Integration in the Gabilan Watershed

#	Project Name	Project Sponsor
Principal Creek Systems		
1	Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program	Rural Community Assistance Corporation (RCAC)
2	Return of the Natives Restoration Education Project	CSUMB Return of the Natives
3	Water quality enhancement of the Tembladero Slough Phase II	Central Coast Wetlands Group
4	Maintenance and Flood Control Planning for the Old Salinas River Channel and Reclamation Ditch	Monterey Coastkeeper / The Otter Project
5	Study of environmental services from nutrient reducing BMPs	Central Coast Wetlands Group
Moss Landing		

6	Potrero Road Tide Gates Construction Project	Monterey County Water Resources Agency
7	Moss Landing County Sanitation District Wastewater System Upgrade Project	Monterey County Public Works
8	SCADA Project	Monterey County Public Works
Elkhorn Slough		
9	Sustainable Agriculture and Sustainable Development - Field Station and Demonstration Area	Central Coast Wetlands Group
10	Coastal Wetland Erosion Control and Dune Restoration	Central Coast Wetlands Group
11	Historic and Existing Drainage Network Mapping Project: Phase 1	Central Coast Wetlands Group
Southwest Salinas		
12	Replacement Raw Sewage Pipeline to Monterey Regional WWTP and City of Salinas Industrial Wastewater Treatment System Expansion	City of Salinas
13	Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements	City of Salinas
14	Dry Weather Runoff Diversion Program	City of Salinas
Boronda		
15	Boronda County Sanitation District Guide Rail Upgrade Project	Monterey County Public Works
	Also see projects 1 and 8	
Coastal Zone		
16	Development and Evaluation of Climate Change Response Strategies in the Elkhorn Slough, Gabilan and Salinas River Watersheds.	Central Coast Wetlands Group
17	Coastal Confluence Monitoring	Central Coast Wetlands Group
18	Save Our Shores Watershed Protection Program - Annual Coastal Cleanup Day in Monterey County	Save Our Shores
	Also see project 10	

In addition, during the interview and contact process several jurisdictions indicated a willingness and desire to rethink their project options in light of the integrated perspective. These conversations are now ongoing throughout the region.

The projects are further described in the Blueprint document (Appendix L).

Evaluation of the WRPC Process

Since the Gabilan Watershed WRPC process was conducted as a pilot experiment to determine whether such a process would be beneficial as an ongoing part of IRWM planning in the Greater Monterey County region, the final step was to evaluate the process. An evaluation was conducted with stakeholders who participated in the process, and with the WRPC Committee and the RWMG.

In May 2014, a final stakeholder meeting was held to present the results of the Gabilan Watershed Blueprint, to discuss next steps, and to gain the stakeholders' feedback on the process. Stakeholders were asked to respond to the following questions on a written survey:

- Did you find this process beneficial/useful?
- What did you learn through the process (if anything)?

- If this process were to be conducted again in another watershed, how could it be improved?

Almost all of the stakeholders who responded found the process to be very beneficial, and one stakeholder who found it to be “somewhat beneficial” pointed to “too many interests” in the watershed and the problem of “stakeholder fatigue” in attempting to work out solutions. Several stakeholders appreciated the graphic visioning process as being especially useful for understanding common goals and major challenges, and for providing clarity of the core issues. Some stakeholders commented that the process had been very helpful in terms of building and strengthening relationships, and several commented that it was useful in getting people “to speak the same language.” One stakeholder wrote, “Bringing together solution-focused people is a good thing and I appreciated the opportunity to learn from that process and understand perspectives different than my own.” One stakeholder cautioned, however, that the most important part of this exercise will be to develop the Blueprint document as a tool that can be used for making positive progress in the watershed, noting that “if a tool that we develop cannot be used, the process failed.”

Answers varied in response to the question, “What did you learn?” One stakeholder said she learned about the ideas that are being pursued in the IRWM Plan. Another stakeholder learned additional ways to provide recreation for recreation-deficient Salinas. Another said she learned that one of the big hurdles to implementing projects is permitting, and one stakeholder in the agricultural sector commented, “[I] was glad to understand that it wasn't just us that had a challenge with regulation.” Another stakeholder wrote, “[I learned] that the challenges around getting landscape-scale initiatives/efforts implemented look different, but fundamentally haven't changed over the past decade.” Yet another commented, “Despite disparate views, several common themes emerged. Identifying the shared interests is key to moving forward.”

Suggestions for improving the process focused largely on providing more meetings over a shorter period of time (the WRPC process had been significantly extended due to delays with the Planning Grant contract amendment), in order to be able to show tangible results sooner. Another recommendation was to clarify the purpose of the process and provide greater focus at the outset in order to better define a collective path forward. One stakeholder requested that disadvantaged communities (DAC) and DAC advocates be brought in during the planning stages in order to get community input and engage DACs earlier on. Some stakeholders commented on the limited presence of individual growers in the WRPC process, and recommended finding ways to engage them in the process (noting that it is difficult to get growers to attend these types of meetings).

Overall, comments from stakeholders regarding the WRPC process were very favorable. In June 2014, a RWMG meeting was held to internally evaluate the WRPC process in terms of what worked, what didn't work, and whether the WRPC process proved beneficial as an ongoing tool for IRWM planning in the Greater Monterey County region. The results of that discussion are as follows:

What worked: It was agreed that the landscape visioning process was an extraordinarily useful tool. Focusing on *project outcomes* (as opposed to conflicts in the watershed) kept the process positive. Also, the watershed focus was seen as a good approach. One person commented that the WRPC proved to be “more accessible to a layperson” coming to water management than the usual IRWM planning process. Others commented on the positive outcomes of networking, partnership building, and “people talking to each other for the first time.” All in all, everyone agreed it was a very positive experience, providing a solid foundation for bringing stakeholders together and implementing integrated projects in the Gabilan Watershed.

What didn't work: Everyone agreed that the extended timeline was a major challenge in the process. A delayed contract process with the Department of Water Resources resulted in a significant loss of

momentum, which negatively impacted the process. WRPC Committee members agreed there should have been more meetings, more conversations, and more input from stakeholders as the process moved forward. Others felt the process should have been less “conceptual.”

Is this process useful for the future? Would we want to do it again? The RWMG members concluded that the process was indeed useful, though the true utility of the process will depend on the extent to which integrated projects are actually developed and implemented in the Gabilan Watershed area. As to the question, “should we do it again?” the response was, rather than do it all over again in another part of the region, it would make most sense to build off the momentum of what has occurred in the Gabilan Watershed. One modification of the process recommended by the facilitators would be to conduct more one-on-one stakeholder meetings, in addition to the large group meetings.

In summary, the Gabilan Watershed WRPC pilot process proved to be a positive and beneficial experience, and much was learned from the process. If we ask, “were the original conflicts resolved?” the answer would be no; but what was learned was that if we focus on the “common desired outcomes” rather than on the conflicts in the watershed, a great deal can be achieved in terms of developing and implementing multi-benefit, environmentally sustainable, “triple bottom line” (people, planet, profit) projects that everyone can get behind.

Next Steps

Next steps include using the Gabilan Watershed Blueprint document – including the visioning graphics, the Nitrate Quick-Test guide and website, CSR efforts on the Central Coast, and the regulatory matrix – as an educational outreach tool to engage additional stakeholders. If funds become available, more stakeholder meetings will be conducted (largely in the form of one-on-one meetings) with the purpose of developing additional integrated projects within the Gabilan Watershed region for the IRWM Plan. As opportunities arise, these educational tools will be brought to other areas of the Greater Monterey County region to initiate a similar project development/integration process, building off the momentum of what has occurred in the Gabilan Watershed.

The Gabilan Watershed WRPC process is fully outlined on the Greater Monterey County IRWM website in order to provide information to stakeholders as well as to other IRWM regions that might be interested in initiating a similar process (<http://www.greatermontereyirwmp.org/current/wrpc/>). The final Gabilan Watershed Blueprint along with other documents that were produced from the WRPC process are available for download from the website.

Section J: Plan Performance and Monitoring

The intent of the Plan Performance and Monitoring standard in the Proposition 84/1E Integrated Regional Water Management (IRWM) Program Guidelines is to ensure that:

- The Regional Water Management Group (RWMG) is efficiently making progress towards meeting the objectives of the IRWM Plan;
- The RWMG is implementing projects listed in the IRWM Plan; and that
- Each project in the IRWM Plan is monitored to comply with all applicable rules, laws, and permit requirements.

This section addresses the first two requirements listed above. The third requirement of the standard is addressed as part of the regular project review process (described in Section F); each project submitted for inclusion in the IRWM Plan is carefully reviewed by the RWMG to ensure that it complies with all applicable rules, laws, and permit requirements before it can be approved for inclusion in the Plan. As projects get implemented, they will continue to be monitored to ensure compliance with all applicable rules, laws, and permit requirements.

This section outlines the general process that is used for IRWM Plan performance and project monitoring. Project-specific details are not included in this section, but will be made available on the Greater Monterey County website (<http://www.greatermontereyirwmp.org/>) following each Plan Performance Review.

J.1 PLAN PERFORMANCE

A Plan Performance Review will be conducted every two years or as appropriate to evaluate progress made toward achieving Plan objectives. The Plan Performance Review will be prepared by the IRWM Plan Coordinator, or in the absence of a Coordinator, by a subcommittee of the RWMG. Progress toward meeting Plan objectives is directly tied to the implementation of projects. The implementation of projects, along with associated monitoring data, will be tracked using a Data Management System (DMS) that takes advantage of database systems developed by statewide efforts. Because the Greater Monterey County IRWM Plan does not have an ongoing secure funding source for data management, the RWMG has opted to utilize existing State database frameworks including, for surface water quality, those developed by the California Surface Water Ambient Monitoring Program (SWAMP) and by the California Environmental Data Exchange Network (CEDEN). Wetland and riparian habitat conditions will be measured and documented using the California Rapid Assessment Methods (CRAM), and groundwater data will reside in GeoTracker using the Groundwater Ambient Monitoring and Assessment (GAMA) database (see the Data Management section for a detailed description). The IRWM Plan Coordinator will work closely with the Data Management Coordinator (or in absence of a Data Management Coordinator then a subcommittee of the RWMG) to track project implementation.

Two tables will be generated with each Plan Performance Review that address the first two requirements of the standard, i.e., that the RWMG is implementing projects listed in the IRWM Plan, and that the RWMG is efficiently making progress towards meeting the objectives of the IRWM Plan. The first table will simply list all of the projects in the IRWM Plan, their implementation status, and funding source. Projects that have been fully implemented will be highlighted, as follows:

Table J-1: Status of Project Implementation

Project Proponent & Project Title	Funding Source		Date of Implementation/Status
	IRWM funds \$	Other funds \$ (cite source)	
1. xxx			Not yet implemented
2. xxx	\$xxx	\$xxx EPA 319(h) grant; \$xxx	Phase I completed August 2012, in initial stages of Phase II
3. xxx			Not yet implemented
4. xxx		\$xxx (USDA Farm Bill grant)	Project fully implemented, completed April 2012
5. xxx	\$xxx	\$xxx (EPA CWSRF funds)	Project near completion, September 2012
6. xxx			Not yet implemented
Etc.			

The second table will help chart the progress of the projects that have been implemented, or are in the process of being implemented, toward achieving IRWM Plan objectives. The table will be populated by a Conservation Action Tracker database, which is a data system for tracking land-use management improvements in the Central Coast region. It is an online tool (currently under construction) that will allow project proponents to register and update information on conservation projects across the region in order to track efforts and improve stakeholders' ability to evaluate collective impacts and effectiveness. The Conservation Action Tracker will be implemented by the Central Coast Resource Conservation Districts (RCDs) and project partners of the Greater Monterey County IRWM Plan.

Table J-2 below provides a template of the table that will be completed during each Plan Performance Review using the Conservation Action Tracker online tool. The measurability criteria for objectives (defined in Section D of this IRWM Plan) will be documented through the Conservation Action Tracker to help track the extent to which projects are achieving Plan objectives and implementing the IRWM Plan. Results will be brought to the RWMG for review and discussion.

Table J-2: Progress toward Achieving IRWM Plan Objectives

Objectives	Qualitative Measurement	Quantitative Measurement
WATER SUPPLY OBJECTIVES		
<i>Objective 1: Increase groundwater recharge and protect groundwater recharge areas.</i>		
Project X	List how project is meeting obj	List how project is meeting obj
Project Y	List how project is meeting obj	List how project is meeting obj
Project Z	List how project is meeting obj	List how project is meeting obj
<i>Objective 2: Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.</i>		
Project title(s) here	List how project is meeting obj	List how project is meeting obj
<i>Objective 3: Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.</i>		
Project title(s) here	List how project is meeting obj	List how project is meeting obj
ETC.		
WATER QUALITY OBJECTIVES		
<i>Objective 1: Promote practices necessary to meet, or where practicable, exceed all applicable water quality regulatory standards (for drinking water, surface and groundwater quality).</i>		
Project title(s) here	List how project is meeting obj	List how project is meeting obj
ETC.		

FLOOD PROTECTION OBJECTIVES		
<i>Objective 1: Promote projects and practices to protect infrastructure and property from flood damage.</i>		
Project title(s) here	List how project is meeting obj	List how project is meeting obj
ETC.		
ENVIRONMENT OBJECTIVES		
<i>Objective 1: Support science-based projects to protect, improve, enhance, and/or restore the region's ecological resources, while providing opportunities for public access and recreation where appropriate.</i>		
Project title(s) here	List how project is meeting obj	List how project is meeting obj
ETC.		
REGIONAL COMMUNICATION OBJECTIVES		
<i>Objective 1: Facilitate dialogue and reduce inconsistencies in water management strategies/regulations between local, regional, state, and federal entities.</i>		
Project title(s) here	List how project is meeting obj	List how project is meeting obj
ETC.		
DISADVANTAGED COMMUNITIES OBJECTIVES		
<i>Objective 1: Seek funding opportunities to ensure all communities have a water system with adequate, safe, high-quality drinking water.</i>		
Project title(s) here	List how project is meeting obj	List how project is meeting obj
ETC.		
CLIMATE CHANGE OBJECTIVES		
<i>Objective 1: Plan for potential impacts of future climate change.</i>		
Project title(s) here	List how project is meeting obj	List how project is meeting obj
ETC.		

During each Plan Performance Review, the information in the above table will get updated and new projects will be added. The table will be accompanied by a narrative, which will summarize the overall progress to date in achieving IRWM Plan goals and objectives and describe areas that need further attention. The analysis will include data submitted to the statewide databases and information provided in the Conservation Action Tracker tool. Based on this analysis, the RWMG will evaluate how to fill the gaps and help achieve regional goals.

J.2 PROJECT-SPECIFIC MONITORING PLANS

If the project requires monitoring, the project proponent is responsible for both development of the project-specific monitoring plans and for all monitoring activities. There may be cases where project-specific monitoring will not apply, such as land acquisition or installation of purple pipe for reclaimed water.

There are two levels of development for the project monitoring plan. First, a general outline of monitoring requirements and design will be included in a project proposal for inclusion in the IRWM Plan; second, the monitoring plan and quality assurance project plan will be included in the scope of work in a funding proposal, and must be approved by the appropriate State agency prior to monitoring taking place for a given project.

The DMS for the Greater Monterey County IRWM region will include data validation and quality assurance for the set of standardized key metadata fields. The data system will provide a portal to data sets (measurements) hosted by the data generating organizations or those that have been integrated to regional, statewide, or national databases, including Wetland Tracker, CalDUCs, and CEDEN. For further details on this system please refer to Section K, the Data Management section of this IRWM Plan. The Data Management Coordinator, or in absence of a Coordinator then a subcommittee of the RWMG, will be responsible for ensuring that data gets uploaded to the appropriate State database.

The project-specific monitoring plan requirements will vary based on the type of project being implemented. All projects must adhere to certain State guidelines for monitoring in order to be implemented through the IRWM Plan. These include:

- Projects that involve surface water quality must meet the criteria for and be compatible with SWAMP, http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml).
- All projects that involve groundwater quality must meet the criteria for and be compatible with GAMA, <http://www.waterboards.ca.gov/gama/>).
- All projects that involve wetland restoration must meet the criteria for and be compatible with the State Wetland and Riparian Area Monitoring Plan (WRAMP, http://www.waterboards.ca.gov/mywaterquality/monitoring_council/wetland_workgroup/docs/2010/tenetsprogram.pdf)

Any projects that do not fall into one of the above categories must, at minimum, address the following:

1. Clearly and concisely (in a table format) describe what is being monitored for each project. Examples include photo monitoring, water depth, flood frequency, and effects the project may have on habitat or particular species (before and after construction), etc.
2. Measures to remedy or react to problems encountered during monitoring. An example would be to coordinate with the Department of Fish and Game if a species or its habitat is adversely impacted during construction or after implementation of a project.
3. Location of monitoring (with a map).
4. Monitoring frequency.
5. Monitoring protocols/methodologies, including who will perform the monitoring.
6. Procedures to ensure the monitoring schedule is maintained and that adequate resources (budget) are available to maintain monitoring of the project throughout the scheduled monitoring timeframe.

Through project-specific monitoring efforts, the Conservation Action Tracker, and measurable objectives, the RWMG intends to demonstrate over time that the Greater Monterey County IRWM Plan is meeting its goals and objectives. Note that the Plan Performance Review includes an adaptive management process that will enable the RWMG to respond to lessons learned from the project monitoring efforts and to utilize new information, particularly as new data regarding climate change impacts and vulnerabilities for the Greater Monterey County region become available. With this information, the RWMG may choose to modify IRWM Plan objectives, the measurability of those objectives, the use of resource management strategies, or the project review process; and these decisions will, in turn, dictate the types of projects that will be prioritized and implemented in the future.

Section K: Data Management

The intent of the Data Management standard in the Proposition 84/1E Integrated Regional Water Management (IRWM) Program Guidelines is to ensure efficient use of available data, stakeholder access to data, and to ensure that the data generated by IRWM implementation activities can be integrated into existing State databases. The Regional Water Management Group (RWMG) has intentionally adopted existing statewide protocols for the regions' data management needs in order to ensure sustainable long-term support and standardization. This section describes how data from IRWM-funded projects is stored, validated, and shared in the Greater Monterey County IRWM planning region.

K.1 DATA MANAGEMENT: INTRODUCTION

Throughout Monterey County, a great deal of valuable water quality data is collected, but not in an organized or collaborative way that is meaningful for all stakeholders in the region. Most data that is collected is program specific with outcomes intended for a particular question or purpose. The IRWM planning process can help to facilitate better information sharing and identify data needs that will help the RWMG, agencies and organizations, project proponents, and stakeholders in the region better understand water quality and habitat conditions.

The objective of adopting uniform data management principles for IRWM Plan projects is to create information that will be more accessible and useful for addressing regional questions about the health of water resources and to facilitate data sharing in the region. Complete standardization of all data types throughout the region would require substantial resources to be allocated by data generators and would also require creation of an entity for centralized data management. Efforts to completely standardize water quality monitoring data sets have been ongoing in the region for more than five years with limited success. Challenges to complete standardization include differences in monitoring or implementing organizations' long-term data storage objectives, technical capacities, and reporting requirements.

A less costly alternative with a greater chance for success is the adoption of similar data management documentation practices for IRWM Plan projects along with the rigorous standardization of the most critical information across projects and data types. Given resources currently available, it is not possible to centralize the management of the diverse data types that may include physical implementation, monitoring, restoration, design, inspection, education and outreach. Further, tasking an entity with managing data they did not collect is risky since they have a less intimate knowledge of that data and may be more prone to introducing errors during data management operations, such as quality assurance or duplicate detection and removal.

Ultimately, a more seamless integration of data sets that can be used to assess watershed health and address regional knowledge needs is desirable. Adopting common data documentation standards and standardizing key metadata fields is a sensible and useful step towards this goal at this time. The proposed structure will facilitate data discovery and sharing, lowering the costs associated with satisfying regional knowledge needs.

Because the Greater Monterey County IRWM Plan does not have an ongoing secure funding source for data management, the RWMG has opted to utilize existing State database frameworks including, for surface water quality, those developed by the California Surface Water Ambient Monitoring Program (SWAMP) and by the California Environmental Data Exchange Network (CEDEN). Wetland and riparian habitat conditions will be measured and documented using the California Rapid Assessment Methods (CRAM), and groundwater data will reside in GeoTracker using the Groundwater Ambient Monitoring and Assessment (GAMA) database.

K.2 OVERVIEW OF DATA NEEDS

In 2006, the Monterey Bay National Marine Sanctuary (MBNMS) began an effort to coordinate disparate monitoring programs and to determine if the data was comparable enough to answer specific State non-point source (NPS) questions. This effort was called the “Central Coast Water Quality Data Synthesis, Assessment, and Management (SAM) Project.” The SAM Project facilitates region-wide water quality monitoring coordination, data management, and data analysis for addressing the sources, status, and trends of NPS pollution on the Central Coast via technical, scientific, and programmatic activities. Key goals of the project include enhancement of the regional water quality monitoring network and improving access to knowledge used for managing coastal watershed and nearshore marine systems. Findings of the SAM Assessment include the following recommendations to address key information gaps. These gaps apply to all of the watersheds draining to the MBNMS but are highly representative of information gaps and data needs for the Greater Monterey County IRWM Plan (MBNMS and SIMoN 2008).

- The absence of a region-wide standardized water quality data format for the Central Coast is an important barrier to regional water quality data analysis, information exchange, and coordination between monitoring organizations. A system should be created for automatic, seamless data integration that is based on the SWAMP formats and facilitates upward data flow toward a central location in CEDEN.
- The lack of coordination between monitoring organizations results in wasted resources and important data gaps that reduce our ability to understand the status and trends of water quality conditions. Two things that would help to identify opportunities to optimize resources are: 1) a regularly updated clearinghouse of information on all the Central Coast Water Quality Data Assessment existing programs; and 2) an annual water quality conference in the region to disseminate information and highlight the value of monitoring coordination efforts.
- Adequate detection of changes over time in water quality conditions requires that we: 1) maintain commitments to sustain long-term monitoring stations such as the Central Coast Ambient Monitoring Program (CCAMP) Coastal Confluences stations; 2) encourage standardized flow measurement as a regular part of water quality monitoring; and 3) allocate sufficient resources to data analysis.
- Encourage cooperation of watershed stakeholders to collect and share information about changes in land management practices in a standardized way that will be useful for comparison with water quality data.
- Develop a monitoring design with the express purpose of evaluating relationships between changes in land use management activities and water quality conditions at multiple watershed scales.
- Institutionalize a regional data node for ongoing data collection, analysis and multi-tiered reporting to facilitate the NPS pollution management objectives of regional stakeholders.

K.2.1 Monitoring Programs

Surface Water Quality

There is quite a bit of water quality data collected in the Salinas Valley watershed, including two long-term regional programs: the Central Coast Regional Water Quality Control Board’s (RWQCB) CCAMP and the Central Coast Agriculture Preservation, Inc.’s Cooperative Monitoring Program. Other programs that measure water quality and have large spatial or temporal scale are described below. Very little water quality monitoring takes place along the Big Sur coast. One data set is from the MBNMS Citizen

Watershed Monitoring Network's Annual Snapshot Day, a single-day event that has been taking place since 2000, in which volunteers measure water quality at over 150 rivers and streams along the entire Central Coast, including the Big Sur region. Programs that are ongoing, have good potential to produce high quality data, and are known to have collected substantial data sets at fixed locations over a period of greater than three years are listed below:

- **Central Coast Ambient Monitoring Program (CCAMP)**
Central Coast RWQCB
<http://www.ccamp.org/>
- **Central Coast Long Term Environmental Assessment Network (CCLEAN)**
Applied Marine Sciences
<http://www.cclean.org/>
- **Ag Waiver Cooperative Monitoring Program**
Central Coast Water Quality Preservation Inc. (CCWQP)
<http://www.ccwqp.org/>
- **Elkhorn Slough Volunteer Monitoring Program**
Elkhorn Slough National Estuarine Research Reserve (ESNERR)
<http://www.elkhornslough.org/esnerr.htm>
- **Snapshot Day**
MBNMS Citizen Watershed Monitoring Network/Coastal Watershed Council (CWC)
<http://montereybay.noaa.gov/monitoringnetwork/events.html>
<http://www.coastal-watershed.org/>
- **Marc Los Huertos Ambient Monitoring (MaLoHAM)**
University of California Santa Cruz / California State University Monterey Bay
<http://envs.ucsc.edu/shennan/Directory/Mark.html>
<http://home.csumb.edu/l/loshuertosmarc/world/>
- **Central Coastal Watershed Studies (CCoWS)**
California State University Monterey Bay
<http://ccows.csumb.edu/index.htm>
- **National Water Information System**
US Geological Survey (USGS)
<http://waterdata.usgs.gov/nwis>
- **The Marine Pollution Studies Laboratory at Granite Canyon**
University of California Davis
<http://www.envtox.ucdavis.edu/GraniteCanyon/GraniteCanyon.htm>

Habitat Condition

If habitat condition monitoring is required by funding guidelines, CRAM will be used to document the habitat condition for Greater Monterey County IRWM Plan projects. CRAM is an approach that provides consistent, scientifically defensible, affordable information about the conditions of wetlands and riparian habitats throughout California. Large amounts of public and private funds are being invested in policies, programs, and projects to protect, restore, create, enhance, and manage wetlands and riparian habitats in California. Most of these investments have not been evaluated, because the ambient conditions of the habitats have not been monitored, or the monitoring methods have been inconsistent, and there is little

assurance of data quality. CRAM provides a means to measure and document habitat conditions and makes the results of the monitoring readily available to analysts and decision makers.

CRAM is designed to cost-effectively assess the performance of wetland and riparian restoration projects, mitigation projects, and the status and trends of ambient conditions within watersheds, regions of the state, and for the state as a whole. The use of CRAM for ambient monitoring will, over time, help wetland managers and scientists quantify the relative influence of anthropogenic stress, management actions, and natural disturbance on the spatial and temporal variability in reference conditions. This information can then be used in the design, management, and assessment of projects.

Specific applications of CRAM could include:

- Assessments of impacted wetlands to help determine appropriate mitigation measures;
- Preliminary assessments of wetland conditions and stressors to determine the need for intensive monitoring;
- Evaluation of wetland project performance under the Coastal Zone Management Act, Section 1600 of the California State Fish and Game Code, Sections 401 and 404 of the Clean Water Act, and local government wetland regulations; and
- Assessment of restoration or mitigation progress relative to ambient conditions, reference conditions, and expected ecological trajectories.

The Central Coast Wetlands Group (CCWG) is the Central Coast lead for the development and implementation of CRAM. Since 2002 they have assisted in the development of the riverine, estuarine, depressional and bar-built estuarine wetland modules. CCWG is the Central Coast monitoring coordinator, trainer and quality assurance (QA) manager of CRAM and eCRAM, the online repository for all CRAM data. Additionally, CCWG is an active member of the State Level 2 (Rapid Assessment) Committee of the California Wetlands Monitoring Workgroup. This Committee is tasked with overseeing the development and implementation of CRAM.

Groundwater Quality

The State Water Resources Control Board's (SWRCB) GAMA Program is California's comprehensive groundwater quality monitoring program. The GAMA Program was created by the SWRCB in 2000. It was later expanded by Assembly Bill 599 – the Groundwater Quality Monitoring Act of 2001. The main goals of GAMA are:

- To improve statewide groundwater monitoring; and
- To increase the availability of groundwater quality information to the public.

Most of the Greater Monterey County IRWM planning region with the exception of the Big Sur coast falls within the Monterey-Salinas Study Unit. Recharge to the groundwater system is primarily from stream-channel infiltration from the major rivers and their tributaries, and from infiltration of water from precipitation and irrigation. The primary sources of discharge are water pumped for irrigation and municipal supply, evaporation, and discharge to streams. Results of the GAMA study for this region can be found at: <http://pubs.usgs.gov/fs/2011/3089/>.

The most extensive source for ambient groundwater quality data in the region is the Monterey County Water Resource Agency's (MCWRA) monitoring program. The purpose of the ambient monitoring program is to provide long-term data to document and analyze water quality trends and conditions over time. Water quality samples are collected annually for the ambient monitoring program, primarily from agricultural production wells throughout the Salinas Valley Basin and from MCWRA-owned dedicated monitoring wells. Over 350 agricultural monitoring wells and 44 dedicated monitoring wells are

monitored. The same wells are sampled from year to year, unless abandoned, destroyed, or not operating. The data are stored locally in a Geographic Information System (GIS) relational database.

The Central Coast RWQCB is currently in the process of developing the Groundwater Assessment and Protection (GAP) component of CCAMP, referred to as CCAMP-GAP. The RWQCB's groundwater regulatory programs have, until now, dealt with groundwater pollution problems on an ad hoc basis; there has been no systematic, region-wide approach to assess and track the quality of Central Coast groundwater basins. CCAMP-GAP is intended to enable the RWQCB to develop a comprehensive monitoring program within the Central Coast Region. There are a number of organizations that currently implement groundwater monitoring programs with dedicated monitoring well networks within the Central Coast Region. CCAMP-GAP will leverage these existing individual programs into a coordinated regional monitoring program. Coordinating the groundwater data from local agencies into a regional database will significantly improve the ability to assess the data, streamline sharing of these data with the RWQCB and other agencies, and allow public access to the data (while keeping well location and ownership confidential). The data generated from CCAMP-GAP will be publicly available on the GeoTracker GAMA website.

Other sources of groundwater data can be found at <http://www.waterboards.ca.gov/gama/grid.shtml> or at <http://www.water.ca.gov/waterdatalibrary/>.

K.3 TYPICAL DATA COLLECTION TECHNIQUES

When considering data collection, we first must determine what questions we are trying to answer. Many different types of data collection exist, be it water quality, habitat condition, biological, or groundwater quantity and quality. For surface water quality monitoring and biological monitoring, the RWMG has opted to use guidance developed by the SWRCB's SWAMP.¹ Monitoring techniques for habitat condition will follow CRAM. Groundwater monitoring will follow the GAMA Program. Chemical measurements typically include sediments, nutrients, bacteria, pesticides and herbicides, persistent organic pollutants, and trace metals. Additionally, a number of programs collect measurements that reflect ecosystem level health including toxicity, periphyton assays, bioassessments, and rapid condition assessments. Through cooperative agreements with local agencies, the United States Geological Survey (USGS) maintains, collects, processes and publishes stream flow data at specific sites throughout Monterey County and provides access to real-time or historical data sets via the web, accessible from USGS websites.

Below are data collection techniques for the previously mentioned programs and methods.

SWAMP: Typical data collection techniques for surface waters include both field measurements and laboratory analysis. Field measurements are either collected using meters or field kits for a common list of constituents including but not limited to water temperature, pH, conductivity, dissolved oxygen and turbidity. For an example of a field data sheet and complete list of SWAMP required fields go to: http://swamp.mpsl.mlml.calstate.edu/wp-content/uploads/2009/04/swamp_sop_field_measures_water_sediment_collection_v1_0.pdf. There is a large list of possible analytes that are measured in surface waters that require laboratory analysis. Typical laboratory analysis includes fecal indicator bacteria, metals, nutrients, persistent organic pollutants, and turbidity. SWAMP provides guidance on methods and quality assurance; the guidance can be found at: http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/qaprp082209.pdf.

¹ See: http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#methods.

Biological monitoring is helpful for determining the health of a system and whether it is able to sustain a diverse community of benthic macroinvertebrates. Standard operating procedures for determining a stream's physical/habitat condition and benthic invertebrate assemblages can be found at:

http://swamp.mpsl.mlml.calstate.edu/wp-content/uploads/2009/04/swamp_sop_bioassessment_collection_020107.pdf.

CRAM: The CRAM model is a standardized tool for assessing the ambient condition of wetlands and riparian habitats. CRAM software guides users through assessments that take less than half of a field day to complete. The CRAM user's manual can be downloaded at:

http://www.cramwetlands.org/documents/2008-09-30_CRAM%205.0.2.pdf.

GAMA: The GAMA Priority Basin Project is grouped into 35 groundwater basin groups called "study units." Each study unit is sampled for common contaminants regulated by the California Department of Public Health (CDPH), and also for unregulated chemicals. Testing for these chemicals—usually at detection levels well below those achieved by most laboratories—will help public and private groundwater users to manage this resource. Results from the Monterey/Salinas study unit can be found at <http://pubs.usgs.gov/fs/2011/3089/>. Some of the chemical constituents that are sampled by the GAMA Priority Basin Project include:

- Low-level volatile organic compounds (VOCs)
- Low-level pesticides
- Stable isotopes of oxygen, hydrogen, and carbon
- Emerging contaminants (pharmaceuticals, perchlorate, chromium VI, and other chemicals)
- Trace metals (arsenic, selenium, lead, and other metals)
- Radon, radium, and gross alpha/beta radioactivity
- General ions (calcium, magnesium, fluoride)
- Nutrients, including nitrate, and phosphates
- Bacteria: total and fecal coliform bacteria

K.4 HOW STAKEHOLDERS CONTRIBUTE DATA TO THE DATA MANAGEMENT SYSTEM

This section describes how project proponents in the Greater Monterey County IRWM planning region will contribute data to the Greater Monterey County IRWM Plan data management system.

K.4.1 Surface Water Quality and Biological Monitoring Data

CEDEN will be the data management system used by all organizations collecting surface water quality and biological measurements in the Greater Monterey County IRWM planning region. CEDEN is a system designed to facilitate integration and sharing of data collected by many different participants. It is a growing statewide cooperative effort of various groups involved in the water and environmental resources of the state of California. This network is open to federal, state, county, and private organizations interested in sharing data throughout the state. The purpose of the CEDEN network is to allow the exchange and integration of water and environmental data between groups and to make it accessible to the public.

Integrating data from many different programs and data generators is one of CEDEN's main goals. To assist with this task, the Regional Data Centers (RDCs) have developed applications to support agencies, organizations, and groups who want to submit their data. These applications help improve data comparability within the CEDEN system by checking data prior to submittal. Standard templates have also been developed for use with the data checkers and to increase data comparability. These templates and associated documentation can be downloaded at:

http://www.ceden.org/ceden_submitdata.shtml#templates.

For the Central Coast region, the Central Coast RWQCB developed a tool called the California Data Upload and Checking System (CalDUCs) which facilitates upload of the data templates and checks the data for erroneous information, thus ensuring the data is of known and sufficient quality. More information on these tools can be found at: <http://www.ccamp.info/CalDucs/index.html>. The RDC for projects in the Greater Monterey County region is located at Moss Landing Marine Laboratories. The first time an organization in this region submits data to CEDEN, or if the data is for a new project, the RDC at Moss Landing Marine Laboratories must be contacted to register the project (<http://www.ceden.org/mlml.shtml>).

CEDEN has established a list of “valid values” that are used for submitting, reporting, and exchanging data within the CEDEN system. Valid values are acceptable names and codes for analytes, projects, organism names, etc. The link to the accepted values lists can be found at: <http://www.ceden.us/Metadata/ControlledVocab.php>. These values will be updated periodically as new values are created. To submit values for inclusion into the CEDEN system, project proponents should contact their local RDC.

The Central Coast RDC at Moss Landing has been funded to provide the CCAMP (Central Coast RWQCB) tools for graphing and sorting data using CEDEN data until the end of 2012.

K.4.2 Habitat Conditions

Five CRAM field books have been produced for: estuarine, riverine, depressional, individual vernal pools, and vernal pool systems. Each field book has its own guidance and instructions for collecting data, completing field data sheets, definitions, and scoring. These field books can be downloaded at: <http://www.cramwetlands.org/documents/>.

eCRAM is an online data entry tool used to upload CRAM results. CRAM documentation is generally performed in the field with the eCRAM software installed on a tablet computer or laptop. An online version of the eCRAM software is also available. Project proponents must register before using online data entry (at <http://www.cramwetlands.org/register/>).

K.4.3 Groundwater

For those entities measuring groundwater, the RWMG has opted to use the GeoTracker GAMA database. GAMA collects data by testing the untreated, raw water in different types of wells for naturally occurring and man-made chemicals. GAMA compiles these test results with existing groundwater quality data from several agencies into a publicly accessible internet database, GeoTracker GAMA. GeoTracker GAMA is an online groundwater information system that provides access to water quality data and connects a user to groundwater basics and protection information. This online database integrates groundwater quality data from multiple sources, which are searchable by chemical or by location with results displayed on an interactive Google maps interface, found at <http://geotracker.waterboards.ca.gov/gama/>. GeoTracker GAMA currently integrates data from State and Regional Water Boards, California Department of Public Health, Department of Pesticide Regulation, Department of Water Resources, USGS, and Lawrence Livermore National Laboratory.

If a project work plan contains a groundwater ambient monitoring element, the project proponent will contact the SWRCB’s GAMA program for guidance on the submittal of ambient groundwater data. Prior to the project proponent implementing any sampling or monitoring activities, the State must be notified in writing as to the planned procedure for submittal of groundwater data to GAMA.

K.5 ENTITY RESPONSIBLE FOR MAINTAINING DATA IN THE DATA MANAGEMENT SYSTEM

Each organization or project proponent that collects data related to habitat condition, biological monitoring, or water quality will be responsible for maintaining their own data management system and quality control. Primary data management responsibilities for surface water quality data lies with the data collecting organization. After appropriate quality assurance checks, the data will be uploaded into the CEDEN database through the Regional Data Center (which for this region is located at Moss Landing Marine Labs). Primary data management responsibilities for data related to habitat conditions and groundwater also lies with the data collecting organization. If this type of monitoring is required by funding source guidelines, the entity collecting the data will maintain their own data storage system for their organization in advance of uploading the data into the CRAM or GeoTracker GAMA statewide databases.

K.6 DESCRIPTION OF DATA VALIDATION OR QUALITY ASSURANCE/QUALITY CONTROL MEASURES

While data management practices need not be equivalent for all projects included in the Greater Monterey County IRWM Plan, it is important that protocols and practices are documented in a methodical way such as a Quality Assurance Project Plan (QAPP), so that users of the data can assess its comparability with other data sources. IRWM Plan projects will be compatible with quality assurance protocols established for:

- SWAMP: http://www.swrcb.ca.gov/water_issues/programs/swamp/qapp.shtml
- CRAM: http://www.wrmp.org/docs/cram/CRAM_calibration_QAPP_final.pdf

K.7 DATA TRANSFER AND SHARING

This section describes how data collected for IRWM Plan implementation will be transferred and/or shared between members of the RWMG and other interested parties throughout the region, including local, state, and federal agencies.

The CEDEN database will be updated every week with new data from the four RDCs around the state. The advanced query tool that exists on the CEDEN website currently allows the user to query multiple data types by project, site, analyte type together in different formats. Other tools such as a bioassessment reporting module and the ability to query the data by geographical area, watershed, county, etc. will be available in late 2012. Currently there is no planned date to release a graphing package or summary data on CEDEN. However, CEDEN is the data repository for many different portal applications built by the SWRCB on the “My Water Quality” website (<http://www.waterboards.ca.gov/mywaterquality/>). Data that is uploaded to CEDEN will be available in these and other applications that use CEDEN data.

The same situation is true for CRAM data. The California Wetlands Portal is an interactive tool that displays information about modern and historical wetland habitat in California (go to: <http://www.californiawetlands.net/tracker/>). Wetlands Portal catalogues planned, in progress, and completed wetland restoration, preservation, creation, and enhancement projects. CRAM data that is uploaded to the statewide database automatically populates this website to enable data sharing and dissemination.

GeoTracker GAMA is an online groundwater information system that gives the user access to water quality data and connects the user to groundwater basics and protection information. This online database integrates groundwater quality data from multiple sources, which are searchable by chemical or location with results displayed on an interactive Google maps interface:
http://www.waterboards.ca.gov/gama/geotracker_gama.shtml

K.8 HOW THE DATA MANAGEMENT SYSTEM SUPPORTS THE RWMG EFFORTS TO SHARE COLLECTED DATA

The intent and design of the Greater Monterey County IRWM Plan data management system focuses on a localized approach to data collection and management with the primary goal of uploading data of known quality into a statewide database with web tools for dissemination. It is not reasonable to expect every organization that has implementation projects to change the way they store and manage their data. In addition, the Greater Monterey County RWMG does not have the resources to develop and fund a centralized data storage system. The most logical system is to fully leverage and support the efforts and resources the SWRCB has put into the RDC that support the CEDEN and CRAM databases and the My Water Quality Portal. A significant amount of time and funding has developed SWAMP and CRAM protocols and quality assurance with the intent of being the recipient of many different sources of environmental data. These systems make data collection much more informative and valuable when it is easily accessible and available to the RWMG for resource management and decision-making.

K.9 HOW DATA WILL GO TO LARGER DATA SETS

As previously stated in section K.4 above, the data collected for IRWM Plan projects will be managed by each respective organization and then uploaded into a statewide data system, e.g., CEDEN, Wetlands Tracker or GeoTracker GAMA. See section K.4 for more details.

Section L: Finance

The intent of the Finance standard in the Proposition 84/1E Integrated Regional Water Management (IRWM) Program Guidelines is to ensure that financing of the IRWM Plan has been considered at a programmatic level by the Regional Water Management Group (RWMG), and that a strategy for financing the IRWM Plan is documented for stakeholders.

From the Proposition 50 IRWM Grant Program, it has become clear that the need for funding substantially exceeds the grant funding available through recent bond measures. Most of the cost of developing, maintaining, and implementing an IRWM Plan must be borne by local entities with State grant funding providing a necessary, but relatively small, supplement in funds. With potentially multiple sources of funding being accessed to formulate, maintain, and implement an IRWM Plan, documentation of how the funding pieces fit together is necessary for the RWMG and stakeholders to understand how the Plan will be implemented. This section provides that information.

L.1 ONGOING FUNDING OF THE IRWM PLAN

To date, the Greater Monterey County IRWM planning effort has been funded through a combination of private foundation grant funds, State IRWM Planning Grant funds, monetary contributions from RWMG entities, and in-kind staff time contributed by members of the RWMG. As noted in the Governance section, the Greater Monterey County RWMG has been developed to be a “working group,” with its members expected to actively participate in all aspects of the IRWM planning process. During the development of this IRWM Plan, RWMG members have attended monthly RWMG meetings, helped lead public workshops, reviewed drafts of the IRWM Plan, and participated on various committees to develop elements of the Plan, including the following:

- *Issues and Conflicts Committee:* To identify water resource issues in the region, as a first step in identifying goals and objectives for the IRWM Plan.
- *Goals and Objectives Committee:* To identify regional goals and objectives for the IRWM Plan. This committee was convened twice, first to develop goals and objectives, and later to review those goals and objectives in light of the new Proposition 84 IRWM Program Guidelines and to make the objectives “measurable.”
- *Project Ranking Committee:* To develop a system for ranking projects. This committee was convened in 2010, prior to the first IRWM Plan project solicitation.
- *Project Review Committee:* This committee was convened twice, in 2010 and in 2011, to review and rank projects from both IRWM Plan project solicitations.
- *Project Review—DAC/Environmental Justice Committee:* This committee, convened for both the 2010 and 2011 project solicitations, worked alongside the Project Review Committee to review all project proposals for potential environmental justice impacts or impacts to disadvantaged communities (DACs).
- *Integration Committee:* A special committee convened in 2010, as part of the Project Review process.
- *Water Resource Project Coordination Committee:* To coordinate the Water Resource Project Coordination (WRPC) process – a “fact-finding” process – for project proponents and other stakeholders in the lower Gabilan Creek Watershed region.
- *Data Management Committee:* To develop a data management system for IRWM Plan projects.
- *Draft IRWM Plan Review Committee:* A core group of dedicated reviewers.

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- *Funding Committee:* A “permanent” committee convened to identify sources of funding for IRWM Plan projects and programs, and to develop a strategy for funding the ongoing IRWM planning process.

All of this work has been accomplished by means of donated staff time, or in some cases volunteered time, on the part of all of the RWMG members. It is also important to recognize the many hours contributed by stakeholders and community members who have volunteered their time to review IRWM Plan milestones and the draft IRWM Plan, to provide comments, and to offer technical advice and expertise. Leading this effort—and responsible for drafting this IRWM Plan—is the IRWM Plan Coordinator, a consultant and non-voting member of the RWMG whose time has been funded thus far through a combination of private foundation grant funds, State grant funds from the Proposition 84 IRWM Planning Grant Program, and RWMG monetary contributions.

With the completion and final approval of this IRWM Plan, the time and resources required to support the Greater Monterey County IRWM planning effort are expected to diminish. While the RWMG has met on a monthly basis during the initial development of this Plan, it is anticipated that the continuing IRWM planning process will require fewer (e.g., quarterly) meetings and considerably less time spent on subcommittees. A Funding Committee has been convened to estimate the level of support that will be required to continue the IRWM planning process at a sustainable pace, and to develop a strategy for obtaining those funds.

The Funding Committee estimates that after the initial IRWM Plan development, ongoing IRWM planning and “maintenance” for the Plan will most likely entail:

- Approximately 4-8 RWMG meetings a year, which will focus on alternative sources of funding for IRWM Plan projects and programs, ongoing water resource issues in the region, integration of projects, the Water Resource Project Coordination process, ongoing outreach and assistance to DACs, and opportunities for collaboration between RWMG members.
- Project solicitations for the IRWM Plan, which will occur about every 18 months.
- Committee work associated with the project solicitations (e.g., project ranking and project review).
- Project monitoring and Plan performance evaluation, which is expected to occur bi-annually.

It is expected that RWMG members will continue to donate their staff time toward the ongoing planning effort, and that stakeholders will continue to participate actively in the process. Additional funds will be needed, however, to continue to support the IRWM Plan Coordinator position. With such positive momentum created during development of the new Greater Monterey County IRWM Plan, the IRWM Plan Coordinator need to keep the process driving forward—organizing meetings, overseeing project solicitations, coordinating the continued planning process, keeping stakeholders (and RWMG members) engaged, and ensuring that IRWM Plan objectives are being met. Since the private foundation grant funds that had supported the IRWM Plan Coordinator position have been expended and State Planning Grant funds are limited, the Funding Committee is exploring various means for securing long-term funding for this position (which is expected to cost on the order of \$40K - \$50K annually).

The Funding Committee is sensitive to the fact that the Greater Monterey County RWMG includes non-profit organizations with limited discretionary funds, disadvantaged communities, and public agencies that are over-burdened and under-funded. The founding of the RWMG has been based on the principle and understanding that each RWMG organization would have an equal vote regardless of the organization’s ability to contribute financially to the Plan or to other RWMG activities. Therefore, while financial contributions are not required of RWMG members, the Funding Committee is requesting each

RWMG entity to contribute annually, on a sliding scale, toward the ongoing IRWM planning process, primarily to support the IRWM Plan Coordinator but also for other planning activities as needed. The Funding Committee is also investigating other potential means of long-term support, including:

- Collaboration with other agencies and organizations, external to the RWMG, that share similar goals and that might benefit from IRWM Plan implementation, for donation of financial contributions or other resources toward the IRWM planning effort.
- Potentially, grant funds from America's Great Outdoors (AGO) Initiative. The IRWM Plan goals and objectives support most of the priority themes for the AGO.

L.2 POTENTIAL FUNDING SOURCES FOR IRWM PLAN PROJECTS AND PROGRAMS

In addition to seeking financial support for the ongoing IRWM planning process, the Funding Committee is also tasked with identifying alternative, non-IRWM sources of grant funds and other means to help implement projects and programs in the IRWM Plan. Potential funding sources include (where appropriate):

- *Federal grant programs*, e.g., US Fish and Wildlife Service grants (such as Coastal Wetlands Conservation grants, Cooperative Endangered Species Conservation grants, Partners for Fish and Wildlife grants), National Fish and Wildlife Federation grants, Economic Development Administration grants, American Recovery and Reinvestment Act of 2009 (ARRA) funds, US Department of Agriculture grant programs (such as the Agricultural Water Enhancement Program), Bureau of Reclamation Title XVI funds, USDA Natural Resources Conservation Service Environmental Quality Incentives Program (EQIP) grants.
- *State grant programs*, e.g., Department of Fish and Game Fisheries Restoration Grant Program funds for watersheds with salmonids present, State Coastal Conservancy funds, State Water Resources Control Board Cleanup and Abatement Account grants, Supplemental Environmental Protection (SEP) grants (from Regional Water Quality Control Board fines).
- *Local funds*, e.g., Transportation Agency for Monterey County (TAMC) grants.
- *Private grants*, including grants from foundations associated with federal/state programs (such as California State Parks Foundation, Elkhorn Slough Foundation, Monterey Bay Sanctuary Foundation), other private foundations (such as the Monterey County Agricultural and Historical Land Trust), corporate gifts.
- *Ratepayer fees*, e.g., water use fees.
- *Special taxes, assessments, and fees*, e.g., Monterey County and municipal taxes, Fort Ord Reuse Authority Community Facilities District (CFD) fees, assessment district fees, water district or community services district fees.
- *Loans*, e.g., Clean Water State Revolving Fund loan.

Table L-1 below summarizes the anticipated and potential sources of funding that will support the projects and programs included in this IRWM Plan, including financing for operations and maintenance (O&M), which is not eligible for grant reimbursement by State grant programs. The table lists, in alphabetical order according to project proponent, both the implementation projects proposed in this Plan and projects that are currently being implemented through Round 1 IRWM Implementation Grant funds. The table shows the approximate total project cost, the anticipated funding sources, the certainty of obtaining those funds, the O&M finance source, and the certainty of obtaining O&M financing.

Table L-1: Financing Projects and Programs in the IRWM Plan

Project Proponent & Project Title	Project Phases (if applicable)	Approximate Total Cost	Funding Source & % of Total Cost	Funding: Certainty/ Longevity	O&M Finance Source	O&M Finance Certainty
California State Parks: Big Sur River Steelhead Enhancement Project		\$400,800	California State Parks Foundation and Cal State Parks: 10%	Secure – part of current and ongoing Natural Resources funding source	California State Parks Natural Resources Program	Secure – part of current and ongoing Natural Resources Program funding
			Prop 84 Grant: 90%	Application submitted	NA	NA
Castroville Community Services District: Well 2B Treatment Project		\$610,000	Castroville CSD: 30%	Secure – Castroville CSD capital improvement budget	Castroville CSD budget	Secure – 2011 O&M budget
			Prop 84 Grant: 70%	Awarded, grant secure	NA	NA
Central Coast Wetlands Group: Coastal Wetland Erosion Control and Dune Restoration		\$1,400,000	Prop 84 Grant: 75%	Application will be submitted FY 11/12	State Parks operational budget, CCWG ongoing program	Secure – O& M costs minimal
			Matching Funds: 25%	Potential sources include project partners, USFWS, Coastal Conservancy, NOAA, private foundations, etc.	State Parks operational budget, CCWG ongoing program	Secure – O& M costs minimal
Central Coast Wetlands Group: Development and Evaluation of Climate Change Response Strategies in the Elkhorn Slough, Gabilan and Salinas River Watersheds		\$498, 750	Prop 84 Grant: 73%	Application will be submitted FY 12/13	CCWG operational budget	Secure, rates covered through line item O&M for current grant programs
			Ocean Protection Council LiDAR Project: 25%	Certain, part of current funding		
			CCWG Program Resources: 2%	Certain, part of current funding		
Central Coast Wetlands Group: Ecosystem Condition Profile for the Lower Salinas River Watershed using Level 1-2-3 Framework		\$690,500	Prop 84 Grant: 75%	Application will be submitted FY 11/12	NA	NA
			Federal Grant: 25%	Tentative award, contingent on State funding	NA	NA

Project Proponent & Project Title	Project Phases (if applicable)	Approximate Total Cost	Funding Source & % of Total Cost	Funding: Certainty/ Longevity	O&M Finance Source	O&M Finance Certainty
Central Coast Wetlands Group, MBNMS, Monterey Bay Aquarium Research Institute, Elkhorn Slough Reserve: Expansion of a Coastal Confluence Water Monitoring System to support the Greater Monterey IRWMP	\$600,557		Prop 84 Grant: 75%	Application will be submitted FY 12/13	CCR and San Jose State University Foundation operational budget	Secure, rates covered through line item O&M for current grants
			Current LOBO budget: 23%	Certain, part of current funding		
			CCWG / CCR program resources: 4%	Certain, part of current funding		
Central Coast Wetlands Group: Northern Gabilan Mountain Watershed Management Project		\$557,025	Prop 84 Grant: 75% TBD: 25%	Application will be submitted FY 12/13	City and County agencies, operational budget; CCWG, program funds	Secure – depends on project type
Central Coast Wetlands Group: Implementation of the Moro Cojo Slough Management and Enhancement Plan – Restoration of the Upper Slough		\$1,934,181	Prop 84 Grant: 75%	Application will be submitted FY 11/12	NA	NA
			Federal Grant, USFWS, Coastal Conservancy, Private funds: 25%	Tentative award, contingent on State funding	NA	NA
Central Coast Wetlands Group: Study of Environmental Services from Nutrient Reducing BMPs		\$496,000	Prop 84 Grant: 75% TBD: 25%	Application will be submitted FY 12/13	No O&M for Tasks 1,2,4,5; CCWG program funds, CSUMB grant funds Task 3	Secure
Central Coast Wetlands Group: Tembladero Restoration and Castroville Community Public Access (Phase I)		\$455,479	Prop 84 Grant: 75%	Awarded, grant secure	NA	NA
			Federal Grant: 14.2%	secure	NA	NA
			SJSU Research Foundation: 10.8%	secure	NA	NA
Central Coast Wetlands Group: Water Quality Enhancement of the Tembladero Slough Phase II		\$812,700	Prop 84 Grant: 100%	Some long-term maintenance will be provided as match and integrated with County maintenance	City and County agencies, operational budget; CCWG program funds	Secure – depends on project type, landowner and county maintenance agreements

Project Proponent & Project Title	Project Phases (if applicable)	Approximate Total Cost	Funding Source & % of Total Cost	Funding: Certainty/ Longevity	O&M Finance Source	O&M Finance Certainty
				agreements		
City of Salinas: Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements	Segments 1 and 2	\$8,250,000	Non-State match funding: 58% Prop 84 Grant: 42%	City has received an EDA grant for partial funding (\$3.48 M) and will use rates for other matching funds	City operational budget	Secured through existing rates and planned rate increases
	Industrial Wastewater Treatment Facility	\$9,660,000	Non-State match funding: 25% Prop 84 Grant: 75%	City will use rates for matching funds	City operational budget	Secured through existing rates and planned rate increases
City of Salinas and Monterey Regional Water Pollution Control Agency: Dry Weather Runoff Diversion Program		\$590,000	Non-state-match funding: 31% Prop 84 Grant: 69%	City and MRWPCA funding planned from existing resources	City operational budget	Secured through existing rates and planned rate increases
City of Soledad: Soledad Recycled Water Project		\$1,155,000	Non-State match funding: 25% Prop 84 Grant: 75%	Match: City Water Capital Fund. Grant awarded – secure	City operating Capital (currently unfunded)	Proposed rate increase could cover O & M costs
Delicato Family Vineyards: San Bernabe Lining Project		\$2,281,000	Prop 84 Grant: 75% San Bernabe Vineyard: 25%	Secure – part of SBV capital improvement budget	SBV operational budget	Secure – SBV operational budget
Ecology Action: Monterey Bay Green Gardener Training & Certification Program	10-week Bilingual Green Gardener Certification-Level Training	\$17,685	California Water Service Company: 31%	Pending approval	California Water Service Agency Conservation Budget	Pending approval
			Mission Trails ROP: 35%	Secure – funded by student attendance fees, ADA funds	Mission Trails ROP operating budget	Secure
			Prop 84 Grant: 34%	Application will be submitted	NA	NA
	Green Gardener Advanced Series (open to the public)	\$19,475	Mission Trails ROP: 5%	Secure, funded by student attendance fees, ADA funds	Mission Trails ROP operating budget	Secure
			Prop 84 Grant: 95%	Application will be submitted	NA	NA
Elkhorn Slough Foundation: Integrated Ecosystem Restoration in Elkhorn Slough		\$3,071,383	Prop 84 Grant: 31%	Funded, secure	Department of Fish and Game	Secure - land lease
			Federal Grant: 40%	Funded, secure	NA	NA
			State Grant, Coastal	Application will be	NA	NA

Project Proponent & Project Title	Project Phases (if applicable)	Approximate Total Cost	Funding Source & % of Total Cost	Funding: Certainty/ Longevity	O&M Finance Source	O&M Finance Certainty
			Conservancy: 29%	submitted FY 11/12		
Elkhorn Slough Foundation: Ridgeline to Tideline – Water Resource Conservation in Elkhorn Slough	Phase I – North Marsh Restoration	\$2,028,216	Prop 84 Grant: 75%	Modified FY10/11 application and resubmitted in FY11/12	NA	NA
			ARRA: 24%	Funded 2009-2012	Annual Allocation from Department of Fish and Game and NOAA/NERR	Secure
			NO24: 0.7%	Funded 2011-2012	NA	NA
			MBA: less than 0.5%	Funded 2011-2012	NA	NA
			NFWF: 0.7%	Funded in 2011-2012	NA	NA
	Phase II – Land Acquisition	\$5,414,816	Prop 84 Grant: 75%	Modified FY10/11 application and resubmitted in FY11/12	NA	NA
			Private: 1.1%	Funded in 2009 and 2010	NA	NA
			Federal: 23.7%	Funded in 2009	NA	NA
	Phase III – Uplands Restoration	\$786,100	Prop 84 Grant: 75%	Modified FY10/11 application and resubmitted in FY11/12	NA	NA
			Private: 23.1%	Funded through individual and corporate gifts and private foundation grants	ESF Stewardship Budget (including major donors and endowments)	Secure
			NFWF: 1.9%	Funded in 2011-2012	NA	NA

Project Proponent & Project Title	Project Phases (if applicable)	Approximate Total Cost	Funding Source & % of Total Cost	Funding: Certainty/ Longevity	O&M Finance Source	O&M Finance Certainty
Marina Coast Water District: Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP)		\$40,800,000	Title XVI funds (Bureau of Reclamation); Clean Water State Revolving Fund loan (State Water Resources Control Board); FORA CFD reimbursements; MCWD reserves; Prop 84 IRWM grant	Applications submitted, in review	MCWD Operational Budget	MCWD & FORA commitments secure; Title XVI funds and SRF loan in process
Monterey Bay Sanctuary Foundation: Making Monitoring Count		\$404,000	Prop 84 Grant: 75% NOAA: 0.6% EPA: 24.4%	Proposal submitted	NA	NA
Monterey Bay Sanctuary Foundation: Watershed Approach to Water Solutions		\$512,134	Prop 84 Grant: 73%	Awarded August 2011, secure	Landowner	Secure – only requires manual labor of community
			Federal, In-kind: 9% (\$46,750)	Secure, NOAA and USDA already committed	NA	NA
			Local, In-kind: 10.5% (\$55,000)	Secure, Monterey County Agriculture Trust	NA	NA
			Federal grant, In-kind: 7.4% (\$38,000)	Secure, AWEP, USDA funds already committed	NA	NA
Monterey County Public Works: Las Lomas Drive Storm Drain Improvements Project		\$1,054,421	Local Grant: 25%	Secure, local grant through TAMC and Road Fund	Local agency budget	Secure, O&M budget
			State Grant, DAC assistance, DWR: 75%	Tentative award contingent on project approval by IRWM and State funding	NA	NA
Monterey County Redevelopment & Housing Office: Well Replacement and Pipeline – San Lucas Water		\$543,149	Prop 84 Grant: 100%	Application submitted	San Lucas Water District operational budget	Secure, current rates cover O&M costs

Project Proponent & Project Title	Project Phases (if applicable)	Approximate Total Cost	Funding Source & % of Total Cost	Funding: Certainty/ Longevity	O&M Finance Source	O&M Finance Certainty
District						
Monterey County Water Resources Agency: Aquatic Invasive Species Inspection Project		\$631,000	Prop 84 Grant: 75% Monterey County: 25%	Funded for FY 2011/2012	NA	NA
Monterey County Water Resources Agency: Coastal Dedicated Monitoring Well Drilling		\$921,600	Prop 84 Grant: 75% MCWRA: 25%	Application submitted	MCWRA Monitoring Budget	Secure, costs will be incorporated in the 2011-2012 Budget
Monterey County Water Resources Agency: Granite Ridge Regional Water Supply Project		\$26,500,000	Prop 84 Grant: 75% MCWRA: 25%	Application submitted	Monterey County	Secure 2012-2015 County Budget
Monterey County Water Resources Agency: Salinas River Fisheries Enhancement Project		\$1,157,000	Prop 84 Grant: 75% MCWRA: 25%	MCWRA 2010/11 Budget	NA	NA
Monterey County Water Resources Agency: Salinas River Flood Risk Reduction Project		\$560,000	MCWRA: 25%	Secure, part of MCWRA approved budget for FY 11-12	NA	NA
			Prop 84 Grant: 75%	Application will be submitted for FY 11-12	NA	NA
Monterey County Water Resources Agency: Test Well for Regional Desalination Project – Slant Well		\$4,000,000	Prop 84 Grant: 75% MCWRA: 25%	Application submitted	Monterey County Water Resources Agency	Secure 2012-2013 MCWRA Water Resources Planning & Management Operations Budget
Nacimiento Regional Water Management Advisory Committee: Interlake Tunnel between Lake Nacimiento and Lake San Antonio		\$11,000,000	Lake Nacimiento Community Service District: 40%	In development stage	NA	Part of project
			Prop 84 Grant: 20%	Application will be submitted FY 11/12	NA	NA
			MCWRA: 20%	Proposal phase	NA	NA
			San Luis Obispo County: 10%	Pending application	NA	NA
Pajaro/Sunny Mesa		\$3,000,000	Prop 84 Grant: 100%	Application will be	Water billing	Secure. Rate increase

Project Proponent & Project Title	Project Phases (if applicable)	Approximate Total Cost	Funding Source & % of Total Cost	Funding: Certainty/ Longevity	O&M Finance Source	O&M Finance Certainty
Community Services District: Springfield Water Project			(DAC Project)	submitted FY 12/13		covers O&M costs
RCD of Monterey County: Livestock and Land		\$1,192,852	Prop 84 Grant: 75% Landowner match: 10%	Secured with landowner agreements. Application submitted.	Landowner agreements secure O&M for life of BMP	Secure
			- NRCS technical assistance: 4% - USFWS technical assistance: 2% - USFWS Partners for Fish and Wildlife grants: 6% - NRCS/RCD equipment and vehicles: 3%	- Committed project partner - Committed project partner - Grant currently secured - Secured, available now from agencies	NA	NA
RCD of Monterey County: Monterey County Farm Water Quality Assistance Program		\$759,000	UCCE: 7% for staff time & equipment	Secure, part of shared efforts	NA	NA
			RCDMC: 1% for equipment			
			Prop 84 Grant: 75%	Application will be submitted FY 11/12	NA	NA
			USDA NRCS: 7% staff and vehicles	Secure	NA	NA
			USDA NRCS: 10% EQIP program grants and cooperative agreement w RCDMC	Pending annual renewal of agreements	NA	NA
RCD of Monterey County: Salinas River Watershed Invasive Non-native Plant Control and Restoration		\$1,634,500	RCDMC personnel & equipment: 5%	Secure	NA	NA
			Prop 84 Grant: 75%	Application will be submitted FY 11/12	NA	NA
			NRCS personnel & vehicles: 5%	Secure part of RCD-NRCS relationship	NA	NA
			Monterey County Ag	Mostly secure. Some	NA	NA

Project Proponent & Project Title	Project Phases (if applicable)	Approximate Total Cost	Funding Source & % of Total Cost	Funding: Certainty/ Longevity	O&M Finance Source	O&M Finance Certainty
			Dept.: 5%	pending approval of future county budgets		
			RON student volunteers: 0.5%	Secure	NA	NA
			Participating growers: 10%	Pending landowner agreements	NA	NA
Rural Community Assistance Corporation: Greater Monterey Bay DAC Wastewater Management Pilot Program		\$689,000	Prop 84 Grant: 98% In-Kind Match: 2%	2012 and 2013	Community. A fee-based O&M program will be established with rate payers from each household.	Moderate. Each resident will be required to cover their repairs/ replacement.
San Jerardo Cooperative: San Jerardo Wastewater Project		\$3,023,945	State Grant, Cleanup and Abatement Account, State Water Board: 65%	Awarded. Grant secure through 2014.	Cooperative, Operating budget	Secure
			State Grant, Prop 84, DAC assistance, DWR: 35%	Awarded	Cooperative, Operating budget	Secure
Save Our Shores: Watershed Protection Program – Annual Coastal Cleanup Day in Monterey County		\$24,000	Prop 84 Grant: 50%	Application will be submitted	NA	NA
			California Coastal Commission: 4%	Secure, will receive Fall 2012	NA	NA
			REI: 21%	Secure, will receive June 2012	50% Operations, 50% Programs	Secure- 2012 O&M budget
			Community Support: 25%	Secure, will receive May 2012	All Operations	Secure- 2012 O&M budget
UC Davis Marine Pollution Studies Lab: Evaluation of Potential for Stormwater Toxicity Reduction by LID Treatment Systems		\$246,100	Prop 84 Grant: 78% In-kind: 22%	Awarded. Grant secure.	NA	NA

Section M: Technical Analysis

The purpose of the Technical Analysis standard as stated in the Proposition 84/1E Integrated Regional Water Management (IRWM) Program Guidelines is to explain the technical information, methods, and analyses used by the Regional Water Management Group (RWMG) to understand the water management needs over the planning horizon.

M.1 TECHNICAL INFORMATION USED IN THE IRWM PLAN

The RWMG relies almost entirely on existing plans, reports, and studies as a basis for understanding current water resource conditions in the Greater Monterey County IRWM planning region and for developing the IRWM Plan. The background information and technical data—including land use information, population studies and demographic information, economic data, water supply and water use data, environmental resources, and projected water demand—have been derived from the following types of plans and reports (among others):

- Urban Water Management Plans
- Water Master Plans
- Stormwater Management Plans
- Wastewater Management Plans
- Local Agency Formation Commission (LAFCO) Municipal Services Review Reports
- Department of Water Resources (DWR) Land Use Surveys
- Watershed Assessment and Management Plans
- Monterey County Water Resources Agency (MCWRA) Groundwater Extraction Summary Reports
- MCWRA Monterey County Floodplain Management Plan
- Monterey County General Plan and Specific Area Plans
- Regional Water Quality Control Board (RWQCB) plans, including 303(d) List
- Monterey Bay National Marine Sanctuary (MBNMS) Management Plan
- MBNMS Condition Report
- US Census decennial population data
- US Census/American Community Survey (ACS) five-year economic survey data
- Association of Monterey Bay Area Governments (AMBAG) economic reports
- Monterey County Agricultural Commissioner Crop Reports
- Research and technical studies conducted by local academic institutions and environmental consultants

Regional objectives have been informed by these and other planning documents, including MBNMS Water Quality Protection Program Action Plans, RWQCB Central Coast Basin Plan objectives, and the RWQCB Watershed Management Initiative.

The sources listed above have been used to describe historic and existing conditions in the Greater Monterey County IRWM region as well as to estimate future conditions—most importantly, future water demand—for the purposes of IRWM planning. The table below lists the sources of technical information used specifically to develop projected needs. Following the table is a brief description of these technical sources, and an explanation for why this technical information is representative and adequate for developing the IRWM Plan. All documents cited in this IRWM Plan are available to the public upon request.

Table M-1: Technical Information Used in the IRWM Plan

Type of Study or Data	Source (Author/Title)	Technical Analysis or Method Used	Information Derived from Technical Analysis	Use in IRWM Plan
Economic data	US Census Bureau, American Community Survey, 2006-2010	Five-year economic surveys	Median household income data (2010) for communities and census tracts in region.	Used to identify disadvantaged communities (DACs).
Historic population trends	US Census Bureau, population data from 1960 to 2010 (US Census website)	Decennial population surveys	Population for urban areas in region from 1960 to 2010.	Used as basis for estimating population growth, and for calculating future urban water demand in the Salinas Valley Groundwater Basin (using Method 1).
Population growth	AMBAG: 2008 Regional Forecast	Statistical analysis	Estimated population growth for urban areas in region, from 2020 to 2035. Population projections for Chualar 2030-2035 and for San Ardo, San Lucas, and "Other Areas" 2020-2035 were based on AMBAG projected growth rate for Unincorporated Monterey County.	Used as basis for determining future urban water demand in the Salinas Valley Groundwater Basin (using Method 1).
Population growth	Marina Coast Water District (MCWD): 2010 Urban Water Management Plan	Statistical analysis	Future population estimates for the MCWD service area.	Used as basis for determining future urban water demand in the Salinas Valley Groundwater Basin (using Method 1).
Ground and surface water modeling	MCWRA: Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) Update, May 1997, Montgomery Watson	SVIGSM	Historic water use from the Salinas Valley Groundwater Basin: 1970-1994.	Used to establish historic water use trends in the Salinas Valley Groundwater Basin.
Groundwater use	MCWRA: Ground Water Extraction Summary Reports (GWESR) 1995-2010	Review of existing records: data reported from well operators for agricultural and urban water uses	Historic water use from the Salinas Valley Groundwater Basin: 1995-2010.	Used to establish historic water use trends, to document current water use, and as a basis for estimating future water demand in the Salinas Valley Groundwater Basin (using Method 1).

Type of Study or Data	Source (Author/Title)	Technical Analysis or Method Used	Information Derived from Technical Analysis	Use in IRWM Plan
Urban water use	Urban Water Management Plans for: City of Greenfield (2008), King City (2010), Marina Coast (2010), California Water Service Company-Salinas District (2010), City of Soledad (2010)	Statistical analysis	Projected water use for urban areas in region, according to water purveyors as reflected in their Urban Water Management Plans.	Used as basis for estimating future urban water demand from the Salinas Valley Groundwater Basin (using Method 2).
Urban water use	RMC Water and Environment Survey, October 2005; and personal communications with water purveyors	Survey of water purveyors (statistical analysis and deductive reasoning)	Projected water use for urban areas in region (specifically, City of Gonzales, Castroville Community Services District, and Alcoserved portion of the City of Salinas), according to direct communication with individual water purveyors.	Used as basis for estimating future urban water demand from the Salinas Valley Groundwater Basin (using Method 2).
Land use trends: Monterey County	DWR Land Use Surveys: 1968-2005	Aerial surveys and field verification	Land use trends in the region, specifically agricultural vs. urban vs. native land acreages, including irrigated and non-irrigated lands.	Used to establish land use trends, and as a basis for estimating future water demand in the region.
Land use trends: Crops	Monterey County Agricultural Commissioner's Office: Annual Crop Reports 1930 - 2010	Review of existing records	Current crop acreages and historic crop trends in Monterey County.	Used to establish crop trends, and as a basis for estimating future agricultural water demand in the Salinas Valley Groundwater Basin.
Land use trends: Big Sur	Monterey County Planning Department: Big Sur Coast Local Coastal Plan (1986); and direct communication with Big Sur water suppliers	Statistical analysis and deductive reasoning	Land use trends together with population trends were used to conclude that water demand will most likely remain constant in the Big Sur region over the planning horizon.	Used to estimate future water demand in the Big Sur coastal region.
Groundwater and surface water modeling	MCWRA: Salinas Valley Integrated Ground and Surface Water Model Update, May 1997, Montgomery Watson	SVIGSM	Land use, water use, population trends, and other factors (including crop patterns, conversion of ag land to urban land, water efficiency increases, etc.) were used to conclude that agricultural water demand will most likely decline slightly and that urban water demand will increase considerably in the Salinas Valley over the planning horizon.	Used to estimate future agricultural and urban water demand in the year 2030 from the Salinas Valley Groundwater Basin (Method 3).

Type of Study or Data	Source (Author/Title)	Technical Analysis or Method Used	Information Derived from Technical Analysis	Use in IRWM Plan
Seawater intrusion	MCWRA: Memorandum from MCWRA to EPA Region IX, dated July 30, 2010, Subject: Technical Memorandum – SEAWATER INTRUSION, 2010	Groundwater sampling from coastal wells	Mineral content of groundwater at various well locations and depths, resulting in seawater intrusion maps (using isochloride contours).	Used to document the extent of seawater intrusion in the Salinas Valley Groundwater Basin, as well as the projected intrusion rate, to understand future groundwater supply conditions.
Local projections of changes in climate variables	Cal-adapt Web Tool - http://cal-adapt.org/	Cal-Adapt allows the user to identify potential climate change risks in specific geographic areas throughout the state	Local projections of changes in rainfall, average temperature, evapotranspiration, surface flows.	Used to define how various climate variables are projected to change within the Greater Monterey County IRWM region and their effect on water resources.
Climate vulnerabilities	Climate Change Handbook, 2011, www.water.ca.gov/climatechange/cchandbook.cfm	Assessing regional vulnerability to climate change	Prioritization of potential environmental vulnerabilities.	Used to define most critical environmental variables from which to focus Climate Risk Assessment and future studies.
Climate risk assessment	International Council for Local Environmental Initiatives (ICLEI) Climate Adaptation Planning Workbook	ICLEI Risk Assessment protocol	Identify high risk infrastructure and water resources	Used to help prioritize future adaptation strategies for high-risk resources.
Developing climate adaptation strategies	California Natural Resources Agency's 2009 <i>California Climate Adaptation Strategy</i>	Evaluating appropriate adaptation strategies for the region, based on the risk assessment	Recommended adaptation actions and response scenarios	Used to help prioritize future adaptation strategies for high-risk resources.

M.2 DESCRIPTION OF TECHNICAL INFORMATION SOURCES

The following provides a brief description of the technical sources used to develop projected water management needs in the Greater Monterey County IRWM planning region, and an explanation for why this technical information is representative and adequate for developing the IRWM Plan.

M.2.1 Population Data

U.S. Census Bureau Data: The U.S. Census decennial population data have been derived from the U.S. Census Bureau website.¹ Economic data—in particular, median household income (MHI) and poverty status—have been derived from the American Community Survey (ACS) five-year survey, for 2006-2010. ACS is an ongoing statistical survey by the U.S. Census Bureau, sent to approximately 250,000 addresses monthly (or 3 million per year). It regularly gathers information previously contained only in the long form of the decennial census. MHI was measured in 2010 inflation-adjusted dollars. DACs are defined as communities that had a MHI in 2010 of less than 80 percent the statewide MHI. “Severely DACs” are defined as communities that had a MHI in 2010 of less than 60 percent the statewide MHI. DACs were identified both on the community level and tract level. The U.S. Census data are a trusted and broadly accepted source of population, demographic, and economic data, and the data used in the IRWM Plan are the latest U.S. Census data available. Therefore these data are considered representative and adequate for developing the IRWM Plan.

Association of Monterey Bay Area Governments 2008 Regional Forecast: As required by state law, the regional planning agency AMBAG produces a regional forecast approximately every five years of population, housing, and employment for a region spanning the counties of Monterey, San Benito and Santa Cruz. Each forecast is produced with the best available data and is extensively reviewed by AMBAG’s member agencies. The 2008 Regional Forecast provides detailed population, housing and employment projections for every jurisdiction in the Monterey Bay region through 2035. The forecast is developed using professionally accepted forecasting methodologies, and represents the most likely trend in population, housing units, and employment. As such, the forecast is broadly accepted as a basis for supporting official regional planning efforts.

M.2.2 Water Supply, Water Use, and Projected Water Demand

Seawater Intrusion Technical Memorandum: The “Memorandum from MCWRA to EPA Region IX, dated July 30, 2010, Subject: Technical Memorandum – SEAWATER INTRUSION” has been used along with the most recent seawater intrusion maps to provide an understanding of the extent of seawater intrusion in the Salinas Valley Groundwater Basin. The phenomenon of seawater intrusion was first noticed in the early 1930s and was documented in 1946 in Bulletin 52, an investigation of the Salinas Basin (DWR 1946). The MCWRA has implemented several programs aimed at slowing the rate of seawater intrusion, and conducts annual sampling of groundwater wells in the coastal region to monitor the advancement of seawater intrusion. The Coastal Sampling Program includes agricultural wells in the Pressure 180-Foot, 400-Foot, and Deep Aquifers, as well as the East Side Shallow and Deep Aquifers. The MCWRA samples these wells annually during the peak agricultural production season (June through September) when pumping stresses are at their highest. The memorandum and isochloride contour maps used in this IRWM Plan represent the most current information available on seawater intrusion.

MCWRA Ground Water Extraction Summary Reports: The purpose of the GWESR is to summarize data submitted to the MCWRA by well operators on an annual basis from Ground Water Extraction Reports (agricultural and urban), Water Conservation Plans (agricultural and urban), and Water and Land

¹ U.S. Census Bureau website: <http://factfinder2.census.gov/>.

Use Forms (agricultural). The report is intended to present a synopsis of current water extraction within the Salinas Valley, including agricultural and urban water conservation improvements that are being implemented to reduce the total amount of water pumped. While the MCWRA makes every effort to ensure the accuracy of the data presented in the report, it should be noted that the data is submitted by individual reporting parties and is not verified by Agency staff. The MCWRA maintains strict quality assurance in the compilation, standardization, and entry of the data received. In the 2010 reporting year, the MCWRA received GWESR from 97 percent of the 1846 wells in the Salinas Valley for the 2010 reporting year. Agricultural and Urban Water Conservation Plan submittals for 2011 were 94 percent and 95 percent, respectively. In this IRWM Plan, GWESR are used to establish historic water use trends, document current water use, and as a basis for projecting future water demand in the Salinas Valley Groundwater Basin. The GWESR represents the only reliable source of groundwater extraction information in the region. Therefore these data are considered representative and adequate for developing the IRWM Plan.

Urban Water Management Plans: All urban water suppliers as defined in Section 10617 (including wholesalers), either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) annually are required to prepare an Urban Water Management Plan (UWMP). The UWMP serves as a long-range planning document for water supply, source data for development of a regional water plan, and a source document for cities and counties as they prepare their General Plans. UWMPs include a description of the service area (including population served), historical and current water demand and water demand projections, an overview of water system supplies (including purchased water, surface water, groundwater, recycled water, desalinated water, and water transfers), water supply reliability and water shortage contingency plans, and conservation master plans, among other topics. UWMPs for the following water districts have been used in the development of this IRWM Plan: City of Greenfield (2008), King City (2010), Marina Coast (2010), California Water Service Company-Salinas District (2010), City of Soledad (2010). Information from these UWMPs has been used to describe water systems and to establish future water demand for urban areas in the Greater Monterey County IRWM region.

Salinas Valley Integrated Ground and Surface Water Model Update (1997): The MCWRA initiated development of the Salinas River Basin Management Plan in 1996 with the specific goals to: stop seawater intrusion; create a long-term balance between recharge and withdrawal in the Salinas Valley Groundwater Basin; and provide a sufficient water supply in the Salinas Valley to the year 2030. The SVIGSM is a hydrologic/operational model that simulates the groundwater and surface water flows and their interaction in the Salinas Valley. The SVIGSM was developed to be the primary analytical tool to analyze the hydrologic and operational impacts of various alternatives presented in the Salinas River Basin Management Plan. The SVIGSM was used to provide a better understanding of the nature of the physical and hydrological processes that govern the groundwater flow system in the Salinas Valley Groundwater Basin, and to analyze the hydrologic impacts of the Salinas Valley Basin Management Plan. Although the SVIGSM was last updated in 1997, it is still considered by MCWRA staff to be the best and most valuable water resource planning tool for managing the Salinas Valley Groundwater Basin, and is therefore considered adequate for use in this IRWM Plan.

M.2.3 Land Use Trends

Department of Water Resources Land Use Surveys: DWR land use surveys are typically performed every seven years throughout the state of California and consist of aerial surveys followed by field verification. The main emphasis of DWR's land use surveys is the mapping of agricultural land. Over 70 different crops or crop categories are included in the surveys. Urban and native vegetation (undeveloped) areas are also mapped, though not to the level of detail of agricultural land. The land use surveys are performed using aerial photos and, more recently, satellite imagery to define field boundaries. For this

IRWM Plan, land use surveys from 1968-2005 were used to provide an understanding of agricultural vs. urban lands in the region and as a basis for projecting future land use trends (and therefore, projected water use). The 2005 land use surveys are the latest data available for this region.

Monterey County Agricultural Commissioner Crop Reports: Annual Crop Reports published by the Monterey County Agricultural Commissioner’s Office from 1930-2010 have been used in this IRWM Plan to document crop acreage trends and to establish the importance of agriculture for Monterey County’s economy. The Crop Reports include acreages, production, and revenues for: vegetable crops, fruit and nut crops, seed production, apiary production, livestock and poultry, cut flowers and cut foliage, nursery products, and field crops. The Crop Reports also include Monterey County export information and a summary of gross production values. The Crop Reports are considered the most reliable source of summary information for crop acreages and crop values in the county, and are therefore considered representative and adequate for use in this IRWM Plan.

M.2.4 Climate Change

Many climate models have been generated to predict changes in ocean and land temperature, rain frequency and intensity, coastal wave exposure, and sea level rise. Modeling using regional climate models (RCMs) has matured over the past decade to enable meaningful climate vulnerability assessment applications. California has created several web-based interfaces to help local and regional planners “downscale” climate models for local planning purposes. The Cal-Adapt website provides a geographically based climate model interpretation tool that generates predictive changes to various climate variables using different Intergovernmental Panel on Climate Change (IPCC) greenhouse gas (GHG) emissions projections. Specifically, emissions scenarios A2 and B1 coincide, respectively, with emission rates consistent with current rates of increase and with emission rates associated with global success at curbing emissions as prescribed within international climate treaties.²

The Pacific Institute study (*California Vulnerabilities to Sea Level Rise*, 2009) provides an analysis of coastal resources, human populations, infrastructure, and property that is at risk from projected sea level rise if no actions are taken. The study provides data regarding the cumulative impacts of increased watershed flooding, sea level rise, and storm surge, and shows how these cumulative effects can impact coastal areas for each United States Geological Survey (USGS) Quadrangle map of the California Coast.

The RWMG used the California Natural Resources Agency’s 2009 *California Climate Adaptation Strategy* to develop an adaptation strategy for the Greater Monterey County IRWM region. Adaptation actions and response scenarios from were selected from this document as applicable to the Greater Monterey County region. High priority responses along with climate mitigation actions are listed in Section R, Table R-10, “Adaptation and Response Strategies Based on Risk Assessment.”

M.3 DATA GAPS

Each technical information source that has been used in the development of this IRWM Plan represents the latest or most currently available information available for that source. Each source is broadly considered to be a reliable and acceptable source of information by water resource managers and related

² These emissions scenarios are described in the 2009 California Climate Adaptation Strategy (California Natural Resources Agency) as follows: “One scenario depicts a higher-emissions scenario (A2), the other a lower-emissions scenario (B1). The A2 scenario represents a more competitive world that lacks cooperation in development and portrays a future in which economic growth is uneven, leading to a growing income gap between developed and developing parts of the world. The B1 scenario denotes a future that reflects a high level of environmental and social consciousness combined with global cooperation for sustainable development.”

professionals in the field. Thus, the information and data that have been used are considered to be representative and adequate for the development of this IRWM Plan.

Nonetheless, some data gaps do exist:

- *Environmental water needs:* Environmental water needs must be taken into consideration alongside agricultural and urban water needs when considering future water supplies for the region. Unfortunately, as noted in the Region Description, Section B.5.4.c, environmental water needs are not well quantified for the Greater Monterey County IRWM region. The lack of numerical data suggests that environmental water needs may be getting overlooked in water resource planning. Addressing environmental water needs will become more and more critical as ecosystems become increasingly vulnerable to the impacts of climate change. One of the objectives of this IRWM Plan is to “support applied research and monitoring to better understand environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources.” It is the intention of the RWMG to provide quantified data for environmental water needs in future updates of this IRWM Plan.
- *SVIGSM:* The SVIGSM is a sophisticated modeling tool developed for analysis of hydrologic conditions in the Salinas Valley. Although the SVIGSM was last updated in 1997, it is a powerful model and is still considered the best and most valuable tool for Salinas Valley Groundwater Basin management. Nonetheless, if recalibrated to current conditions, the SVIGSM would be that much more valuable a tool for water resource management planning in the region. The RWMG would like to see this model updated, should funding become available.
- *Future urban water demand:* As described in Section B.5.4.a of the Region Description chapter, future urban water demand in the Salinas Valley has been estimated for the purposes of this IRWM Plan according to three different methods: 1) using GWESRs and AMBAG population data, 2) using projections reported by water purveyors, primarily in their UWMPs, and 3) using SVIGSM. While the timeframe for this IRWM Plan is a minimum 20-year planning horizon (to the year 2035), two of the three methods (projections by water purveyors and SVIGSM) only allow for projections to the year 2030. For future updates of this IRWM Plan, the RWMG will work more closely with water purveyors to obtain water use projections that extend over the minimum 20-year planning horizon, and hopes to see the SVIGSM updated.
- *Climate change impact assessment, adaptation and mitigation:* There are significant data resources that are needed before more accurate vulnerability evaluations can be made. Key data needs that have been identified to date include: 1) a comprehensive coastal elevation map using Light Detection And Ranging (LIDAR) data collected in 2011; 2) a complete inventory of water management infrastructure within the areas identified as vulnerable to the combined impacts of sea level rise and increased rain; 3) an evaluation of future capacity of culverts and tide gates that protect inland wetlands, agriculture, and urban land uses under various sea level rise scenarios; and 4) a cost benefit/effectiveness analysis of coastal protection, adaptation, and retreat options for various categories of coastal infrastructure and land uses.

Note that all of the data and information contained in this IRWM Plan will be reviewed and updated approximately every five years, depending on available funds, as part of the formal IRWM Plan update. Some data will be reviewed on a more frequent basis; for example, MHI data will be reviewed prior to every Proposition 84 Implementation Grant solicitation, using the ACS five-year survey estimates, in order to determine the status of DACs in the region.

Section N: Relation to Local Water Planning

The intent of the Relation to Local Water Planning standard in the Integrated Regional Water Management (IRWM) Program Guidelines is to ensure that the IRWM Plan is congruent with local plans and that the IRWM Plan includes current, relevant elements of local water planning and water management issues common to multiple local entities in the region. IRWM planning does not replace or supersede local planning; rather, local planning elements are used as the foundation for the regional planning effort. This section describes how the Greater Monterey County Regional Water Management Group (RWMG) has coordinated its water management planning activities to address or incorporate all or part of the following actions of its members and other local resource planning efforts:

- Sustainable groundwater management
- Water supply assessments
- Urban water management
- Agricultural water management
- Flood management
- Watershed management
- Storm water management
- Wastewater management
- Low impact development (LID)
- Salt and salinity management
- City and County general planning
- Emergency response, hazard mitigation, and drought contingency planning
- Monterey Bay National Marine Sanctuary Management Plan

N.1 HOW THE IRWM PLAN IS CONSISTENT WITH LOCAL WATER RESOURCE MANAGEMENT PLANS

The goals and objectives for this IRWM Plan have been developed in response to the perceived water resource issues in the Greater Monterey County region. The water resource goals for this Plan include the following:

- *Water Supply:* Improve water supply reliability and protect groundwater and surface water supplies.
- *Water Quality:* Protect and improve surface, groundwater, estuarine, and coastal water quality, and ensure the provision of high-quality, potable, affordable drinking water for all communities in the region.
- *Flood Protection and Floodplain Management:* Develop, fund, and implement integrated watershed approaches to flood management through collaborative and community supported processes.
- *Environment:* Protect, enhance, and restore the region's ecological resources while respecting the rights of private property owners.

In order to achieve those goals, the RWMG must first have a clear understanding of the region's water system, including current conditions and future water needs. The water system includes not only water supply sources (groundwater, surface water, recycled water, desalinated water, etc.) but also ecological

systems (watersheds, floodplains, wetlands, and coastal waters), as these systems are integrally connected. The information used to describe the region's water system for the purposes of this IRWM Plan has been derived almost entirely from existing local and regional water resource management plans. This IRWM Plan has incorporated the information and data from those existing plans and is therefore consistent with those plans. The following sections describe the local plans that have been used to inform the regional IRWM planning effort.

N.1.1 Sustainable Groundwater Management

Monterey County Groundwater Management Plan: The Monterey County Groundwater Management Plan (GWMP) was prepared by the Monterey County Water Resources Agency (MCWRA) in 2006 in accordance with California Water Code (CWC) Part 2.7, §10753, Groundwater Management Act. The document provides the framework for the management of groundwater resources in the Salinas Valley Groundwater Basin (exclusive of the Seaside and Paso Robles subareas) and acts as a guidance document for future groundwater projects. While the 2006 GWMP focuses on the Salinas Valley Groundwater Basin, MCWRA is responsible for the management of the water resources for all of Monterey County, and future GWMP editions will incorporate the additional groundwater basins in the County. The overall basin management objectives of the GWMP are:

- Development of integrated water supplies to meet existing and project water requirements
- Determination of sustainable yield and avoidance of overdraft
- Preservation of groundwater quality for beneficial use

To accomplish these objectives, the GWMP incorporates a number of components, which are divided into a set of 14 elements. The elements formally recognize the effectiveness of a number of ongoing water resource management activities and further recognize the need for additional activity, such as expanded conjunctive use of supplemental surface water and recycled water, with groundwater. They also reflect the wider focus on groundwater management, such as continuing cooperation with the municipal water purveyors and other groundwater users in the basin to address the impacts of regional resource opportunities and/or challenges. The plan elements are as follows:

- Plan Element 1: Monitoring of Groundwater Levels, Quality, Production, and Subsidence
- Plan Element 2: Monitoring of Surface Water Storage, Flow, and Quality
- Plan Element 3: Determination of Basin Yield and Avoidance of Overdraft
- Plan Element 4: Development of Regular and Dry Year Water Supply
- Plan Element 5: Continuation of Conjunctive Use Operations
- Plan Element 6: Short-Term and Long-Term Water Quality Management
- Plan Element 7: Continued Integration of Recycled Water
- Plan Element 8: Identification and Mitigation of Groundwater Contamination
- Plan Element 9: Identification and Management of Recharge Areas and Wellhead Protection Areas
- Plan Element 10: Identification of Well Construction, Abandonment, and Destruction Policies
- Plan Element 11: Continuation of Local, State and Federal Agency Relationships
- Plan Element 12: Continuation of Public Education and Water Conservation Programs
- Plan Element 13: Groundwater Management Reports
- Plan Element 14: Provisions to Update the Groundwater Management Plan

The goals and objectives of this IRWM Plan are fully consistent with the basin management objectives of the GWMP. Numerous projects included in this Plan have been developed specifically to carry out the GWMP objectives.

Groundwater Sustainability Plans: The Sustainable Groundwater Management Act (SGMA), enacted in 2014, is perhaps the most significant legislative water initiative in California in half a century. The legislation provides a framework for long-term sustainable groundwater management across California, with a goal of achieving sustainable management by the year 2042. Under the roadmap laid out by the legislation, local and regional authorities in medium and high priority groundwater basins are required to form Groundwater Sustainability Agencies (GSAs) and to prepare and implement local Groundwater Sustainability Plans (GSPs) for their basins. Local stakeholders in critically overdrafted basins have until January 2020 (or until January 2022 in all other medium and high priority basins) to develop, prepare, and begin implementation of GSPs.

Several GSAs have been formed in the Greater Monterey County IRWM region. These include: Salinas Valley Basin GSA, Marina Coast Water District GSA, City of Marina GSA, and Arroyo Seco GSA. Each of these GSAs will be developing a GSP for the groundwater basins or subbasins within their jurisdiction.

The Salinas Valley Basin GSA was formed through a joint powers authority in 2017 for the Salinas Valley Groundwater Basin (including: 180/400 Foot Aquifer, Forebay Aquifer, Monterey Aquifer, East Side Aquifer, Upper Valley Aquifer, Paso Robles Area, and Langley Area). The GSA is governed by an eleven-member board, consisting of: four Agriculture seats, one City of Salinas seat, one South County Cities seat, one CPUC-regulated Water Company seat, one Environment seat, one “Disadvantaged Community or Public Water System, including Mutual Water Companies serving residential customers” seat, one Public Member seat, and one “Other GSA Eligible Entity” seat (currently held by a member of the County Board of Supervisors). A GSP is currently under development by the Salinas Valley Basin GSA, with a plan to achieve basin sustainability by 2040. The GSP, once completed, will supersede the Monterey County Groundwater Management Plan. As of October 2017, the Greater Monterey County RWMG and Salinas Valley Basin GSA have been exploring opportunities for information sharing and the most appropriate forum for regular, ongoing dialogue between the two water resource planning efforts.

The Marina Coast Water District formed a single-agency GSA in 2017 for groundwater management of the District’s Central Marina and Ord Community service areas within the Monterey Subbasins (excluding the adjudicated Seaside Basin). The District is currently working with the Salinas Valley GSA to create a management area for the portion of the District’s jurisdictional boundaries within the 180/400 Foot Aquifer, and the portion of the Ord Community service area within the 180/400 Foot Aquifer. The District is also working with the Local Area Formation Commission (LAFCO) to extend its jurisdictional boundaries into those areas.

In 2018, the City of Marina formed a single-agency GSA for groundwater management of the portion of the southwest 180/400 Foot Aquifer that lies within the City’s jurisdictional limits. The City of Marina GSA boundary is a portion within the City’s boundary that does not receive water and sewer service from the Marina Coast Water District.

A GSA was formed for groundwater management of the Forebay Aquifer of the Salinas Valley Groundwater Basin. The Arroyo Seco GSA consists of the City of Greenfield and the Clark Colony Water Company, which is a mutual water company. The Arroyo Seco GSA is working with the Salinas Valley GSA to develop a management area that covers the City of Greenfield’s jurisdictional boundary and the service area of the Clark Colony Water Company. The City manages its water supply and has land use responsibilities within the city limits.

Ground Water Extraction Summary Reports: MCWRA began collecting groundwater extraction data from well operators for agricultural and urban water uses in 1992. The groundwater extraction data, provided by over 300 well operators, is compiled in the Ground Water Extraction Management System

portion of MCWRA Information Management System, a relational database maintained by the MCWRA, and published in the annual Ground Water Extraction Summary Reports (GWESR). Since 1991, MCWRA has also required the annual submittal of Agricultural Water Conservation Plans, which outline the best management practices (BMPs) that are adopted each year by growers in the Salinas Valley. In 1996, an ordinance was passed that required the filing of Urban Water Conservation Plans. These plans provide an overview of per capita water use and BMPs being implemented by urban water users as conservation measures. The GWESR summarizes the data submitted to the MCWRA for both Agricultural and Urban Water Conservation Plans, as well as agricultural Water and Land Use Forms. Data from the GWESR has been used in this IRWM Plan to establish historic water use trends, to document current water use, and as a basis for estimating future water demand in the Salinas Valley Groundwater Basin.

N.1.2 Urban Water Management

Urban Water Management Plans: All urban water suppliers as defined in CWC §10617, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) annually are required to prepare an Urban Water Management Plan (UWMP). The UWMP serves as a long-range planning document for water supply, source data for development of a regional water plan, and a source document for cities and counties as they prepare their General Plans. UWMPs include a description of the service area (including population served), historical and current water demand and water demand projections, an overview of water system supplies (including purchased water, surface water, groundwater, recycled water, desalinated water, and water transfers), water supply reliability and water shortage contingency plans, and conservation master plans, among other topics.

UWMPs for the following water districts have been used in the development of this IRWM Plan:

- City of Greenfield (2015, Draft)
- King City (2015)
- Marina Coast Water District (2015)
- California Water Service Company-Salinas District (2015)
- City of Soledad (2015)

Information from these UWMPs has been used to describe water systems and to establish future urban water demand in the Salinas Valley Groundwater Basin. Note that the City of Gonzales and the Castroville Community Services District (CCSD) are both under 3,000 connections and therefore are not required to produce an UWMP; however CCSD has developed a modified UWMP to address California Department of Environmental Health (CDEH) requirements for individual hydrologic studies in unincorporated Monterey County, though this document is not available in electronic format.

LAFCO Municipal Services Reviews: The Local Agency Formation Commission of Monterey County (LAFCO) produces Municipal Service and Sphere and Influence Reviews (MSR) for urban areas and other planning districts within the County. State law requires that the Commission conduct periodic reviews and updates of the Sphere of Influence of each city and district in Monterey County (Government Code §56425(e)). The law also requires the Commission to update information about municipal services before adopting Sphere updates (Government Code §56430). The MSRs contain information pertinent to understanding the water management and water management needs in the Greater Monterey County IRWM planning region, including: growth and population projections; present and planned land uses in the area, including agricultural and open space lands; description of present and planned public facilities, including water supply, wastewater, storm water, and flood management infrastructure; and adequacy of

public services, including infrastructure deficiencies and needs.

The following MSRs have been used in the development of this IRWM Plan:

- City of Gonzales (2010)
- City of Greenfield (2010)
- King City LAFCO (2010)
- City of Marina (2011)
- City of Salinas (2010)
- City of Soledad (2010)
- North County (2006)
- South/Central County (2015)
- Castroville Community Services District (2014)

The specific information derived from these MSRs includes population and population growth data, land use, and water resource infrastructure and needs for the cities and planning districts within the Greater Monterey County IRWM planning region.

N.1.3 Wastewater Management

Wastewater management is important for public health and safety, environmental and drinking water quality, and increasingly, for water supply. The IRWM planning effort encourages the use of recycled water for water supply, lauding the success of such projects as the Castroville Seawater Intrusion Project (which blends recycled water with Salinas River water for irrigation use on 12,000 acres of farmland in the Castroville area, replacing groundwater pumping in the northern coastal portion of the groundwater basin and thereby helping to reduce seawater intrusion). More recently, Monterey One Water initiated Pure Water Monterey, which uses recycled water for groundwater replenishment. These and other projects, along with various wastewater management plans and studies (including, for example, the City of Soledad Long-term Wastewater Management Plan (2006), and the 2017 Moss Landing Sewer System Risk Assessment), have been reviewed and considered in the writing of this IRWM Plan.

N.1.4 Flood Protection and Floodplain Management

Monterey County Floodplain Management Plan: The MCWRA developed the *Monterey County Floodplain Management Plan* in 2002 with the goal of creating a plan to minimize the loss of life and property in areas where repetitive losses have occurred, and to ensure that the natural and beneficial functions of the County's floodplains are protected. Updated in 2008, the Plan describes the County's flood control system (infrastructure), identifies flood zones defined by the Federal Emergency Management Agency (FEMA), including maps depicting Repetitive Loss Properties (RLPs) and 100-year floodplains, provides a general hazard assessment, assesses the flood hazards of specific waterways in the County in terms of repetitive losses, and provides an implementation plan for flood mitigation and for mitigation of RLPs.

Information from the Floodplain Management Plan has been used in this IRWM Plan to provide the RWMG and stakeholders with an understanding of flooding, flood protection, and floodplain management in the Greater Monterey County IRWM region. The Flood Protection and Floodplain Management objectives in this IRWM Plan incorporate and are fully consistent with the objectives of the *Monterey County Floodplain Management Plan*. In addition, several projects in the IRWM Plan will help carry out these objectives through flood risk reduction and restoring ecological functioning to floodplains.

N.1.5 Watershed Management

Information from current and recent watershed assessments and management plans has been used in this IRWM Plan primarily to provide background for the RWMG and stakeholders about local watershed management planning efforts. This information is presented in Section B.6.2.c, Water Quality Goals and Objectives for Watersheds in the Region. The goals and objectives of this IRWM Plan are fully congruent with the various watershed management planning efforts in the Greater Monterey County region. In fact, many of the objectives in this Plan were derived from these and previous watershed assessment and planning efforts.

The following watershed management plans have been considered and incorporated into this IRWM Plan (for details about the watershed management plans, see Section B.6.2.c):

- ***San Antonio and Nacimienta Rivers Watershed Management Plan (2008)***: This watershed management plan was developed by the Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc. for the MCWRA and the State Water Resources Control Board (State Water Board) in October 2008.
- ***Garrapata Creek Watershed Assessment and Restoration Plan (2006)***: This plan was developed by the Garrapata Creek Watershed Council for the Garrapata Creek Watershed Community and the California Department of Fish and Wildlife in July 2006.
- ***Northern Salinas Valley Watershed Restoration Plan (1997)***: This plan was the Final Report of a study entitled, “Nonpoint Pollution in Coastal Harbors and Sloughs of the Monterey Bay Region” prepared for the Association of Monterey Bay Area Governments (AMBAG) by Moss Landing Marine Laboratories and the Watershed Institute of California State University Monterey Bay (CSUMB) in January 1997, and funded under Section 205(j) of the federal Clean Water Act. The plan focuses on the northern Salinas Valley, encompassing all of the water courses that flow from the Gabilan Mountains east of Salinas into Moss Landing Harbor.
- ***Reclamation Ditch Watershed Assessment and Management Strategy (2005)***: This study, completed for MCWRA by the Central Coast Watershed Studies (CCoWS) team of the Watershed Institute at CSUMB, focuses on the same geographic area as the Northern Salinas Valley Watershed Restoration Plan, a 157 square-mile watershed with its headwaters in the Gabilan Range and its terminus at a set of tide gates at the entrance to Moss Landing Harbor (see Casagrande and Watson 2005).
- ***Moro Cojo Slough Management and Enhancement Plan (1996)***: The Moro Cojo Slough Management Plan was developed for the Monterey County Planning and Building Inspection Department and the State Coastal Conservancy by The Habitat Restoration Group in October 1996. The plan describes the environmental resources of the Moro Cojo Slough watershed and recommends actions to enhance, restore, and manage the significant resources in the slough system.
- ***Elkhorn Slough Watershed Conservation Plan (1999)***: This plan was produced for the Elkhorn Slough Foundation and The Nature Conservancy in 1999. The Conservation Plan was developed to identify critical resources within the Elkhorn Slough watershed, to identify and address threats, and to maintain the long-term viability of Elkhorn Slough and its related upland communities as a significant coastal system. In 2002, a second report was produced based on the Elkhorn Slough Watershed Conservation Plan. *Elkhorn Slough at the Crossroads: Natural Resources and Conservation Strategies for the Elkhorn Slough Watershed* identifies key natural resources of the slough and suggests strategies for conserving them.

Plans related to steelhead and watershed management in the Big Sur River watershed that have been considered in the development of this IRWM Plan include the following:

- ***Big Sur River Watershed Management Plan (2014):*** The *Big Sur River Watershed Management Plan* was prepared by the Resource Conservation District of Monterey County, Central Coast Salmon Enhancement, Stillwater Sciences, and California State University of Monterey Bay, for the California Department of Fish and Wildlife in 2014. The purpose of the plan was to investigate the habitat factors affecting south-central California steelhead (*Oncorhynchus mykiss*) population dynamics in the Big Sur River Watershed. The plan assesses existing conditions, documents issues and concerns of stakeholders related to the watershed's ecological conditions, and prioritizes recommendations to support restoration and recovery of steelhead.
- ***South-Central Steelhead Recovery Outline (2007) and South-Central Steelhead Recovery Plan (National Marine Fisheries Service, Southwest Regional Office, 2013):*** The federal Endangered Species Act of 1973 requires that the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) develop and implement recovery plans for the conservation and survival of NMFS-listed species. In the interim between listing and recovery plan approval, NMFS Interim Recovery Planning Guidance requires the development of a Recovery Outline for the listed species. The Recovery Outline for South-Central Steelhead (2007) presented a preliminary strategy for recovery of the species, with recommended high priority actions to stabilize and recover the species, and was reviewed as part of the development of this IRWM Plan. The Recovery Plan was completed for the South-Central California Steelhead in 2013.

Recovery planning for South-Central California Coast Steelhead is fully supported in this IRWM Plan. Several objectives in the IRWM Plan promote the protection and enhancement of steelhead and steelhead habitat, including:

- Protect and enhance state and federally listed species and their habitats.
- Implement fish-friendly stream and river corridor restoration projects.
- Reduce adverse impacts of sedimentation into streams, particularly from roads and non-point sources.
- Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.

The RWMG will continue to stay abreast of federal recovery plans for steelhead and to promote fish-friendly projects through this IRWM Plan.

- ***Big Sur River Protected Waterway Management Plan (1983):*** The *Big Sur River Protected Waterway Management Plan* was developed in response to the California Protected Waterways Act and also as a management program intended to assist in implementing the Big Sur Coast Local Coastal Program Land Use Plan. The plan was adopted by the Monterey County Planning Commission in 1983; certification was acknowledged by the California Coastal Commission in 1986. The California Protected Waterways Plan, prepared in 1971 pursuant to the Protected Waterways Act of 1968, recognized the Big Sur River as an important steelhead and trout stream. In 1973, the State Legislature, with the support of the Monterey County Board of Supervisors, designated the Big Sur River a protected waterway. The resolution that incorporated the Big Sur River into the Protected Waterways Program requested the Resources Agency and affected local agencies to prepare a detailed waterway management plan for the Big Sur River. This protected waterway plan addresses pertinent issues and concerns in the Lower Big Sur River Basin. The

plan serves as a guide for the RWMG in promoting IRWM Plan projects along the Big Sur River.

- ***Little Sur River Protected Waterway Management Plan (1983):*** The Little Sur River Protected Waterway Management Plan was also developed in response to the California Protected Waterways Act and also as a management program intended to assist in implementing the Big Sur Coast Local Coastal Program Land Use Plan. The plan was adopted by the Monterey County Planning Commission in 1983; certification was acknowledged by the California Coastal Commission in 1986. The resolution that incorporated the Little Sur River into the Protected Waterways Program requested the Resources Agency and affected local agencies to prepare a detailed waterway management plan for the Little Sur River. This protected waterway plan addresses pertinent issues and concerns in the Little Sur River Basin. The plan serves as a guide for the RWMG in promoting IRWM Plan projects along the Little Sur River.
- ***Big Sur Enhancement Plan for Steelhead Habitat (2003):*** The *Big Sur Enhancement Plan for Steelhead Habitat* was developed for the California Department of Parks and Recreation (DPR) in 2003. The plan focuses its geographic scope to the two State Park properties within the Big Sur River watershed: Andrew Molera State Park and Pfeiffer-Big Sur State Park. The primary purpose of the Enhancement Plan is to characterize the status of the existing steelhead within the project area and provide recommendations for habitat enhancement and resource management measures that benefit the species. One of the projects in this IRWM Plan, “Big Sur River Steelhead Enhancement Project” proposed by California State Parks, will implement several of the recommendations included in the Enhancement Plan.

N.1.6 Storm Water Management

Storm Water Management Plans: Storm water management programs and plans are discussed in this IRWM Plan in Section B.6.3.a, Regulatory Water Quality Programs, under “Federal and State Storm Water/Urban Runoff Programs.” The section describes each of the following storm water programs and plans:

- City of Salinas Stormwater Management Plan (2013)
- King City National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater Management Plan (2009)
- City of Soledad Stormwater Management Plan (2010)
- Monterey Regional Stormwater Management Program (2006)

The City of Salinas is the only Phase I Municipal Separate Storm Sewer System (MS4) in the Central Coast Region, and is covered by an individual NPDES Phase I permit. There are five Phase II Small MS4 regulated entities within the IRWM planning region: the cities of Marina, Soledad, Gonzales, and King City, and the County of Monterey. Monterey County Resource Management Agency administers the Phase II General Permit for unincorporated urban areas of the county. Information from these programs and plans has been incorporated into the IRWM Plan in order to inform the RWMG and stakeholders about local storm water management as part of the region’s water system. The goals and objectives of the IRWM Plan support the storm water management efforts described in these plans (as indicated in the IRWM Plan objective: “capture and manage storm water runoff”).

Storm Water Resource Plans: In order for a storm water or dry weather runoff capture project to receive State grant funds, the project must be included in a Storm Water Resource Plan (SWRP) or equivalent document (Water Code §10562(b)(7)). The legislative code requires that upon development of a SWRP, the plan must be submitted to the applicable IRWM group, and the SWRP shall be incorporated into the

IRWM Plan. This requirement does not apply to disadvantaged communities that have populations of 20,000 or less and that are not co-permittees for a municipal separate storm water system NPDES permit issued to a municipality with a population greater than 20,000. However, if a disadvantaged community wishes to apply for storm water implementation grant funds and its project is not included in an approved SWRP, the project must be included in the applicable IRWM Plan for it to be eligible.

Two separate SWRPs have been developed, or are under development, for planning regions within the Greater Monterey County IRWM Region: the Greater Salinas Area SWRP and the Greater Monterey County SWRP.

The Greater Salinas Area SWRP was developed by Kennedy/Jenks Consultants for Monterey One Water (formerly, the Monterey Regional Water Pollution Control Agency) and the City of Salinas in order for those agencies to be eligible for Round 1 of Proposition 1 Storm Water Implementation Grant funds. The plan focuses on a targeted watershed area surrounding the city of Salinas. The Greater Salinas Area SWRP was approved by the RWMG at a regularly scheduled RWMG meeting on February 15, 2017, and is hereby incorporated into this IRWM Plan as Appendix O.

A SWRP for the Greater Monterey County IRWM Region, encompassing the Greater Salinas Area planning area and extending out to the broader Greater Monterey County IRWM Region, is currently under development (as of the time of this writing, August 2018). This plan is using the Greater Salinas Area SWRP as its foundation, and is expanding the geographic planning area and adding modeling and other tools to help identify additional storm water and dry weather runoff capture opportunities. The Greater Monterey County SWRP planning effort is being led by the Central Coast Wetlands Group at Moss Landing Marine Laboratories (CCWG) on behalf of the Greater Monterey County RWMG, with the Monterey County Resource Management Agency acting as lead public agency.

Both SWRPs have been developed in close collaboration with the RWMG. The public outreach effort for the Greater Salinas Area SWRP was conducted via regularly scheduled RWMG meetings; that plan was presented and discussed at a total of eight RWMG meetings, spanning from July 2016 – February 2017. For the Greater Monterey County SWRP, the RWMG is serving as the Technical Advisory Committee and as such is involved in all key decision points and milestones, such as plan boundaries, plan objectives, project list, and project prioritization. The Greater Monterey County SWRP has been presented and discussed at a total of three RWMG meetings thus far, spanning from March 2017 – August 2018. At least three more meetings are anticipated between September 2018 and June 2019.

Once the Greater Monterey County SWRP is completed, it will be reviewed by the RWMG and upon approval, will be incorporated into this IRWM Plan as Appendix P.

A SWRP was also completed for the Monterey Peninsula Region (public draft released in June 2018). The planning teams for the Greater Monterey County SWRP and for the Monterey Peninsula Region SWRP have consulted with one another during the development of the respective plans.

N.1.7 Low Impact Development

One of the Water Quality objectives of this IRWM Plan is to “incorporate or promote principles of low impact development where feasible, appropriate, and cost effective.” To help address that objective, a project by the UC Davis Marine Pollution Studies Laboratory was put forward and awarded funds in Round 1 of the Proposition 84 IRWM Implementation Grants to evaluate the efficacy of LID treatment components in reducing the concentrations of contaminants that contribute to storm water toxicity. Objectives of the study included evaluating efficacy of bioswales or other treatment systems in reducing storm water runoff toxicity to aquatic organisms; determining storm water load reduction and storm water

pollutant load reduction through infiltration in LID design components; and providing data to storm water agencies, water quality managers, LID engineers, and others to be incorporated into future planning and management decisions to protect the Salinas River Watershed.

RWMG entities are also working with the Central Coast Regional Water Quality Control Board (RWQCB, or Regional Board) on the Central Coast Joint Effort for LID and Hydromodification Control (described in Section B.6.3.b, Voluntary Water Quality Programs). The Municipal NPDES Stormwater Permit requires municipalities to develop performance measures and, in some cases, numeric criteria to manage storm water. Development of these measures and criteria requires substantial knowledge of urban hydrologic processes; appropriate use of LID techniques; and an understanding of technical, policy and regulatory issues related to implementing municipal storm water control requirements. The Central Coast Regional Board is providing municipalities the option of participating in a Joint Effort, led by a consultant team, to develop hydromodification control criteria to meet the Regional Board's storm water regulations for new and redevelopment. The RWMG is interested in promoting LID practices in the Greater Monterey County IRWM region, and will continue to work with the Central Coast Regional Board on the Central Coast Joint Effort and with local agencies to encourage the implementation of LID practices, where appropriate.

N.1.8 Salt and Salinity Management

The State Water Quality Control Board adopted a Recycled Water Policy in February 2009, which requires local stakeholders, such as local water and wastewater entities, and members of the public to develop salt and nutrient management plans for groundwater basins. The Central Coast Regional Board included the following in the City of Salinas Stormwater Permit (RWQCB 2012d, pp. 86-87):

b) Salt and Nutrient Management

- i) Within 2 years of adoption of this Order, the Permittee shall coordinate with local water and wastewater entities, together with local salt/nutrient contributing stakeholders, to fund locally driven and controlled, collaborative processes open to all stakeholders that will prepare salt and nutrient management plans for groundwater basins underlying the Permit coverage area, per State Water Board Recycled Water Policy (State Water Board Resolution No. 2009-0011).
- ii) Within 4 years of adoption of this Order, the Permittee shall evaluate opportunities to include a significant storm water use and recharge component within the salt/nutrient management plan(s). At a minimum, the Permittee shall coordinate with other stakeholders to include storm water recharge/use goals and objectives in salt and nutrient management plan(s).

No entity has as of yet initiated the salt and nutrient management planning process within the Greater Monterey County IRWM planning region. However, in November 2015, the *Salinas River Watershed Area Salt Modeling* report was developed by Tetra Tech for the Central Coast Regional Board and US Environmental Protection Agency to assess salt impairments and to develop of a salt mass balance in the Lower Salinas River and Reclamation Canal watersheds. The purpose of the report was to inform development of salt-related TMDLs by the Central Coast Regional Board and the eventual development of a salt and nutrient management plan for the Salinas Valley aquifers.

N.1.9 City and County General Planning

Every county and city in California is required by State law to have a General Plan, and the plan is required to be up to date. The General Plan identifies the county or city's goals, policies, and

implementation actions regarding future development within that region. State law provides that a General Plan must address, at minimum, seven elements: Land Use, Circulation, Housing, Natural Resource Conservation, Open Space, Noise, and Safety.

The Monterey County 2010 General Plan and General Plans of the cities in the region have been carefully reviewed during the development of this IRWM Plan to identify common goals, to highlight areas of inconsistency or potential barriers to implementing objectives of the IRWM Plan, and to seek opportunities for increasing coordination between water use and land use planning. The following General Plans have been reviewed:

- City of Gonzales Draft General Plan 2010 (Public Review Draft)
- City of Greenfield General Plan 2005-2025
- City of Marina General Plan 2000, with updates through 2010
- City of Salinas General Plan 2002
- City of Soledad General Plan 2005
- King City General Plan 1998
- Monterey County General Plan 2010, including Specific Plans for:
 - Big Sur Coast Land Use Plan (Local Coastal Program) 2008
 - Ford Ord Master Plan
 - Central Salinas Valley Area Plan
 - Greater Salinas Area Plan
 - North County Area Plan
 - South County Area Plan
 - Toro Area Plan

In addition, the *Implementation Plan for the Boronda and Castroville/Pajaro Redevelopment Areas 2010*, produced by Monterey County Redevelopment Agency, has also been reviewed in the development of this IRWM Plan.

The policies of the General Plans are generally consistent with the goals and objectives of the IRWM Plan. As an example—and as a good representation of other General Plans in the region—the following list provides goals and policies from the Monterey County 2010 General Plan that support the IRWM Plan objectives (this list is not exhaustive):

Land Use Element

- *Goal LU-8:* Encourage the provision of open space lands as part of all types of development including residential, commercial, industrial and public.

Conservation and Open Space Element

- *Goal OS-1:* Retain the character and natural beauty of Monterey County by preserving, conserving, and maintaining unique physical features, natural resources, and agricultural operations.
- *Goal OS-3:* Prevent soil erosion to conserve soils and enhance water quality.
 - *Policy OS-3.1:* Best Management Practices (BMPs) to prevent and repair erosion damage shall be established and enforced.
 - *Policy OS-3.2:* Existing special district, state, and federal soil conservation and restoration programs shall be supported. Voluntary restoration projects initiated by landholders, or stakeholder groups including all affected landowners, shall be encouraged.
 - *Policy OS-3.3:* Criteria for studies to evaluate and address, through appropriate designs and

BMPs, geologic and hydrologic constraints and hazards conditions, such as slope and soil instability, moderate and high erosion hazards, and drainage, water quality, and stream stability problems created by increased storm water runoff, shall be established for new development and changes in land use designations.

- *Policy OS-3.7:* Voluntary preparation and implementation of a coordinated resource management plan shall be encouraged in watersheds of State designated impaired waterways.
- *Policy OS-3.8:* The County shall cooperate with appropriate regional, state and federal agencies to provide public education/outreach and technical assistance programs on erosion and sediment control, efficient water use, water conservation and re-use, and groundwater management. This cooperative effort shall be centered through the Monterey County Water Resources Agency.
- *Policy OS-3.9:* The County will develop a Program that will address the potential cumulative hydrologic impacts of the conversion of hillside rangeland areas to cultivated croplands.
- *Goal OS-4:* Protect and conserve the quality of coastal, marine, and river environments, as applied in areas not in the Coastal Zone.
 - *Policy OS-4.1:* Federal and State listed native marine and fresh water species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant shall be protected. Species designated in Area Plans shall also be protected.
 - *Policy OS-4.2:* Direct and indirect discharges of harmful substances into marine waters, rivers or streams shall not exceed state or federal standards.
 - *Policy OS-4.3:* Estuaries, salt and fresh water marshes, tide pools, wetlands, sloughs, river and stream mouth areas, plus all waterways that drain and have impact on State designated Areas of Special Biological Significance (ASBS) shall be protected, maintained, and preserved in accordance with state and federal water quality regulations.
- *Goal OS-5:* Conserve listed species, critical habitats, habitat and species protected in Area Plans; avoid, minimize and mitigate significant impacts to biological resources.
 - *Policy OS-5.3:* Development shall be carefully planned to provide for the conservation and maintenance of critical habitat.
 - *Policy OS-5.4:* Development shall avoid, minimize, and mitigate impacts to listed species and critical habitat to the extent feasible.
 - *Policy OS-5.6:* Native and native compatible species, especially drought resistant species, shall be utilized in fulfilling landscaping requirements.
 - *Policy OS-5.14:* Policies and procedures that encourage exclusion and control or eradication of invasive exotic plants and pests shall be established. Sale of such items within Monterey County shall be discouraged.
 - *Policy OS-5.15:* A fee waiver program for environmental restoration projects shall be established.
 - *Policy OS-5.21:* At five year intervals, the County shall examine the degree to which thresholds for increased population, residential construction, and commercial growth predicted in the General Plan Environmental Impact Report (EIR) for the timeframe 2006-2030 have been attained. If the examination indicates that actual growth is within 10 percent of the growth projected in the General Plan EIR (10,015 new housing units; 500 acres new commercial development; 3,111 acres new industrial development and 10,253 acres of land converted to agriculture), the County shall assess the vulnerability of currently non-listed species becoming rare, threatened, or endangered due to projected development. The County shall complete the preparation of a conservation strategy for those areas containing

substantial suitable habitat for plant and wildlife species with the potential to become listed species due to development. ...

- *Policy OS-5.22:* In order to preserve riparian habitat, conserve the value of streams and rivers as wildlife corridors and reduce sediment and other water quality impacts of new development, the county shall develop and adopt a Stream Setback Ordinance. ... The ordinance shall identify specific setbacks relative to the following rivers and creeks so they can be implemented in the Area Plans: Salinas, Carmel River, Arroyo Seco, Pajaro River, Nacimiento, San Antonio, Gabilan Creek, and Toro Creek.
- *Goal OS-9:* Promote efficient energy use.
- *Goal OS-10:* Provide for the protection and enhancement of Monterey County's air quality without constraining routine and ongoing agricultural activities.
 - *Policy OS-10.7:* Use of the best available technology for reducing air pollution emissions shall be encouraged.
 - *Policy OS-10.11:* Within 24 months of the adoption of the General Plan, Monterey County shall develop and adopt a Greenhouse Gas (GHG) Reduction Plan with a target to reduce emissions by 2020 to the 1990 level to a level that is 15 percent less than 2005 emission levels. At a minimum, the Plan shall:
 - a. Establish an inventory of current (2006) GHG emissions in the County of Monterey including but not limited to residential, commercial, industrial, and agricultural emissions; and
 - b. Include an inventory of emissions as of 1990 Forecast GHG emissions for 2020 for County operations;
 - c. Forecast GHG emissions for areas within the jurisdictional control of the County for "business as usual" conditions;
 - d. Identify methods to reduce GHG emissions;
 - e. Quantify the reductions in GHG emissions from the identified methods;
 - f. Establish requirements for monitoring and reporting of GHG emissions;
 - g. Establish a schedule of actions for implementation;
 - h. Identify funding sources for implementation; and
 - i. Identify a reduction goal for the 2030 Planning Horizon.

During preparation of the Greenhouse Gas Reduction Plan, the County shall also evaluate potential options for changes in County policies regarding land use and circulation, as necessary, to further achieve the 2020 and 2030 reduction goals and measures to promote urban forestry and public awareness concerning climate change.

Public Services Element

- *Goal PS-2:* Assure an adequate and safe water supply to meet the County's current and long-term needs.
 - *Policy PS-2.1:* Coordination among, and consolidation with, those public water service providers drawing from a common water table to prevent overdrawing the water table is encouraged.
 - *Policy PS-2.6:* A Hydrologic Resources Constraints and Hazards Database shall be developed and maintained in the County Geographic Information System (GIS). The GIS shall be used to identify areas containing hazards and constraints (see Policy S- 1.2) that could potentially impact the type or level of development allowed in these areas (Policy OS-3.5). Maps

maintained as part of the GIS will include:

- a. Impaired water bodies on the State Water Resources Control Board 303d (Clean Water Act) list.
 - b. Important Groundwater Recharge Areas
 - c. 100-year Flood Hazards
 - d. Hard rock areas with constrained groundwater
 - e. Areas of septic tank leachfield unsuitability
 - f. Contaminated groundwater plumes and impacted soil and groundwater sites.
- *Policy PS-2.7:* As part of an overall conservation strategy and to improve water quality, Area Plans may include incentive programs that encourage owners to voluntarily take cultivated lands on slopes with highly erosive soils out of production.
- *Policy PS-2.8:* The County shall require that all projects be designed to maintain or increase the site's pre-development absorption of rainfall (minimize runoff), and to recharge groundwater where appropriate. Implementation would include standards that could regulate impervious surfaces, vary by project type, land use, soils and area characteristics, and provide for water impoundments (retention/detention structures), protecting and planting vegetation, use of permeable paving materials, bioswales, water gardens, and cisterns, and other measures to increase runoff retention, protect water quality, and enhance groundwater recharge.
- *Policy PS-2.9:* Protect and manage groundwater as a valuable and limited shared resource. The County shall use discretionary permits to manage construction of impervious surfaces in important groundwater recharge areas. Potential recharge area protection measures at sites in important groundwater recharge areas include, but are not limited to, the following:
 - a. Restrict coverage by impervious materials.
 - b. Limit building or parking footprints.
 - c. Require construction of detention/retention facilities on large-scale development project sites overlying important groundwater recharge areas as identified by Monterey County Water Resources Agency.
 - d. Recognize that detention/retention facilities on small sites may not be practical, or feasible, and may be difficult to maintain and manage.
- *Goal PS-3:* Ensure that new development is assured a long-term sustainable water supply.
 - *Policy PS-3.4:* Specific criteria shall be developed for use in the evaluation and approval of adequacy of all new wells. Criteria shall assess both water quality and quantity including, but not limited to:
 - a. Water quality. ...
 - g. Effects on in-stream flows necessary to support riparian vegetation, wetlands, fish, and other aquatic life including migration potential for steelhead, for the purpose of minimizing impacts to those resources and species.
 - *Policy PS-3.6:* The Monterey County Health Department shall not allow construction of any new wells in known areas of saltwater intrusion as identified by Monterey County Water Resources Agency or other applicable water management agencies until such time as a program has been approved and funded that will minimize or avoid expansion of salt water intrusion into useable groundwater supplies in that area. This policy shall not apply to deepening or replacement of existing wells.
 - *Policy PS-3.8:* The County shall coordinate and collaborate with all agencies responsible for

the management of existing and new water resources.

- *Policy PS-3.9:* A program to eliminate overdraft of water basins shall be developed as part of the Capital Implementation and Financing Plan (CIFP) for this Plan using a variety of strategies, which may include but are not limited to:
 - a. Water banking;
 - b. Groundwater and aquifer recharge and recovery;
 - c. Desalination;
 - d. Pipelines to new supplies; and/or
 - e. A variety of conjunctive use techniques.

The CIFP shall be reviewed every five (5) years in order to evaluate the effectiveness of meeting the strategies noted in this policy. Areas identified to be at or near overdraft shall be a high priority for funding.

- *Policy PS-3.10:* Developments that use gray water and cisterns for multi-family residential and commercial landscaping shall be encouraged, subject to a discretionary permit.
- *Policy PS-3.12:* Maximize agricultural water conservation measures to improve water use efficiency and reduce overall water demand. The County shall establish an ordinance identifying conservation measures that reduce agricultural water demand.
- *Policy PS-3.13:* Maximize urban water conservation measures to improve water use efficiency and reduce overall water demand. The County shall establish an ordinance identifying conservation measures that reduce potable water demand.
- *Policy PS-3.14:* Maximize the use of recycled water as a potable water offset to manage water demands and meet regulatory requirements for wastewater discharge, by employing strategies including, but not limited to, the following:
 - a. Increase the use of treated water where the quality of recycled water is maintained, meets all applicable regulatory standards, is appropriate for the intended use, and re-use will not significantly impact beneficial uses of other water resources.
 - b. Work with the agricultural community to develop new uses for tertiary recycled water and increase the use of tertiary recycled water for irrigation of lands currently being irrigated by groundwater pumping.
 - c. Work with urban water providers to emphasize use of tertiary recycled water for irrigation of parks, playfields, schools, golf courses, and other landscape areas to reduce potable water demand.
 - d. Work with urban water providers to convert existing potable water customers to tertiary recycled water as infrastructure and water supply become available.
- *Policy PS-3.17:* The County will pursue expansion of the Salinas Valley Water Project (SVWP) by investigating expansion of the capacity for the Salinas River water storage and distribution system. This shall also include, but not be limited to, investigations of expanded conjunctive use, use of recycled water for groundwater recharge and seawater intrusion barrier, and changes in operations of the reservoirs. ...
- *Policy PS-3.18:* As required by PS-3.17, County will convene and coordinate a working group made up of the Salinas Valley cities, the MCWRA, and other affected entities. The purpose will be to identify new water supply projects, water management programs, and multiple agency agreements that will provide additional domestic water supplies for the Salinas Valley. These may include, but not be limited to, expanded conjunctive use programs, further improvements to the upriver reservoirs, additional pipelines to provide more efficient

distribution, and expanded use of recycled water to reinforce the hydraulic barrier against seawater intrusion. ...

- *Goal PS-4:* Ensure adequate treatment and disposal of wastewater.
 - *Policy PS-4.4:* Groundwater recharge through the use of reclaimed wastewater, not including primary treated wastewater, in accordance with federal, state, and local laws, regulations and ordinances, shall be encouraged.
- *Goal PS-11:* Maintain and enhance the County's parks and trails system in order to provide recreational opportunities, preserve natural scenic resources and significant wildlife habitats, and provide good stewardship of open space resources.

Agriculture Element

- *Goal AG-1:* Promote the long-term protection, conservation, and enhancement of productive and potentially productive agricultural land.
- *Goal AG-5:* Ensure compatibility between the County's agricultural uses and environmental resources.
 - *Policy AG-5.1:* Programs that reduce soil erosion and increase soil productivity shall be supported.
 - *Policy AG-5.2:* Policies and programs to protect and enhance surface water and groundwater resources shall be promoted, but shall not be inconsistent with State and federal regulations.

Greater Salinas Area Plan: Public Services Element

- *Goal GS-5.1:* Portions of Gabilan Creek shall be evaluated for a linear park as defined by the County's Parkland Classification System at such time when the County can support another regional park. Until such time, Gabilan Creek shall be:
 - a. Maintained in a natural riparian state;
 - b. Kept in a free-flow state devoid of dams;
 - c. Allowed its natural flood capacity through required setbacks conforming to the 100 year flood plain; and
 - d. Kept free from urban encroachment by residential development through required dedication of land in the floodplain corridor.

N.1.10 Emergency Response, Hazard Mitigation, and Drought Contingency Plans

Monterey County Multi-Jurisdictional Hazard Mitigation Plan (2014): The Disaster Mitigation Act of 2000 (DMA 2000) (Public Law 106-390) was passed by Congress to emphasize the need for mitigation planning to reduce vulnerability to natural and human-caused hazards. For multi-jurisdictional plans, DMA stipulates that the plan be adopted by the participating local governing bodies. The Hazard Mitigation Plan for Monterey County was developed for the Monterey County Office of Emergency Services in 2007 and updated in 2014, and was adopted by County of Monterey and the cities of Carmel-by-the-Sea, Del Rey Oaks, Gonzales, Greenfield, King City, Marina, Monterey, Pacific Grove, Salinas, Sand City, Seaside, and Soledad. The plan includes a hazard analysis (including coastal erosion, dam failure, earthquake, flood, hazardous materials event, landslide, tsunami, wildland fire, and windstorm), a vulnerability analysis, and a mitigation strategy. Hazard mitigation activities include structural and non-structural measures. Structural related measures include activities such as strengthening or protecting buildings and infrastructure from the destructive forces of potential hazards, or in some cases, such as flood control, physically altering the natural course of the potential hazard itself to attempt to minimize the potential impact. Non-structural related measures include activities such as the adoption of sound land

use or floodplain management policies and the implementation of public awareness programs.

Emergency response and disaster planning naturally involves water resource planners both in the preparation and mitigation phases. Preparation includes, for example:

- Locating and constructing water supply, wastewater, and other infrastructure in such a way to reduce the effects of earthquakes, floods, tsunamis, and other disasters (Goal 1: Prevent disaster-resistant development)
- Helping coastal residents minimize erosion and stabilize slopes (Goal 3: Reduce the possibility of damage and losses due to coastal erosion)
- Participating in California Division of Safety of Dams (DSOD) mapping updates and reviewing and updating County inundation maps regularly (Goal 4: Reduce the possibility of damage and losses due to dam failure)
- Identifying and implementing minor flood and storm water management projects to reduce damage to infrastructure and damage due to local flooding/inadequate drainage, including the modification of existing culverts and bridges, upgrading capacity of storm drains, stabilization of streambanks, and creation of debris or flood/storm water retention basins in small watersheds (Goal 6: Reduce the possibility of damage and losses due to floods)

Mitigation includes, for example, mitigating property damage following flood events, plans for ensuring the delivery of water following disaster events, and plans for managing the response effort.

Although emergency response and disaster planning is not discussed as a separate topic in this IRWM Plan, several RWMG entities do participate in the multi-jurisdictional hazard mitigation planning effort, and the IRWM Plan incorporates many of the objectives of that effort. Note that several IRWM Plan projects directly address the goals of hazard preparation and mitigation through such means as infrastructure improvements, erosion control, coastal restoration, and flood risk reduction projects. Also, the MCWRA outlines a plan for flood mitigation in the *Monterey County Floodplain Management Plan*, which has been incorporated into this Plan in Section C, Flood Management.

North Monterey County Drought Contingency Plan: The *North Monterey County Drought Contingency Plan* (DCP) is a 24-month look at how to predict the different stages or levels of severity of drought; to address near-term vulnerabilities; to identify mitigation actions and activities that will build long-term resiliency to drought and reduce the need for response actions; identify drought response actions and activities that can be implemented quickly during a drought and, develop an operational and administrative framework to identify who is responsible for undertaking the actions necessary to implement each element of the Plan. The Monterey Peninsula Water Management District (MPWMD) is the lead agency and fiscal agent for the DCP.

Salinas and Carmel Rivers Basin Study: The *Salinas and Carmel Rivers Basin Study* (Draft 2017) is a study process, led by the Bureau of Reclamation, that will develop new modeling and information to be used for the formulation and evaluation of currently identified and potential new mitigation measures. The MPWMD has convened a Plan Task Force to coordinate development of the Basin Study with support from the DCP. Current demands, supplies, and socio-economic factors in the urban areas of north Monterey County identified in the DCP will help inform some of the baseline for the Basin study. The adaptation strategies proposed in the DCP will also likely be a subset of the strategies identified for the urban areas in the Basin Study. The Plan Task Force includes MPWMD, Monterey One Water, Monterey County Water Resources Agency (MCWRA), and Monterey County Office of Emergency Services, among others.

N.1.11 Monterey Bay National Marine Sanctuary Management Plan

The *Monterey Bay National Marine Sanctuary (MBNMS) Management Plan* was developed in 2008, and includes 23 Action Plans to guide the Sanctuary in protecting resources over a five-year planning period. Most of the Action Plans are grouped into four main themes: coastal development, ecosystem protection, water quality, and wildlife disturbance. This IRWM Plan discusses and/or incorporates the strategies of several of the Sanctuary's Action Plans, including: Desalination; Big Sur Coastal Ecosystem Plan; Introduced Species; and implementation of the Water Quality Protection Program Action Plans, in particular: *Implementing Solutions to Urban Runoff*, *Regional Monitoring*, *Data Access*, and *Interagency Coordination*; and *Agriculture and Rural Lands*. Section B.6.3.b of this IRWM Plan describes two voluntary water quality programs that have been specifically developed out of MBNMS's Water Quality Protection Program Action Plans. Several members of the RWMG, most notably the MBNMS itself, along with other stakeholders in the Greater Monterey County region are working to implement strategies in the MBNMS Action Plans through the IRWM planning process. In 2015, MBNMS began an update process for the Management Plan, with the final updated Management Plan anticipated to be completed in 2019.

N.2 DYNAMICS BETWEEN LOCAL PLANNING AND IRWM PLANNING

N.2.1 How and When Updates are Considered in the IRWM Plan

Most of the planning documents described above are updated on a regular basis, some on an annual basis, others on a decennial basis. All of the data and information contained in this IRWM Plan will be reviewed and updated approximately every five years, depending on available funds, as part of the formal Plan update. Accordingly, the IRWM Plan updates will reflect the latest planning efforts and most recent editions of the local planning documents.

N.2.2 How Regional Planning Efforts Feed Back to Local Planning Efforts

The information exchange between IRWM planning and local water planning is not a one-way exchange. The IRWM regional planning efforts feed back into local planning efforts in numerous ways. Most RWMG members are themselves local water planners, and the regional planning that occurs through the IRWM process is brought back to these local planning entities. Likewise, the results of the IRWM planning process impacts the decision-making of other water resource planners and stakeholders involved in the Greater Monterey County IRWM planning process. One example is the following:

The City of Salinas's NPDES Phase I Stormwater Permit was renewed in May 2012. Changes in the new order included provisions for the City to pursue IRWM objectives. Specifically:

3) Aligning Stormwater Management with Related Planning Goals and Requirements

a) Integrated Regional Water Management –

- i) Within 12 months of adoption of this Order, the Permittee shall coordinate with other stakeholders to pursue the Environmental Enhancement Objectives of the May 2006 Integrated Regional Water Management Functionally Equivalent Plan Update, or comparable water supply, water quality, and flood protection and flood management goals and objectives of the Integrated Regional Water Management Plan in use, through the Permittee's storm water management program.
- ii) Within 2 years of adoption of the Order, the Permittee shall identify opportunities to protect, enhance, and/or restore natural resources including streams, groundwater, watersheds, and other resources consistent with the Integrated Regional Water Management

Plan. At a minimum, the Permittee shall examine opportunities for storm water capture and reuse, and storm water infiltration for aquifer recharge. (RWQCB 2012d, p. 86)

Ideally the relationship between regional IRWM planning and local water resource management planning will remain dynamic, with the information exchange continuing to occur in both directions.

N.2.3 How Inconsistencies are Resolved

Since the IRWM Plan is essentially built upon local plans and planning efforts, few inconsistencies between the IRWM Plan and local plans exist. If inconsistencies are found they will be resolved through direct communication and coordination with the planning entities where the inconsistencies occur. As noted above, the RWMG intends to conduct an in-depth investigation of potential barriers to IRWM Plan implementation in city and county General Plan policies, ordinances, and other state, regional, and local rules and regulations, for future updates of this IRWM Plan. The RWMG will seek to eliminate any barriers to IRWM Plan implementation by working closely with the regulating agencies to resolve those issues on a case-by-case basis.

N.2.4 Climate Change Adaptation and Mitigation Strategies in Local Plans

Some local water suppliers are taking initial steps to consider the potential impacts of climate change in water supply planning. For example, Cal Water recently (as part of its 2015 urban water management plan updates) completed an initial study of climate change impacts for a sample of its districts. The sample districts accounted for 85% of Cal Water's total 2014 production and reflect the diversity of all Cal Water districts, including geographic, hydrologic, and climatic conditions and primary and secondary supply sources. Table N-1 shows the ranges of projected overall climate change impacts on available supply for the sample districts, relative to the historic average.

Table N-1: Cal Water’s Projected Changes in Average Available Water Supply Due to Climate Change

Table 6-10 Projected Changes in Average Available Supply Due to Climate Change				
District	Percentage Change in Supply			
		2020	2050	2100
BK	Minimum	-10%	-10%	-12%
	Maximum	-12%	-16%	-20%
VIS	Minimum	-7%	-8%	-8%
	Maximum	-9%	-10%	-14%
KRV	Minimum	-13%	-16%	-19%
	Maximum	-16%	-21%	-31%
MPS/SSF/BG	Minimum	0%	-2%	-6%
	Maximum	0%	-7%	-15%
LAS	Minimum	-3%	-3%	-10%
	Maximum	-4%	-18%	-28%
CH	Minimum	2%	2%	0%
	Maximum	3%	1%	-3%
ORO	Minimum	0%	8%	5%
	Maximum	0%	-8%	-7%
DOM/HR/PV	Minimum	0%	0%	-1%
	Maximum	0%	-2%	-3%
STK	Minimum	0%	0%	-8%
	Maximum	0%	-14%	-17%
SLN	Minimum	-6%	-6%	-6%
	Maximum	-7%	-7%	-7%

Source: 2015 Urban Water Management Plan for the King City District, Cal Water.

This initial study represents a first step toward gaining a better understanding of the potential impacts of climate change on the availability of Cal Water’s diverse water supplies. Three critical messages emerged from the study:

- Cal Water supplies in the 21st century are likely to be adversely affected by climate change.
- These impacts will vary considerably across districts, depending on geography and source mix. For some districts, the impacts can be significant; for others, little or no impacts are projected.
- The impacts will generally increase over time. Anticipated late-century impacts are forecast to be significantly higher in some districts than impacts at mid-century. Moreover, during the period that climate change is forecast to increasingly constrain supplies, demands are also generally forecast to increase, further exacerbating the adverse impacts on water supply reliability.

For its Salinas District 2015 Urban Water Management Plan, Cal Water used models to predict the effect of climate change on water demand. The model showed that predicted temperature increases by the year 2040 associated with climate change implied a 2 to 3 percent increase in demand relative to weather-normalized demand. This expected effect is solely due to predicted changes in temperature and is based on current patterns of outdoor water use. It does not account for changes households and businesses may make in the way they use water in the future given a warming climate. Cal Water anticipates integrating climate change into the company’s ongoing water supply planning.

As climate change adaptation and mitigation strategies become more developed in local water planning efforts, those strategies will become incorporated into the Greater Monterey County IRWM Plan with future Plan updates.

Section O: Relation to Local Land Use Planning

The purpose of the Relation to Local Land Use Planning standard in the Integrated Regional Water Management (IRWM) Program Guidelines is to require an exchange of knowledge and expertise between land use and water resource managers through the IRWM planning process; to examine how Regional Water Management Groups (RWMGs) and land use planning agencies currently communicate; and to identify how to improve planning efforts between the RWMGs and land use planning agencies. One of the goals of the *California Water Plan Update 2009* is to ensure that water managers and land use planners make informed, collaborative water management decisions on a statewide basis. The purpose of including the Relation to Local Land Use Planning standard in the IRWM Program Guidelines is to help meet that goal.¹

Every city and county in California must adopt a comprehensive long-term General Plan in accordance with §65300 of the California Government Code. There are seven required elements of a General Plan including Land Use, Circulation, Housing, Conservation, Open Space, Noise, and Safety, which provide a broad overview of the issues within a jurisdiction. Water-related supply and treatment issues are included in the Conservation element. Policies that must be addressed in the Conservation element include the following:

- Senate Bill (SB) 221 (Bus. and Prof. Code, §11010 as amended; Gov. Code, §65867.5 as amended; Gov. Code, §66455.3 and 66473.7) prohibits approval of subdivisions consisting of more than 500 dwelling units unless there is verification of sufficient water supplies for the project from the applicable water supplier(s). This requirement also applies to increases of 10 percent or more of service connections for public water systems with less than 500 service connections.
- SB 610 (California Water Code [CWC] §10631, 10656, 10910, 10911, 10912, and 10915 as amended; Public Resources Code [PRC] §21151.9 as amended) and Assembly Bill (AB) 901 (CWC §10610.2 and 10631 as amended; CWC §10634) make changes to the Urban Water Management Planning Act to require additional information in Urban Water Management Plans (UWMPs) if groundwater is identified as a source available to the supplier. A key provision in Senate Bill (SB) 610 requires that any project subject to the California Environmental Quality Act (CEQA) and supplied with water from a public water system be provided a water supply assessment, except as specified in the law.
- State of California General Plan Guidelines (Governor's Office of Planning and Research [OPR] 2003) recommends facilitating SB 610 by having strong water elements in local general plans that incorporate coordination between the land use agency and the water supply agency.

The enactment of the Sustainable Groundwater Management Act (SGMA) in 2014 has created additional requirements for improved coordination and consultation between land use planners and local water supply and management agencies for regions that are subject to this legislation (i.e., groundwater basins that are designated as medium or high priority according to the Department of Water Resources Bulletin 118; this includes the Salinas Valley groundwater basin). SGMA provides a framework for long-term sustainable groundwater management across California, with a goal of achieving sustainable management by the year 2042.

¹ This introduction has been excerpted from the Proposition 84/1E IRWM Program Guidelines, p. 62.

According to §65352.5 of the SGMA legislation, upon receiving notification of a city's or a county's proposed action to adopt or substantially amend a general plan, a public water system with 3,000 or more service connections must provide the planning agency with: the current version of its urban water management plan; the current version of its capital improvement program or plan; a description of the source or sources of the total water supply currently available to the water supplier by water right or contract; a description of the quantity of surface water and of groundwater that was purveyed by the water supplier in each of the previous five years; a description of the total number of customers currently served by the water supplier; quantification of the expected reduction in total water demand associated with future implementation of water use reduction measures identified in the water supplier's urban water management plan; and any additional information that is relevant to determining the adequacy of existing and planned future water supplies to meet existing and planned future demands on these water supplies.

Even with advances in policy as described above and with new legislation such as SGMA, efforts to link land use decisions and water management decisions often remains an area of challenge. Land use decisions and water management decisions are frequently under the purview of different agencies, yet the resources each agency manages are inextricably linked. Often, the relationship among these agencies is characterized as reactive in that one agency must act to accommodate a decision the other agency has made. Early communication is vital in changing the relationship from reactive to proactive.

A primary aim of IRWM planning is to solve regional water management issues through diversified water management portfolios and early water management input into, and coordination with those responsible for making, land use decisions. This relationship can significantly influence how both water management decisions and land use decisions are made. The importance of open lines of communication between local land use planners and water resource managers is imperative to a successful IRWM effort.

This chapter describes the current relationship between local land use planning entities and water management entities in the Greater Monterey County IRWM region, and provides suggestions for how that relationship may be improved.

O.1 CURRENT RELATIONSHIP BETWEEN LOCAL LAND USE PLANNING ENTITIES AND WATER MANAGEMENT ENTITIES

The effort to link land use decisions and water management decisions remains an area of challenge in the Greater Monterey County IRWM region as it does in many other regions of the state. The level of communication and coordination between land use planners and water resource managers varies quite significantly amongst entities. A higher level of communication and coordination seems to exist between entities that operate on a regional scale than between those that operate more locally. Opinions also vary as to the level of exchange desired, with some water resource managers (typically those in rural areas where development pressures are minimal) preferring to manage their water supplies without "input" (perceived constraints) from outside agencies, and other water managers expressing a strong desire and need for increased coordination with land use planning agencies.

This section provides some examples of how water resource managers currently communicate with land use planners in the Greater Monterey County IRWM region. Since communication patterns seem to be similar amongst entities with similar jurisdictions, this section has been organized, solely for the purpose of structuring this discussion, according to the following general categories:

- Municipalities that supply their own water services
- Municipalities and large communities that do not supply their own water services
- Smaller, more rural communities
- Agencies with regional jurisdiction

A note on terminology: The term “water manager” is used in a general sense in this section to refer both to regulatory water management entities—including those that manage water supply (such as the Monterey County Water Resources Agency [MCWRA], which is responsible for long-term management of the Salinas Valley Groundwater Basin) and those that regulate water quality (e.g., the Regional Water Quality Control Board [RWQCB] and Monterey County Department of Environmental Health)—as well as to those that “manage” water delivery (i.e., the water purveyors, such as California Water Service Company (Cal Water), Alco Water Company, Marina Coast Water District, Castroville Community Services District, and several municipalities that supply water within their city boundaries).

O.1.1 Municipalities that Supply Their Own Water

Several of the municipalities in the region—specifically, Gonzales, Greenfield, King City, and Soledad—supply their own water and provide their own wastewater treatment services. The water source for all of these cities is the Salinas Valley Groundwater Basin, which as noted above, is managed by the MCWRA. The water purveyor function is managed and implemented by the public works department in each of these municipalities.

Where water resource management and land use planning occur “in house,” coordination tends to occur naturally through ongoing interdepartmental communications. Discussions are initiated, for example, whenever a developer inquires about a land use project or files an application. Development projects over a certain threshold must prepare a SB 610 Water Supply Assessment (WSA); during the preparation of an assessment an exchange of information will occur between the planning and public works departments. Additionally, when a City updates its General Plan, the City planners will consider water sources and the expansion of the urban area. Interagency coordination (e.g., between a City and the MCWRA) typically occurs in conjunction with major subdivisions, or annexation proposals. Environmental Impact Reports (EIRs) and, more recently, WSAs, typically provide the instrument for disclosure of information and potential impacts to concerned members of the public and other agencies.²

O.1.2 Municipalities and Large Communities that Do Not Supply Their Own Water

Other municipalities and large communities in the region receive their water supply from water districts, such as the Marina Coast Water District or Castroville Community Services District, or from water companies, including privately owned water companies such as Coastlands Mutual Water Company in Big Sur, or investor-owned water companies such as Cal Water, which serves the cities of Salinas and King City. Where inherent separation exists between the utility (water manager) and the City or unincorporated community (land use planner) that it serves, coordination between the two is somewhat more challenged than in the situation where land use planning and water resource planning occur “in house.”

For example, according to a water resource planner at Cal Water, the only type of “formal” coordination that exists between the water purveyor and land use jurisdictions is limited to efforts such as developing Urban Water Management Plans, or developing WSAs. Some examples of Cal Water’s typical interactions with land use planners include:

² Sources for information in this paragraph are from email communications with: City of Gonzales Community Development Director, January 30, 2012; City of Greenfield Community Development Director, February 6, 2012; Senior Planner, City of Soledad Community Development Department, February 6, 2012; Assistant Planner, King City Community Development Department, February 7, 2012.

- Cal Water staff work with City staff to develop growth projections (population, service counts, water demand) for Urban Water Management Plans.
- To develop Cal Water's Water Supply and Facilities Master Plan, Cal Water staff used General Plan data and interviewed City planning personnel to project future growth and water use.
- Cal Water District Management attends City Council meetings.

In addition, for large development projects that require a WSA, Cal Water will conduct the WSA and submit it to the City prior to development approval. Coordination between Cal Water and a City or the County is more limited for smaller projects. In those cases Cal Water deals directly with the developers after their plans have already been approved by the City or County. Cal Water staff will review the project to make sure that adequate water supply exists in that part of the system and then will issue a will-serve letter. The Cal Water District Manager notes that oftentimes developers spend significant time and energy creating water system plans that do not meet Cal Water's specifications. This could be avoided if more coordination existed between the utility and the City, specifically, if a sign-off from the water company were required as a part of the development approval process.³

From the City of Salinas's perspective (i.e., from the land use planning perspective), communication and coordination with water managers is generally adequate though there is "much room for improvement."⁴ Examples of communication "working" include distribution of the City's General Plan to all water managers for early review and discussion.⁵ The City's General Plan stipulates that the City must consult with local and regional water agencies to assess whether the water demand associated with a development project is included in the agency's most recent Urban Water Management Plan and whether existing supplies can meet the project's demand for water (City of Salinas 2002, p. COS-5). In addition, Goal COS-1, "Create a safe and adequate supply of water for community uses," includes the following policies:

- *Policy COS-1.1:* Work with regional and local water providers to ensure that adequate supplies of water are available to meet existing and future demand.
- *Policy COS-1.3:* Work with local and regional water providers to increase the production, distribution, and use of recycled water.
- *Policy COS-1.4:* Maintain and restore natural watersheds to recharge the aquifers and ensure the viability of ground water resources.
- *Policy COS-1.5:* Cooperate with the Monterey County Water Resources Agency, the State Water Resources Control Board, and the Regional Quality Control Board to implement programs that address two primary causes of poor water quality in the planning area: salt water intrusion and nitrate contamination.
- *Policy COS-1.6:* Enforce national (NPDES) requirements and participate in regional efforts to protect and enhance water quality.

Coordination between the City of Salinas and the MCWRA exists on a project-by-project basis, usually through a CEQA process or project review for projects adjoining the County's drainage ditch (the Salinas Reclamation Ditch). Another way in which information is exchanged between the City and water managers—in this case, water regulators—is in regards to the National Pollutant Discharge Elimination System (NPDES) Permit issued by the RWQCB.

³ Email communication with Cal Water Project Engineer, January 30, 2012.

⁴ Email communication with the City's Community and Economic Development Department Assistant Director February 6, 2012.

⁵ Telephone conversation with City of Salinas Principal Planner, February 8, 2012.

Formalized City-County meetings do take place on a monthly basis between the City (usually Planning staff and sometimes a Public Works representative) and the County's Resources Agency (usually County Planning and Public Works staff); however, Water Resources Agency staff do not tend to participate in these meetings, nor do the water purveyors such as Cal Water and Alco. The conclusion offered by the City's Community and Economic Development Department Assistant Director is that there is "much room for improvement, particularly for long-term water resources planning and coordination of all water-related development issues."⁶

A similar situation exists—and similar conclusions might be drawn—for the relationship between the Marina Coast Water District (MCWD, water purveyor) and the land use planning entities for the areas it serves, including the City of Marina. For large development projects, MCWD will prepare the WSA, and the WSA will invariably be included in the EIR. Potential problems may arise, however, when MCWD and the City (or another land use jurisdiction) disagree on the amount of water that will be required by a project (i.e., when MCWD estimates a project will use more water than the City does). If the City approves the project based on its lower water use projections, and the higher projections prove to be more accurate, the City may be faced with a serious water shortage and MCWD will be in the position of needing to identify additional water supply. One water manager at MCWD is concerned that precisely this situation may occur as the economy picks up and those "last units," which received prior approval by the City but have not yet been built because of the economic downturn, finally get built. Upfront coordination between water managers and land use jurisdictions would help prevent this situation.⁷

From MCWD's perspective, increased coordination and communication needs to occur with small development projects as well. For most land use jurisdictions, water supply is not directly allocated to particular parcels. If business development on the small parcels is being promoted without adequate (or accurate) consideration of the potential water use by those businesses (e.g., a hotel, a laundry facility), a potential "accounting" problem may occur. One suggestion is that water management staff and land use planners work together to develop a parcel map of a region, allocating water to each parcel in some sort of flexible—but quantifiable—manner. Specific allocations of water for small as well as large projects will remove some of the ambiguity and uncertainty regarding future water use and will help improve long-term water supply security.

A regular forum does exist between the MCWD and the City of Marina to discuss upcoming projects and potential conflicts: the Joint City/District meeting, attended by MCWD Board and Marina City Council members, takes place once/month (providing there is a quorum). The Joint City/District meeting provides a good example of similar forums that could be set up between water management districts/companies and land use jurisdictions in the region.

O.1.3 Rural Communities

Other water district and water company managers in the region have reported even less coordination with land use planners than that described thus far—and many of them would prefer it to remain that way.

The General Manager at the Castroville Community Services District (CCSD) explains that CCSD makes decisions based on a five-member Board in the community of Castroville. Three of the five board members sit on the Castroville Advisory Committee, which advises the County Board of Supervisors through the office of Housing and Redevelopment. Through this connection, some collaboration exists

⁶ Email communication February 6, 2012.

⁷ Information regarding MCWD was obtained via telephone conversations with the MCWD Capital Projects Manager, February 8 and February 16, 2012.

with land use planners but there is no direct oversight of how CCSD allots their water and sewer capacity. For permitting, CCSD determines the water and wastewater connections without any input at all from land use planners. The General Manager noted, “My goal is to simplify. Anytime I can reduce the number of layers on a project, I do.” It is not that the District is averse to accepting input from other entities. The CCSD does not have much direct interaction with land use planners at the County of Monterey, but the General Manager is also quick to point out that the District has not yet had the kind of growth that would require a WSA.⁸

Similar sentiments have been expressed by other water managers, particularly those in rural areas. For example, Butch Kronlund, the President of Coastlands Mutual Water Company, a small, private water company in Big Sur, reports that “communication and coordination” between small water company managers and Monterey County land use planners in that region tends to be limited only to water quality testing and permitting requirements (e.g., avoiding fines and taking advantage of state and federal grants to reach compliance). Like the water managers at the CCSD, he prefers to keep the “coordination” effort to a minimum in favor of having more autonomy in managing the water resources (“less is more”).⁹

O.1.4 Regional Agencies

While communication and coordination between land use planners and water resource managers appears to be lower—and least desired by water managers—on the local level in the more rural areas of the region, at the regional level, communication and coordination appear to be actively pursued and desired. For example, the MCWRA—which is responsible for managing, protecting, and enhancing water supply and water quality as well as providing flood protection in the County of Monterey—appears to be thoroughly involved in all levels of land use planning throughout the county. The following provides some examples of MCWRA’s interactions with land use planners.¹⁰

The MCWRA works in close coordination with the Monterey County Planning Department, Building Department, and several other departments/agencies throughout the land use permitting process. MCWRA is primarily responsible for administering Monterey County floodplain, drainage, water conservation, water supply, and well construction regulations. The MCWRA reviews discretionary permits, ministerial permits, and well construction permits. Written comments and recommendations are provided in accordance with established departmental protocols. The MCWRA also participates in the development of various CEQA documents including initial studies, negative declarations, mitigated negative declarations, and EIRs. As requested, the MCWRA reviews CEQA documents in other jurisdictions and written comments are provided to the lead agency.

The MCWRA also participates in several regularly scheduled meetings, including public hearings to provide clarification as necessary. Examples include:

Regularly scheduled meetings:

- Inter-Agency Review Meeting
- Inter-Departmental Review Meeting
- Inter-Departmental Coordination Meeting
- General Plan Implementation

⁸ Email communications with CCSD General Manager, February 7 - 13, 2012.

⁹ Email communications with Coastlands Mutual Water Company President, January 30 and 31, 2012.

¹⁰ The examples of MCWRA’s involvement with land use planning are from an email communication with the Senior Water Resources Hydrologist at MCWRA, February 17, 2012.

Regularly scheduled public hearings:

- Zoning Administrator
- Planning Commission
- Subdivision and Minor Subdivision Committees
- Board of Supervisors

Other planning related meetings:

- Permit Streamlining Task Force
- Code Enforcement Task Force
- Carmel River Task Force
- Carmel River Advisory Committee
- Monterey Peninsula IRWMP Technical Advisory Committee
- Monterey Peninsula Water Management Technical Advisory Committee
- Floodplain Management Plan Working Group
- Multi-jurisdictional Hazard Mitigation Plan Working Group
- County Service Area 50 Citizens Advisory Committee – Technical Support

Note, the MCWRA is not fully funded to participate in some land use activities (e.g., general plan implementation), which limits communication and coordination in those areas. Essentially there is more demand for services than there is funding.

On the “land use planner” side, the Monterey County Resource Management Agency (RMA) participates in several water resource planning activities throughout the county, including¹¹:

- RMA participates as Technical Advisory Committee (TAC) member in the Integrated Watershed Restoration Program with the Resource Conservation District (RCD) of Monterey County and other partners;
- RMA provides input to Central Coast Wetlands Group regarding wetland planning efforts in the region;
- RMA provides input to the Monterey Bay National Marine Sanctuary (MBNMS) regarding climate change adaptation planning efforts (including the potential impacts of climate change on the Monterey Bay area coastline).

RMA consults with MCWRA on water supply and flood/drainage matters in all parts of Monterey County; part of the permit application goes to the MCWRA for that service. RMA consults with the Monterey County Environmental Health Bureau regarding water quality issues. In addition, the 2010 Monterey County General Plan is set up such that MCWRA provides advice on water supply, which the RMA Board has the discretion to accept or not.

In Elkhorn Slough, the Elkhorn Slough National Estuarine Research Reserve (ESNERR) staff (i.e., land managers) collaborate with RWQCB staff on data sharing, and with the Moss Landing Harbor District (a water manager) on navigation and access. ESNERR is itself a collaborative partnership between the California Department of Fish and Game and the National Oceanic and Atmospheric Administration. The Elkhorn Slough Foundation, a community non-profit, is also highly engaged in that partnership. Less frequent and less formal communication, consisting of the sharing of reports and occasional meetings, occurs between local land management staff and the MCWRA and the Pajaro Valley Water Management

¹¹ Email communication with Acting Deputy Director, MCRMA, June 9, 2011 and March 12, 2012.

Agency, which oversee surface and groundwater management and groundwater management respectively in portions of the Elkhorn Slough Watershed.¹²

In addition, several forums exist throughout the region to bring together land use planners, water managers, natural resource managers, landowners, and other stakeholders for the purposes of planning or conflict resolution related to certain geographic areas or features. These include, for example, forums related to the Salinas Reclamation Ditch, the Salinas River Lagoon, and the Salinas River Channel. These forums do not exist in any formal way, but are initiated on an as-needed basis by various agencies and organizations; and while the forums may serve an important function in relaying information and promoting communication, they do not tend to lead to interagency coordination per se. Regional planning entities such as the Association of Monterey Bay Area Governments (AMBAG) conduct workshops from time to time where interdisciplinary professionals, including land use planners and water managers, come together.

One current forum that brings together land use planners, water managers, and natural resource managers along with other stakeholders is provided by the Ford Ord Reuse Authority (FORA). FORA is responsible for the planning, financing, and implementation of the conversion of the former Fort Ord to civilian activities. The approved Base Reuse Plan calls for significant commercial economic development, supportive housing, visitor serving facilities, and related institutional activities to replace the contribution to the local economy of the 15,000 soldiers and thousands of civilian employees when Fort Ord was active. Nearly two-thirds of the former base will be preserved and maintained as habitat for endangered species and recreational open space.¹³ Working groups have been formed to focus on particular issues related to the Base Reuse Plan, including the Habitat Conservation Plan and Coordinated Resources Management and Planning. A Water and Wastewater Oversight Committee also meets on a regular basis to implement the delivery of water and wastewater services on the former Fort Ord, and by meeting regularly it provides a forum for the discussion of water and land use jurisdiction interactions.

It is clear that while the level of coordination between land use planners and water managers varies considerably in the Greater Monterey County IRWM region from entity to entity, and from the local level to the regional level, there is much room for improvement.

O.2 CLIMATE CHANGE ADAPTATION AND MITIGATION STRATEGIES IN LOCAL LAND USE PLANS

Many land use planners in the region are in the process of updating their plans to include climate change adaptation and mitigation strategies. Developing strategies for climate change adaptation is one area in particular where land use planning and water use planning are inextricably linked. Chapter R of this IRWM Plan, Climate Change, describes efforts being made in the region to address climate change impacts. Leading the charge is a Climate Task Force comprised of local scientists, land use managers, water resource managers, and coastal policy experts. Participating entities on the Climate Task Force include: Central Coast Wetlands Group at Moss Landing Marine Laboratories (CCWG), Stanford University Center for Ocean Solutions, Monterey Bay National Marine Sanctuary, Santa Cruz County, Association of Monterey Bay Area Governments, Monterey County Planning, California Water Company, Monterey County Water Resources Agency, Stanford University Natural Capital Project, California Department of Water Resources, Santa Cruz County Resource Conservation District, and The Nature Conservancy.

¹² Email communication with the Tidal Wetland Project Director, ESNERR, January 30, 2012.

¹³ Source: FORA website: <http://www.fora.org/index.htm>.

Monterey County has made great strides to include climate change mitigation strategies in its recent planning documents. In 2006, the California legislature passed Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, which established a mandate to reduce California's greenhouse gas (GHG) emissions to 1990 levels by 2020 (approximately 10 to 11% below 2006 state levels). The California Air Resources Board (CARB) developed the state's roadmap for reaching this goal, known as the AB 32 Scoping Plan. The Scoping Plan specifically identifies local governments (counties and cities) as key players in achieving the statewide goal to reduce statewide GHG emissions. The AB 32 Scoping Plan recommends that local governments establish GHG reduction goals for both their municipal operations and the community to be consistent with those of the state. In 2013, in response to the AB 32 Scoping Plan recommendation, the Monterey County Board of Supervisors adopted a Municipal Climate Action Plan (MCAP).

The MCAP: (1) provides a description of the steps being taken by the County to reduce GHG emissions associated with its municipal operations (i.e., the County's day-to-day activities in providing services to Monterey residents and businesses); (2) describes three potential paths towards the County's goal of reducing GHG emissions to a level that is 15% below the 2005 emissions level before 2020; and (3) serves as one component of the County's larger, community-wide climate action plan (CAP), which addresses GHG emissions from the community at large (the CAP is still under development, as of 2018).

In addition, Monterey County adopted a new General Plan on October 26, 2010. The environmental impact report prepared for the 2010 General Plan contains a discussion of potential GHG emissions impacts. Policies were added to the General Plan as mitigation for these potential GHG impacts related to buildout of the General Plan. The MCAP was prepared pursuant to that mitigation and Policy OS-10.15 of the General Plan to address GHG emissions from County operations.

Please see Chapter R, Climate Change, for a full discussion of current climate change efforts in the region.

O.3 EFFORTS TO ESTABLISH A STRONGER RELATIONSHIP BETWEEN LAND USE PLANNERS AND THE RWMG

As part of the 2017-2018 IRWM Plan update process to comply with 2016 IRWM standards, and in an attempt to facilitate discussion and forge a stronger relationship between local land use and water use planning, the RWMG invited local land use planners to two regularly scheduled RWMG meetings. The first meeting focused on climate change impacts, and the second meeting focused on the County's new requirements for on-site wastewater systems. This section briefly summarizes the outcomes of those meetings.

Local land use planners from Monterey County RMA and the Office of Emergency Services (OES) were invited to the April 18, 2018 RWMG meeting to coordinate with local water managers and planners on addressing potential impacts of climate change. Staff from RMA included the Deputy Director of Land Use and Community Development, a Senior Planner for Current and Long Range Planning, and the Sustainability Coordinator of the Green Program. Staff from OES included the OES Director, the OES Senior Secretary, and the Emergency Services Planner.

Ross Clark, Program Director of the CCWG, began by briefly presenting key findings from CCWG's recent report on coastal climate change impacts in the lower Salinas Valley, entitled *Moss Landing Community Coastal Climate Change Vulnerability Report* (completed June 2017).² Mr. Clark noted that much of CCWG's work on climate change was conducted in partnership with Monterey County, who acted as lead on an Ocean Protection Council (OPC) grant. CCWG had performed a climate risk analysis for the broader region, and also performed a more targeted evaluation of coastal climate change

vulnerabilities, specifically looking at the cumulative risks associated with predicted higher seas, increased storm intensity, and changes in rainfall patterns. The three project goals of the climate change report included:

- Identify what critical coastal infrastructure may be compromised due to sea level rise and estimate when those risks may occur;
- Identify how fluvial processes may increase flooding risk to coastal communities in the face of rising seas; and
- Define appropriate response strategies for these risks and discuss with regional partners the programmatic and policy options that can be adopted within Community Plans, Hazard Mitigation Plans, and Local Coastal Plan (LCP) updates.

Mr. Clark provided an overview of key findings, and then opened the floor for discussion, beginning with the question, “How can the RWMG and other water planners/managers help the County address these hazards?” From the OES perspective, staff responded that OES can utilize CCWG’s data to address climate change in response planning. Other OES staff pointed out that federal governments are requiring Hazard Mitigation Plans to include climate adaptation planning, and suggested that CCWG and other water resource planners could participate in a Working Group that will be convened in 2019.

From the RMA perspective, staff noted that RMA is more focused on climate mitigation rather than climate adaptation, i.e. reducing greenhouse gas (GHG) emissions, though added they very much appreciated the opportunity to work together with CCWG, MCWRA, the Monterey County Agricultural Commissioner’s Office, and others in the room. There was also discussion about adaptation response planning, including the possibility of managed retreat actions. RMA staff encouraged RWMG members to attend County Board of Supervisors meetings to help inform the board about coastal impacts, including sea level rise, for the next General Plan update. By the end of the discussion, there was general agreement of the “need to be cognizant of each other’s efforts,” with the added intention of identifying funding opportunities for coordinated planning through IRWM and other funding sources.

On May 16, 2018, Nicki Fowler with the Monterey County Environmental Health Bureau was invited to present to the RWMG on the County’s new Local Agency Management Program (LAMP) for Onsite Wastewater Treatment (septic) Systems. The goals of the LAMP are to reduce potential impacts from onsite wastewater treatment systems on groundwater, surface water, and public health. The purpose of the meeting was both to inform the RWMG about the new LAMP and to seek input from the RWMG on the new program.

Following the informational portion of the presentation, a discussion between Ms. Fowler and the RWMG ensued. One outcome of the discussion was the recognition of potential financial impacts on disadvantaged communities as a result of the new LAMP requirements. This potential issue will be considered as part of the RWMG’s continued efforts to address drinking water and wastewater problems of disadvantaged communities in the region (including its current work under the Proposition 1 IRWM Disadvantaged Community Involvement Grant).

Another suggestion that came out of the discussion was the potential establishment of local management entities to help keep septic systems maintained, for example, providing oversight of ongoing inspection and monitoring for all septic systems within a geographic area. Ms. Fowler noted that this idea had not been specifically addressed by the County, and expressed interest in discussing it further. Staff from the Rural Community Assistance Corporation (a RWMG member) commented that it was an especially good time for the RWMG to be able to support the LAMP through outreach and training to disadvantaged communities via the IRWM Disadvantaged Community Involvement Grant.

Given the perceived success and concrete outcomes that resulted from both of these RWMG meetings targeted at increased coordination between land use and water use planners, the RWMG intends to pursue further opportunities for joint meetings and other means of collaboration with land use planners, including in particular opportunities for coordination on climate change planning. The importance of open lines of communication between local land use planners and water resource managers is imperative to a successful IRWM effort.

O.4 FUTURE EFFORTS: ESTABLISHING A PROACTIVE RELATIONSHIP BETWEEN LAND USE PLANNING AND WATER MANAGEMENT

This section considers potential opportunities for continuing to improve communication and coordination between water managers and land use decision makers.

Some specific opportunities to improve coordination between land use decision-makers and water managers have already been mentioned. These suggestions were made by those being interviewed for this chapter, and include:

- Involving the water supplier earlier in the development approval process, and requiring a review from the water supplier prior to approval.
- Similarly, ensuring that the water supplier and the land use decision-maker are in agreement about anticipated water use by any project prior to approval (“the optimal time to ‘get into alignment’ is during the WSA and EIR process”).
- If appropriate to the situation, the water supplier and land use planners could work together to create parcel maps, allocating water to each parcel in some sort of flexible—but quantifiable—manner, and thereby ensuring greater certainty in regards to future water use.

While it is not the role or the intention of the RWMG to “force” entities to communicate and coordinate better, the RWMG can serve an important function in providing leadership and opportunities for encouraging and promoting increased communication between land use decision-makers and water managers. Potential opportunities include the following:

Monthly or Quarterly Joint Planning Meetings: The RWMG can encourage local land use jurisdictions and local water managers to hold joint planning meetings at regular intervals to improve communication and efficiencies. Joint planning meetings can be held at the staff level and/or by governing boards. Both options provide value in different ways, and both should be encouraged. A good model is the Joint City/District meeting that is held by the MCWD Board of Directors and the Marina City Council, described above.

Annual Water Resource Planning Forum: One land use planner interviewed for this chapter suggested that part of the “disconnect” between land use and water resource planning entities might be that individuals in those organizations do not fully understand the mission, priorities, and issues of the other organizations and agencies.¹⁴ To help resolve that problem, he suggests the RWMG could host an annual forum of land use and water resource planning agency/organization directors, where staff present their agency or organization’s mission and programmatic priorities and then heads of staff discuss, in a workshop-type forum, overlapping areas of interest, potential conflicts in priorities or objectives, and potential areas for coordination. This type of forum could potentially be conducted as a “retreat,” and led by a professional facilitator.

¹⁴ Email communications with Bryan Largay, Tidal Wetland Project Director, ESNERR, January 30-31, 2012.

Collaboration Workshop: Similarly, a one-time collaboration session could be offered to land use planners and water managers in the region. ESNERR recently hosted a workshop entitled “How to Plan and Run a Collaborative Process,” which laid out an approach to help individuals and organizations with some overlapping interests identify those overlaps and focus in on a meaningful step they could take to move the collaborative process forward. ESNERR, a member of the RWMG, has offered to conduct a “needs assessment” for land use managers and water managers in the region, if desired, to evaluate the needs for increased collaboration. The assessment would determine whether a collaborative process is called for, what topics it would cover, and what entity would be the best host to ensure a successful process. If that assessment demonstrates a need for the collaborative process, and that ESNERR would be a good host, then ESNERR is willing to host such a process for land use managers and water managers in the region.

“A User’s Guide to the Water and Land Management Organizational Landscape”: The RWMG could produce an almanac of the various agencies, organizations and companies that own or have jurisdiction over the land and water. The almanac would contain the entities’ mission statements, authority (“what they do”), and jurisdictions, including a map that clearly shows watersheds and jurisdictional boundaries. The map would enable individuals to understand how land areas and waterways are connected, how their actions may impact land or water resources, and which entities may have an interest in, or a responsibility for, those resources. For example, when a landowner discharges water to a drainage ditch, he or she will be able to see that it goes downstream into a habitat that a particular conservation agency manages. When a conservation organization wants to remove some culverts to improve water quality, they will be able to see which agency is responsible for maintaining that culvert to protect farmland and houses from flooding. Understanding these connections will help individuals and organizations understand the need for increased coordination, and will help facilitate that coordination, in order to achieve mutual benefits.

Greater Use of Websites for Information Dissemination and Education: Websites provide a great vehicle for keeping the public and other land use planners and water managers up to date on plans, policies, regulations, studies, and related developments. Websites can provide access to meeting agendas and meeting minutes, monthly and quarterly status reports on a variety of water supply and water use issues, and other information that might be useful to both land use planners and water resource managers, as well as to the public in general. The RWMG could encourage both water managers and land use planners in the region to take greater advantage of their websites for the purpose of disseminating and sharing information in this way.

Addressing Policy and Regulatory Barriers to IRWM Plan Implementation: If funding becomes available, the RWMG intends to investigate potential policy and regulatory barriers to IRWM Plan implementation. This includes any laws, regulations, or practices that may conflict with the objectives of the IRWM Plan or that may inhibit implementation of any project proposed through the IRWM Plan. The RWMG will work with local land use planners to resolve conflicts and implement changes as appropriate. Increased communication will lead to increased understanding on the part of both the land use planners and the water managers of the other agencies’ objectives and constraints, and will ultimately lead to win-win solutions for both land use management and water resource management.

It should be emphasized that while this chapter has focused on the coordination between land use planners and water managers in the Greater Monterey County IRWM region, the goal of the IRWM planning effort overall is to improve coordination and communication not only between land use planning and water management, but within all aspects of water management—connecting water supply, surface and ground water quality, floodplain issues, stormwater issues, water conservation, municipal and agricultural usage,

ecological conservation, etc.—to more comprehensively coordinate all of the efforts of all the agencies and stakeholders involved.

Section P: Stakeholder Involvement

The intent of the Stakeholder Involvement standard in the Integrated Regional Water Management (IRWM) Program Guidelines is to ensure that Regional Water Management Groups (RWMGs) give the opportunity to all stakeholders to actively participate in the IRWM decision-making process on an ongoing basis. California Water Code (CWC) §10539 defines a RWMG as “a group in which three or more local agencies, at least two of which have statutory authority over water supply or water management, as well as those other persons who may be necessary for development and implementation of a [IRWM] Plan...” This definition recognizes the collaborative nature of IRWM planning. The IRWM planning process relies on stakeholder involvement to gather regional information and make regional decisions. This section describes the protocols used for stakeholder involvement in the Greater Monterey County IRWM region.

P.1 STAKEHOLDER OUTREACH

P.1.1 Process Used to Identify Stakeholders

Outreach efforts to include stakeholders in the development of the IRWM Plan have targeted specific audiences and constituencies as well as the general public. An initial stakeholder email list, with about 175 names, was developed by the RWMG through brainstorming every known organization that might be affected by and/or interested in the IRWM Plan process. An invitation to participate in the IRWM planning process was sent to each of those stakeholders. The current list includes about 250 individuals representing over 150 agencies, organizations, and interest groups. The list includes all of those stakeholders who were initially invited (except those who specifically requested to be removed from the list), plus many others who have asked to join or who have been invited to join since.

Stakeholders have played an important role in the decision-making process throughout the development of this IRWM Plan. Together, stakeholders and the RWMG represent all of the major water resource management authorities in the region—as well as water resource management authorities and stakeholders from neighboring IRWM regions—and provide broad and fair representation of water supply, water quality, wastewater, storm water, flood control, watershed, municipal, environmental, agricultural, and regulatory interests throughout all geographic areas of the planning region. Stakeholder organizations include such entities as the following:

- Water suppliers and water service districts
- Wastewater agencies
- Water quality regulatory entities
- Watershed groups
- Flood control agencies
- Federal, state, county and municipal governments
- Environmental non-profit organizations
- Agricultural organizations
- Business organizations
- Disadvantaged communities
- Other community organizations
- Universities and research institutions
- Elected officials
- Other interested individuals

All of the stakeholder groups necessary to meet the objectives of the IRWM Plan are included on the stakeholder list. The list continues to expand and evolve as new stakeholders are introduced to the process. New stakeholders are introduced through sign-in sheets at public workshops, recommendations from those already involved, and targeted outreach to underrepresented groups (see process for including disadvantaged communities below). At the end of every email communication sent to stakeholders, the IRWM Plan Coordinator provides an opportunity for stakeholders to either remove themselves from the email list or to make recommendations for additional stakeholders. Please see Appendix D for the full list of stakeholder organizations in the Greater Monterey County IRWM region (this list is occasionally updated on the IRWM website at: <http://www.greatermontereyirwmp.org/>).

P.1.2 Process Used to Communicate with Stakeholders

A website has been developed to facilitate communication with stakeholders about the Greater Monterey County IRWM Plan process (see website address above). The website is a good source of information, containing documents produced during the course of Plan development, news and events (such as public workshops), maps of the region, current project lists, contact information, other resources related to IRWM planning, and a downloadable version of the IRWM Plan. The website will also contain a portal for data related to IRWM Plan projects.

Stakeholders are informed of IRWM Plan developments through website postings, email notices, and where email capability is lacking, personal communication. All email communications to stakeholders, as well as the website, include clear contact information for the IRWM Plan Coordinator (email and phone number). Stakeholders are encouraged to contact the Coordinator at any time (not just during the public comment periods) with questions or comments on the process.

Public workshops are held on occasion to encourage broad and diverse stakeholder participation in the IRWM planning process. The workshops are widely advertised through brochures, newspapers, email, website announcements, and word of mouth. Special efforts are made to ensure broad participation at the public workshops. For example, workshops are held in different locations throughout the region, at different times of day (during the workday and in the evening); workshops are held in locations that have handicap access, near public transportation; and Spanish language translation is made available at (at least) one of the locations. In the course of IRWM Plan development thus far, four public workshops have been conducted:

- *Workshop #1:* A public workshop was held in September 2009 in two different locations (Big Sur and Soledad) to introduce stakeholders to the Greater Monterey County IRWM planning process. The regional boundaries, RWMG composition, and strategy for developing the IRWM Plan were explained. A summary of regional issues and conflicts (as identified by the RWMG, with substantial input from local experts) was then presented, and small breakout sessions were held to encourage discussion. The facilitator documented the participants' comments and input regarding issues and conflicts.
- *Workshop #2:* A second public workshop was held in March 2010. The purpose of this workshop was to solicit projects for inclusion in the IRWM Plan, describe the project submission process, answer questions about the IRWM Grant Program, and explain exactly what the RWMG was looking for in a project. The workshops were held in three different locations (Big Sur, Salinas, and King City) on different days and different times of day in order to encourage participation by as many stakeholders as possible.
- *Workshop #3:* A public workshop was held in August 2011 to coincide with the second annual project solicitation. The project submission process was described and questions about

both the project solicitation and the IRWM planning process were answered. The workshop was held in two different locations, King City and Salinas.

- *Workshop #4:* A public workshop was held in July 2012 to present the Draft IRWM Plan to stakeholders and to explain the process for public comment. The Draft IRWM Plan was presented in sections, the process for submitting comments was explained, and stakeholders' questions were answered by the facilitator (a RWMG member). This workshop was conducted in two different locations, Salinas and King City.

P.2 OUTREACH TO DISADVANTAGED COMMUNITIES

P.2.1 Disadvantaged Communities in the Greater Monterey County Region

Special effort has been made to encourage the participation of disadvantaged communities in the Greater Monterey County IRWM planning process and to ensure that their water resource needs are considered and addressed. Disadvantaged communities are defined as communities with annual median household incomes (MHI) that are less than 80 percent of the statewide MHI. "Severely" disadvantaged communities are defined as communities with annual MHIs that are less than 60 percent of the statewide MHI. Using 2015 US Census data, the statewide annual MHI is \$61,818 (in 2015 inflation-adjusted dollars). All US Census places, census tracts, and block groups with an annual MHI of \$49,454 or less are therefore considered disadvantaged, and those with an annual MHI of \$37,091 or less are considered severely disadvantaged. Note that new income data is released each year by the US Census through the American Community Survey (ACS), and therefore, the threshold for "disadvantaged community" changes each year. This Plan reflects the most current data at the time of writing (in 2017), utilizing 2015 ACS five-year estimates.

With the release of the Proposition 1 IRWM Program Guidelines, the Department of Water Resources (DWR) also recognizes, in addition to disadvantaged communities, "economically distressed areas." An economically distressed area (EDA) is defined as: "a municipality with a population of 20,000 persons or less, a rural county, or a reasonably isolated and divisible segment of a larger municipality where the segment of the population is 20,000 persons or less, with an annual median household income that is less than 85 percent of the statewide median household income, and with one or more of the following conditions as determined by the department: (1) financial hardship, (2) unemployment rate at least 2 percent higher than the statewide average, or (3) low population density (Water Code §79702(k))." For the Proposition 1 IRWM Disadvantaged Community Involvement Grant Program, DWR includes not only disadvantaged communities but also EDAs and "underrepresented communities" (which is not defined) as being eligible for grant funds, referring to all three collectively as "disadvantaged communities."

Based on the 2015 ACS data, eight US Census places within the Greater Monterey County IRWM region are defined as disadvantaged. Table P-1 shows the population and MHI for each of these places, and also illustrates how disadvantaged community status has changed for US Census places in the Greater Monterey County IRWM region over the three years of this planning effort. The community of Castroville and the City of Salinas are included in the table to show how consistently close their MHIs have been to the "disadvantaged community" threshold. An income survey was performed for Castroville in 2017 by the Rural Community Assistance Corporation (RCAC), demonstrating the community to qualify as "severely disadvantaged" with an MHI of \$35,000.

Table P-1: Disadvantaged Community Status of US Census “Places” in the Greater Monterey County IRWM Region from 2013 – 2015 (ACS Five-Year Estimates)

	Estimate; Total Population	Estimate; Median household income in the past 12 months (in Inflation-adjusted dollars)		
	2015	2015	2014	2013
<i>Disadvantaged Community</i>		49,454	49,191	48,875
<i>Severely Disadvantaged Community</i>		37,091	35,149	36,656
Moss Landing CDP	153	31,500	30,500	28,750
Boronda CDP	1,271	34,009	42,333	41,094
King City city	13,389	40,238	40,500	45,905
San Ardo CDP	746	40,375	42,333	40,781
San Lucas CDP	384	43,750	45,417	47,500
Gonzales city	8,378	48,865	51,178	50,168
Greenfield city	16,869	49,263	52,374	53,805
Soledad city	25,826	51,161	46,010	49,570
Castroville CDP	6,707	49,654	50,000	53,580
Salinas city	155,366	49,840	49,728	49,264
Pine Canyon CDP	2,243	57,424	46,683	55,125
Lockwood CDP	446	46,538	94,615	94,607

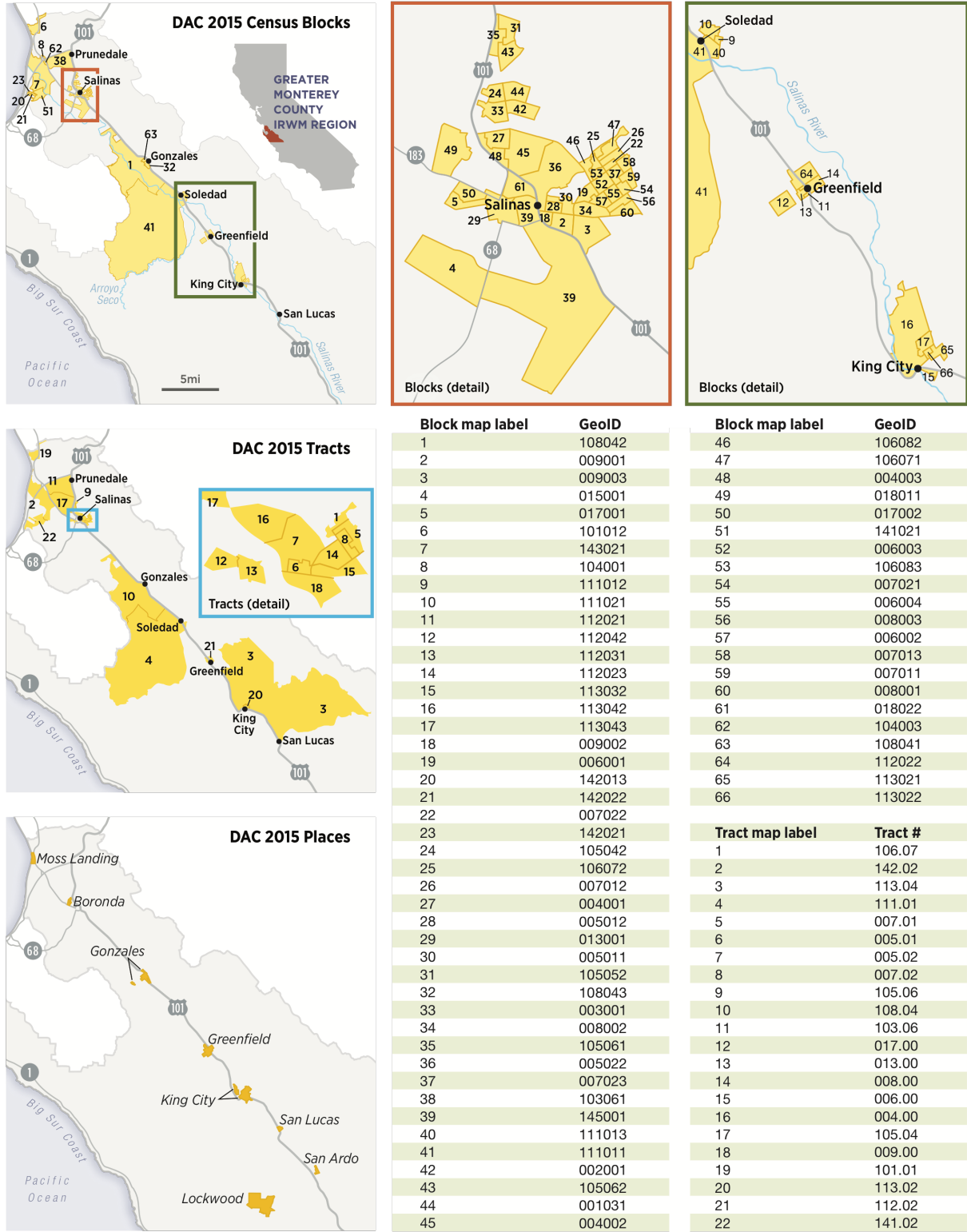
Source: American Community Survey five-year estimates.

Numerous census tracts and block groups also fall within the definition of “disadvantaged community,” including 26 census tracts and 77 block groups (six of the census tracts and 25 of the block groups are severely disadvantaged). In all, 36 percent of the population within the Greater Monterey County IRWM region is defined as being disadvantaged, according to 2015 ACS data at the block group level. Figure P-1 illustrates disadvantaged communities in the Greater Monterey County IRWM Region according to 2015 ACS data, showing the distinctions between US Census places, tracts, and block groups and identifying those regions by the US Census geographic identification number.

Many small low-income communities that face drinking water and wastewater issues are located in neighborhoods or communities that are not identified as being “disadvantaged” by large-scale income survey efforts such as the US Census. The scale of census tract or even block group data, particularly in rural areas, may not be fine enough to identify very small disadvantaged communities. Recognizing that US Census data alone would likely fail to account for all disadvantaged communities located within the region, the RWMG also searched for “hidden” (or “suspected”) disadvantaged communities using alternative methods to help identify geographic areas where such communities are likely to exist.

Figure P-1: Disadvantaged Community Places, Tracts, and Block Groups in the Greater Monterey County IRWM Region

2015 Disadvantaged Community Block Groups, Census Tracts, and Places



P.2.2 Environmental Justice Communities

In addition to ensuring that critical water needs of disadvantaged communities are met through the IRWM Plan process, the RWMG remains vigilant to environmental justice concerns. Environmental justice concerns exist where water resource problems disproportionately impact communities that lack the capacity to address those problems themselves, due to financial, language, or other constraints. Environmental justice is also relevant where water resource projects meant to convey “general” public benefit do not in fact benefit poor or otherwise disadvantaged communities proportionately (e.g., conservation programs that feature rebates for high efficiency washing machines may benefit middle and upper class communities more than poorer communities, which cannot afford the initial purchase).

Environmental justice communities are often low-income or non-English-speaking communities. According to ACS 2006-2010 data the population of Monterey County is 55.4 percent Hispanic/Latino. Several communities within the Greater Monterey County IRWM region have very high Hispanic/Latino populations. Many people in these communities are first-generation and are monolingual in Spanish. Other languages may be represented within specific disadvantaged communities as well. For example, the City of Greenfield has a large number of households from the Oaxaca region of Mexico, where the primary language is an indigenous dialect unrelated to Spanish. Table P-2 below shows the Hispanic/Latino populations for selected communities within the Greater Monterey County IRWM region, as well as the percentage of people within those communities that speak a language other than English at home.

Table P-2: Hispanic/Latino Populations and Non-English Language Spoken at Home

Community	% Hispanic/Latino Population	% of Population that Speaks Language Other than English at Home
Boronda CDP	85.2	76.2
Castroville CDP	90.1	81.9
Chualar CDP	96.7	90.7
Gonzales city	88.9	77.9
Greenfield city	91.3	85.3
King City city	87.5	84.5
Las Lomas CDP	89.2	79.3
Salinas city	75	67.6
San Ardo CDP	70.2	71.4
San Lucas CDP	83.3	93.4
Soledad city	71.1	64.2

Source: 2006-2010 ACS data, US Census Bureau

In the Salinas Valley, many environmental justice communities are also farmworker communities. Approximately 24 percent of jobs in Monterey County are related to the agricultural industry, and agriculture-related jobs are some of the lowest paying jobs of all industry sectors in the county.

P.2.3 Water-Related Challenges for Disadvantaged Communities and Environmental Justice Communities

Disadvantaged communities and environmental justice communities in Monterey County face a variety of water-related challenges, including water supply, wastewater treatment, and flooding problems. Many drinking water systems are experiencing rising rates of contamination. Common contaminants in Monterey County include nitrates, dissolved solids, and arsenic. A recent study completed by the University of California, Davis, “Addressing Nitrate in California’s Drinking Water,” reports that one

third of wells in the northern, eastern and central areas of the Salinas Valley tested for nitrates are in excess of the State standard of 45 milligrams per liter that is considered acceptable for safe drinking water (Harter et al. 2012). One in ten public supply wells are estimated by the UC study to exceed the nitrate levels before treatment. Further, the study concluded that nitrate problems are likely to worsen for several decades.

Disadvantaged communities are affected disproportionately throughout Monterey County due to high treatment costs for water in relation to household income. The lowest income households may be unable to afford bottled water or filtration systems if tap water or well water is undrinkable. Affordability of water and wastewater expenses is often expressed as a maximum of 2 percent of MHI or \$81 per month. Using current MHI data, lower income households are likely to experience financial hardship even at that rate per month. An example of the “affordability” problem for disadvantaged communities is what recently occurred at the San Jerardo Farm Cooperative, a low-income community in the Salinas Valley. The community members at San Jerardo had been getting sick from contaminants in their drinking water, and after several years and persistent effort, the community was successful in obtaining grant funds to install a new water filtration system. An unexpected result of the new water system, however, has been a sharp rise in cost to members—e.g., from \$25-30/month to \$100-150/month. Many members of the community are simply unable to afford these rates.

In addition to other water resource problems faced by disadvantaged communities and environmental justice communities, many of these communities in Monterey County lack water-based recreational and open space opportunities. While Monterey has a wealth of beautiful coastline, many disadvantaged communities and environmental justice communities are located in the Salinas Valley or North County areas, where rivers and streams have been diverted and/or covered up to accommodate agricultural and urban growth. One result is a lack of healthy, thriving watersheds in low-income areas such as Salinas and Castroville. There is a great need for watershed restoration projects in these areas.

P.2.4 Disadvantaged Community Representatives on the RWMG

The Greater Monterey County RWMG has made a concerted effort to ensure that the water resource management needs and interests of disadvantaged communities are fully addressed in the IRWM Plan. Two organizations, the Environmental Justice Coalition for Water (EJCW) and the San Jerardo Cooperative, were asked to participate in the RWMG specifically to represent disadvantaged community interests. They were joined in this effort by the Rural Community Assistance Corporation (RCAC) in late 2011.

EJCW is a statewide coalition comprised of over 70 community-based and non-profit member organizations working on water justice issues that impact low income communities and communities of color. EJCW has identified a chronic lack of access to safe and affordable water resources as a critical disparity facing many of California’s communities, and aims to build the capacity of organizations and groups to engage in local, regional and statewide water policy and planning (see www.ejcw.org).

The San Jerardo Cooperative is a unique rural housing complex for low-income farmworker families in rural Monterey County. The Cooperative is the first such development in California, where there are 60 units that are owned by Cooperative members as a mutual benefit organization, four rental units, a community room, child care center, and soccer fields. The Cooperative has experienced severe drinking water contamination and wastewater issues, and was recently awarded an IRWM Implementation Grant in Round 1 to install wastewater system improvements. San Jerardo has also been involved in the statewide movement for water justice.

RCAC provides training and technical assistance to rural communities in the western states and has been a partner with EJCW and the San Jerardo Cooperative in developing solutions to San Jerardo's water quality problems. RCAC is currently in discussions with disadvantaged communities in the Greater Monterey County IRWM region and in the adjacent Monterey Peninsula IRWM region to provide technical assistance on water quality issues (see www.RCAC.org).

The RWMG is committed to achieving a fair and equitable distribution of benefits to all communities in the Greater Monterey County IRWM region. Including three organizations on the RWMG that proactively represent the interests of disadvantaged communities and environmental justice communities helps ensure that the IRWM planning process remains sensitive to the unique needs of these communities.

In addition, the Castroville Community Services District (CCSD) is a member of the RWMG and represents the community of Castroville, which is a disadvantaged community in the Greater Monterey County IRWM region. The CCSD was successful in obtaining Round 1 IRWM Implementation Grant funding. The grant will replace an arsenic-contaminated water supply with a new well to serve the community.

P.2.5 Disadvantaged Community Outreach Plan (2012)

In 2012, the RWMG received Round 1 IRWM Planning Grant funds to expand outreach to disadvantaged communities and to enable other assistance to be provided to disadvantaged communities in order to increase their participation in the IRWM planning effort. EJCW was contracted through the Planning Grant to implement the Disadvantaged Community Outreach Plan, with assistance from California Rural Legal Assistance and the San Jerardo and RCAC representatives. Outreach activities took place over a two-year period, beginning with areas that had been previously identified as disadvantaged in the Salinas Valley and in North Monterey County.

One goal of the planning effort was to investigate potential disadvantaged community issues in areas that were undergoing severe water shortage and in areas with high levels of arsenic or other contaminants. A special effort was made to mobilize communities in the Salinas Valley to participate strategically in RWMG meetings. EJCW advocated for the development of water projects that could be included in the IRWM Plan, particularly water and wastewater projects.

P.2.6 Plan to Address Drinking Water and Wastewater Needs of Disadvantaged Communities in the Salinas Valley and Greater Monterey County IRWM Region (2017)

In October 2014, the RWMG received \$500,000 in grant funds from the State Water Resources Control Board (State Water Board) to develop an integrated plan to address drinking water and wastewater needs of disadvantaged communities in the Salinas Valley. The funds were appropriated by the California Legislature through Assembly Bill (AB) 1630 (Alejo), from fines and penalties from the Waste Discharge Permit Fund. In 2017, the RWMG was provided an additional \$200,000 in grant funds from the State Water Board to enable the Project Team to expand community engagement and evaluation of long-term solutions. The resulting plan, entitled *Integrated Plan to Address Drinking Water and Wastewater Needs of Disadvantaged Communities in the Salinas Valley and Greater Monterey County IRWM Region*, is incorporated into this IRWM Plan as Appendix Q.

The following objectives, and associated tasks, were identified for the planning effort:

1. Identify disadvantaged communities within the planning region, with a focus on small disadvantaged communities in unincorporated areas.
2. Identify drinking water and wastewater problems.

3. Develop a comprehensive inventory and database and create maps.
4. Identify potential solutions for (at minimum) each “high priority” community.
5. Work with each community to determine preferred solution(s).
6. Develop conceptual project descriptions and cost estimates for the “high priority” communities.
7. Identify potential funding sources for the proposed projects and for broader regional solutions.

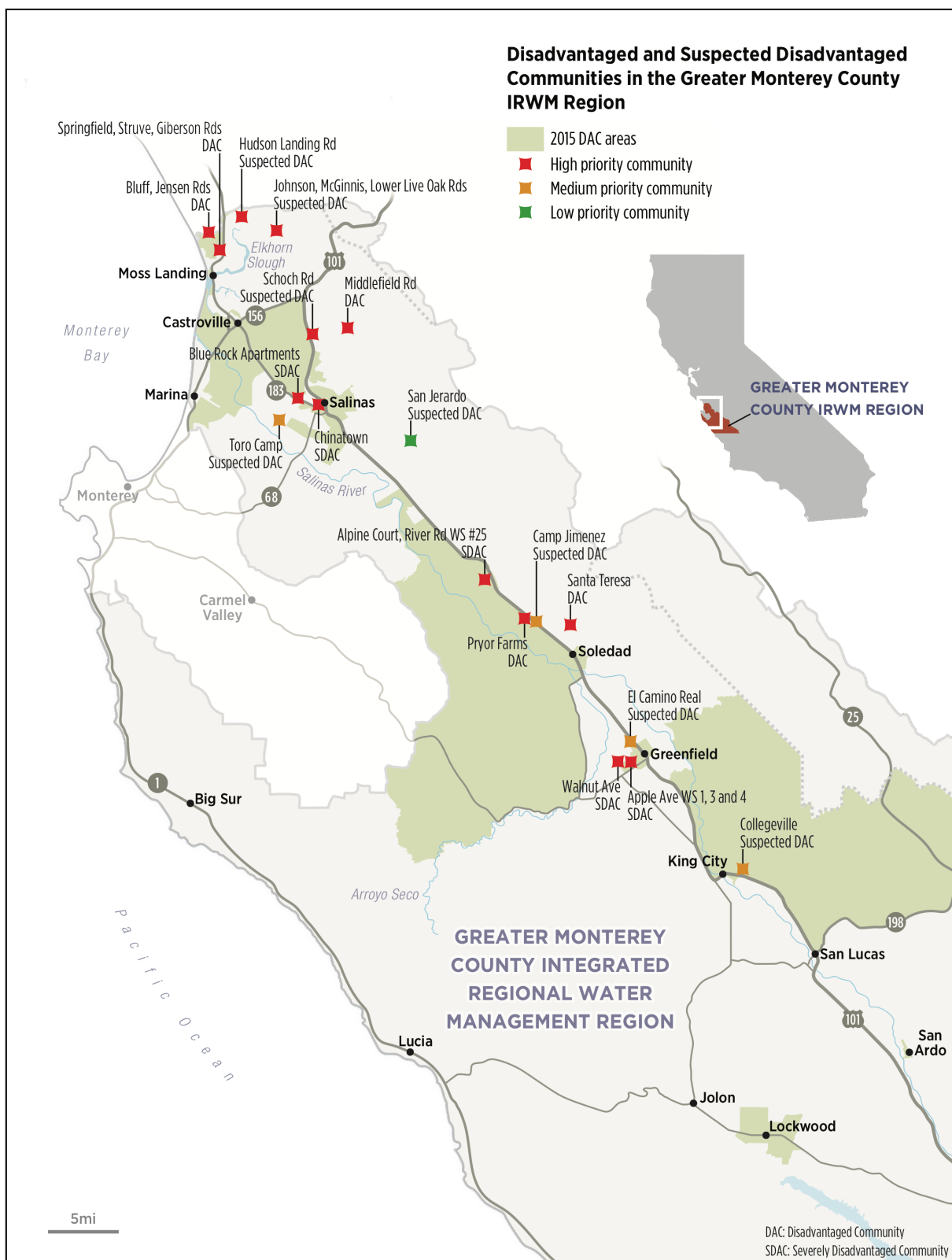
The core Project Team for this planning effort consisted of the Greater Monterey County IRWM Program Director and members of the Regional Water Management Group: EJCW, RCAC, and San Jerardo Cooperative, Inc. – plus the consulting group Nilsen and Associates. The Project Team was assisted by a Technical Advisory Committee (TAC) consisting of representatives from the State and Regional Water Boards, local agencies, environmental justice organizations, engineers, water utilities, and individual community representatives. This plan was formally approved by vote of the RWMG at a regularly scheduled RWMG meeting, open to the public, on November 8, 2017.

The plan focuses on small disadvantaged communities, and communities suspected to be disadvantaged, in unincorporated areas that are served by state small water systems (5-14 connections), local small water systems (2-4 connections), and private domestic wells. EJCW staff conducted extensive outreach to small communities in unincorporated areas of the region, using a questionnaire survey. EJCW surveyed a total of 153 households in 25 communities, covering 19 census block groups. Six of these communities were identified as disadvantaged and 15 were identified as suspected disadvantaged communities (“disadvantaged community” status was later proven for many of the suspected disadvantaged communities by means of MHI surveys conducted over the course of the project.)

The Project Team prioritized the communities according to need. Figure P-2 illustrates the high, medium, and low priority communities in the IRWM planning region. From the high priority community list (with 14 communities), seven small communities were selected. The Project Team worked in partnership with the Community Engineering Corps (CECorps), an alliance of the American Society of Civil Engineers, the American Water Works Association, and Engineers Without Borders-USA, to identify and evaluate solutions for each of the seven selected high priority disadvantaged communities. The plan describes the water problems and alternative long-term options for each community, recommended solution(s), potential barriers, community preference (if any), and next steps.

Outreach to the following larger disadvantaged communities was also conducted to assess needs and potential capacity to provide services to nearby small communities: Boronda CDP, Castroville CDP, Greenfield, Gonzales, King City, Moss Landing CDP, San Ardo CDP, and San Lucas CDP. The following water districts/utilities were contacted to assess available resources for potential consolidation or extension of service: City of Soledad, Pajaro Sunny Mesa Community Services District, Castroville Community Services District, City of Gonzales, California American Water (CalAm), Alco Water Service, and California Water Service (Cal Water).

Figure P-2: Locations of High, Medium, and Low Priority Disadvantaged Communities



The Project Team offered the following recommendations based on their work over the three-year project period:

Recommendation 1. Funding Needs

Most of the Project Team's recommendations began with a need for increased funding support. While numerous federal and state funding opportunities exist for disadvantaged communities, the Project Team noted certain funding "gaps" and recommended that federal, state, and regional government entities consider increasing funding in the following areas:

- a) Guaranteed set-aside funds for small disadvantaged community water systems, particularly to see the "high priority" communities through to an implementable solution.
- b) Increased support for community engagement, particularly to support outreach to communities in the four geographic focus areas identified for future work, and for pre-project development and project development activities for all high priority projects.
- c) Ongoing assessment of needs: Since MHI data changes every year, resources are needed to enable re-assessment of disadvantaged community status and of their drinking water and wastewater needs on an annual basis; importantly, funds are needed to support ongoing updates and maintenance for the Greater Monterey County Community Water Tool database and map viewer (developed through this project), as well as continued hosting costs.
- d) Focused MHI surveys to prove "disadvantaged" status of "suspected disadvantaged" communities in order for those communities to qualify for special grants and loans.
- e) Guaranteed funding for bottled water programs and other interim solutions to ensure that immediate drinking water and wastewater needs are addressed for however long it takes a community to implement a permanent solution.
- f) More intensive outreach to private domestic well owners, along with systematic water quality testing.
- g) Wastewater education, including distributing written materials, hosting informative community workshops, and providing door-to-door outreach.

Recommendation 2. Grant Funding Process

The following recommendations were targeted primarily toward state funding agencies (in particular, the State Water Board) and Monterey County to help make the grant funding process more effective and efficient:

- a) *Project sponsorship*: The difficulty in finding qualified sponsors for drinking water projects for small disadvantaged communities is, statewide, a frequent and significant barrier to implementing solutions. The Project Team recommended that State funding agencies make grant requirements for disadvantaged community drinking water projects easier and more affordable for qualified entities to sponsor projects. Other ideas were for State or local governments to take a leadership role in sponsoring projects, or for the development of a legal entity, such as a regional Joint Powers Agency (JPA), to act as project sponsor for rural communities, private domestic wells, and small systems where consolidation is not feasible.
- b) *Lateral costs*: While most funding sources cover infrastructure costs, lateral costs are typically not covered; as a result, a solution that may appear low cost may wind up being an unaffordable

option. The Project Team recommended that State funding agencies allow for grant coverage of lateral costs for disadvantaged communities.

- c) *More efficient reimbursement from State grants:* Short vs. long reimbursement periods can make the difference between small communities being able or not being able to implement long-term solutions. Beginning with Proposition 1 IRWM funds, the Department of Water Resources has instituted a policy to pay disadvantaged communities and nonprofit organizations 50 percent of their grant award upfront. The Project Team urged other State agencies to consider similar reimbursement policies for disadvantaged communities.
- d) *Need for increased certainty in identifying costs:* Community members repeatedly state that their interest to participate in a long-term water or wastewater project depends on cost. The Project Team recommended that the State Water Board and other funding agencies implement a “pre-approval” process to clarify the costs to property owners of future water or wastewater projects. A pre-approval process, and clear schedule of deadlines for application requirements, would provide community members the information they need to decide whether to join a water project.

Recommendation 3. Monterey County Health Department Coordination

Given the depth of experience and knowledge that County staff have regarding small communities in unincorporated areas of the region, the Project Team encouraged increased input from County staff on project evaluations for disadvantaged communities as this work continues into the future.

P.2.7 Needs Assessment Conducted as part of 2017-2018 IRWM Plan Update

As part of the 2017-2018 IRWM Plan update process to ensure compliance with 2016 IRWM Program standards, and with funds from a Proposition 1 IRWM Planning Grant, additional outreach was conducted to disadvantaged communities to inform community members of possible contaminants in their drinking water (in particular, nitrate, hexavalent chromium, and arsenic, per requirements of AB 1249), to let them know about the IRWM Plan update, and to inform them about a free water quality testing program that had just been launched by the Central Coast Regional Water Quality Control Board (including testing for hexavalent chromium, nitrate, arsenic, perchlorate, and 123-TCP). The outreach was conducted by the Environmental Justice Coalition for Water (EJCW) on behalf of the RWMG.

At the conclusion of that outreach program, EJCW staff submitted a Needs Assessment report outlining recommendations for disadvantaged community engagement moving forward. The Needs Assessment is attached as Appendix P.

P.3 OUTREACH TO NATIVE AMERICAN TRIBES

Archeological evidence indicates that humans have been occupying coastal California for at least 10,000 years. When the first Spanish settlers arrived in the early 1600s, the Monterey area was inhabited by American Indians of the Ohlone (formerly Costanoan), Esselen, and Salinan groups. According to the 2010 US Census, Monterey County had a Native American population of 5,396 persons or 1.3 percent of the County population.

While there are no dedicated tribal lands within the Greater Monterey County region, there are a number of historic, cultural, and Native American sacred sites throughout the region that are of great importance to the descendants of these tribes. The RWMG has consulted with the California Native American Heritage Commission and is working to include representatives of the Ohlone/Costanoan, Esselen, and Salinan Nation tribe in the project review process to ensure that projects implemented as part of the

IRWM Plan do not impact Native American archeological or cultural resources. The RWMG will continue to encourage the participation of Native Americans in the IRWM planning process.

It should be noted that Tribes are sovereign nations, and as such any coordination with Tribes is on a government-to-government basis.

P.4 STAKEHOLDER PARTICIPATION

Participation in the IRWM planning process is entirely voluntary. Access to IRWM Plan participation and involvement is never based on an individual's or group's ability to contribute financially to IRWM Plan development or to the planning process.

Stakeholders can participate directly in the IRWM planning process through attendance at regularly scheduled RWMG meetings, which are open to the public and announced on the website. At RWMG meetings, stakeholders are welcome to voice their opinions and participate in the discussions along with RWMG members, though stakeholders are unable to vote. The meeting minutes from all RWMG meetings are posted on the website within a week following the RWMG meeting.

In addition, stakeholders can participate in the Greater Monterey County IRWM decision-making process by attending public workshops as described above, and by providing input through written comments both generally and during specific public comment periods. Minimum 30-day public comment periods are held for every IRWM Plan "milestone," including: goals and objectives; project ranking system; ranked project lists; and the Draft IRWM Plan. Stakeholders are occasionally asked directly to assist the RWMG in its decision-making process; for example, regional "experts" were asked to provide input during information gathering for "issues and conflicts," and several non-RWMG water resource managers and other experts were asked to help review project proposals during the first (2010) project solicitation.

Section Q: Coordination

The intent of the Coordination standard in the Integrated Regional Water Management (IRWM) Program Guidelines is to ensure that Regional Water Management Groups (RWMGs):

- Coordinate their activities with local agencies and stakeholders to avoid conflict within the region and to best utilize resources;
- Are aware of adjacent planning efforts and are coordinating with adjacent RWMGs; and
- Are aware of state, federal, and local agency resources and roles in the implementation of their plans and projects.

This section describes how the IRWM planning effort in the Greater Monterey County IRWM region addresses this Coordination standard.

Q.1 COORDINATION OF ACTIVITIES WITHIN THE IRWM REGION

The coordination of IRWM-related activities and efforts between the RWMG and project proponents and stakeholders in the Greater Monterey County IRWM planning region occurs in several ways. The Greater Monterey County IRWM website (<http://www.greatermontereyirwmp.org/>) is the “go to” place for project proponents and stakeholders to learn about the IRWM planning effort, read the latest news, review projects that are included in the IRWM Plan, and find resources about related efforts in the region, including other Central Coast area IRWM Plans. In addition, the IRWM Plan Coordinator sends email notices to all stakeholders and project proponents whenever anything “newsworthy” occurs, such as milestone decisions for the IRWM Plan or planning process, solicitation of new projects for the IRWM Plan, the ranking of implementation projects for inclusion in the Plan, or the release of new IRWM Program Guidelines or Proposal Solicitation Packages (PSPs).

Secondly, the RWMG has been working with the Central Coast Resource Conservation Districts (RCDs) to develop and utilize a new database as a way to track water resource projects within the Greater Monterey County region. The Conservation Action Tracker database, described in the Plan Performance and Monitoring Section of this IRWM Plan, is a data system for tracking land-use management improvements in the Central Coast region. It is an online tool that will allow project proponents to register and update information on conservation projects across the region in order to track efforts and improve stakeholders’ ability to evaluate collective impacts and effectiveness. The Conservation Action Tracker is being implemented by the Central Coast RCDs and project partners of the Greater Monterey County IRWM Plan.

Finally, a type of “project coordination” occurs during each new IRWM Plan project solicitation. The Project Review Committee reviews each and every project (both implementation projects and concept proposals) for potential integration opportunities, with an aim of combining discrete project elements or combining entire projects to create regional programs. Through the integration process, the RWMG helps coordinate activities within the IRWM planning region in order to avoid redundancies, increase efficiencies, and to create projects with multiple benefits. For future IRWM Plan project solicitations, the RWMG is considering the idea of hosting informal “mixers” for project proponents and other stakeholders where they can discuss current projects and brainstorm new project ideas. The concept behind the mixers is to bring individuals together in a casual setting that is conducive to “mingling” and an easy exchange of ideas. The intent is to increase integration of projects and to enhance opportunities for coordination of activities, collaboration, and partnerships throughout the region.

Q.2 COORDINATION WITH NEIGHBORING IRWM REGIONS

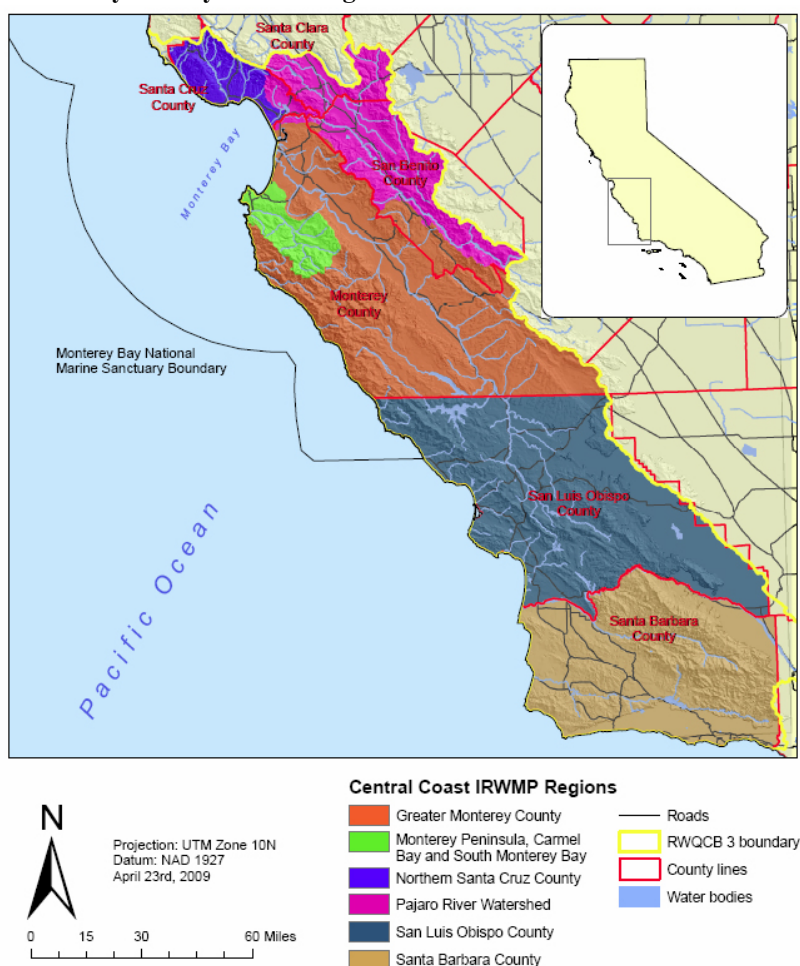
Q.2.1 IRWM Regions on the Central Coast

Six IRWM Plans have been developed in the Central Coast IRWM Funding Area:

- Northern Santa Cruz County IRWM Plan
- Pajaro River Watershed IRWM Plan
- Greater Monterey County IRWM Plan
- Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Plan
- San Luis Obispo County IRWM Plan
- Santa Barbara Countywide IRWM Plan

Each of the six Central Coast IRWM regions was determined and deemed appropriate for IRWM planning based on various factors—including watersheds, groundwater basins, jurisdictional boundaries, existing partnerships, historical planning efforts, and other factors—that made each regional alignment the most logical for IRWM planning and coordination. These regional boundaries were developed in consultation with the water resource agencies and organizations in each of the six counties to coordinate and avoid conflicts between the IRWM regions. Figure Q-1 below illustrates the boundaries of the Greater Monterey County IRWM region in relation to the other Central Coast IRWM regions.

Figure Q-1: Greater Monterey County IRWM Region in Context with Other Central Coast IRWM Regions



Q.2.2 Why There are Three Separate IRWM Plans in Monterey County

The Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (or “Monterey Peninsula” IRWM region) and a portion of the Pajaro River Watershed IRWM region both lie within Monterey County, as does the Greater Monterey County IRWM region. This section explains why there are three separate IRWM Plans within Monterey County.

When contemplating the formation of a new IRWM region that would address coverage voids in the Salinas River watershed and the Big Sur coastal watersheds (resulting in the expansion of the former Salinas Valley IRWM region into the current Greater Monterey County IRWM region), the Planning Committee considered several potential boundary alignments. These included potential re-alignments of existing IRWM regions, such as incorporating the Big Sur coastal watersheds into the Monterey Peninsula IRWM region, or creating one large IRWM region to cover all of Monterey County. However, those alignments did not make sense given the distinct characteristics and unique circumstances of each of the existing IRWM regions, as explained below.

The regional boundaries that define the three current IRWM Plans within Monterey County—i.e., Greater Monterey County, Pajaro River Watershed, and Monterey Peninsula IRWM Plans—reflect the way in which water resource issues are managed locally and regionally. In Monterey County, this structure is institutionalized through the charters of three water management districts as well as through several subsequent MOUs between those agencies. As the first of those agencies created in the Water Code, the Monterey County Water Resources Agency (MCWRA, known originally as the Monterey County Flood Control and Water Conservation District) was organized with broad, countywide water resources planning and management authorities. Subsequently, through creation of the Monterey Peninsula Water Management District (MPWMD) and the Pajaro Valley Water Management Agency (PVWMA), as well as through follow-on MOUs, most water resources planning and management authorities except flood protection were allocated from MCWRA to those agencies within their jurisdictional areas. The three IRWM Plans developed within Monterey County reflect both the jurisdictional boundaries and the cooperative relationships of these three water management agencies.

These regional alignments not only recognize the historical management of water resources in the area but recognize the unique issues and conflicts that distinguish these three IRWM regions. The Pajaro River Watershed IRWM Plan is a collaborative effort by the PVWMA, San Benito County Water District, and Santa Clara Valley Water District. The IRWM planning area encompasses the boundaries of the Pajaro River watershed, which is approximately 1,300 square miles and includes portions of Santa Cruz, Santa Clara, San Benito, and Monterey Counties. The Pajaro River Watershed IRWM Plan partners are all entitled to Central Valley Project (CVP) deliveries and share an interest in improving the system reliability, efficiencies, and operational flexibility of the San Felipe Division of the CVP. The Greater Monterey County and Monterey Peninsula IRWM regions do not receive CVP water and instead depend entirely on local groundwater and surface water sources for their water supply. In addition, flooding is a major source of conflict within the Pajaro River watershed; cooperative efforts to manage flooding have led to the formation of the Pajaro River Flood Prevention Authority, a joint powers authority with representatives from all four counties (the MCWRA is a participating member). These factors distinguish the Pajaro River watershed from the Greater Monterey County and Monterey Peninsula IRWM regions and justify them being separate and distinct IRWM regions.

Development of the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Plan has been led by the MPWMD, the Big Sur Land Trust, City of Monterey, the MCWRA, and the Monterey Regional Water Pollution Control Agency (MRWPCA); the Marina Coast Water District has recently joined this RWMG. The Monterey Peninsula IRWM region boundary is based on groundwater basins within the MPWMD boundary (specifically, the Carmel Valley aquifer and the Seaside Groundwater Basin) and

surface watersheds flowing into or through the MPWMD boundaries, including all of the Carmel River and San Jose Creek watersheds. The planning region is approximately 347 square miles and consists of coastal watershed areas in Carmel Bay and south Monterey Bay between (and including) Pt. Lobos in the south and Sand City in the north—a 38-mile stretch of the Pacific coast.

As noted above, the Monterey Peninsula IRWM region is dependent on local rainfall and runoff for its potable water supply, with no connections to water sources outside of the region. Nearly all of the region's water supply comes from the Carmel River, the Carmel Valley aquifer, and from the coastal subareas of the Seaside Groundwater Basin. This common reliance on a shared water supply distinguishes the Monterey Peninsula IRWM region from the larger Monterey County region, which depends primarily on Salinas Valley groundwater (and secondarily on surface water in the Big Sur region) for its water supply sources. In addition, freshwater from the Seaside and Carmel River basins is integrally linked through infrastructure and is used to supply the Monterey Peninsula cities, whereas no similar infrastructure exists between the Seaside and Salinas basins; water exportation from the Salinas Basin is distinctly prohibited by Monterey County ordinance, and no water from the Seaside Basin is exported to the Salinas Basin. For these reasons, the Monterey Peninsula IRWM region is considered a discrete sub-region within Monterey County and has been determined to be an appropriate geographical region for integrated planning, separate from the Greater Monterey County and Pajaro River Watershed IRWM regions.

Q.2.3 How the Greater Monterey County Region Coordinates with Adjacent Regions

The Greater Monterey County IRWM region shares borders with three other IRWM planning regions: the Pajaro River Watershed region to the north, the Monterey Peninsula region, and the San Luis Obispo County region to the south. The boundary divisions are as follows:

- *Border with Pajaro River Watershed IRWM region:* The boundary division between the two regions is marked by the Pajaro River watershed line in Monterey County. The Greater Monterey County region does not include any portion of the Pajaro River watershed, but does overlie a small portion of the Pajaro Valley Groundwater Basin.
- *Border with Monterey Peninsula IRWM region:* The Greater Monterey County region surrounds the Monterey Peninsula IRWM region on all sides, except where the Monterey Peninsula region meets the coast. In relation to the Monterey Peninsula region, the Greater Monterey County region runs north from the MPWMD boundary and includes the City of Marina; runs north of the Seaside Groundwater Basin, and includes the areas outside of the Carmel River watershed boundary; runs south from the MPWMD boundary just south of Pt. Lobos; and runs south from the southernmost limit of the San Jose Creek and Carmel River watersheds to the San Luis Obispo County line. The Greater Monterey County IRWM region does not include any portion of the Carmel River or San Jose Creek watersheds.
- *Border with San Luis Obispo County IRWM region:* The boundary division between the Greater Monterey County and the San Luis Obispo County IRWM regions is demarcated by the Monterey/San Luis Obispo county line.

Collaborative efforts have been undertaken to ensure that projects for each of the regions are well understood and coordinated where overlapping interests may exist now and in the future. This section describes how the Greater Monterey County RWMG coordinates IRWM planning efforts with each of these adjacent regions.

Shared Border with San Luis Obispo County IRWM Region

The region for the San Luis Obispo County IRWM Plan is defined as the County of San Luis Obispo. While the Greater Monterey County and San Luis Obispo County IRWM regions do not overlap, there

are overlapping interests. The Salinas River watershed spans both counties, as do the Nacimiento River and the San Antonio River sub-watersheds. The *San Antonio and Nacimiento Rivers Watershed Management Plan* (October 2008) covers both IRWM regions, and therefore both regions have a shared interest in carrying out the recommended actions of that plan.

Also, while the Nacimiento Reservoir is located within San Luis Obispo County, it is owned and operated by the MCWRA (a RWMG member for the Greater Monterey County region). The MCWRA and the San Luis Obispo County Flood Control and Water Conservation District (District) have coordinated efforts for implementation of both the Nacimiento Water Project and the Salinas Valley Water Project, both of which utilize water from the Nacimiento Reservoir. The Nacimiento Water Project includes the construction of a pipeline and appurtenant facilities from the existing Nacimiento Reservoir south to the communities of Paso Robles, Templeton, Atascadero, and San Luis Obispo to convey the District's existing water entitlement from the reservoir to areas of use.

Because of this shared use of resources of the Nacimiento Reservoir and the fact that the Salinas River watershed spans both counties, the MCWRA and the District discussed the possibility of shared regional planning. The decision was made, however, to contain the respective IRWM planning regions to within each county. This regional alignment made sense given that the Salinas River watershed is divided near the county boundary into major groundwater basins (the Salinas Valley and the Paso Robles basins), and that the county boundary has historically differentiated management responsibilities for land, watershed, and infrastructure within the two counties. The RWMG for the Greater Monterey County IRWM Plan will continue to coordinate with the San Luis Obispo County RWMG on watershed management and water supply issues, and will continue to discuss joint regional planning efforts for the future. Some potential interregional projects between the two regions include:

- *Invasive Aquatic Species Control and Monitoring:* Monterey and San Luis Obispo counties have worked closely over the past several years to monitor for invasive mussels. The goal is to create a sustainable program to inspect all vessels launching at reservoirs in the region to prevent quagga/zebra mussels from becoming established in these critical water supplies. This project is included in the Greater Monterey County IRWM Plan.
- *Interlake Tunnel between Lake Nacimiento and Lake San Antonio:* Lake Nacimiento and Lake San Antonio are manmade reservoirs within the Salinas River Basin. Lake Nacimiento is located in northern San Luis Obispo County and Lake San Antonio is located in Monterey County, but as noted above, both reservoirs are owned and operated by the MCWRA. The watershed feeding Lake Nacimiento is more responsive to rain events, with nearly three times more inflow than Lake San Antonio. At times water releases are made from Lake Nacimiento during the winter months because the lake is at capacity while Lake San Antonio has excess storage available. A project has been proposed to provide a pathway between the lakes in order to redirect water and use it to fill the excess capacity typically available in Lake San Antonio. This would provide additional water storage as well as increased recreational opportunities. This project is included in the Greater Monterey County IRWM Plan.
- *South-Central California Coast Steelhead:* Several small coastal streams in San Luis Obispo County share the same steelhead Distinct Population Segment (DPS) as the Greater Monterey County IRWM region. Issues in the area south of the Carmel River watershed extending across the county line would be better addressed by having the two IRWM regions working closely together.
- *Paso Robles Groundwater Basin:* More than 33 percent of the Paso Robles Groundwater Basin lies within Monterey County, with the remaining portion located within San Luis Obispo County. The MCWRA participates on the Paso Robles Groundwater Management Plan Steering Committee. There are numerous issues that face and will face the Paso Robles Groundwater

Basin, including increasing agricultural demands, water quality issues, water supply issues (overdrafted basin), and urbanization pressure. The committee is currently discussing possible options for the basin. Opportunities to share experiences, resources, and strategies would provide a win-win situation for both regions.

Shared Border with Pajaro River Watershed IRWM Region

As noted above, the Pajaro River Watershed IRWM Plan is a collaborative effort by the PVWMA, San Benito County Water District, and Santa Clara Valley Water District. The water resource issues that exist in the Pajaro River Watershed region are quite distinct to that region, including flooding within the Pajaro River watershed. However, there are certain issues that are common to both regions and that would be suitable for potential interregional projects or programs. These include:

- *Agricultural Water Quality:* Agriculture is the predominant land use in both IRWM regions, and consequently agricultural water quality is a major concern on both sides of the border. The Central Coast Regional Water Quality Control Board renewed the Agricultural Order (No. R3-2012-0011, Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands) in March 2012. The Order requires compliance with water quality standards, and requires those who are subject to the Order to address impacts to water quality by evaluating the effectiveness of management practices (e.g., waste discharge treatment and control measures), and taking action to improve management practices to reduce discharges. The RWMGs for both the Greater Monterey County and the Pajaro River Watershed IRWM regions can coordinate on projects and programs to help growers comply with the Agricultural Order and to help ensure consistent implementation of the Order.
- *Co-Management of Food Safety and Water Quality:* With Monterey County's \$4 billion agricultural industry, this is an issue of critical importance for both IRWM regions. The fresh produce of Monterey County is among the healthiest food in the world. Rare outbreaks of illness have been linked to the contamination of leafy greens by pathogens where wildlife was the likely vector. In response, many large buyers have adopted stringent standards for the management of the fields where they source their produce. Some interpretations of these standards conflict with agricultural management practices developed for water quality protection and erosion control, which often include the retention of surface runoff or establishment of non-crop vegetation on field edges (such as filter strips or buffers). Growers report that they are increasingly caught in an untenable position, forced to choose between meeting mandates to improve water quality, or meeting food safety guidelines and contractual requirements. For example, 32 percent of leafy greens growers who responded to a local survey reported removing non-crop vegetation in response to pressure from buyers or auditors (RCD 2007).

Addressing these conflicts is critical to the success and advancement of both regions' IRWM Plans. Many growers and regional experts believe that "co-management" for food safety and environmental protection represents the optimal path forward. Co-management is defined as an approach to minimize microbiological hazards associated with food production while simultaneously conserving soil, water, air, wildlife, and other natural resources. The Greater Monterey County and Pajaro River Watershed RWMGs are considering possible opportunities to coordinate on projects and programs to help resolve barriers that food safety concerns present to implementing water quality, ecological restoration, and flood management projects in both regions' IRWM Plans.

Shared Border with Monterey Peninsula IRWM Region

The primary area where water resource management is shared between the Greater Monterey County and the Monterey Peninsula regions is in the vicinity of the Seaside/Salinas River groundwater basin divide in the former Fort Ord military base area (now known as the "Ord Community"). The Seaside Groundwater

Basin is a place of water supply storage and extraction for the Monterey Peninsula, and the Salinas Valley Groundwater Basin is a source of water supply for the Ord Community. The former Fort Ord area is almost equally divided geographically between the Greater Monterey County and Monterey Peninsula IRWM regions. The Ord Community is under the jurisdiction of several agencies. Water supply is managed by both the MCWRA and the MPWMD, is extracted from both the Seaside Groundwater Basin and the Salinas Valley Groundwater Basin, and is delivered by the Marina Coast Water District (MCWD), California American Water Company, and several dozen other water distribution systems.

The Seaside Groundwater Basin and other portions of the former Fort Ord area can provide a significant opportunity for stakeholders in both IRWM planning regions to collaborate and coordinate on projects of interest to both regions. A combination of factors—including a lack of sufficient permanent diversion rights from the Carmel River, pumping reduction requirements resulting from the Seaside Groundwater Basin adjudication, increased water demands from planned redevelopment of the former Fort Ord military base, and increasing population—has resulted in the need for over 25,000 acre-feet/year (AFY) in new water supplies for northern Monterey County (RMC 2010).

In September 2010, IRWM Planning Grant funds were requested collaboratively from the Greater Monterey County and the Monterey Peninsula IRWM regions to explore and describe the overlapping interests and jurisdictional boundaries between the two regions, focusing specifically on the former Fort Ord area and including “joint” projects. Upon award of the Planning Grant funds, the MPWMD agreed to take the lead with support from the Greater Monterey County region. At the time that the Planning Grant work was initiated, a portfolio of possible water supply projects called the Monterey Bay Regional Water Program – the goal of which was to address water supply issues within both the Greater Monterey County and Monterey Peninsula regions – was moving through the approval process. That project is no longer being pursued by regional stakeholders. However, there are other projects being pursued by stakeholders in the region that have similar objectives and would achieve similar results if implemented, and involve regional integration, cooperation, and collaboration. The Summary Report that resulted from the Planning Grant work is attached as Appendix M, “Interregional Coordination between the Greater Monterey County and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Regions.”

The Greater Monterey County and Monterey Peninsula IRWM regions share common interests beyond those that exist in the border Ord Community area. For example, stormwater passes across the boundaries of both regions. The Monterey Regional Stormwater Management Program covers both the Monterey Peninsula cities and unincorporated areas of Monterey County for the purposes of the National Pollutant Discharge Elimination System (NPDES) Phase II stormwater permit, and as such covers geographic areas that are included in both IRWM Plans. Additional work is needed on the regional stormwater program. The Canyon Del Rey watershed is a good example of a drainage that lies within both regions. An upgraded drainage study has been planned, however, existing funds do not appear sufficient to implement any project that might come out of this study. The Greater Monterey County RWMG will continue to coordinate with the Monterey Peninsula RWMG on common issues such as this.

Q.2.4 Participation of Greater Monterey County RWMG Members in Other IRWM Efforts

Four members of the Greater Monterey County RWMG—the Big Sur Land Trust, MCWRA, the MRWPCA, and the MCWD—are also participating members of the RWMG for the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region. The involvement of these entities in both IRWM Plan efforts makes sense since both IRWM regions fall squarely within the jurisdictional boundaries and/or geographic areas of interest of all four entities, and projects included in both plans concern all of these organizations. Note, however, that the MPWMD is the lead agency in the Monterey Peninsula IRWM Plan effort, and as such the Big Sur Land Trust, MCWRA, MRWPCA, and the MCWD have

played supporting roles in that planning effort. Since there is no one lead agency for the Greater Monterey County IRWM Plan effort, all members of the RWMG are expected to play a “leading” role.

Q.2.5 Coordination between the Six Central Coast IRWM Regions

The Central Coast IRWM Funding Area is diverse, with geographically distinct regions. Some of the established IRWM regions have common/overlapping water-related interests, but most water issues are more effectively managed within each of the individual regions.

Representatives from each of the six IRWM regions within the Central Coast Funding Area meet periodically to discuss issues related to IRWM planning and funding considerations. Discussions regarding regional cooperation began in February 2007, with the lead agencies for each of these planning regions agreeing to a set of principles to guide the funding region in seeking Proposition 50 funds (see Appendix E, Statement of Principles).

For the purposes of coordinated planning, the Monterey Bay National Marine Sanctuary compared and summarized the six IRWM Plans in the Central Coast Funding Area (MBNMS 2008a). The report found many commonalities in water management objectives and issues, though distinct differences exist. Three out of the six regions receive at least some imported water (the Pajaro River Watershed region receives about 23 percent of its water supply from the CVP, and both the San Luis Obispo County and Santa Barbara County regions each receive a small portion of their water supply from the State Water Project). The Greater Monterey County, Monterey Peninsula, and Northern Santa Cruz County IRWM regions are all dependent on local rainfall and runoff for their water supply, with no connections to water sources outside of their respective regions. Groundwater is an important water supply source for all six regions, and all but the Monterey Peninsula region experience a significant problem with seawater intrusion.

Agriculture is a major land use in all of the six Central Coast IRWM regions. Water quality issues are similar across all of the regions, though to varying degrees. The most significant and serious water quality problems tend to be seawater intrusion, nitrates, sediment, nutrients, pesticides, and other contaminants (with the exception of the Monterey Peninsula region, which seems to experience fewer water quality problems than the other regions).

Not surprisingly, all six IRWM planning regions have quite similar goals and objectives in terms of water supply, water quality, flood management, and environmental protection and enhancement, with minor differences reflecting regional needs and priorities. All regions aim to improve water supply reliability and protect against drought; almost all of the regions contain objectives regarding maximizing water conservation and recycled water use. Similarly, all regions aim to protect and improve water quality (including surface water, groundwater, stormwater, wastewater, recycled water, and/or coastal waters), and to meet or exceed all applicable regulatory standards. Regarding environmental protection, all regions aim to identify opportunities for enhancement and/or restoration of natural resources and to minimize adverse effects from water management activities.

Commonalities are also evident in the types of high priority projects chosen for IRWM grant funding. The differences that exist between regions reflect region-specific needs and issues. At the risk of being simplistic: the Northern Santa Cruz County region seems to place greatest emphasis on water supply strategies; Pajaro River Watershed on groundwater management strategies; Monterey Peninsula on water quality strategies; San Luis Obispo County on water quality and water supply strategies; Santa Barbara County equally across several strategies (mainly, water quality, water supply, wastewater treatment, and environmental protection); and the Greater Monterey County region on water supply/groundwater management, water quality, and environmental protection strategies (as reflected by the number of objectives under each goal category).

Table Q-1 below provides a summary of shared interests that exist between the six Central Coast IRWM regions. The table also shows potential opportunities for interregional projects and programs. Representatives from the six IRWM regions continue to communicate on an ongoing basis regarding IRWM planning efforts and water-related issues on the Central Coast, as well as potential opportunities for interregional projects such as those listed below.

Table Q-1: Central Coast IRWM Regions: Shared Interests and Opportunities for Interregional Coordination

Objective	Key Issues	Strategies	Potential Project Examples
Water Quality	Agriculture Water Quality: High concentrations of nutrients, pesticides and sediment are known pollutants in certain watersheds with agricultural development.	• Nutrient management • Irrigation management • Education • Integrated pest mgmt • Food safety efforts	• Permit Coordination • Watershed Working Groups • Ranchette Series Model • Expand Regional Mobile Lab
	Urban Water Quality: High concentrations of nutrients, indicator bacteria and metals are known pollutants in watersheds with urban development.	• Reduce runoff • Education • Integrated pest mgmt • Best management practices	• Permit Coordination • Low Impact Development (LID) • First Flush monitoring • Green Business Program
	Special Protected Areas: All planning regions along the coast have areas either designated as Marine Protected Areas, Critical Coastal Areas or Areas of Special Biological Significance.	• Education • Watershed assessments • Monitoring	• Coast and Oceans Regional Round Table • California Coastal Commission (CCC) Critical Coastal Areas Program • Historical Ecology
	Sediment and Erosion: Erosion from roads, agriculture and unstable stream banks carry pollutants and are detrimental to aquatic habitat and organisms.	• Irrigation management • Stream bank stabilization • Redesign of rural roads • Education	• RCD Rural Roads program • Roads Maintenance Guide • Implementation of Stormwater Management Plans (SWMPs)
	Data Coordination and Management: A coordinated effort of data synthesis, assessment, management and accessibility is important to determine effectiveness of efforts.	• Make data comparable, accessible, and useful • Develop consistent evaluation tools	• Synthesis, Analysis and Management (SAM) Program • Upload of data to the Surface Water Ambient Monitoring Program (SWAMP) • Regional Web Information Station • Central Coast Wetland Group
Water Quality/ Water Supply	Groundwater Management: Groundwater is an important source of water for much of the Central Coast, but is threatened or already affected by saltwater intrusion, salinity, and overdraft in many areas.	• Conjunctive management • Recharge area protection	• Pajaro Watershed Desalination Feasibility Study • RWQCB LID Strategy

Water Supply	Water Availability: Water needs exceed available supply throughout the Central Coast for municipal, domestic, and agricultural use as well as environmental protection. Expected water demand will increase in the future.	• Desalination • Water Recycling	• Regional Planning Approach • Research • Explore new technologies • Reclaimed water • Information exchange • Import advanced technology
		• Expand conservation programs • Expand rebate programs	• Regional conservation programs
		• Recharge, restoration, and enhancement	• Wastewater mgmt to restore naturally functioning systems • Seaside Aquifer Storage and Recovery (ASR)
Ecosystem Protection	Fisheries Enhancement: Many Central Coast streams provide habitat for federally threatened or endangered species such as coho, steelhead, and the red-legged frog.	• Promote, improve or re-establish habitat	• Removing fish passage barriers • Watershed assessments • Habitat restoration
Flood Management	Flood Management: All regions have areas prone to flooding and development within flood plains.	• Flood management	• Wetland restoration • Improve existing levees • Hydromodification • Central Coast Wetland Group • Stream gauges

An additional issue—and an increasingly urgent issue—that is particularly suited to an interregional approach is climate change and the potential impacts on water management systems on the Central Coast. Some preliminary attempts have been made to initiate a Central Coast region-wide climate change impact analysis. Sharing information and resources, coordinating efforts, and potentially creating a region-wide database would increase efficiencies, save money and staff time, and most likely result in increased coordination, collaboration, and communication between the regions regarding climate change projects, actions, and overall planning. The Central Coast IRWM regions will continue to discuss the possibilities for collaborating on climate change planning for the Central Coast, as well as coordinating on other potential projects and programs mentioned above.

Q.3 COORDINATION WITH AGENCIES

The Greater Monterey County RWMG is composed of a diverse mix of agencies, organizations, nonprofit organizations, educational institutions, and interest groups, including several government agencies and districts. The participation of these agencies and local districts on the RWMG enables the RWMG to coordinate the IRWM planning effort closely with the mission of these agencies and helps to avoid regulatory or other conflicts in either the planning or the implementation stage of the IRWM Plan. Greater Monterey County RWMG agency/district members include:

- **Federal Agencies:**
Elkhorn Slough National Estuarine Research Reserve
Monterey Bay National Marine Sanctuary

- **Local/Regional Government and Districts:**
 - Castroville Community Services District
 - City of Salinas
 - City of Soledad
 - Marina Coast Water District
 - Monterey County Agricultural Commissioner's Office
 - Monterey County Water Resources Agency
 - Monterey Regional Water Pollution Control Agency
 - Resource Conservation District of Monterey County

Additionally, the Greater Monterey County RWMG has entered into extensive coordination with federal, state, and local agencies for the planning process and for implementation of projects included in the IRWM Plan. The major federal, state, and local agencies that have been involved are described below.

Q.3.1 Coordination with Federal Agencies

National Oceanographic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS)

The RWMG communicates with NMFS primarily in an advisory capacity. NMFS is also involved in IRWM Plan project implementation through permitting requirements. The MCWRA is currently working with NMFS to implement its project, "Salinas River Fisheries Enhancement Project," and has worked closely with NMFS in the past on issues associated with the Salinas Valley Water Project (SVWP), including evaluation of impacts and appropriate mitigations for endangered species that may be impacted by the SVWP.

NOAA Monterey Bay National Marine Sanctuary (MBNMS)

The MBNMS is an active participating member of the RWMG as well as a project proponent for several implementation projects in the IRWM Plan (including "Watershed Approach to Water Quality Solutions," which is currently being implemented through Round 1 IRWM Implementation Grant funds). The MBNMS's representative on the RWMG helps coordinate the IRWM planning process with the MBNMS Water Quality Protection Program, and works to ensure that projects included in the IRWM Plan are consistent with MBNMS regulations and programs. The MBNMS works with project proponents and other stakeholders in the Greater Monterey County IRWM region to assist with water quality information and monitoring and to promote implementation of the MBNMS's Action Plans.

US Army Corps of Engineers (COE)

The COE is involved in the IRWM planning process primarily in its capacity as a permitting agency. A 404 Permit from the COE, pursuant to section 404 of the Clean Water Act, may be required for construction associated with some projects in the IRWM Plan.

US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS)

The RWMG coordinates with the NRCS primarily through the implementation of agricultural water quality and water conservation projects through the IRWM Plan. For example, the RCD of Monterey County will be collaborating with the NRCS on its project, "Monterey County Farm Water Quality Assistance Program." NRCS conservation and engineering staff will participate in field trials and will provide equipment, lab resources, time and critical technical guidance to the RCD project team.

US Fish and Wildlife Service (USFWS)

The USFWS serves as an advisor to the RWMG and is largely involved in the IRWM planning process in its capacity as a permitting agency. The USFWS also provides technical assistance to project proponents. For example, the USFWS will be providing technical program guidance, site assessment, and property

owner assistance to the RCD of Monterey County on its project, “Livestock and Land,” and will be partnering with the RCD with a stockpond-improvement grant to meet shared program goals.

US Environmental Protection Agency (US EPA)

MCWRA received grant funding from the US EPA to complete a regional water management plan for the Salinas Valley. That plan has evolved and has been expanded into this IRWM Plan for the Greater Monterey County IRWM region. The US EPA is signatory to the MBNMS Water Quality Protection Program Memorandum of Agreement (MOA).

US Forest Service

Wildfire management is an issue of critical importance to water and natural resource managers in the Greater Monterey County IRWM region, particularly given the region’s dependence on surface water and reservoir storage, the predominance of high quality ecological habitats in the region, and the prediction of increased fires as a result of climate change. The Greater Monterey County RWMG coordinates with the US Forest Service as part of the FireScape Monterey planning effort. FireScape Monterey is a planning effort that promotes protection of both life and property affected by wildfire and healthy resilient ecosystems through collaborative stewardship. FireScape Monterey was initiated and is co-led by the US Forest Service, in collaboration with 27 organizations and local residents, and focuses in the Big Sur Coastal Range with the potential to expand throughout Monterey County.

Q.3.2 Coordination with State Agencies

California Coastal Commission

The California Coastal Commission is an active participant in the Greater Monterey County IRWM planning process, regularly attending and participating in the monthly RWMG meetings and providing “in-house expertise” on all matters related to the County’s Local Coastal Program (LCP) and other statewide coastal issues. LCPs are basic planning tools used by local governments to guide development in the coastal zone, in partnership with the Coastal Commission. Monterey County’s LCP was completed in 1987, adopted by the Monterey County Planning Department and approved by the Coastal Commission, and consists of four plans for the County’s designated coastal areas: the North County Land Use Plan, the Del Monte Forest Land Use Plan, the Carmel Land Use Plan, and the Big Sur Coast Land Use Plan. Several projects in the IRWM Plan are located within the coastal zone. For example, the Central Coast Wetlands Group’s “Coastal Wetland Erosion Control and Dune Restoration” implements parts of the Moro Cojo Slough Wetland Management Plan, which is part of the Local Coastal Plan for Monterey County.

California Department of Fish and Game (CDFG)

The CDFG has been involved in the IRWM planning process in an advisory capacity, as well as on an individual project basis through the California Environmental Quality Act (CEQA) permitting. For example, MCWRA has worked closely with the CDFG on issues associated with the SVWP, including coordination for a Stream Alteration Agreement and issues associated with endangered species that may be impacted by the SVWP.

California Department of Transportation (Caltrans)

Caltrans is involved in the IRWM planning process mainly through project implementation. For example, the Central Coast Wetlands Group will be collaborating with Caltrans on their project, “Coastal Wetland Erosion Control and Dune Restoration,” to source sand for dune reconstruction and mulch for weed control.

California Department of Water Resources (DWR)

The Greater Monterey County RWMG cooperates with DWR on all aspects of the IRWM planning

process in accordance with the IRWM Program Guidelines. The Greater Monterey County's regional representative at DWR regularly attends the monthly RWMG meetings, and is the grant manager for the Round 1 IRWM Planning Grant and Implementation Grant. The IRWM Plan Coordinator communicates with the DWR regional representative on a regular basis regarding requirements of the program. In addition, MCWRA had been in extensive contact with DWR's Division of Safety of Dams (DSOD) regarding the evaluation of the modification to the Nacimiento Dam Spillway and the proposed changes in the operating rule curve associated with the SVWP.

California Natural Resources Agency

The RWMG coordinates with the California Natural Resources Agency mainly through its involvement with the Agency's California Adaptation Strategy process. The California Adaptation Strategy summarizes climate change impacts in California and recommends adaptation strategies. Cal-Adapt is a web-based tool developed by the California Natural Resources Agency and the California Energy Commission that enables city and county planners, government agencies, and the public to identify potential climate change risks in specific areas throughout California. In developing the Climate Change section for this IRWM Plan, the RWMG reviewed the California Adaptation Strategy and utilized Cal-Adapt extensively to determine climate change impacts in the Greater Monterey County region and to develop a preliminary adaptation strategy for the region. The RWMG will continue to stay involved in the California Natural Resources Agency's California Adaptation Strategy process to help shape the IRWM Plan as more climate change tools and data are generated.

California Regional Water Quality Control Board, Region 3 (RWQCB)

The RWMG has made a concerted effort to incorporate the RWQCB's Water Quality Priorities (July 2011, see Appendix H) as well as other Regional Board directives and initiatives into the IRWM Plan and planning process. Many of the IRWM Plan projects address priorities of the Central Coast Basin Plan and the RWQCB's Water Management Initiative chapter, as well as other regional plans such as the Central Coast Regional Toxic Hot Spot Cleanup Plan. RWMG members and project proponents work closely with the RWQCB on an individual basis to develop various plans and to implement projects. For example, MCWRA has worked closely with the RWQCB in development of the Nitrate Management Plan and other programs, including non-point source, TMDL, and other management programs. The City of Soledad has worked closely with the RWQCB in developing the Water Recycling/Reclamation Project.

California State Parks

California State Parks serves as an advisor to the RWMG, and also coordinates with the RWMG through the FireScape Monterey planning process. The RWMG is proposing to implement two projects that will be located within the jurisdiction of California State Parks, including the Central Coast Wetlands Group's "Coastal Wetland Erosion Control and Dune Restoration" project, and "Big Sur River Steelhead Enhancement Project" which has been proposed by State Parks. State Parks is consulted whenever projects are proposed for implementation within their jurisdiction.

California State Water Resources Control Board (SWRCB)

The SWRCB serves in an advisory capacity to the RWMG, and the RWMG works to ensure that projects included in the IRWM Plan comply with State Board regulations. MCWRA has been in extensive contact with the SWRCB Division of Water Rights regarding the status of development of a solution to the groundwater overdraft and seawater intrusion issues. In addition, the RWMG is proposing to implement several projects through the IRWM Plan that address priorities of the SWRCB programs, including for example the State's Nonpoint Source Pollution Control Program (addressed by the Central Coast Wetlands Group's "Coastal Wetland Erosion Control and Dune Restoration," "Study of Environmental Services from Nutrient Reducing BMPs" and "Water Quality Enhancement of the Tembladero Slough Phase II" projects, Ecology Action's "Monterey Bay Green Gardener Training & Certification Program," and by the Elkhorn Slough National Estuarine Research Reserve's project, "Integrated Restoration:

Beneficial Reuse of Sediment to Restore Tidal Marsh and Agricultural Stormwater Treatment by a Native Grassland Buffer”).

Q.3.3 Coordination with Local Agencies, Governments, and Districts

County of Monterey – Public Works Department, Planning Department, Redevelopment & Housing Office

The RWMG works with various departments within the County of Monterey on projects that involve land use planning or development permits, as described further in the Relation to Land Use Planning section of this IRWM Plan. Many project proponents for implementation projects included in the IRWM Plan have coordinated with the Public Works, Planning Department, or Redevelopment Agency on site plans, permits, and other requirements and information needs for their projects. Project proponents are required to ensure that their projects are consistent with the Monterey County General Plan and with local ordinances (as applicable). For example, the MCWRA is collaborating with the Public Works Department on County Right-of-Way and soil stability for “Coastal Dedicated Monitoring Well Drilling” project in the IRWM Plan.

Fort Ord Reuse Authority

The Fort Ord Reuse Authority (FORA) is responsible for the redevelopment of the former Fort Ord military base, a 45-square mile/28,000-acre facility. Following a competitive selection process in 1997, the FORA Board approved the MCWD, a RWMG member, as the purveyor to own and operate the water and wastewater collection systems on the former Fort Ord. Through MCWD’s connection with FORA, the RWMG remains informed of the latest developments in the Ord Community, an important “border region” between the Greater Monterey County and Monterey Peninsula IRWM regions.

Monterey County Health Department

The Monterey County Health Department is responsible for implementing and enforcing the California Safe Drinking Water Act to ensure small public water supply systems deliver a reliable and adequate supply of water that is pure, wholesome, and potable to the users at all times. As the permitting agency for public water systems in Monterey County, the Health Department is integrally involved with water resource management decisions in the Greater Monterey County IRWM planning region. Besides its role as a permitting agency, the Monterey County Health Department is a good source for water quality data and information, and provides assistance to water users to help them comply with regulations and resolve water quality/quantity problems. For example, the County of Monterey Redevelopment & Housing Office is collaborating with the Health Department on its IRWM Plan project, “Well Replacement and Pipeline – San Lucas Water District.” The Health Department has been involved in the San Lucas Water District’s on-going efforts to resolve the nitrate and total dissolved solids (TDS) contamination issues in its public water supply. The Health Department will be collaborating with the Redevelopment & Housing Office in the design and review of the plans for construction of the test well and the subsequent sampling and testing program, the construction plans for the final production well and pipeline, and the final production testing of the completed well.

Monterey County Parks Department

The Monterey County Parks Department is involved in the IRWM planning process primarily in regards to projects that take place on County Parks properties. For example, the MCWRA and Monterey County Parks are collaborating on an implementation project included in the IRWM Plan entitled the “Aquatic Invasive Species Inspection Project,” which will take place at Lake Nacimiento and Lake San Antonio. Lakes Nacimiento and San Antonio are owned and operated by the MCWRA; recreation on the lakes and on properties owned by the MCWRA is administered by Monterey County Parks. The MCWRA and Monterey County Parks have determined that the threat of aquatic invasive species (specifically zebra and quagga mussels) represents a serious risk to local water conveyance systems and the general welfare of

the public. The purpose of the project is to provide a response to this threat by imposing an inspection process at the lakes with a program that assesses and manages the risks without shutting the waters to all recreational boating.

Monterey County Water Resources Agency

The MCWRA is an active participating member of the RWMG, and a project proponent for several projects included in the IRWM Plan. The MCWRA is responsible for managing, protecting, and enhancing water supply and water quality, as well as providing flood protection, in the County of Monterey. As such, the MCWRA has produced many of the water resource and flood management plans that have been used as a basis for this IRWM Plan. The MCWRA also provides “in-house expertise” for the RWMG on all matters related to water supply and flood management in the County. Note that MCWRA had authored the Salinas Valley IRWM Functionally Equivalent Plan, which this Greater Monterey County IRWM Plan is based on, and now supersedes.

Municipalities

The Greater Monterey County RWMG includes representatives from two municipalities in the region—the City of Salinas and the City of Soledad. These RWMG members help provide a municipal perspective to the IRWM planning process, and generally represent the interests of other municipalities within the planning region. Project proponents with implementation projects in the IRWM Plan are required to ensure that their projects are consistent with City General Plans and local ordinances (as applicable). Staff from the City planning or public works departments are consulted by project proponents for technical advice and guidance regarding development projects within City boundaries.

Resource Conservation Districts

The RCD of Monterey County is both a participating RWMG member and a project proponent for projects included in the IRWM Plan. The RCD also assists other project proponents in the region with data compilation and outreach to landowners, and provides “in-house expertise” on matters related to agriculture and water quality management measures. As noted in Section Q.1 above, the RWMG is coordinating with the Central Coast RCDs to utilize the new Conservation Action Tracker database as a way to track water resource projects within the Greater Monterey County IRWM region. The Conservation Action Tracker database is a data system for tracking land-use management improvements in the Central Coast region. It will be implemented by the Central Coast RCDs and project partners of the Greater Monterey County IRWM Plan.

Transportation Agency for Monterey County (TAMC)

TAMC is involved in the IRWM planning process mainly through project implementation. Project proponents will coordinate with TAMC as needed on various aspects of implementation. For example, the Monterey County Department of Public Works will be collaborating with TAMC on their “Las Lomas Drive Storm Drain Improvements Project.”

Section R: Climate Change

The Integrated Regional Water Management (IRWM) Program Guidelines state: “California is already seeing the effects of climate change on hydrology (snowpack, river flows, storm intensity, temperature, winds, and sea levels). Planning for and adapting to these changes, particularly their impacts on public safety, ecosystem, and long-term water supply reliability, will be among the most significant challenges facing water and flood managers this century” (p. 69). By design, IRWM planning efforts are collaborative and include many entities dealing with water management. These aspects make IRWM a good platform for addressing broad-based concerns like climate change, where multiple facets of water management are affected.

The intent of the Climate Change standard in the IRWM Program Guidelines is to ensure that IRWM Plans describe, consider, and address the effects of climate change on their regions and disclose, consider, and reduce when possible greenhouse gas (GHG) emissions when developing and implementing projects. This chapter describes global climate change and its anticipated impacts for the Greater Monterey County region. The chapter includes an initial vulnerability analysis and risk assessment, and offers preliminary adaptation measures and climate change mitigation and GHG reduction strategies for the region. These strategies will be refined as more climate change data, and more refined analysis tools, become available.

Most of the work for this chapter was conducted by the Central Coast Wetlands Group at Moss Landing Marine Laboratories (CCWG), in collaboration with a Climate Task Force comprised of local scientists, land use managers, water resource managers, and coastal policy experts. Participating entities on the Climate Task Force include: CCWG, Stanford University Center for Ocean Solutions, Monterey Bay National Marine Sanctuary, Santa Cruz County, Association of Monterey Bay Area Governments, Monterey County Planning, California Water Company, Monterey County Water Resources Agency, Stanford University Natural Capital Project, California Department of Water Resources, Santa Cruz County Resource Conservation District, and The Nature Conservancy. The Regional Water Management Group (RWMG) will continue to seek to partner with these entities, as well as with other RWMGs in the Central Coast region, and to participate in other regional climate change efforts in order to collectively and proactively address the issue of climate change on the Central Coast.

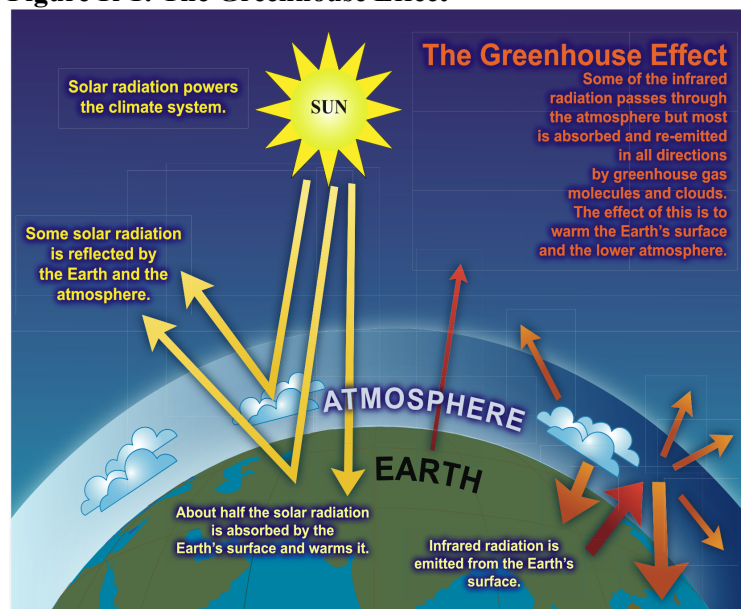
R.1 GLOBAL CLIMATE CHANGE: AN OVERVIEW

Climate change refers to any significant change in measures of climate, such as average temperature, precipitation, or wind patterns over a period of time. Climate change may result from natural factors and/or from human activities that change the composition of the atmosphere and alter the surface features of the land. Such changes vary considerably by geographic location. Over time, the earth’s climate has undergone periodic ice ages and warming periods, as observed in fossil isotopes, ice core samples, and through other measurement techniques. Recent climate change studies use the historical record to predict future climate variations and the level of fluctuation that might be considered statistically normal given historical trends.

Significant changes in global climate patterns have recently been associated with global warming, an average increase in the temperature of the atmosphere near the Earth’s surface. This gradual warming is the result of heat absorption by certain gases in the atmosphere and re-radiation downward of some of that heat, which in turn heats the surface of the Earth. These gases are called “greenhouse gases” because they effectively “trap” heat in the lower atmosphere causing a greenhouse-like effect. Some GHGs occur naturally and are emitted to the atmosphere through natural processes, others are created and emitted

solely through human activities, while the production rate of some naturally occurring GHGs can be increased by human activities (California Natural Resources Agency 2018).

Figure R-1: The Greenhouse Effect



Source: IPCC 2007a, p. 115.

The greenhouse effect helps to regulate the temperature of the planet. It is essential to life; without it, our planet would have an average temperature of about 14°F, as opposed to a comfortable 60°F. However, an accumulation of GHGs in the atmosphere is intensifying the greenhouse effect, threatening to raise average temperatures well beyond our “comfort zone.” Nearly all climate scientists agree that human activities are to blame for the changing climate. The addition of carbon dioxide, the most prevalent GHG, into the atmosphere as a result of burning oil, natural gas, and coal, in combination with the depletion of our dense forests and wetlands which act as natural carbon dioxide sinks, are leading to an unnaturally high concentration of GHGs that are in turn intensifying the natural greenhouse effect on earth.

The Intergovernmental Panel on Climate Change (IPCC) stated in its 2007 Synthesis Report:

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. (IPCC 2007a, p. 30)

Each of the last three decades has been increasingly warmer at the Earth’s surface than any preceding decade since 1850. The time period 1983 to 2012 was likely the warmest 30-year period of the last 1400 years in the Northern Hemisphere (to the extent that assessment was possible). The temperature increase is widespread over the globe and is greater at higher northern latitudes. Average Arctic temperatures have increased at almost twice the global average rate in the past 100 years. Ocean warming makes up the majority of the increased energy stored in the climate system, and accounts for more than 90% of the excess energy stored between 1971 and 2010. The top 75 meters of the ocean have increased in temperature by approximately 0.1 degree Celsius each decade since 1970, while the average global surface temperature has increased by 0.85 degrees Celsius between 1880 and 2012 (IPCC 2014).

The IPCC has linked this increase in global temperature to a wide array of changes to our natural world, including a widespread decrease in the amount of snow cover and thickness and range of glaciers across the globe. Since 1978, the Arctic ice cap has decreased in size by about 4 percent per year with an average summer decrease of 7.4 percent. A 10 percent decrease in global snow cover and earlier spring thaws of rivers and lakes in the northern hemisphere have also been observed. Over the past 50 years, heat waves and serious rain events have been more common and in the past 30 years, there has been an increase in the number of northern Atlantic tropical storms (IPCC 2007a).

The combination of ice melt and the thermal expansion of seawater (due to warmer water temperatures) has led to global sea level rise (IPCC 2014). Research shows that since 1971, thermal expansion and glacial melt have caused 75% of observed sea level rise (IPCC 2014). From 1870 to 2004, a reconstruction based on tide gauge data finds that during the 20th century, sea-level rise occurred at a rate of 1.7 +/- 0.3 mm/year. During this time, sea-level rise also accelerated at a rate of 0.013 +/- 0.006 mm/year² (Church and White 2006). More recent estimates show that from 1880 to the present, the average global sea level has risen by more than 20 centimeters (Church and White 2011). The IPCC's 2014 Fifth Assessment Report (IPCC 2014) projected sea level rise by the end of the century as a result of thermal expansion to range from 0.23 to 0.98 meters (9 - 48 inches). It predicts with "virtual certainty" that sea level rise will continue beyond 2100, and projects sea level rise beyond 2300 to be between 1 and 3 m (IPCC 2014).

IPCC scientists predict that the serious consequences of climate change will continue to grow and expand. The rate of increase in sea surface temperature is unprecedented, and is accelerating the planet's water cycle, which will result in extreme weather events throughout the globe. Droughts, storms, floods, and wildfires will become more common. These events will expose ecosystem and human system vulnerability, and will likely disrupt and damage food and fresh water supplies (IPCC 2014). The extreme increases in temperature could result in a summer ice-free arctic by 2050 (IPCC 2014) and cause the oceans to thermally expand, both of which will raise the average level of all oceans. This continuing increase in average global sea level will have various effects, including coastline destruction, the displacement of major population centers, and economic disruption.

R.2 STATE RESPONSE TO CLIMATE CHANGE: LEGISLATION AND POLICY

California State's top scientists consider climate change to be a very serious issue requiring major changes in resource, water supply, and public health management (California Climate Change Center 2012). Below describes some of the more significant pieces of legislation and policy that have been enacted by the State in response to climate change.

California's first statute on climate change was enacted in 1988 when the State Legislature ordered a report on the impacts of climate change and recommendations to avoid, reduce, and address them. In 2002, the State led the country in becoming the first jurisdiction to require standards for GHG emissions from cars. In 2004, Senate Bill 1107 directed the Secretary of Environmental Protection to coordinate all climate change activities in the state. The Secretary chairs the Climate Action Team, which is made up of agency secretaries and department directors from throughout State government. With the passage of California Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32, California became the first state to set a binding, economy-wide target for GHGs (California EPA 2010).

Executive Order S-3-05

California is a substantial contributor of global GHGs, emitting over 400 million metric tons of carbon dioxide a year (California Air Resources Board 2007). In June 2005, Governor Schwarzenegger

established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals:

- Greenhouse gas emissions should be reduced to 2000 levels by 2010;
- Greenhouse gas emissions should be reduced to 1990 levels by 2020; and
- Greenhouse gas emissions should be reduced to 80 percent below 1990 levels by 2050.

Global Warming Solutions Act of 2006 (Assembly Bill 32)

The State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006 to further the goals of Executive Order S-3-05. AB 32 states:

Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries with penalties for noncompliance. The foremost objective of California Air Resources Board (CARB), tasked with implementing AB 32, is to adopt regulations that require the reporting and verification of statewide GHGs. The initial State goal is to limit GHG emissions to 1990 levels by 2020. In January 2008, a statewide cap for 2020 emissions based on 1990 levels was adopted. In June 2010, CARB prescribed GHG reduction goals to regional governments, including the Association of Monterey Bay Area Governments (AMBAG). These prescriptions are the regional benchmarks from which to track local reductions.

Executive Order S-1-07 (2007)

On January 18, 2007, California further solidified its dedication to reducing GHGs by setting a new Low Carbon Fuel Standard for transportation fuels sold within the state. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10 percent by 2020.

Senate Bill 97 (2007)

SB 97, enacted in 2007, amended the California Environmental Quality Act (CEQA 2012) statute to clearly establish that GHG emissions and effects of GHG emissions are subject to CEQA. It also directed the Governor's Office of Planning and Research (OPR) to develop CEQA Guidelines to address GHG emissions for approval by the California Natural Resources Agency. The Natural Resources Agency adopted the amendments in January 2010, which went into effect in March 2010. The amendments do not identify a threshold of significance for GHG emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations based on substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs when they perform individual project analyses.

Executive Order S-13-08 (2008)

Executive Order S-13-08 launched a major initiative for improving the state's adaptation to climate impacts from sea level rise, increased temperatures, shifting precipitation, and extreme weather events. It ordered a California Sea Level Rise Assessment Report to be conducted by the National Academy of Sciences, which was released in June 2012. It also ordered the development of a California Climate Change Adaptation Strategy. The Strategy, published in December 2009, assesses the state's vulnerability to climate change impacts, and outlines possible solutions that can be implemented within and across State agencies to promote resiliency. The Strategy focuses on seven areas: public health, biodiversity and habitat, ocean and coastal resources, water management, agriculture, forestry, and transportation and energy infrastructure.

California Ocean Protection Council Resolution

California Ocean Protection Council (OPC) Resolution, adopted on March 11, 2011, requires the vulnerabilities associated with sea level rise to be considered for all projects or programs receiving funding from the State. The Resolution states: "Given the currently predicted effects of Climate Change on California's water resources, IRWM Plans should address adapting to changes in the amount, intensity, timing, quality and variability of runoff and recharge. Areas of the State that receive water imported from the Sacramento-San Joaquin River Delta, the area within the Delta, and areas served by coastal aquifers will also need to consider the effects of sea level rise on water supply conditions and identify suitable adaptation measures." The OPC resolution and sea level rise guidance can be found at the following link: <http://www.opc.ca.gov/council-documents/>.

Senate Bill XI-2

This bill codifies California's ambitious goal to increase the quantity of energy generated from renewable sources. The ultimate goal is to have 33% of energy in California generated from renewable sources by 2020, with benchmarks of 20% by 2013, 25% by 2016. This bill enables the California Public Utilities Commission Renewable Energy Resources Program to enforce these goals upon all electricity retailers.

Various Legislative Actions to Promote Electric Vehicles and Zero Emission Vehicles

California passed four different legislative actions between the years of 2013 and 2014 to promote the use of electric and zero emission vehicles. SB 1275 (2014) established a state goal of 1 million zero emission and near zero emission vehicles to be in service by 2020. SB 1204 (2014) created the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program to develop, pilot and deploy zero- and near zero- emission vehicle technologies. AB 8 (2013) extended extra fees on vehicle and boat registrations and tire sales to fund programs that support promotion of alternative fuels, vehicle technologies, and air emission reduction strategies. AB 1092 (2013) required the Building Standards Commission to adopt mandatory building standards for the installation of future electric vehicle charging infrastructure for parking spaces in multifamily dwellings and nonresidential development.

Senate Bill 350 (2015)

SB 350, enacted in 2015, requires that the amount of renewable electricity generated and sold to retail customers be increased to 50% by December 2030. This requirement is made through the Public Utilities Act and the Public Utilities Commission, which codifies the California Renewables Portfolio Standards (RPS) Program. This act revised the RPS program to incorporate expanded requirements on public and publicly owned electric utilities. This bill also requires the PUC to establish targets to double the energy efficiency savings in electricity and natural gas end uses by 2030.

California Commitment to Paris Climate Accord

California Governor Jerry Brown launched America's Pledge, an initiative to support the goals of the Paris Climate Accord that will report on State efforts to drive down GHG emissions. The initiative is meant to show support for the agreement in the United States. The Paris Climate Accord is a pact that was made by nearly 200 countries in 2015, requiring countries to scale down their carbon emissions along with other measures to slow down the human causes of climate change.

R.3 PREDICTED EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

R.3.1 Statewide Studies

Climate change models predict changes in temperature, precipitation patterns, water availability, and sea levels, and how these altered conditions can have impacts on natural and human systems in California. Sea levels have risen by as much as seven inches along the California coast over the last century, increasing erosion and pressure on the state's infrastructure, water supplies, and natural resources. The state has also seen increased average temperatures, more extreme hot days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, and both snowmelt and rainwater running off sooner in the spring (California Natural Resources Agency 2017). According to the California Department of Water Resources (DWR 2013), more changes related to climate change can be expected by the year 2050 and on to the end of the century:

- California's mean temperature may rise 1.5°F to 5.0°F by 2050 and 3.5°F to 11°F by the end of the century.
- Average annual precipitation may show little change, but more intense wet and dry periods can be expected with more floods and more droughts.
- Flood peaks will become higher and natural spring/summer runoff will become lower.
- Global sea level projections suggest possible sea level rise of approximately 14 inches (36 cm) by 2050 and a high value of approximately 55 inches (140 cm) by 2100.¹

Globally, sea level rise is driven by two primary factors—global ice melt and thermal expansion of seawater—but locally, other factors can alter the rate, extent, and duration of changes in sea level. These processes include “steric variations, wind-driven differences in ocean heights, gravitational and deformational effects, and vertical land motions along the coast” (Committee on Sea Level 2012), and in California are additionally affected by movement along the San Andreas Fault and climate patterns in the Pacific Ocean, including the El Niño Southern Oscillation and the Pacific Decadal Oscillation and Interdecadal Pacific Oscillation. Large El Niño events can temporarily raise the sea level as much as 3 to 12 inches (10-30 cm) for several winter months (Committee on Sea Level 2012).

Mean sea level on the California coast rose approximately 8 inches (17-20 cm) over the past century (1900 – 2005) (Cayan et al. 2008). Since 1993, altimetry data suggests that the global mean sea level rise rate has increased from 2 to 3 mm/year, but during this time, data from altimetry and tide gauges show that the mean sea level along the Pacific coast has been stable due to wind stress (Bromirski et al. 2011).

¹ The State of California uses estimates of global sea level rise produced by Ramstorf 2007 and Cayan et al. 2008 for coastal adaptation planning purposes under Executive Order S-13-08.

The changes in sea levels, temperature, and precipitation that are anticipated to occur with climate change, as described above, will affect California's public health, habitats, ocean and coastal resources, water supplies, agriculture, forestry, and energy use (California EPA 2010), and will result in increased droughts and flooding. Climate change may also have adverse effects on water quality, which would in turn affect the beneficial uses (habitat, water supply, etc.) of surface water bodies and groundwater. Changes in precipitation could result in increased sedimentation, higher concentrations of pollutants, higher dissolved oxygen levels, increased temperatures, and an increase in the amount of runoff constituents reaching surface water bodies.

In addition, climate change is expected to have effects on diverse types of ecosystems, from alpine to deep sea habitat. As temperatures and precipitation change, seasonal shifts in vegetation will occur; this could affect the distribution of associated flora and fauna species. As the range of species shifts, habitat fragmentation could occur, with acute impacts on the distribution of certain sensitive species. The IPCC states that "20 percent to 30 percent of species assessed may be at risk of extinction from climate change impacts within this century if global mean temperatures exceed 2°C to 3°C (3.6°F to 5.4°F) relative to pre-industrial levels" (IPCC 2007a). Shifts in existing biomes could also make ecosystems vulnerable to invasive species encroachment. Wildfires, which are an important control mechanism in many ecosystems, may become more severe and more frequent, making it difficult for native plant species to repeatedly re-germinate. In general terms, climate change is expected to put a number of stressors on ecosystems, with potentially catastrophic effects on biodiversity.

R.3.2 Regional Studies and Efforts

A number of studies have been completed that evaluate hazard vulnerabilities of various portions of the Monterey Bay and Monterey County. The following provides a brief summary of regional studies and efforts.

Philip Williams and Associates (PWA) Coastal Regional Sediment Management Plan for Southern Monterey Bay (2008): This plan, prepared by PWA in 2008, aims to create a comprehensive regional strategy to approach issues of coastal erosion and protection in the Southern Monterey Bay, from Wharf 2 to the Monterey Submarine Canyon. The plan looks at local geomorphology, physical processes of erosion, sediment transport, sediment budget, critical habitat and species, existing vulnerable infrastructure, and various regulatory processes, and then proposes management strategies and analyzes their feasibility and projected effectiveness. These strategies include beach nourishment and restoration, sand reduction and removal, and continued natural erosion, while emphasizing the expansion of policies and governance structures to better manage coastal sediments.

ESA PWA Technical Evaluation of Erosion Mitigation Alternatives (2012): This study, conducted by ESA PWA for the Southern Monterey Bay Coastal Erosion Working Group and the Monterey Bay National Marine Sanctuary, assesses various coastal erosion mitigation strategies through cost-benefit analyses. The analyses compare the coastal erosion mitigation strategies to more traditional coastal armoring in order to develop strategies to minimize erosion hazards in the Southern Monterey Bay Littoral Cell. The set of 22 proposed tools highlights rolling easements, cessation of sand mining, and managed retreat, with specific recommendations over four timeframes for each sub-region.

ESA PWA Monterey Bay Sea Level Rise Vulnerability Study: Technical Methods (2014): This vulnerability study and technical methods report, prepared by ESA PWA for the Monterey Bay Sanctuary Foundation, presents the methods and data used to develop maps of erosion and coastal flooding hazard zones for the Monterey Bay study area, from Año Nuevo to Monterey's Wharf 2. The hazard zones,

including dune and cliff erosion, rising tides, and coastal storm flooding, take into account geology, tides, waves, historic erosion, existing armoring, and various sea level rise projections in order to most accurately represent the projected extents of erosion and flooding for 2030, 2060, and 2100. This report describes in depth the GIS layers and metadata for each hazard zone, and the processes used to create those layers.

The Nature Conservancy's Coastal Resiliency Mapping Tool (2015): The Nature Conservancy (TNC) has developed a publicly accessible interactive mapping tool to view projected sea level rise hazards for various geographies across the world, on both local and global scales. Users can explore the extent of flooding and erosion along selected coastlines—specifically in the Americas or on a global scale—for multiple time horizons or amounts of sea level rise, and can overlay ecological, social, or economic layers to view vulnerabilities.

City of Monterey Final Sea Level Rise and Vulnerability Analyses, Existing Conditions and Issues Report (2016): This report, by Revell Coastal, provides analyses of the existing conditions and future vulnerabilities from sea level rise of various sectors, including land use and structures, transportation, wastewater, hazardous materials, emergency services, ecological resources and more in the City of Monterey. The data is reported in detailed maps, charts, and recommendations for each sector. The report also details the physical setting of the City of Monterey, including the geology and geomorphology of the coastline and the coastline ecological habitats and human development, and looks at the current climate science and projections, including temperature, precipitation, wildfires, and sea level rise projections.

TNC Economic Impacts of Climate Adaptation Strategies for Southern Monterey Bay (2016): This report, prepared by TNC, provides detailed economic analyses of various potential adaptation strategies for combating sea level rise and erosion in southern Monterey Bay, from Moss Landing to Del Monte. The report takes into account a range of sea level rise projections, and analyzes the social, environmental, and economic costs and benefits of many adaptation strategies in order to provide coastal planners with an understanding of the value of different strategies within each of the four focus areas. The report found that, contrary to conventional wisdom, in these four areas, hard shoreline armoring had significantly lower net present values than alternative adaptation strategies.

Moss Landing, Capitola, and Santa Cruz County Sea Level Vulnerability reports (2017): The recent Moss Landing Coastal Climate Change Vulnerability Report (CCWG 2017) documented that Moss Landing, Castroville, and nearby farmlands are vulnerable to both river and ocean flooding. Historical examples of this risk include the March 1995 storms which resulted in county-wide flooding to private property resulting in damage to 1,500 homes and 110 businesses. In Castroville 312 residences and 38 businesses were damaged and 1,320 residents were evacuated. The County documented that the flood event in February 1998 resulted in losses of over \$38 million, with agriculture-related losses totaling over \$7 million and damaging 29,000 acres of crops.

The Capitola and Santa Cruz County reports document similar hazards in Santa Cruz County along the coast with similar or more extensive impacts to residential and agricultural properties. By 2100 sea level rise and fluvial models used in this analysis project that much of the coastal and low-lying areas along rivers may be periodically flooded during winter storms and high river discharges. By 2100 tidal inundation within low lying coastal areas may pose a serious challenge. Each of these reports makes valuable adaptation recommendations.

Federal Emergency Management Agency (FEMA) – Pacific Coastal Flood Mapping (Expected Completion 2018): FEMA is working to update the Pacific Coastal flood maps through the California

Coastal Analysis and Mapping Project for Region IX. This project is incorporating the latest engineering and mapping data for areas impacted by coastal flooding for the California coast in order to provide the most up-to-date coastal flood maps.

Safeguarding California Plan: 2018 Update (2018): This Natural Resources Agency report, which is an update to the 2009 California Climate Adaptation Strategy, provides policy guidance for State decision makers and highlights climate risks in nine sectors impacted by climate change, discusses progress to date, and proposes real-world, realistic recommendations for actions to reduce climate change impacts.

State of California Sea-Level Rise Guidance (2018): This Ocean Protection Council report specifically recommends that “risk assessments and adaptation planning efforts should be conducted at community and regional levels” including “cross-jurisdictional coordination.”

Residential Adaptation Policy Guidance (Revised Draft 2018): The California Coastal Commission’s Residential Adaptation Policy Guidance provides an in-depth discussion of sea level rise adaptation policies related to residential development.

R.4 PREDICTED EFFECTS OF CLIMATE CHANGE IN THE GREATER MONTEREY COUNTY REGION

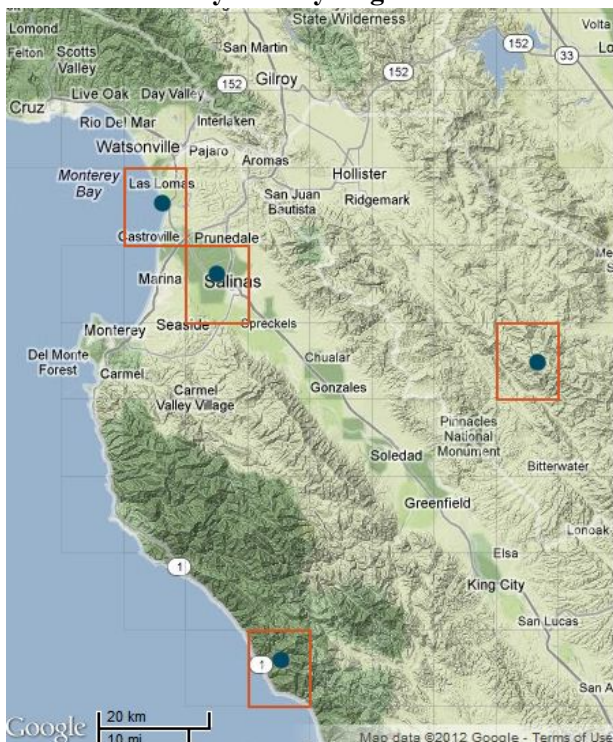
This section first evaluates projected changes in climate variables and then considers the impacts of climate change on the local region.

R.4.1 Projected Changes in Climate Variables

Many climate models have been generated to predict changes in ocean and land temperature, rain frequency and intensity, coastal wave exposure, and sea level rise. Modeling using regional climate models has matured over the past decade to enable meaningful climate vulnerability assessment applications (Wang et al. 2004). California has created several web-based interfaces to help local and regional planners “downscale” climate models for local planning purposes. The Cal-Adapt website (<http://cal-adapt.org/>) provides a geographically based climate model interpretation tool that generates predictive changes to various climate variables using different IPCC GHG emissions projections. Emissions scenario A2 (High Emissions Scenario) coincides with a scenario in which no effort is taken to alter present practices, resulting in increasing rates of emissions. Emissions scenario B1 (Low Emissions Scenario) coincides with emission rates associated with global success at curbing emissions as prescribed within international climate treaties.

The Cal-Adapt tool was used to project changes in various climate variables that may affect water resources within the Greater Monterey County IRWM planning area. Four areas of the region were used to reflect different climate regimes: Coastal Monterey Bay, Coastal Big Sur Mountains, Inland Valley, and Inland Mountains (Figure R-2). Changes in climate variables are presented for the A2 emissions scenario as a worst-case prediction of potential vulnerabilities. Future analysis will be able to increase climate prediction evaluation for a select set of potential impacts based on this initial investigation.

Figure R-2: Four Climate Regimes Modeled in the Greater Monterey County Region



Source: Cal-Adapt (<http://cal-adapt.org/>)

Temperature Changes

Table R-1 below shows the projected difference in temperature between a baseline time period (1961-1990) and an end of century period (2070-2090) for the four climate regime areas selected for the Greater Monterey County IRWM planning region.

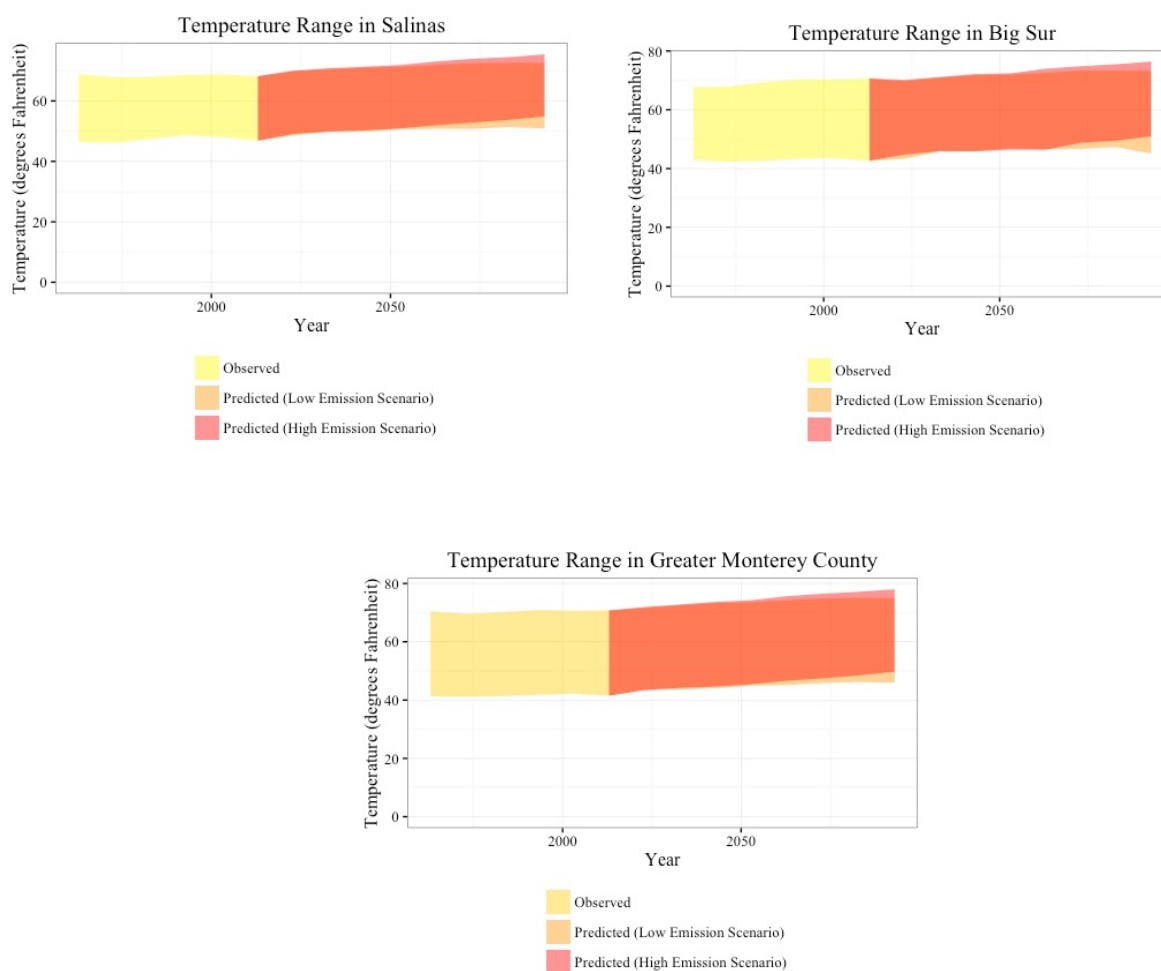
Table R-1: Projected Increases in Average Temperature

Location	Low Emission (°F)	Change in Temp (°F)	High Emission (°F)	Change in Temp (°F)
<i>Salinas</i>	60.3	3.4	62.1	5.2
<i>Moss Landing</i>	60.4	3.2	62.3	5.1
<i>Big Sur</i>	54.4	2.7	56	4.3
<i>Paicines</i>	58.1	3.4	60	5.3

Source: Cal-Adapt web tool (<http://cal-adapt.org/>)

Projected increases in average temperature are graphed for the Big Sur coast and the Salinas Valley in Figure R-3 below. Projected increases in temperature are similar through 2050 for both the A2 (High Emissions) and B1 (Low Emissions) scenarios. After 2050, temperature increases more rapidly using the high emissions rate scenario.

Figure R-3: Projected Decadal Average Temperature Ranges in Big Sur, Salinas, and Greater Monterey County



Source: Cal-Adapt web tool (<http://cal-adapt.org/>)

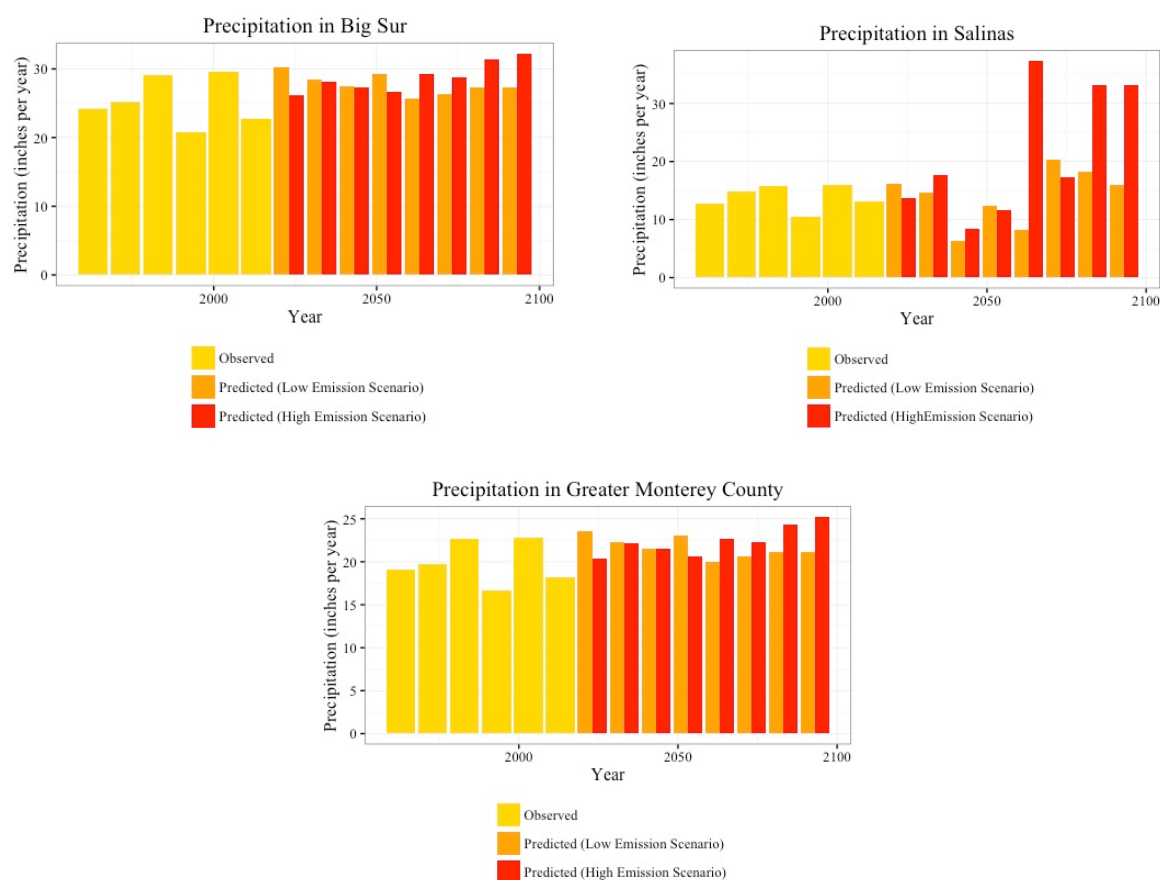
Rainfall Changes

The Cal-Adapt tool predicts that average rainfall will remain relatively constant throughout the Greater Monterey County region with increases in precipitation predicted in a future high emission scenario. Figure R-4 below represents the inter-decadal fluctuations in precipitation (integrating historic decadal fluctuations) and the long-term trends in total precipitation for the areas in question. Note, however, that while most climate change scientists agree that precipitation patterns will change, there is less consensus on the direction of the precipitation change, with some climate models suggesting decreases while others suggesting increases.² According to DWR, average annual precipitation throughout the state may show

² As an example of variable predictions of precipitation impacts in California: A US Department of the Interior Bureau of Reclamation report (2011) predicts mean-annual precipitation in the Sacramento and San Joaquin basins will stay generally steady during the 21st century and will be quite variable over the next century, with the authors

little change, but more intense wet and dry periods can be expected with more floods and more droughts (DWR 2013). The actual change in precipitation is more difficult to predict on the local level.

Figure R-4: Projected Average Rainfall in Big Sur, Salinas, and Greater Monterey County



Source: Cal-Adapt web tool (<http://cal-adapt.org/>)

Other climate variables, including evapotranspiration (water loss in plants) and runoff rates from storms, will also increase over time. Average base flow levels in creeks are projected to decline.

noting that there is significant disagreement among the climate projections regarding change in annual precipitation over the region. The 2009 California Climate Change Adaptation Strategy (California Natural Resources Agency 2009) notes that climate models for the state differ in determining where and how much rain and snowfall patterns will change under different emissions scenarios. However, while the precipitation modeling results vary more than the temperature projections, the authors point out that 11 out of 12 precipitation models run by the Scripps Institution of Oceanography for northern California suggest a small to significant (12-35 percent) overall decrease in precipitation levels by mid-century. Finally, a US Geological Survey report (USGS 2012), using five General Circulation Models (GCM) for two watershed basins in northern California, concludes that precipitation will follow cycles of wetter and drier decadal oscillations during the 21st century.

Sea Level Rise

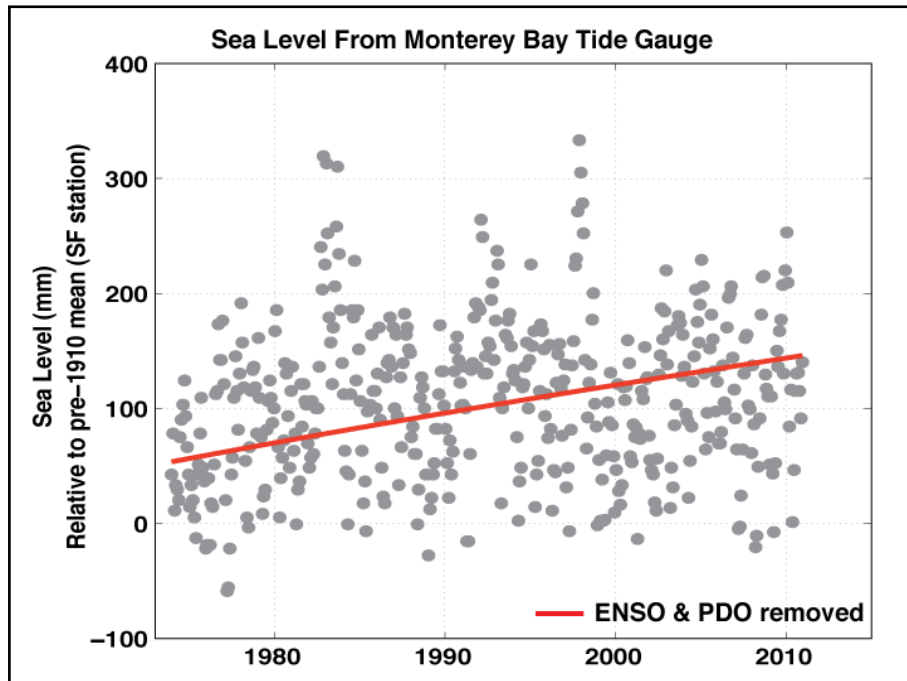
Sea level rise³ is a complex and dynamic process ultimately controlled by levels of heat-trapping greenhouse gases in the atmosphere. There are numerous processes that can alter the rate, extent, and duration of changes in sea level at the local level. As such, accurately predicting sea level over the coming centuries for specific locations is very challenging.

As noted previously, sea level rose approximately eight inches (17-20 cm) over the past century (1900–2005) along most of the California coast (Cayan et al. 2008). Since 1993, altimetry data suggests that the global mean sea level rise rate has increased from 2 to 3 mm per year, but during this time, data from altimetry and tide gauges show that the mean sea level along the Pacific Coast has been stable due to wind stress. However, when the regional climate patterns that drove local sea level trends shift, the Central Coast will very likely experience a rate of sea level rise that will correspond to, or may even exceed, the mean global rate of sea level rise (Bromirski et al. 2011).

Currently, the State of California is using estimates of global sea level rise produced by Rahmstorf (2007) and Cayan et al. (2008) for coastal adaptation planning purposes under Executive Order S-13-08. These projections suggest possible sea level rise of approximately 14 inches (36 cm) by 2050 and up to approximately 55 inches (140 cm) by 2100. However, recent evidence suggests these values may prove to be underestimates of the possible rise in global sea level.

³ This section regarding sea level rise has been excerpted from the “Climate Change and Monterey Bay” website (http://www.climatechangemontereybay.org/impacts_main.shtml). Text prepared by Michael Fox, Center for Ocean Solutions. The references in this section are as cited on the “Climate Change and Monterey Bay” website.

Figure R-5: Sea Level in Monterey Bay from 1976 - 2010



Sea level from the Monterey Bay Tide Gauge. Monthly records of sea level from the Monterey Bay tide gauge are shown from 1976 to 2010. Monterey has experienced a consistent rise in sea level on the order of 2 - 3 mm/yr (0.07 - 0.1 in/yr) for the past 35 years. (Developed by Brock Woodson for the Preparing for the Future: Climate Change and the Monterey Bay Shoreline regional workshop; see <http://centerforoceansolutions.org/preparingforthefuture>. Data obtained from the Permanent Service for Mean Sea Level. Used by permission.)

The anticipated consequences of sea level rise for the Monterey Bay region are serious and far-reaching, and are discussed in Section R.5 below, Potential Impacts of Climate Change in the Greater Monterey County Region.

Changes in Fog

There is evidence to suggest that yearly coastal fog may be declining. A recent study by Todd Dawson from UC Berkeley and James Johnstone from the University of Washington shows that coastal fog in California has declined more than 30 percent over the past 60 years (Sanders 2010; Dayton 2011). With only 60 years of data, it is unclear whether the phenomenon is part of a natural cycle or the result of global climate change.⁴ However, a change in coastal fog could have critical implications for the fate of certain ecosystems, in particular coastal redwoods and maritime chaparral, both of which are dependent on fog for their survival. A decline in coastal fog could also lead to increased water use and an increased demand on water supplies in the Greater Monterey County IRWM region.

California coastal fog is caused by the temperature differential between the cool ocean water and the warmer air. The Monterey Bay region is particularly foggy because of oceanic upwelling of the deep, cold

⁴ Note that the scientists are working to calibrate tree ring isotope data with actual coastal fog conditions in the past century, and will then be able extrapolate back for 1,000 years or more to estimate climate conditions.

waters of the Monterey submarine canyon. When the cold oceanic water meets the warmer air, the air chills and condenses to form fog. As noted above, one of the effects of global climate change is warmer ocean temperatures. The IPCC stated in a 2007 report, “observations since 1961 show that the average temperature of the global ocean has increased to depths of at least 3000 meters” (IPCC, 2007b). Warmer ocean temperatures could mean less fog for coastal California.

Fog occurs primarily in the summer months, when there is little or no rainfall. Fog provides an important source of water for many coastal plant communities by providing soil drip as a source of irrigation. Redwood trees and 80 percent of their understory plants can absorb fog directly through their leaves. Fog also acts to keep moisture in the ecosystem, preventing evaporation and maintaining cooler temperatures. A significant decline in fog could mean an uncertain future for many of the plant communities in the region, including local endemic plants that depend on fog for their survival (Dayton 2011).

The role that coastal fog plays in preventing evaporation and maintaining cooler temperatures also has important implications for water use and water supply in the Greater Monterey County region. A decline in coastal fog would change the local coastal climate, resulting in warmer temperatures and increased evaporation during the summer months. This in turn may lead to increased agricultural and landscape water use, putting additional demand on water supplies in the region.

R.5 POTENTIAL IMPACTS OF CLIMATE CHANGE IN THE GREATER MONTEREY COUNTY REGION

There have been several efforts conducted by various entities in the Monterey Bay region over the past 10 years to determine potential impacts of climate change for the region. This section describes the outcomes of a one-day workshop conducted in 2011 for regional decision makers that focused specifically on coastal impacts. Following that summary, and based partly on the results of that workshop and other regional studies, is a description of the RWMG’s process to determine potential impacts and assess vulnerability and risk for regional infrastructure and natural resources.

R.5.1 Overview of 2011 Regional Climate Change Workshop

On December 6, 2011, the Monterey Bay National Marine Sanctuary (MBNMS) and Center for Ocean Solutions (COS) convened regional decision makers at a one-day workshop titled “Preparing for the Future: Climate Change and the Monterey Bay Shoreline.” The event was the first Monterey Bay region-wide gathering on climate change adaptation, intended to facilitate a discussion on how to best prepare coastal communities in the Monterey Bay region to adapt to the impacts of climate change. More than 90 people attended from cities and municipalities in Santa Cruz and Monterey Counties, representing city and county staff, state and federal governments, research institutions and nonprofit organizations.

Presenters at the workshop focused on impacts of concern for the Monterey Bay region, which included increased coastal erosion, coastal inundation, storm and wave damage, and saltwater intrusion. Monterey Bay has variable coastal geology, and as a result, different regions will experience different types and magnitudes of impacts. For example, portions of the sandy beaches and dunes of southern Monterey Bay are currently eroding at some of the highest rates in California, while the low-lying land and large flood plains in the central portion of the Bay make those areas particularly susceptible to inundation (Abeles et al. 2012).

The following provides information presented at the workshop regarding the anticipated impacts of climate change specifically for the Monterey Bay shoreline area. Note that almost all of the text in this

section has been excerpted from one of two sources: 1) the “Climate Change and Monterey Bay” website, <http://www.climatechangemontereybay.org/>; and 2) the workshop Summary Report (Abeles et al. 2012), which is available at: <http://centerforoceansolutions.com/preparingforthefuture>.

Impacts of Coastal Erosion

Existing levels of coastal erosion in the Monterey Bay region cause significant threats to critical infrastructure, property, and natural habitats.⁵ Coastal erosion will increase as global sea levels continue to rise. Higher sea level will allow waves and tides to travel farther inland, exposing beaches, cliffs, and coastal dunes to more persistent erosional forces (Storlazzi and Griggs 2000). Erosion is not a new issue in California, but rising sea levels threaten to increase the severity and frequency of erosion damage to coastal infrastructure and property. Statewide, a 4.6-foot (1.4 m) rise in sea level has the potential to erode approximately 41 square miles (68 km²) of coastline by the end of the century (Heberger et al. 2009).

The southern portion of Monterey Bay is eroding more rapidly than any other region in the state, with coastal dunes between the Salinas River mouth and Wharf 2 in Monterey eroding at rates between 1.0 and 6.0 feet per year (0.3-1.8 m/yr) (Heberger et al. 2009; Brew et al. 2011; and Hapke et al. 2009). Even without consideration of accelerated sea level rates, eight oceanfront facilities in southern Monterey Bay are at high risk in the next 50 years and will require mitigation measures to prevent their loss (PWA 2008a). One statewide study by the California Energy Commission, *Impacts of Sea Level Rise on the California Coast*, found that in Monterey County a total of approximately 4.4 square miles (7 km²) of coastline is susceptible to erosion, and the maximum distances coastal dunes and sea cliffs are expected to retreat in this region are approximately 1,300 and 720 feet (400 m and 200 m), respectively (Heberger et al. 2009). Loss of this land threatens to place roughly 820 people in Monterey County at risk of losing their homes. In addition to the loss of the protective service, losing these coastal dunes also means the loss of habitat for coastal species.

Coastal erosion will have long-lasting impacts on the Monterey Bay region’s transportation infrastructure, threatening over 50 miles (~83 km) of highway, roads, and rail throughout the region including Highway 1 (Heberger et al. 2009). Important public infrastructure is also at risk of erosion. One example is the Monterey Interceptor pipeline that carries raw sewage from the Monterey Peninsula to the treatment plant located north of the city of Marina. Portions of this critical piece of infrastructure run directly beneath the beach, and if undermined, could result in a significant threat to marine resources and public welfare and safety. Other threatened structures include beachfront hotels, condominiums, private residences, other wastewater pumping appurtenances associated with the Monterey Interceptor pipeline, and Monterey One Water’s (formerly Monterey Regional Water Pollution Control Agency) ocean outfall. Given the current rates of erosion, this sewage pipeline faces possible risk of exposure in the next 30 to 50 years (Brew et al. 2011), highlighting the importance of strategic long-term planning efforts.

Impacts of Coastal Inundation

Coastal inundation occurs when normally dry land becomes covered by water. Coastal inundation is one of the most costly and damaging impacts associated with sea level rise.⁶ Low-lying coastal areas of the

⁵ This section on coastal erosion has been excerpted from the “Climate Change and Monterey Bay” website: http://www.climatechangemontereybay.org/impacts_erosion.shtml. Text prepared by Michael Fox, COS. All references included in this section are cited on the website.

⁶ Much of this section on coastal inundation has been excerpted from the “Climate Change and Monterey Bay” website: http://www.climatechangemontereybay.org/impacts_inundation.shtml. Text prepared by Michael Fox, COS. All references included in this section are cited on the website.

Monterey Bay region will be exposed to a greater risk of major flooding events, and storm surge, high tides, and waves will travel farther inland (Heberger et al. 2009). Elevated sea levels combined with increases in winter storm intensity and wave heights will increase risks associated with coastal inundation (Storlazzi and Wingfield 2005; and Wingfield and Storlazzi 2007).

Given the large impact zone associated with coastal inundation, a significant portion of transportation infrastructure is at risk. Highways, roads, and railways in Monterey County are susceptible to coastal inundation, and flooding may impact several power generation facilities (Heberger et al. 2009). The low-lying coastal location of many agricultural properties in this region increases the likelihood of significant loss of agricultural land due to storm-induced flooding and salinization with increasing sea level and long-term inundation. Loss of agricultural production in the region will have lasting consequences for the largest sector of the regional economy.

In conjunction with coastal inundation, coastal water quality will likely decline as storm-induced flood waters recede, drawing debris, fertilizers, and other contaminants into the bay. This increased runoff has the potential to increase the frequency and severity of harmful algal blooms (HABs) in the area, posing a serious threat to local fisheries and marine mammal populations (Largier et al. 2010).

Coastal inundation also poses a risk to local wetlands. The impact of sea level rise on wetlands is significant for the Greater Monterey County area, since the region contains several important wetland systems. If the rate of sea level rise exceeds the rate of wetland accretion, or if wetlands cannot transgress (migrate up and inland) large tracts of critically important habitat, such as Elkhorn Slough, will become permanently submerged (Heberger 2009; Largier 2010). If these wetland systems become submerged, their ability to provide crucial services such as nursery habitat, wave protection, and nutrient and sediment retention will be greatly diminished. There are several other wetland systems that interact with the main Elkhorn system, including the Moro Cojo and Bennett Sloughs and the Old Salinas River channel. All of these systems' tidal interactions are muted due to culverts and tide gates. Sea level rise will pose significant threats to these systems as well, but those interactions are less well understood.

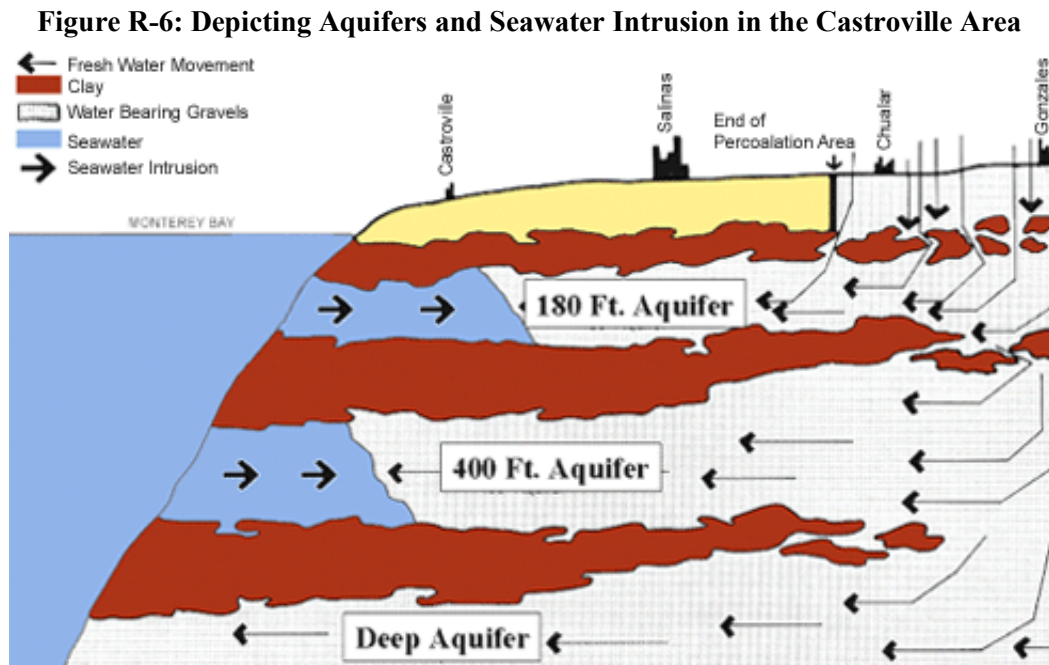
Monterey County also contains about 30 coastal river and creek mouth lagoon systems that provide a diverse set of environmental services and span the entire of the IRWM planning region. The cumulative impacts of increased rain intensity and flows within coastal watersheds along with increased sea levels and storm wave impacts pose unique threats to these valuable wetland resources. Regional partners have begun to evaluate the potential impacts to these systems, but studies are incomplete and more research is needed.

Impacts of Seawater Intrusion

Seawater intrusion is caused by two primary processes: overdrafts of coastal wells that reduces head pressure, and coastal salt water pressure exacerbated by sea level rise. As described in the Region Description of this plan, coastal groundwater basins in the region have been experiencing overdraft for many years. According to the 2015 Urban Water Management Plan for the Salinas District (Cal Water 2016), the annual non-drought overdraft of the Salinas Valley Groundwater Basin is estimated to be approximately 45,300 AF per year. During droughts, the annual overdraft can escalate to between 150,000 to 300,000 AF per year. As a result of this consistent overdraft, groundwater levels in the Salinas Valley Groundwater Basin have dropped below sea level, allowing seawater to intrude from Monterey Bay into aquifers located 180 and 400 feet below ground surface. The East Side and Pressure Subareas of the Salinas Valley Groundwater Basin are most impacted by overdraft. Because of the hydrologic continuity between the ocean and the aquifers of the Pressure Area (Figure R-6), seawater has been intruding into these aquifers at a rate of approximately 28,800 AFY (Cal Water 2010b).

In the mid-1990s, due to seawater intrusion, the Monterey County Water Resources Agency (MCWRA) constructed a water delivery system known as the Castroville Seawater Intrusion Project (CSIP), aimed at providing recycled water produced at the Salinas Valley Reclamation Project (SVRP) tertiary-treatment facility to agricultural growers within the seawater intrusion front area. These growers use the recycled water to supplement groundwater. Since 1998, recycled water deliveries have ranged from approximately 7,500 - 14,000 AFY. As a result of the CSIP, the seawater intrusion front has slowed, but has not been halted. MCWRA also developed the Salinas Valley Water Project as a means to increase the availability of recycled water, thereby further reducing agricultural pumping from intruded Pressure Subarea Aquifers.

In 2017 MCWRA published a special report entitled “Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin,” in which MCWRA staff make six recommendations to address factors that influence the continued advancement of seawater intrusion. Coupled with implementation of groundwater sustainability legislation, the Salinas Valley may look to develop new water supplies for agricultural and urban users in the Salinas Valley Groundwater Basin, which may ultimately be more resilient to climate change impacts than current surface water and groundwater supplies.



Map depicting groundwater flow in the lower Salinas Valley. Yellow represents the area where the Salinas Valley Water Project and the Castroville Seawater Intrusion Project have taken steps to resupply groundwater reserves with recycled water. (MCWRA)

While basin overdraft conditions are expected to improve by the year 2030 due to these and other efforts, recent groundwater modeling from the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) predicted seawater intrusion to continue to worsen, though at a decreased rate. The SVIGSM modeling did not take into account, however, expected sea level rise due to climate change. The problem

of seawater intrusion is expected to be exacerbated significantly by sea level rise. Groundwater contaminated by saltwater is not suitable for agricultural use or for drinking water without treatment.

Possible Unforeseen Groundwater Impacts from Coastal Flooding

There are hundreds of groundwater wells in the lower Salinas Valley, managed by different entities for different purposes. Agricultural irrigation wells are often installed by individual farmers and may be decades old. Wells that are not constructed and maintained properly can become a conduit for aquifer contamination if they are routinely flooded, as predicted under conditions of climate change. Such wells can also become a secondary route for vertical saltwater inundation if the wells are not protected during ocean flooding, which is expected to occur periodically with climate change. (See Section R.6.2.b, Vulnerabilities for 2030, 2060, 2100, for more information about the vulnerability of groundwater wells.)

Impacts of Coastal Storms and Waves

Seasonal patterns of storms and wave intensity are the primary driving forces behind coastal erosion along the California coast.⁷ While a natural process that shape shorelines and beaches, erosional forces become a hazard when they interact with permanent structures that rely on a stable shoreline. The impacts of storm and wave damage are episodic and have the greatest severity when large storms coincide with high tide events. Despite the gradual day-to-day erosion experienced along the coast, it is the large, episodic erosional events that pose the greatest threat to the Monterey Bay shoreline. Given the recent evidence that suggests storm and wave intensity is likely to increase in this region, these large, episodic erosional events may occur more frequently. Protecting and restoring natural systems to take advantage of their protective services can increase resilience to these coastal impacts. Protecting and restoring these systems will likely provide additional benefits such as improved water quality and increased nursery habitat and recreation areas.

Vulnerability of Natural Coastal Protections

Similar to seawalls, dunes are critical in acting as a buffer between the ocean and the areas behind the dunes. Because dunes are natural, they also preserve existing ecosystems and have the ability to move inland with the beach and the sea level in order to preserve the whole beach-dune system. The dunes directly north of the Salinas River mouth are especially narrow and thus already prone to winter storm erosion and wave overtopping. Breaks in the dunes between Jetty and Potrero roads would reduce the protection this dune system provides to the harbor from winter storms. Possible breaks within the dunes south of the Potrero tide gates would leave much of the Salinas Valley vulnerable to coastal flooding.

R.5.2 Evaluation of Potential Impacts to the Greater Monterey County Region Using State Guidance

The State has provided numerous tools and several comprehensive guidance documents to evaluate the potential impacts of climate change, and the vulnerabilities of human and natural systems in the face of climate change variables. Table R-2 below represents a “broad brush” consideration of potential impacts to water resources associated with changes in climate variables, adapted from Appendix B of *Climate Change Handbook for Regional Water Planning* (US EPA Region 9 and DWR 2011) and deemed applicable to the Greater Monterey County IRWM planning region. The RWMG used this information as the basis for its initial climate vulnerability analysis and risk assessment for the Greater Monterey County region in 2012. Section R.6, following the table below, describes that process.

⁷ This section on coastal storms and waves has been excerpted from the “Climate Change and Monterey Bay” website: http://www.climatechangemontereybay.org/impacts_storms.shtml. Text prepared by Michael Fox, COS.

Table R-2: Potential Impacts to Water Resources in the Greater Monterey County Region

Climate Variable	Potential Vulnerability
Water Supply and Demand	• Agricultural water use is expected to increase to offset higher temperatures and evapotranspiration. • Rangelands are expected to be drier. • Domestic landscaping water needs will be higher. • Sea level rise and higher groundwater extraction will lead to increased rates of saltwater intrusion. • Droughts will be more frequent and severe.
Water Quality	• Lower seasonal surface flows will lead to higher pollutant concentrations. • Changes in storm intensity will increase sediment loading in many systems. • Channel stability will be impacted from higher storm flows causing additional turbidity. • Sea level rise will impact current estuary brackish water interface towards more marine systems.
Flooding	• Regional river levees will provide less protection during higher storm flow events. • Natural creeks and managed conveyance will see higher flow rates leading to increased erosion and flooding. • Coastal levees and control structures will be undersized to manage the combined influences of higher river flows and sea level rise.
Aquatic Ecosystem Vulnerabilities	• Migration patterns and species distribution will change. • Invasive species populations will expand. • Coastal wetland systems are especially vulnerable to the combined influences of climate change • Coastal wetland systems are likely to be inundated with increasing frequency, leading to the dieback of tidal marshes (Philip Williams & Associates 2008b) and the salinization of fresh and brackish marshes. • Changes in hydrograph (driven by rain pattern changes) will cause increased erosion and habitat loss in creeks and rivers. • Some locally unique species and communities such as maritime chaparral, coastal prairie, coastal redwoods and giant kelp are susceptible to changes in certain locally favorable climate variables; for example, redwood forest ecosystems and coastal chaparral species are dependent on fog, and productive kelp forests tend to be associated with areas of significant oceanographic upwelling. As conditions change, these ecosystems and species may face an uncertain future (see Dayton 2011).
Hydropower and Reservoir Storage	• Changes in rainfall patterns may be problematic for timing of release from reservoirs. • More intense rainfall and increased risk of fires in watershed lands can lead to increased sediment loading to reservoirs.

R.6 EVALUATING THE ADAPTABILITY OF WATER MANAGEMENT SYSTEMS IN THE REGION TO CLIMATE CHANGE: CLIMATE VULNERABILITY AND RISK ASSESSMENT

The Integrated Regional Water Management Planning Act, CWC §10541(e)(10), states that IRWM plans must include an evaluation of the adaptability to climate change of water management systems in the region. For the 2012 IRWM Plan, the RWMG conducted an initial climate risk assessment to help water resource managers evaluate the risks to water management systems. As part of the 2017-2018 IRWM

Plan update (for compliance with 2016 IRWM Guidelines), the RWMG performed a more in-depth assessment of vulnerability and risk for regional infrastructure and environmental resources in order to help water resource managers consider potential adaptation measures. The latter effort included interviews with RWMG members to obtain a better understanding of water resource management efforts being planned or implemented by IRWM Plan partners within Greater Monterey County (Appendix N).

The sections below describe the initial risk analysis conducted by the RWMG, followed by a more specific and in-depth analysis (i.e., GIS hazard model evaluation) of sea level rise vulnerability for the lower Salinas Valley area.

R.6.1 Initial Risk Analysis

The RWMG used a combination of tools and two hazard analysis methods to identify priority resources that face the greatest threat from the impacts of climate change. Those impacts were then prioritized based on their likelihood and the potential consequences of those impacts for life, property, public resources, and the natural environment of the Greater Monterey County region.

Key documents used for this climate risk assessment include the State guidance document, *Climate Change Handbook for Regional Water Planning* (US EPA Region 9 and DWR 2011) and the guidebook, *Preparing for Climate Change* (Snover et al. 2007). Both documents outline a process for defining vulnerable infrastructure, land uses, and habitats, for defining the sensitivity of those resources to changes in climate conditions, and evaluating the risk of impacts to those resources. The RWMG also used several tools to identify resources that are sensitive to changes in climate variables. The website for the International Council for Local Environmental Initiatives (ICLEI) – Local Governments for Sustainability provides an online tool to identify important resources (human and natural) that are susceptible to climate change, and the *Climate Change Handbook* provides a useful checklist for identifying potential water resource specific vulnerabilities.

The RWMG conducted a risk analysis for regional assets and areas of concern, as well as several hazard analyses associated with coastal sea level rise. This section describes a narrative risk analysis that was conducted for the region, evaluating the likelihood and relative vulnerability of various risks, using the potential impacts that were initially identified as part of the IRWM climate change evaluation, listed in Table R-3. Following this section, Section R.6.2 describes a hazard-specific analysis (i.e., sea level rise), using projected GIS hazard extents for three future time horizons.

Climate preparedness planning relies on the evaluation and prioritization of risks. Risk is determined based on the probability that a certain impact will occur (*likelihood*) and the significance of that impact (*consequence*) on life, land uses, water resources, the economy, and the environment. The equation is: $Risk = Consequences \times Likelihood$. Since no region has sufficient resources to address all potential impacts of climate change simultaneously, this prioritization process is necessary to address impacts that are most likely and that will result in the greatest detriment to life, the economy, and infrastructure (*consequence*).

Likelihood: The probability that a specific impact will occur, defined within the ICLEI workbook as *likelihood*, is estimated based on the increased chance, or periodicity, that a certain event will occur. Table R-3 illustrates how the combined factors of risk and likelihood relate to the determination of priority planning areas. Table R-4 illustrates the “Likelihood Rating” of impacts based on the chance of an infrequent impact occurring more often (“recurrent risk”) and the chance that a previously unrealized impact could occur (“single event”).

Table R-3: Risk Variables

	Low Likelihood	Medium Likelihood	High Likelihood
High to Extreme Risk	May be priority planning areas	Should be priority planning areas	Should be priority planning areas
Low to Medium Risk	Are unlikely to be priority planning areas	May be priority planning areas	Likely to be priority planning areas

Table R-4: Probability Variables

Likelihood Rating	Recurrent Risks	Single Event
Almost Certain (5)	Could occur several times per year	More likely than not - probability greater than 50%
Likely (4)	May arise about once per year	As likely as not - 50/50 chance
Possible (3)	May arise once in 10 years	Less likely than not but still appreciable - probability less than 50% but still notable
Unlikely (2)	May arise once in 10 years to 25 years	Unlikely but not negligible - probability low but noticeably greater than zero
Rare (1)	Unlikely during the next 25 years	Negligible - probability very small, close to zero

Consequence: The *consequence* of a specific climate change impact occurring was evaluated individually for five different social, economic, and environmental factors, including specifically:

- Public safety
- Local economy and growth
- Community and lifestyle
- Environment and sustainability
- Public administration

The cumulative consequence from the combined impacts to specific social, economic, and environmental factors was then derived. For example, the consequences of failing to address sea level rise will depend on the potential impacts of that future sea level rise on the five factors listed above, combined. The consequence for each factor was estimated from little or no consequence (0) to serious devastation to infrastructure or significant economic or environmental impacts or loss of life (5).

Risk: The amount of *risk* involved from a climate change impact depends on both the likelihood and severity of the consequences that may result from that impact. Using the example of sea level rise, risk can be mitigated by reducing the consequence of the flooding or the possibility that flooding will occur at a given ocean height. Risk was determined for the Greater Monterey County region based on the consequences that are expected to arise from any particular impact occurring within the region. Consequences were evaluated for human wellbeing, economic stability, environmental health, and the ability of municipalities to respond.

Table R-5 depicts the relative risk of each climate change impact scenario, along with a relative level of urgency to act (priority level). The table illustrates results separately for five socio-economic and environmental consequences (including: public safety, local economy and growth, community and

lifestyle, environment and sustainability, and public administration), and for the environmental consequence only. This initial priority impact assessment was used by the RWMG to prioritize implementation actions and future studies.

Table R-5: Determining Priority Impacts: Prioritized Impacts Based on the Combined Consequences of Five Social-economic Factors and for Environmental Consequence Alone

Potential Climate Change Impact	Risk Score	Priority Level	Risk Score	Priority Level
Water Supply	Based on All Five Consequences		Environmental Consequence Only	
Agricultural water use is expected to increase to offset higher temperatures and evapotranspiration	62	High	19	Extreme
Rangelands are expected to be drier	49	Medium	15	High
Domestic landscaping water needs will be higher	51	Medium	15	High
Local rainfall changes are estimated to be reduced by 3-10 inches	61	High	17	Extreme
Sea level rise and higher groundwater extraction will lead to increased rates of saltwater intrusion	66	High	17	Extreme
Droughts will be more frequent and severe	59	High	16	Extreme
Water Quality	Based on All Five Consequences		Environmental Consequence Only	
Lower seasonal surface flows can lead to higher pollutant concentrations	39	Low	12	High
Changes in storm intensity will increase sediment loading in many systems	48	Medium	13	High
Channel stability will be impacted from higher storm flows causing additional turbidity	39	Low	11	Medium
Flooding	Based on All Five Consequences		Environmental Consequence Only	
Regional levees will provide less protection during higher storm flow events	69	High	13	High
Natural creeks throughout the region and managed conveyance within the Salinas Valley will see higher flow rates leading to increased erosion and flooding	54	Medium	12	High
Coastal levees and control structures will be undersized to manage the combined influences of higher flow events and sea level rise	89	Extreme	17	Extreme
State recommendations suggest no new critical facilities be built within the 200-year floodplain (DWR 2008, DWR 2009b, CNRA 2009)	23	Low	3	Low
Ecosystem Vulnerabilities	Based on All Five Consequences		Environmental Consequence Only	
Sea level rise will impact current estuary brackish water interface towards more marine systems	50	Medium	16	Extreme
Migration patterns and species distribution will change	37	Low	13	High
Invasive species populations will expand	38	Low	10	Medium
Coastal wetland systems are especially vulnerable to the combined influences of climate change	45	Medium	16	Extreme

Potential Climate Change Impact	Risk Score	Priority Level	Risk Score	Priority Level
Some locally unique species such as coastal redwoods and giant kelp are susceptible to changes in certain locally favorable climate variables (fog duration, coastal upwelling)	37	Low	13	High
Hydropower and Reservoir Storage	Based on All Five Consequences		Environmental Consequence Only	
Changes in rainfall patterns may be problematic for timing of releases from reservoirs	47	Medium	9	Low
Higher rainfall and increased risk of fires in watershed lands can lead to increased sediment loading to reservoirs	37	Low	10	Medium

R.6.2 Sea Level Rise GIS Hazard Model Evaluation for Lower Salinas Valley: A Case Study

State guidelines recommend that regional planning groups identify key areas where there is a high risk of climate change vulnerability to water infrastructure. Within the Greater Monterey County IRWM region, the lower Salinas Valley is a priority water management focus area. For the 2017-2018 IRWM Plan update, IRWM partner groups, led by CCWG, performed a sea level rise vulnerability analysis for the Lower Salinas Valley area and completed a comprehensive analysis of water resources and infrastructure that are at risk of impacts associated with sea level rise and climate change-induced storm flooding along the coast.

Water resources and water infrastructure within the Lower Salinas Valley that are at risk of coastal flooding and sea level rise were identified using the base layers and data analysis completed for the Moss Landing Vulnerability Report (CCWG 2017, described in Section R.3.2). Resources at risk of future flooding (by 2030, 2060 or 2100) were identified and tallied, and response actions were evaluated. The Case Study follows steps outlined within State guidelines to identify vulnerable water infrastructure and identify adaptive measures that can be supported and/or implemented by the IRWM Plan.

R.6.2.a Temporal Hazard/Vulnerability GIS Analysis

The Lower Salinas Valley hazard evaluation is intended to provide a predictive chronology of future risks to benefit local coastal planning and foster discussions with State regulatory and funding agencies. Estimates of the extent of assets at risk of various climate hazards were made using best available regional data. This approach allows planners to understand the full range of possible impacts that can be reasonably expected based on the best available science, and to build an understanding of the overall risk posed by potential future sea level rise. The hazard maps provide projected hazard zones for each climate scenario for each of the three planning horizons.

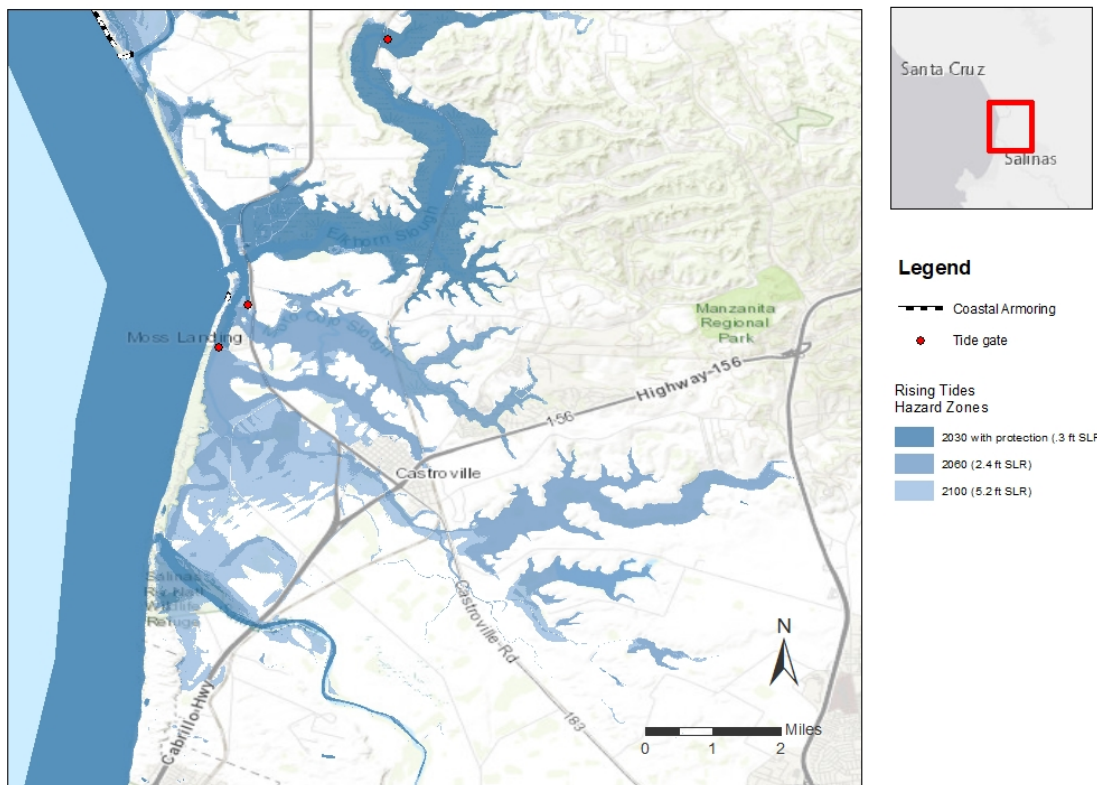
Coastal Climate Risk Model Hazard Layers

A coastal hazard modeling and mapping effort by ESA (ESA PWA 2014) led to a set of common hazard map layers that integrate the multiple coastal hazards projected for the Monterey Bay coastline (i.e., hazards of coastal climate change). There is, however, a benefit to evaluating each hazard (or coastal process) separately. CCWG staff posted processed hazard layers to account for reductions in potential hazards provided by current coastal protection infrastructure. This refinement of coastal hazard mapping helped the RWMG better understand the future risks that the Lower Salinas Valley area may face for each

coastal hazard process. The following maps describe and show the modeled hazard zones for each identified coastal climate change hazard type.

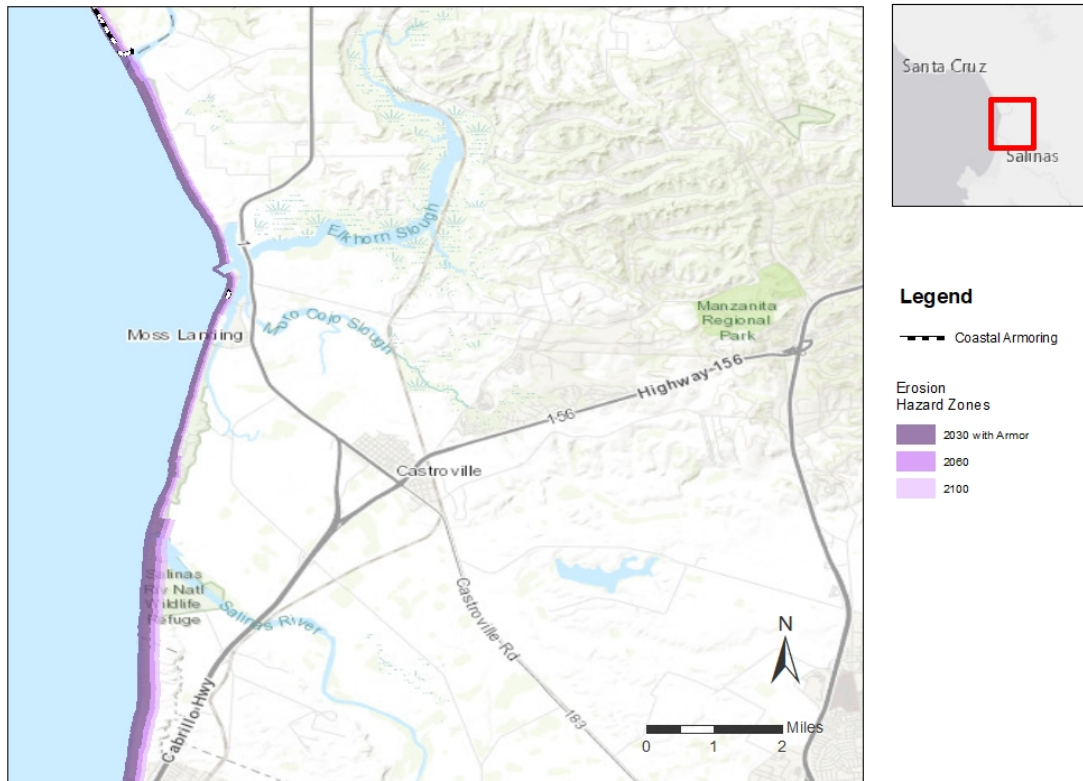
Rising Tides: These hazard zones show the area and depth of inundation caused simply by rising tide and groundwater levels (not considering storms, erosion, or river discharge). The water level mapped in these inundation areas is the Extreme Monthly High Water (EMHW) level, which is the high water level reached approximately once a month. There are two types of inundation areas: (1) areas that are clearly connected over the existing digital elevation through low topography, (2) and other low-lying areas that do not have an apparent connection, as indicated by the digital elevation model, but that are low-lying and flood prone from groundwater levels and any connections (culverts, storm drains and underpasses) that are not captured by the digital elevation model. This difference is captured in the “connection” attribute (either “connected to ocean over topography” or “connectivity uncertain”) in each Rising Tides dataset. These zones do not, however, consider coastal erosion or wave overtopping, which may change the extent and depth of regular tidal flooding in the future. Projected risks from rising tides lead to reoccurring flooding hazards during monthly high tide events.

Figure R-7: Projected Rising Tide Hazard Zones for Years 2030, 2060, 2100



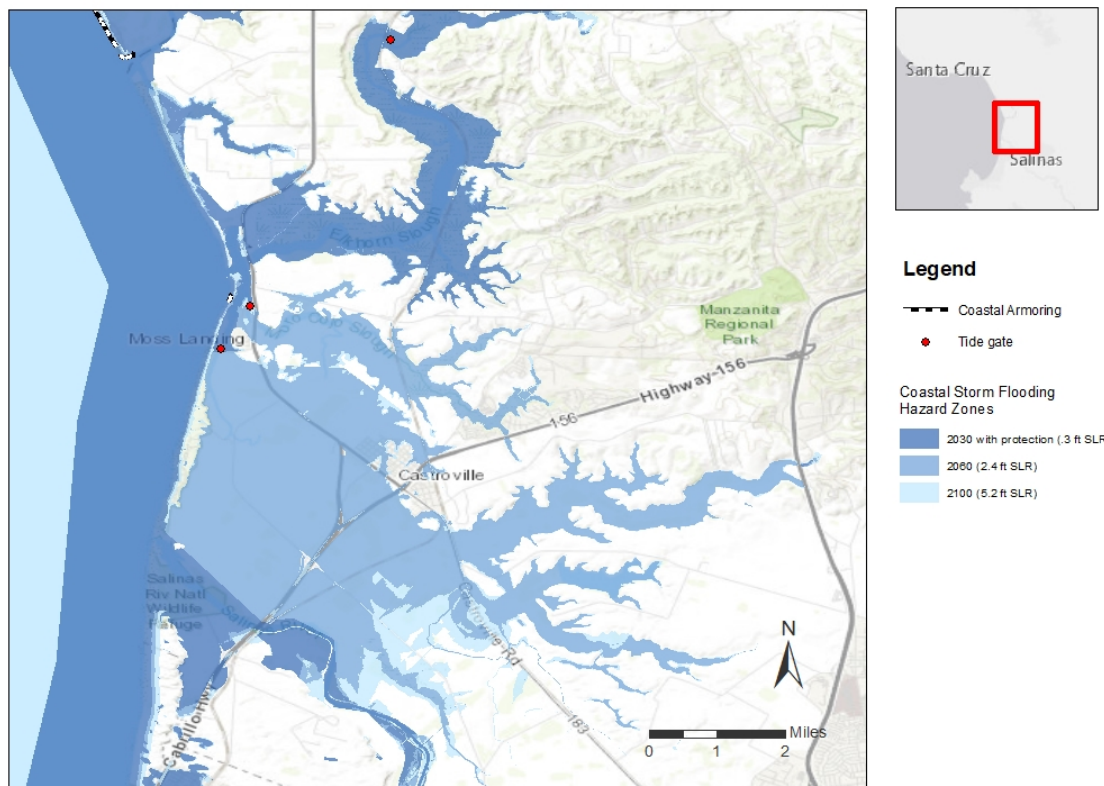
Erosion: These layers represent future dune (sandy beach) erosion hazard zones, incorporating site-specific historic trends in erosion, additional erosion caused by accelerating sea level rise and (in the case of the storm erosion hazard zones) the potential erosion impact of a large storm wave event. The inland extent of the hazard zones represents projections of the future crest of the dunes for a given sea level rise scenario and planning horizon. Erosion can lead to a complete loss of habitat, infrastructure and/or use of properties.

Figure R-8: Projected Erosion Hazard Zones for Years 2030, 2060, 2100



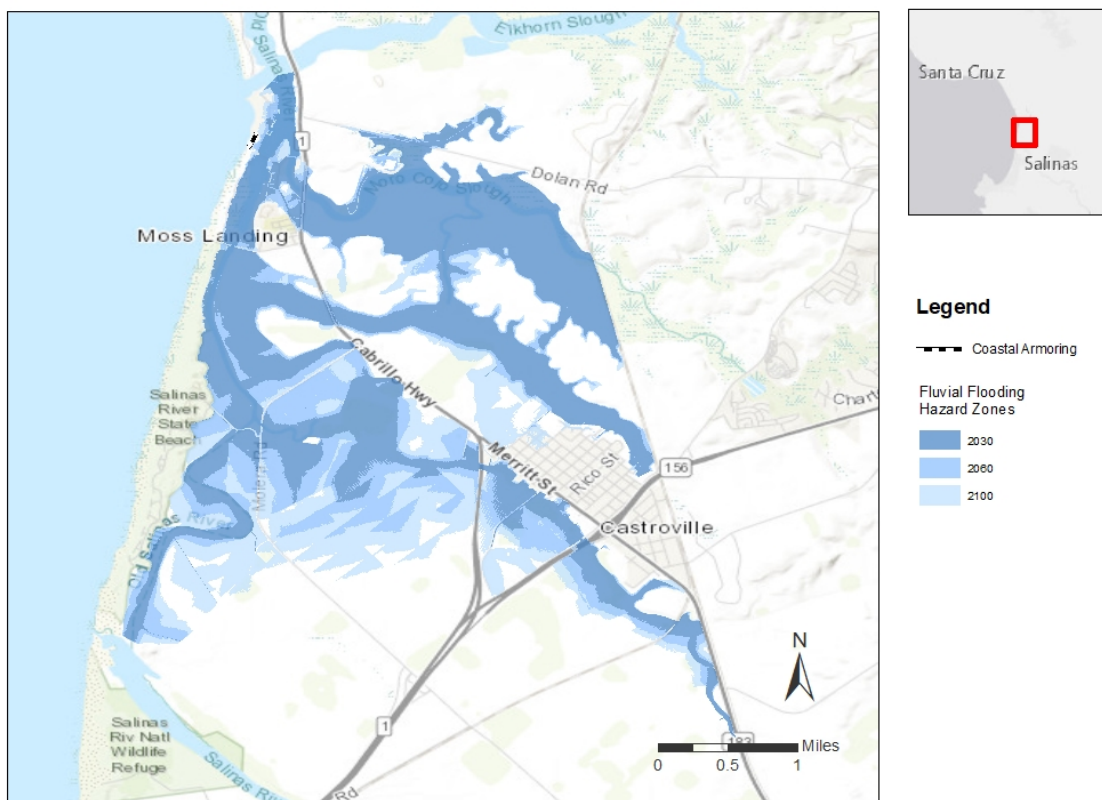
Coastal Storm Flooding: These hazard zones depict the predicted flooding caused by future coastal storms. The processes that drive these hazards include (1) storm surge (a rise in the ocean water level caused by waves and pressure changes during a storm), (2) wave overtopping (waves running up over the beach and flowing into low-lying areas, calculated using the maximum predicted wave conditions), and (3) additional flooding caused when rising sea levels exacerbate storm surge and wave overtopping. These hazard zones also take into account areas that are projected to erode, sometimes leading to additional flooding through new hydraulic connections between the ocean and low-lying areas.

Figure R-9: Projected Coastal Storm Flood Hazard Zones for Years 2030, 2060, 2100



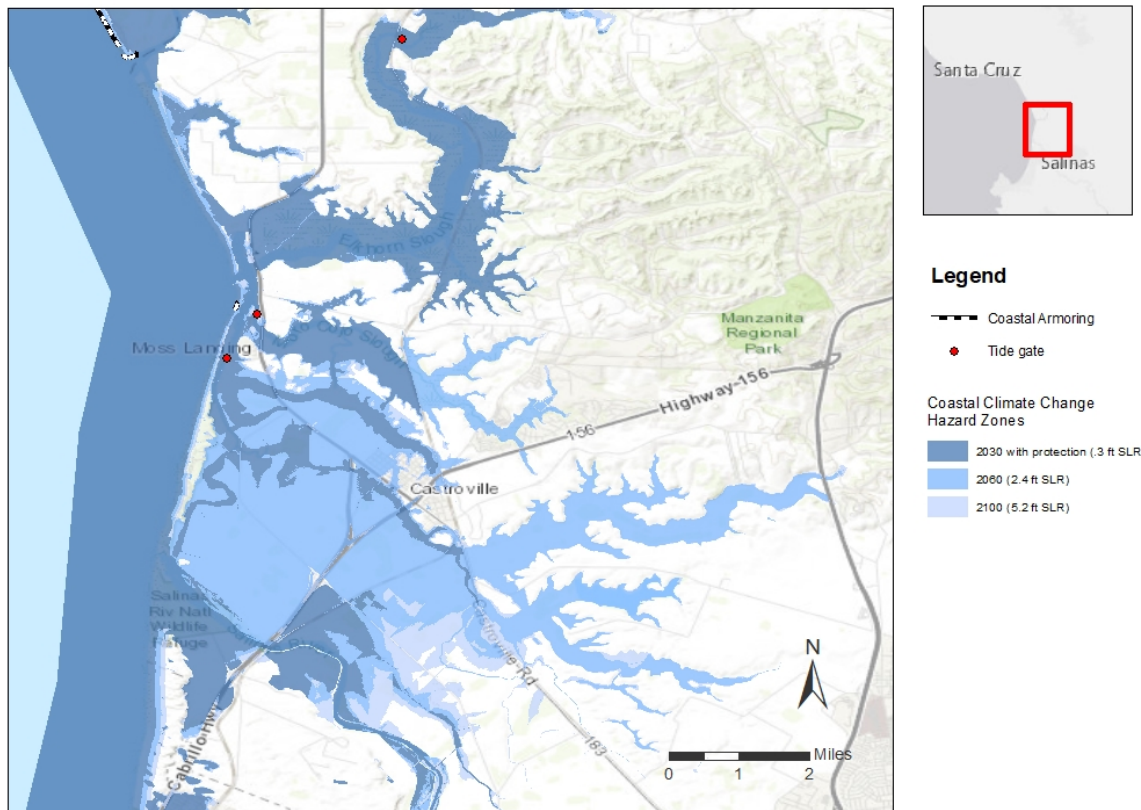
Fluvial Flooding: A river flooding vulnerability analysis was completed to evaluate the cumulative impacts of rising seas and future changes in fluvial discharge within the Gabilan watershed. The ESA modeling team expanded hydrologic models of the Gabilan watershed provided by the County to estimate discharge rates under future climate scenarios (ESA 2016). The fluvial model estimates localized flooding along the Reclamation Ditch/Gabilan Creek when discharge is restricted behind the Potrero tide gates during high tides.

Figure R-10: Projected Fluvial Flood Hazard Zones for years 2030, 2060, 2100



Combined Hazards: CCWG merged the coastal hazard layers (for the specific scenarios as modified to account for structures) to create a new combined hazard layer for each planning horizon (2030, 2060 and 2100). These merged layers represent the combined vulnerability zone for “Coastal Climate Change” for each time horizon. Projections of the combined hazards of Coastal Climate Change are intended to help estimate the cumulative effects on the community and help identify areas where revised building guidelines or other adaptation strategies may be appropriate. Combined hazards, however, do not provide municipal staff with the necessary information to select specific structural adaptation responses. Therefore, this study also evaluates the risks associated with each individual coastal hazard.

Figure R-11: Projected Combined Coastal Climate Change Hazard Zones for 2030, 2060, 2100



Land Use and Infrastructure GIS Base Layers

This case study evaluated water and utility infrastructure and wetland and dune natural resources that may be at risk to sea level rise and associated flooding. GIS layers were obtained from County and State data repositories, or created by CCWG. Assets that fell outside of the coastal flood zone were not included in this report. Assets evaluated for this case study included:

- **Farmland:** The Moss Landing community is surrounded by thousands of acres of productive farmland. Land use maps were used to identify which of these lands are susceptible to flooding.
- **Transportation Infrastructure:**
 - **Highway 1:** Highway 1 runs through Moss Landing with a bridge crossing Elkhorn Slough.

- **Rail:** The rail line transects the Moss Landing study area passing through Elkhorn and Moro Cojo sloughs. The rail line is operated daily by Southern Pacific for both commercial and passenger service.
- **Bridges:** There are a number of bridges and roads that overpass the complex network of creek and wetland features within Moss Landing.
- **Water and Utility**
 - **Water Control:** There are two tide gates in place to help reduce tidal range within the Old Salinas and Moro Cojo sloughs. These structures restrict tidal flooding to large areas of the southern Moss Landing study area but also inadvertently restrict river discharge during large winter storms.
 - **Sewer:** There are several wastewater pump stations located in the Moss Landing area. Passive and gravity fed sewer mains were evaluated and reported as impacted where flooding overlay this infrastructure. Pressurized sewer mains were assumed to be resilient to coastal flooding.
 - **Storm Drains:** Storm drains within the urban areas that are located within flood zones were noted as being vulnerable to future flooding.
 - **Wells:** Agriculture, test, and water supply wells exist throughout the lower Salinas Valley. Because these systems are not designed to accommodate surface flooding, saltwater flooding of these wells during periods of coastal storm flooding was determined to risk groundwater contamination and thus noted as vulnerable within the Coastal Storm Flood hazard zones.
 - **Recycled Water Infrastructure:** Recycled water infrastructure within coastal erosion zones was identified.
- **Natural Resources:**
 - **Wetlands:** Elkhorn Slough's tidal salt marsh provides critical habitat for many species. Fresh and brackish water wetlands within the Moro Cojo Slough and Salinas River/Old Salinas River channel provide important habitats for threatened species and flood attenuation during winter storms. Increased flood water depth on marsh plains can threaten plant communities. Saltwater flooding inland of normal mixing areas can threaten fresh and brackish water plant and animal communities.
 - **Dunes:** The beach dunes along Moss Landing State Beach and Salinas River State Beach provide important habitat for many native plants and animals. These dunes are vulnerable to winter wave damage and erosion, leaving low lying lands behind the dunes vulnerable to flooding.

R.6.2.b Vulnerabilities for 2030, 2060 and 2100

Due to climate change, the cumulative amount of infrastructure at risk will increase between 2010 and 2100 as projected ocean water elevation and storm intensity increase. Impacts during early time horizons (2030) will most commonly result from infrequent storm-induced flooding and erosion. Hazards associated with fluvial and tidal flooding will increase during future time horizons (2060 and 2100).

Figure R-12 illustrates what water infrastructure is projected to be vulnerable to coastal climate change hazards for the years 2030, 2060, and 2100. Hazards include dune erosion, frequent to annual wave

damage and storm-related flooding, and areas where increases in sea level will lead to monthly inundation during high tides. Infrastructure located behind tide gates are assumed to be protected from projected risks through 2030. Future hazards projected beyond 2030 are assumed to place infrastructure behind tide gates at risk because it is assumed that current tide gate infrastructure will no longer provide flood protection for projected 2060 and 2100 hazards.

Figure R-13 illustrates groundwater well infrastructure projected to be impacted by coastal storm flooding for the years 2030, 2060, and 2100. The amount of water infrastructure, transportation infrastructure, farmland, and natural resource areas at risk from the combined effects of coastal climate change are presented in Table R-6 below for each time horizon.

Figure R-12: Sewer and Storm Water Infrastructure and the Combined Coastal Change Hazards in the Lower Salinas Valley Study Area

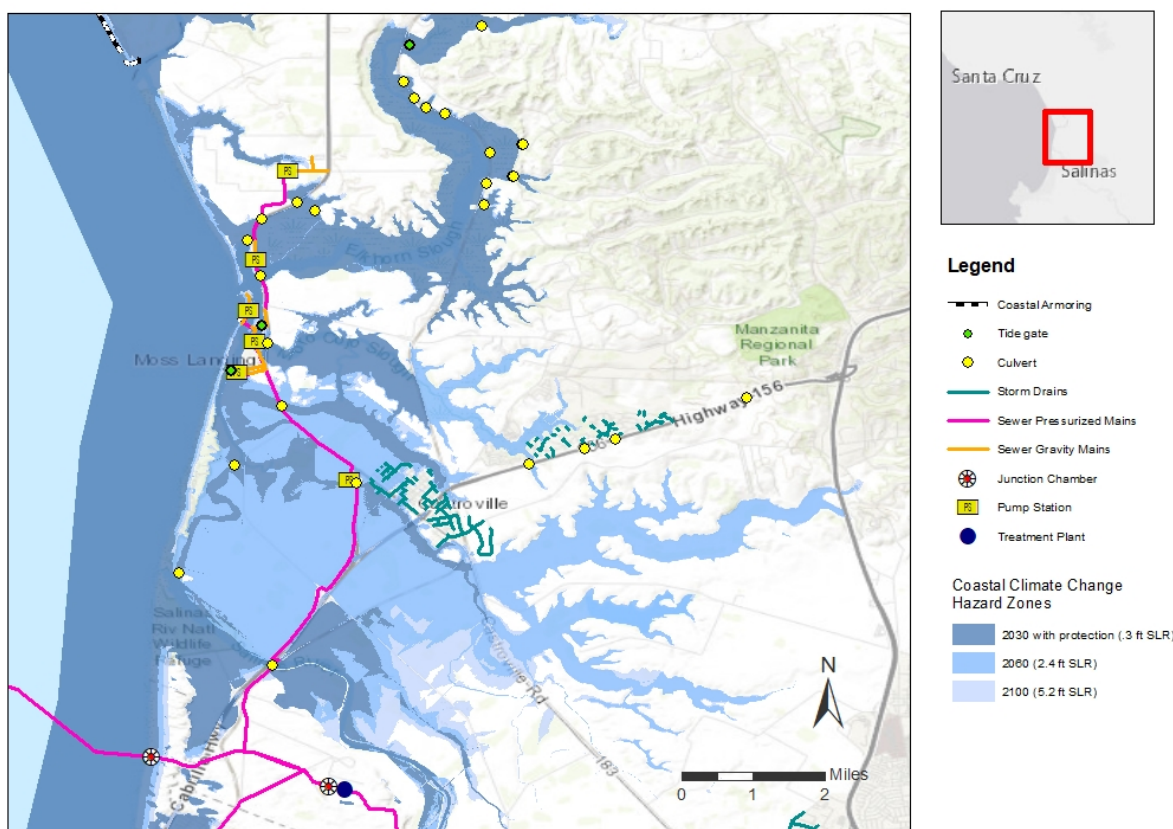


Figure R-13: Wells Projected to be Impacted by Coastal Storm Flooding in the Lower Salinas Valley Study Area

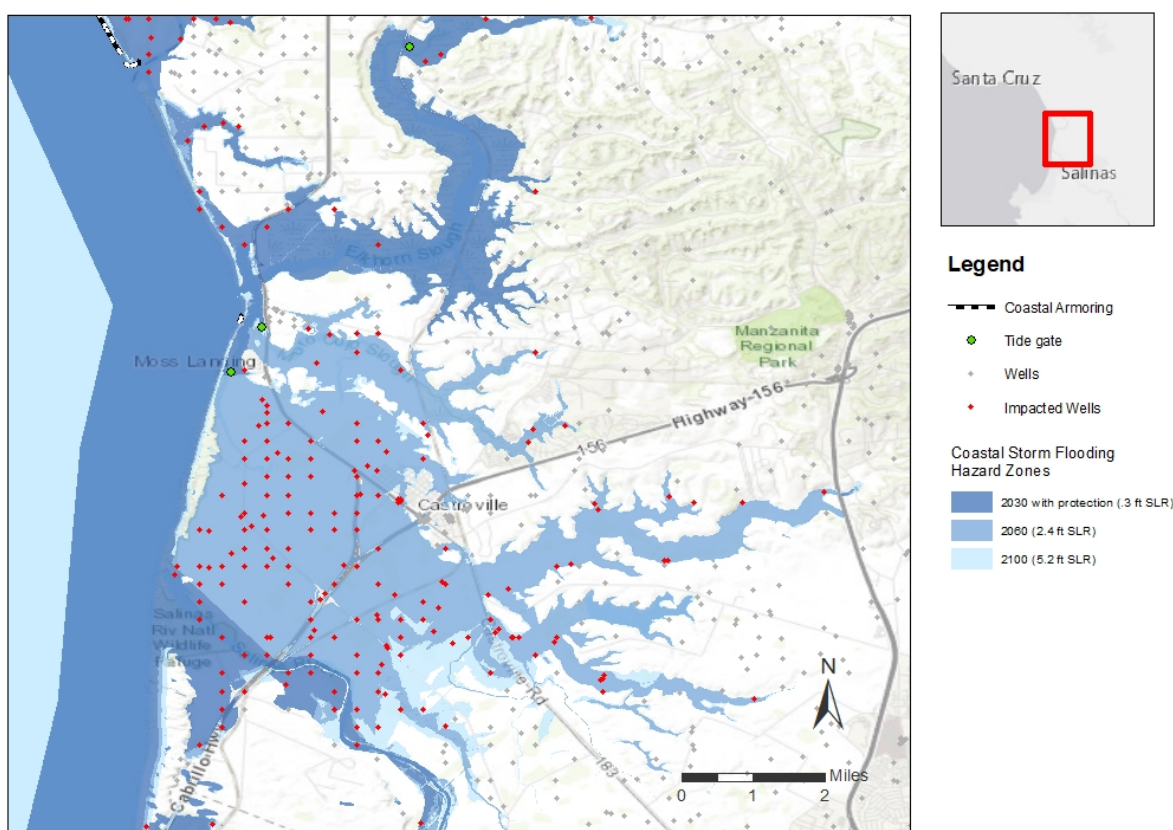


Table R-6: Vulnerability of Assets due to Combined Effects of Coastal Climate Change within the Lower Salinas Valley Study Area

ASSET	UNITS	TOTAL	2030 (with protection)	2030 (no protection)	2060 (no protection)	2100 (no protection)
Land Use						
Farmland	Acres	15,393	1,991	4,731	5,290	5,532
Transportation						
Roads	Feet	687,784	20,279	50,746	73,286	95,284
Rail	Feet	45,730	7,855	11,280	15,901	24,728
Highway 1	Feet	62,949	3,894	14,464	22,780	29,040
Water and Utility Infrastructure						
Storm Drains	Feet	29,201	0	80	100	172
Culverts and Tide Gates	Count	29	19	20	22	24
Wastewater Pumps	Count	6	2	5	5	5

ASSET	UNITS	TOTAL	2030 (with protection)	2030 (no protection)	2060 (no protection)	2100 (no protection)
Sewer Gravity Mains	Feet	12,585	6,329	7,152	8,540	9,593
Recycled Water Infrastructure	Count	2	1	1	1	1
Wells (impacted by storm flooding only)	Count	~1,100	108	259	282	314
Natural Resources						
Dunes	Acres	1,227	636	736	894	969
Critical Habitat	Acres	2,306	1,048	1,126	1,361	1,629
National Wetlands	Acres	5,889	3,382	4,074	4,387	4,495

R.6.2.c Summary of Key Findings

Water Control Structures: By 2060 many of the existing tide gates and culverts will not have the capacity to address the combined impacts of predicted coastal storm flooding and rising tides. It is assumed that the flood protection provided by the Moss Landing Road tide gates for the Moro Cojo watershed will be compromised. The fluvial analysis for the Old Salinas River estimated that the flow restriction posed by these tide gates will increase with higher ocean elevations, reducing flood conveyance, and leading to further flooding of agriculture and urban areas of the lower Salinas Valley. A number of storm drains within the town of Castroville and Moss Landing discharge to drainage areas that are within the coastal storm flood hazard areas, suggesting that future effectiveness of some storm drains to manage flooding within the town will be reduced. This storm drain infrastructure may also act as a conduit for flooding of low-lying areas that are protected behind berms from coastal flooding.

A number of sewer lines and the Moss Landing pump station are located within future hazard zones. For this analysis, CCWG did not determine if the pump station would continue to function when predicted flooding occurs. It is assumed that gravity fed and non-pressurized sewer lines are susceptible to saltwater seepage when flood waters are present.

Groundwater wells throughout the lower Salinas Valley are located within future coastal storm flooding hazard zones. A number of these wells have been found to act as conduits allowing cross contamination between the 180 Foot and 400 Foot aquifers. If these wells are flooded with surface salt water, it is assumed that many of the wells may allow saltwater intrusion to one or multiple aquifers.

Natural Resources: Coastal erosion compromises sand dunes' ability to restrict wave overtopping and flooding within the lower Salinas Valley. By 2060 erosion of the dunes near Potrero Road and near the Salinas River mouth will be at risk of storm wave overtopping, leading to waves flowing into the Old Salinas River channel, bypassing the coastal flood protections provided by the tide gates and river levees. This inland migration of beach along this portion of the coast poses a significant risk to the Salinas Valley if the dunes are not encouraged to migrate inland with the coastline. Such migration will, of course, lead to serious conflicts with adjacent agriculture and the current alignment of the Old Salinas River.

By 2100, the Old Salinas River channel and harbor main channel will be vulnerable to coastal wave processes as the dunes along this stretch of coast experience the effects of "coastal squeeze." Within these areas the dune faces are projected to erode inland while the location of inland development remains static.

Three sections of the coastal sand spit are vulnerable to loss from coastal erosion. The failure of these dunes will likely lead to significant changes in how (or if) the harbor and Sandholdt sand spit development continues to function. Additionally, many of the surrounding freshwater wetland resources may be negatively impacted by the increased tidal range.

R.6.3 Top Priority Climate Risks for the Greater Monterey IRWM Region

By integrating the results of the narrative risk evaluation with the GIS temporal hazard analysis, CCWG was able to use numerous prediction methods to identify priority assets that are at risk of future impact in the broader Greater Monterey County region. The following climate risks were identified as being top priority for the RWMG and other water managers in the Greater Monterey County IRWM region for considering how to adapt the region's water management systems for climate change impacts:

- ***Decreased water supply*** due to changes in precipitation, more frequent and severe droughts, increased surface and groundwater consumption, and increased seawater intrusion (due to sea level rise affecting coastal aquifers). Note, water infrastructure (wastewater and recycled water), which provides a significant secondary water supply to agriculture within the lower Salinas Valley, is vulnerable to sea level rise and storm impacts. Climate hazards may jeopardize this infrastructure, resulting in potential loss to future water supply resiliency.
- ***Increased flooding and erosion of creeks and rivers*** due to more intense storm events (higher river flow rates), and overburdening of conveyance systems, levees, and culverts.
- ***Coastal inundation of urban development and other land uses, and impacts to river and wetland ecosystems*** due to changes in rainfall patterns, storm intensity, storm surges (due to increased storm intensity) and sea level rise.

Water purveyors have spent considerable effort and funding to draft and implement water supply resiliency plans (e.g., California Water Service Conservation Master Plan 2016-2020, Salinas District Urban Water Management Plan 2015). Less attention has been dedicated to risks associated with increased river flows and higher seas. The section below provides an initial evaluation of adaptation options that can be implemented by IRWM partners to increase local water resource resiliency. Where possible, RWMG members and other IRWM partners should work together to develop integrated projects that address two or all three of these priority vulnerabilities.

R.7 ADAPTATION STRATEGY

R.7.1 Adaptation Goals and Objectives

The Greater Monterey County IRWM region's initial adaptation goals and objectives, listed below, were selected from a comprehensive list of potential actions within the DWR guidance document. The goals are intended to direct focus towards the three priority climate risks identified above as well as the water resource goals and objectives defined within this Greater Monterey County IRWM Plan (see Section D, Objectives). The adaptation goals and objectives form the foundation for the RWMG's initial adaptation strategy for the Greater Monterey County region. The goals document specific responses to the priority climate risks that can be accomplished by the various IRWM partner agencies and stakeholders and do not need to be managed or actively coordinated by the RWMG. The Greater Monterey County IRWM planning effort will serve as a forum to hear ideas and results of projects aimed to address these goals by numerous entities.

Adaptation Goals and Objectives

The Greater Monterey County IRWM Plan recognizes the importance of becoming a climate resilient region. Adaptation goals and objectives from DWR's guidance document that support that intention include:

Adaptation Goals:

- Encourage adaptation activities that increase the resiliency of local communities, businesses, and institutions to changes in the climate.
- Minimize the potential for injury of citizens and damage to public and private property from climate change-related impacts.
- Increase the resilience of municipal departments to adapt and respond to climate related emergencies.
- Protect natural lands, agricultural areas, and coastal resources from the future threats of climate change to increase the resilience of communities.
- Do not permit the construction of new critical facilities within the 200-year flood plain (per State recommendations).
- Plan for effective adaptation and resiliency that supports proactive steps towards sustainability rather than response through unplanned emergency actions.

Adaptation Objectives:

- Implement on-going climate change variable monitoring to inform adaptation and response efforts.
- Develop regional sea level rise resiliency strategies to prepare for impacts to water resource infrastructure and lands, that support the multiple benefits described in the IRWM Plan, and that consider short and long-term economic implications.
- Consider potential climate change impacts to water resources in future land use and regional resource planning of the county and other municipalities.
- Support regional collaborations and planning efforts, and provide information to the public regarding potential climate change impacts and status of response planning.
- Encourage the retrofit or relocation of water infrastructure (including waste water and recycled water) that is vulnerable, and evaluate changes to water management strategies that are likely to be less effective due to climate change.
- Prioritize the protection of drinking water resources and sensitive water supplies and aquatic ecosystems that support a sustainable region.

R.7.2 Initial Adaptation Strategy

To develop an initial adaptation strategy for the Greater Monterey County IRWM region, adaptation actions and response scenarios from the California Natural Resources Agency's *2009 California Climate Adaptation Strategy* were selected as applicable to the Greater Monterey County region. High priority responses along with climate mitigation actions are listed in Table R-7, Adaptation and Response Strategies Based on Risk Assessment. The "high priority responses" were prioritized by the RWMG according to the risk assessment described previously and in accordance with the objectives of the Greater Monterey County IRWM Plan. Both the comprehensive risk assessment (which heavily favors human impacts as priorities) and the environmental risk assessment is presented together in Table R-7.

This prioritized list of adaptation actions was considered a first step toward developing a comprehensive adaptation strategy for the Greater Monterey County IRWM planning region to address the impacts of

climate change. For the 2017-2018 IRWM Plan update, the RWMG (led by CCWG) took the process a step further by identifying possible strategies to reduce specific climate change vulnerabilities, according to anticipated impacts in three different timeframes. This process is described in Section R.7.3 following Table R-7.

As more tools become available, the RWMG will continue to consider more specific risks to the region due to climate change and will be able to refine its understanding of the tradeoffs and benefits of different adaptations, and to identify additional adaptations relevant to the region.

Table R-7: Adaptation and Response Strategies Based on Risk Assessment

Climate Change Consequences	Including All Consequences		Environment and Sustainability Consequence Only		Adaptation and Response Strategies	Initial Actions
	Risk Score	Priority Level	Risk Score	Priority Level		
Water Demand						
Agricultural water use is expected to increase to offset higher temperatures and evapotranspiration	62	High	19	Extreme	• Promote community resilience to reduce vulnerabilities: food sustainability	• Expand water supplies (purple pipe) and storage • Aquifer management • Expand agriculture water conservation programs
Rangelands are expected to be drier	49	Medium	15	High	• Prepare fire reduction strategies to protect watershed lands using ecologically sustainable strategies. • Implement adaptation strategies to conserve California's biodiversity.	N/A
Domestic landscaping and recycled water irrigation needs will be higher	51	Medium	15	High	• Integrate land use, storm water and climate adaptation planning	• Education • Incentive programs • Demonstration programs • Grey water • Xeriscaping • Expand water supplies (purple pipe) and storage • Aquifer management • Expand domestic conservation programs
Local rainfall is estimated to be reduced by 3-10 inches	61	High	17	Extreme	• Promote community resilience to reduce vulnerabilities: Food sustainability • Implement water conservation and supply management efforts • Manage watersheds, habitat, and vulnerable species	• Education • Incentive programs • Demonstration programs • Grey water • Xeriscaping • Aquifer management • Expand agriculture water conservation programs

Climate Change Consequences	Including All Consequences		Environment and Sustainability Consequence Only		Adaptation and Response Strategies	Initial Actions
	Risk Score	Priority Level	Risk Score	Priority Level		
Sea level rise and higher groundwater extraction will lead to increased rates of saltwater intrusion	66	High	17	Extreme	• Prepare a regional sea level rise adaptation strategy • Promote working landscapes with ecosystem services • Integrate land use and climate adaptation planning	• Education • Incentive programs • Demonstration programs • Grey water • Xeriscaping • Expand water supplies (purple pipe) and storage • Aquifer management • Expand agriculture water conservation programs • Groundwater barriers • More robust monitoring and testing • Easements for retired farmland
Droughts will be more frequent and severe	59	High	16	Extreme	• Implement adaptation strategies to conserve California's biodiversity • Educate, empower, and engage citizens regarding risks and adaptation • Integrate land use, water reuse and climate adaptation planning • Promote community resilience to reduce vulnerabilities	• Human safety response • Education • Incentive programs • Demonstration programs • Grey water • Xeriscaping • Expand water supplies (purple pipe) and storage • Aquifer management • Expand agriculture and urban water conservation programs • Groundwater barriers • More robust monitoring and testing • Easements for retired farmland
Water Quality						
Lower seasonal surface flows can lead to higher pollutant concentrations	39	Low	12	High	• Manage watersheds, habitat, and vulnerable species	• Minimize non-point source pollution • Buffers
Changes in storm intensity will increase sediment loading in many systems	48	Medium	13	High	• Prepare fire reduction strategies to protect watershed lands using ecologically sustainable strategies	• Erosion control on farms and creeks • Buffers

Climate Change Consequences	Including All Consequences		Environment and Sustainability Consequence Only		Adaptation and Response Strategies	Initial Actions
	Risk Score	Priority Level	Risk Score	Priority Level		
Channel stability will be impacted from higher storm flows causing additional turbidity	39	Low	11	Medium	• Provide guidance on protecting critical coastal ecosystems and development	• Erosion control on creeks • Wastewater and stormwater infrastructure vulnerability analysis
Sea level rise will impact current estuary brackish water interface towards more marine systems	50	Medium	16	Extreme	• Implement adaptation strategies to conserve California's biodiversity	• Retain freshwater in watershed • Habitat migration • Buffers • Erosion control • Conservation easements • Xeriscaping
Flooding						
Regional levees will provide less protection during higher storm flow events	69	High	13	High	• Support essential data collection and information sharing • Manage watersheds, habitat, and vulnerable species • Prepare a regional sea level rise adaptation strategy	• Refurbish or expand levees or tide gates (upgrade priority infrastructure) • Map/inventory infrastructure
Natural creeks throughout the region and managed conveyance within the Salinas Valley will see higher flow rates leading to increased erosion and flooding	54	Medium	12	High	• Manage watersheds, habitat, and vulnerable species	• Refurbish or expand levees or tide gates (upgrade priority infrastructure) • Map/inventory infrastructure

Climate Change Consequences	Including All Consequences		Environment and Sustainability Consequence Only		Adaptation and Response Strategies	Initial Actions
	Risk Score	Priority Level	Risk Score	Priority Level		
Coastal levees and control structures will be undersized to manage the combined influences of higher flow events and sea level rise	89	Extreme	17	Extreme	• Support essential data collection and information sharing • Prepare a regional sea level rise adaptation strategy	• Refurbish or expand levees or tide gates (upgrade priority infrastructure) • Map/inventory infrastructure/levee locations and WCS, ownership • Phase II task 5 activity 3 - ecosystem services - be aware of services available • Elevations of levees and sea walls - maybe with PWA-management strategies • USGS elevation data? • Channel dredging • Ecological restoration
State recommendations suggest no new critical facilities be built within the 200-year flood plain (DWR 2008, DWR 2009b, CNRA 2009)	23	Low	3	Low	• Integrate land use and climate adaptation planning	• Work with Monterey County and cities, Coastal Commission (local jurisdiction)
Aquatic Ecosystem Vulnerabilities						
Migration patterns and species distribution will change	37	Low	13	High	• Establish a system of sustainable habitat reserves	• Reduce migration impediments (dams, etc.) • Compile data on species distribution • Primary focus species - amphibians, waterfowl, salmonids, redwoods, tide water gobies • Maintain habitat corridors - contiguous areas • Fish and Game - wildlife adaptation plan - vulnerability for key species for each region • Remove barriers
Invasive species populations will expand	38	Low	10	Medium	• Habitat/ecosystem monitoring and adaptive management	• What are the invasive species and their ranges? Will they expand, be introduced? How are the habitats shifting (awareness)? • Ecological adaptation investigation and strategy • Model range shifts with climate change

Climate Change Consequences	Including All Consequences		Environment and Sustainability Consequence Only		Adaptation and Response Strategies	Initial Actions
	Risk Score	Priority Level	Risk Score	Priority Level		
Coastal wetland systems are especially vulnerable to the combined influences of climate change	45	Medium	16	Extreme	- Establish regional policies to protect critical habitats - Provide guidance on protecting critical coastal ecosystems and development	- Identify critical habitats and ecosystems - Integrate ecosystem management - Regulatory mechanisms dedicated to protecting future locations of these areas - Inventory of wetlands currently - What lands are adjacent? - Rolling easement for ag - retired ag lands - Hazard mitigation
Some locally unique species such as coastal redwoods and giant kelp are susceptible to changes in certain locally favorable climate variables (fog duration, coastal upwelling)	37	Low	13	High	Manage watersheds, habitat, and vulnerable species	- Identify how they will be impacted - What are the changes? - USGS study outcome - get a better handle on modeling fog changes in climate change
Hydropower and Reservoir Storage						
Changes in rainfall patterns may be problematic for timing of releases from reservoirs	47	Medium	9	Low	Implement water conservation and supply management efforts	- Modified flood control operations - Opportunities for more water storage - Maintain optimum flow capacity in channels - San Antonio and Nacimiento Reservoirs and rainfall – potential for interlake tunnel
Higher rainfall and increased risk of fires in watershed lands can lead to increased sediment loading to reservoirs	37	Low	10	Medium	Prepare fire reduction strategies to protect watershed lands using ecologically sustainable strategies	- Fire prevention - Forest management - FireScape Monterey - Rangeland management (much of the area around the reservoirs is grassland) - Erosion control for infrastructure surrounding reservoirs

R.7.3 Adaptive Capacity and Adaptation Response Planning

The Greater Monterey County region's ability to respond to a given climatic impact will enable the region to reduce either the likelihood or consequence of an event. The ability to adapt to sea level rise, for example, can occur in many forms, including coastal armoring and protection, the raising of infrastructure, and inland retreat. Each adaptive measure provides a certain level of additional protection for a certain period of time for a certain cost. Significant resources are required to fully evaluate the adaptive capacity of any social-economic factor to a given climatic variable. Numerous engineering (hard) and adaptive planning (soft) measures would need to be evaluated and cost benefit analyses completed. Additionally, secondary unintended consequences of any adaptive measure to all of the social-economic factors defined within this chapter should also be evaluated and quantified. Because of the complexity of this process, adaptive capacity has not been systematically evaluated by the RWMG.

Nonetheless, understanding which infrastructure is vulnerable to what hazard at what future date can help local agencies and regional partners identify strategies to increase water management resiliency and to develop projects and programs to support those strategies. The sections below describe possible strategies to reduce vulnerabilities, including specific assets that lie within the various future climate hazard zones according to climate scenarios for the years 2018-2030, 2030-2060, and 2060-2100. Table R-8 identifies the asset, the likely hazard, and possible actions to reduce the vulnerability of these assets to these risks.

Table R-8: List of Possible Actions

Asset	Hazard	Recommended Actions	Feasibility	Estimated Cost	Key Partners
Water and Utility Infrastructure					
Storm Drains	Storm and fluvial flooding	Install gates on vulnerable storm drains	Easy	Low	CCSD, MCWRA, Monterey County Public Works
	Rising tides	Estimate effective life using sea level rise predictions	Easy	Low	CCSD, MCWRA, Monterey County Public Works
	Storm and fluvial flooding	Evaluate options to reduce reliance on vulnerable storm drain infrastructure (LID, retention)	Easy	Low	CCWG, City of Salinas, CCSD, MCWRA, Monterey County Public Works
Culverts and Tide Gates	Rising tides	Evaluate necessary upgrade to existing structures	Moderate	Moderate	CCSD, MCWRA, Monterey County Public Works
	Fluvial flooding	Evaluate secondary overflow options	Moderate	Moderate	CCSD, MCWRA, Monterey County Public Works
	Fluvial flooding	Evaluate feasibility of installing additional pumps and control structures	Moderate	Moderate	CCSD, MCWRA, Monterey County Public Works
	Fluvial flooding	Evaluate drainage modifications (retention) in upper watershed that reduce downstream peak flows	Moderate	Moderate	CCWG, City of Salinas, Stormwater planning team, Salinas Valley GSA
Wastewater and Recycled Water	Coastal Storm Flooding and Erosion	Relocate infrastructure out of hazard areas or redesign to accommodate hazards.	Easy	Moderate	Monterey One Water, Salinas Valley GSA, Monterey County Public Works

Groundwater Wells	Coastal storm flooding, rising tides	Evaluate risk of contamination from surface flood waters	Moderate	Moderate	RWQCB, agriculture industry, MCWRA
Moss Landing Lift Station	Coastal storm flooding, rising tides	Evaluate upgrades, resiliency or relocation	Moderate	High	CCSD, MCWRA, Monterey County Public Works
Moss Landing Harbor	Sea level rise and coastal storm flooding	Draft a site specific SLR vulnerability and adaptation plan	Easy	Low	Monterey County Planning, Moss Landing Harbor District
Natural Resources					
Dunes	Coastal storm flooding	Continue restoration and resiliency programs, upgrade trails	Easy	Moderate	Monterey County Planning, State Parks, CCWG
	Coastal storm flooding, rising tides and coastal erosion	Accommodate retreat and investigate development rights exchange program	Moderate	Moderate	BSLT, Center for Ocean Conservation, CCWG, MCRCD, Monterey County Planning
	Coastal storm flooding, rising tides	Beach Nourishment	Moderate	Moderate	Monterey County, State Parks, MBNMS
Beach Habitat	Coastal storm flooding and erosion	Draft a Beach Management Plan that establishes objectives and strategies to retain beach habitat in parallel with other sea level rise adaptation strategies.	Easy	Low	Monterey County, State Parks, CCWG, MBNMS
Wetlands	Sea level rise and coastal storm flooding	Draft Tide Gate Management Plan and Sea Level Rise Adaptation Strategy for Moro Cojo Slough	Moderate	FUNDED	CCWG, MCWRA, CDFW
	Sea level rise and coastal storm flooding	Prioritize Implementation of the Elkhorn Slough Tidal Wetland Project Strategic Plan	Easy	Moderate - High	ESNERR, Elkhorn Slough Foundation, CDFW, Monterey County
	Sea level rise and coastal storm flooding	Update and implement the Salinas River Lagoon Management and Enhancement Plan	Moderate	Moderate	CCWG, MCWRA, CDFW, USFWS, State Parks
	Fluvial flooding, coastal storm flooding, rising tides	Establish easement programs that fairly compensates farmers for lands lost due to adaptive retreat along waterways	Moderate	Moderate	BSLT, Center for Ocean Conservation, CCWG, MCRCD, Monterey County Planning

Acronyms:

BSLT: Big Sur Land Trust
 CCSD: Castroville Community Services District
 CCWG: Central Coast Wetlands Group
 CDFW: California Department of Fish and Wildlife
 ESNERR: Elkhorn Slough National Estuarine Research Reserve
 GSA: Salinas Valley Groundwater Basin Groundwater Sustainability Agency
 MBNMS: Monterey Bay National Marine Sanctuary
 MCRCD: Resource Conservation District of Monterey County
 MCWRA: Monterey County Water Resources Agency
 RWQCB: Central Coast Regional Water Quality Control Board
 USFWS: US Fish and Wildlife Service

R.7.3.a Adaptation Response Planning: 2018-2030

Support Dune Restoration Activities: Future wave run-up is projected to undercut dune faces and funnel waves inward along erosion scars, leading to inland flooding of the Old Salinas River valley. Wave overtopping in this area will leave the lower Salinas Valley vulnerable to flooding. Several studies suggest that restoring the complexity of dune species (De Lillis et al. 2004) and the reestablishment of native foredunes will support natural dune building processes and enhance the long-term resiliency of dunes to wave-derived erosion and overtopping. An increase in structural complexity is anticipated to play a key role in maintaining resilience as ocean levels rise and dunes are required to adapt and migrate. Setting restoration goals that ensure the long-term adaptive capacity of these natural dunes through proper management and habitat enhancement should be a priority for the continued protection of the Salinas Valley.

STATE GUIDANCE

The Coastal Act allows for protection of certain existing structures. However, armoring can pose significant impacts to coastal resources.

To minimize impacts, innovative, cutting-edge solutions will be needed, such as the use of living shorelines to protect existing infrastructure, restrictions on redevelopment of properties in hazardous areas, managed retreat, partnerships with land trust organizations to convert at risk areas to open space, or transfer of development rights programs. Strategies will need to be tailored to the specific needs of each community based on the resources at risk, should be evaluated for resulting impacts to coastal resources, and should be developed through a public process, in close consultation with the Coastal Commission and in line with the Coastal Act

Photo by R. Clark



Reduce Risks of Flooding: The periodic flooding predicted within the 2030 hazard maps can be planned for. Actions to provide protection and accommodation can be made that will reduce risks to properties.

Evaluate Tide Gate Upgrades to Improve Flood Release: Through the 2030 planning horizon, the Moss Landing and Potrero tide gates are predicted to continue to serve an important protection from tidal flooding to upstream properties, primarily agriculture and natural habitats. The tide gates, however, have restricted discharge during large rain events, which exacerbates flooding upstream. Upgrades to these gates that allow overflow during large events may help to reduce flooding extent and duration of flooding on upstream farmlands. Using the Salinas River mouth as a secondary discharge pathway during watershed flooding events should be studied.

Establish Managed Retreat Policies to Support Future Adaptation: Managed retreat is designed to facilitate and regulate the gradual move away from areas vulnerable to flooding or erosion. Managed retreat can take many forms, including zoning, setbacks, buffers, restrictions, rolling easements, and land acquisition. These strategies can be used in conjunction with other adaptation measures to facilitate the most fluid and equitable adaptation approach to the varying threats that sea level rise and other climate-related flooding poses. Managed retreat programs can work in tandem with other adaptation strategies to manage flooding, maintain local character, improve natural habitat areas, and secure coastal access.

Improve Flood Attenuation through Creek and Wetland Restoration: Wetlands can act as a critical buffer for waves, tides, and erosion. Additionally, wetlands are able to migrate inland as sea levels rise, if space is provided. Wetlands also provide natural pollution filtration and shoreline stability, sequester carbon, and can store extra water in the case of a flood, along with providing important habitat that can support local fishing and tourism. Numerous wetland restoration efforts are underway within the Elkhorn and Moro Cojo sloughs. The County and local community can support these and other activities within the Gabilan watershed to improve climate resiliency in the lower Salinas Valley.

The Greater Monterey County IRWM Plan outlines strategies to improve the function of local drainages to benefit the goals of numerous stakeholders. Proposed watershed management and drainage enhancement projects included in the plan can help the lower Salinas Valley area become more resilient to predicted increases in flooding during rain events. Numerous low-lying areas along these drainages (notably Carr Lake) can be acquired and redeveloped to provide aquatic habitat, open space, recreation, and flood attenuation, which would greatly reduce the predicted negative effects associated with more intense rainfall and higher sea levels.

R.7.3.b Adaptation Response Planning: 2030-2060

Tide Gate Upgrades: By 2060, the ability of the current tide gates to provide protection from coastal and tidal flooding may be significantly reduced due to the predicted 14-38 inch increase in water elevations within the harbor. Further analysis with help from the Monterey County Water Resources Agency will be necessary to determine the expected reduction in service and the likely increase in water elevation behind the tide gate structures. Replacing tide gates with pump stations may increase the capacity of the system to retain current water levels within the Old Salinas River, but it will likely be cost prohibitive to construct and operate a system large enough to manage predicted increases in winter river discharges of up to 700 cfs. The estimated total costs of installing and operating new pumps on one or both tide gate systems should be evaluated in comparison with the benefit to 1,592 acres of farmland at risk of coastal flooding.

Hard Armor Protection: Structures on Moss Landing Island and within the Monterey Dunes Colony are within projected 2060 coastal erosion hazard zones. Strategies should be developed that identify areas where coastal armoring is feasible and appropriate, and areas where redevelopment and retreat are more appropriate. These decisions should take into account risks from coastal climate change impacts projected forward for the total life of the properties being protected. Future risks to Moss Landing Harbor should also be considered.

Identify Priority Areas for Managed Retreat: Protection of all properties and infrastructure identified at risk during each time horizon is likely infeasible. Therefore, Monterey County will need to establish adaptation strategies that best meet local long-term goals. Public cost considerations, longevity of adopted strategies, and resultant changes to the community should be considered when setting policy. Establishing equitable managed retreat policies early will likely best enable the long-term implementation of these policies to ensure long-term sustainability for the community. Selecting time horizons and climate conditions for which next phase adaptation strategies are triggered will allow the community to anticipate and prepare for future actions.

Providing for the managed retreat of the Salinas River dunes complex onto adjacent farm and residential properties may provide significant long-term protection from coastal storm flooding within the lower Salinas Valley. The RWMG recommends that the County work with State Parks to establish dune adaptation strategies, and to prioritize land acquisition and road realignment to accommodate coastal resiliency.

R.7.3.c Adaptation Response Planning: 2060-2100

Between 2060 and 2100, increased coastal wave damage, greater flooding depths and periodicity, and higher tides will threaten significant portions of properties within Moss Landing and Castroville. Protection of all properties from these risks will be costly and technically challenging. Decisions regarding what the urban and beach front areas will look like in 2100 will need to be made much earlier if adaptation is to be strategic and cost effective. Adopting coastal adaptation and retreat policies once all efforts to protect infrastructure fail would be a costly strategy.

Implement Managed Retreat Strategies: There are a number of theoretical managed retreat strategies that have been described within the literature. Examples of coastal communities adopting re-zoning, building restrictions, and other land use policies to drive the removal of buildings and infrastructure from the California coast, however, are few.

The Marin Climate Adaptation effort has completed focus area analysis of coastal communities (e.g., Bolinas) similar to this Monterey County study and has identified infrastructure that will need to be raised or otherwise modified to respond to tides and coastal flooding. Agricultural lands have been identified for transition to wetlands. No residential or commercial private properties have been identified for removal and no procedures have been identified to support municipalities to “convert at risk areas to open space.” Such procedures are likely necessary, however, if areas such as Moss Landing and Castroville are to remain viable communities in 2100. The overwhelming hazard predictions for these communities suggest that long-term adaptive planning and managed retreat programs are necessary and should be developed as early as possible (i.e., by 2030) for future implementation (i.e., 2060-2100).

Cost implications from routine impacts from the predicted hazards will lead many property owners to upgrade their properties to be more resilient, or abandon the current uses of those properties. Equitable retreat policies that outline how and when various portions of a community should be relocated will help the community adapt and become more resilient. Cost sharing strategies between private property owners and State and local agencies will need to be defined. Local land trusts will likely play an important role in administering these programs in years to come. Adaptation strategies adopted decades before they are implemented will help property valuation, economic considerations, and land use objectives accommodate these future changes.

Realign Roads and Utility Infrastructure: Between 2060 and 2100, much of the lower Salinas Valley west of Highway 1 is predicted to be flooded during high tides or by winter storms. Highway 1 and other

roads will need to be upgraded or realigned if they are to continue to function. Adaptive community planning can help Caltrans and other agencies make better decisions regarding how to upgrade roads and utilities to best serve coastal Monterey County through 2100.

Costs for future realignment of roadways (including Highway 1) and utility infrastructure can be minimized if managed adaptation and retreat policies are established decades before implementation. County agencies and utility districts should integrate future land use changes into current infrastructure repair and replacement decisions to minimize future costs of infrastructure loss and realignment.

R.7.4 No Regret Strategies

In addition to the strategies outlined above, the RWMG encourages the implementation of so-called “no regret” adaptations to general effects of climate change. Such adaptations are those that make sense in light of the current water management context for the region and will also help the region adapt to expected climate change impacts. Examples of “no regret” strategies include increasing water use efficiency, practicing integrated flood management, and enhancing ecosystems and their ability to provide multiple benefits to the region. The RWMG generally encourages the implementation of “no regret” strategies throughout the IRWM Plan and gives higher priority to these strategies in the project ranking process by providing additional points under the “Climate Change” categories.

R.8 CLIMATE CHANGE MITIGATION AND GHG EMISSIONS REDUCTION STRATEGY

The development of a GHG emissions reduction strategy is a required component of an IRWM Plan. All aspects of water resources management have an impact on GHG emissions, including the development and use of water for habitat management and recreation; domestic, municipal, industrial, and agricultural supply; hydroelectric power production; and flood control. Water management results in the consumption of significant amounts of energy in California and the accompanying production of GHG emissions, especially where water must be pumped from long distances, from the ground, or over significant elevations. According to California Energy Commission (2005), 19 percent of the electricity and 30 percent of the non-power plant natural gas of the State’s energy consumption (i.e., 12% of all energy used in California) are spent on water-related activities, primarily related to end-uses of water. The close connection between water resource management and energy is an important consideration for helping the State meet its GHG emission reduction goals. IRWM Plans can help mitigate climate change by reducing energy consumption, especially the energy embedded in water use, and ultimately reducing GHG emissions.⁸

This IRWM Plan focuses on several sectors of emissions that are most directly linked to water management and that are most likely to not be addressed within other climate/GHG reduction strategies. Emissions sources to be addressed include:

- Emissions included in the county for the production and distribution of water
- Emissions from privately owned pumps
- Emissions from county staff fleet and private vehicle emission associated with water project construction and maintenance
- Emissions from energy generation that could be mitigated through renewable energy sources

⁸ This introductory paragraph has been excerpted from the Proposition 1 IRWM Program Guidelines, pp. 70.

R.8.1 GHG Reduction Strategies

To address the emissions categories identified above, several key strategies and actions described in the *Climate Change Handbook for Regional Water Planning* (US EPA Region 9 and DWR 2011) can be encouraged by the RWMG through the IRWM planning process. These include the following:

Emissions from water supply and delivery

- Select energy sources with low carbon content (green electricity purchases)
- Prioritize pump and infrastructure upgrades based on energy efficiency
- Reduce water use by all sectors of the community through conservation and water efficient irrigation
- Install solar PV at remote pump and infrastructure sites and provide incentives for private investment in solar for similar infrastructure
- Schedule pumping to reduce peak hour (12:00-5:00pm) energy use that has the highest carbon content

Staff fleet and commute

- Encourage carpooling
- Invest in energy efficient/low carbon fleet vehicles
- Encourage efficient driving practices

Emissions from IRWM Plan project construction

- Encourage carpooling within construction contracts
- Encourage use of B20 fuels in construction equipment and other diesel machinery
- Invest in high efficiency pumps and control equipment
- Integrate solar generation in appropriate projects

Renewable energy generation

- Encourage investment in solar and other renewable energy generation options in Greater Monterey County IRWM region facilities
- Work with regional waste district to increase electricity generation from farm-generated food and animal bio-waste
- Increase hydro-electric generation within current water infrastructure

Carbon Sequestration

- Identify new carbon sequestration opportunities including wetland restoration and bio-char soil amendment opportunities.
- Develop funding mechanisms to support sequestration within proposed IRWMP projects or as project mitigation options.

The RWMG encourages the reduction of GHG emissions for IRWM Plan implementation projects through the project review and ranking process. The RWMG can use the IRWM planning process to coordinate with water managers and land use planners throughout the Greater Monterey County region in order to encourage broader implementation of these and other GHG reduction and climate mitigation actions.

R.8.2 Other Climate Change Mitigation/GHG Reduction Activities in the Central Coast Region

The RWMG has been communicating with water managers and land use managers in the broader Central Coast region regarding other climate change mitigation/GHG reduction efforts along the Central Coast.

The RWMG will seek to partner in these and similar efforts as opportunities arise. Regional climate change mitigation/GHG reduction programs include the following.

Climate Action Compact

In October 2007, the County of Santa Cruz, the City of Santa Cruz, and the University of California Santa Cruz partnered to create a Climate Action Compact (CAC). The goal of the CAC is to achieve meaningful and measurable progress towards lowering local GHG emissions through the implementation of cooperative programs. To that end, the CAC partners initiated a process to develop actions necessary to accomplish the goals outlined in the compact. In 2011 CAC members reached out to all municipalities within the Monterey Bay region, including the area covered by the Greater Monterey County IRWM Plan, to join and participate in collaborative GHG reduction efforts. The members pledged to support public, private, and nonprofit partnerships and investments to reach quantifiable reductions in their institutions' GHG emissions (Clark 2011). In taking this leadership role, the CAC partners pledged themselves to the following:⁹

- set and present a GHG reduction goal for their respective organizations;
- identify specific inter-institutional cooperative projects that reduce GHG emissions, stimulate investment in the community, and foster economic development;
- present a comprehensive GHG reduction action plan for their respective organizations; and
- invite others from the public, private, and non-profit sectors in the region to join in the effort.

Association of Monterey Bay Area Governments Programs

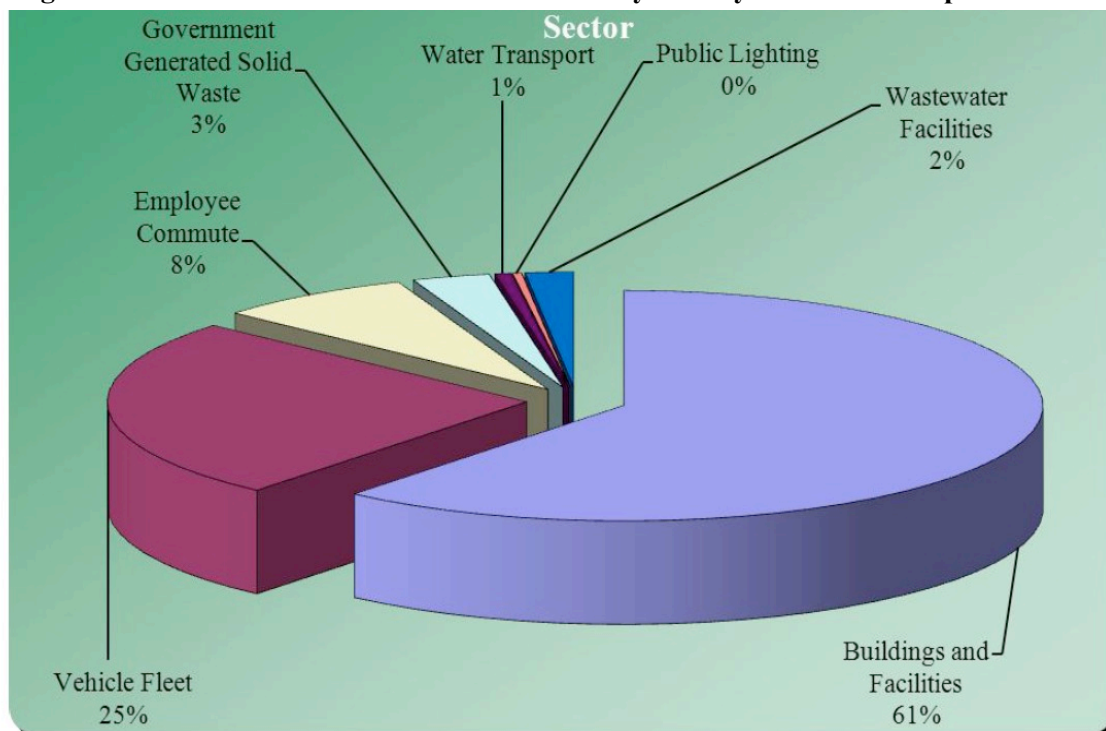
The Association of Monterey Bay Area Governments (AMBAG) has developed regional emission targets in accordance with requirements of SB 375. AMBAG has also initiated a program in collaboration with the Pacific Gas and Electric Company (PG&E) called "Energy Watch." The Energy Watch Program helps local governments in Monterey, San Benito, and Santa Cruz counties to promote energy efficiency and climate action planning. This collaboration has included preparation of GHG emissions inventories.

In early 2011, the AMBAG Energy Watch Program completed a GHG emissions inventory for Monterey County for the year 2005. The inventory for Monterey County was developed using the "Clean Air and Climate Protection" software developed by ICLEI. The inventory examines emissions by community sector and includes direct and indirect emissions. The study also predicts that under a "business-as-usual" scenario, Monterey County GHG emissions are estimated to grow by approximately 9 percent by the year 2020, which represents an average annual rate of increase of about 0.6 percent per year with the total increase between 2005 and 2020.

In 2010, AMBAG completed a set of GHG inventories for all of its 21 municipal members. The cumulative emissions from the unincorporated areas of Monterey County were quantified for various sectors including municipal (county government) residential and commercial/industrial. For 2005, countywide emissions were calculated to be 1,648,410 metric tons. Of that total, municipal emissions comprised 1.3 percent (21,641 tons); and of the municipal emissions total, emissions from municipal supply and distribution of water resources were 0.6 percent (133 tons). Figure R-14 below illustrates emissions from local government operations for Monterey County, by sector. Additional emissions attributable to water management in the Greater Monterey County region that are not included in this calculation include: emissions from small water purveyors, private well and flood management pump infrastructure, and the emissions associated with water agency fleet and staff vehicles used to manage the vast water resource infrastructure of the region.

⁹ Source: City of Santa Cruz CAC website: <http://www.cityofsantacruz.com/index.aspx?page=1231> (March 2012).

Figure R-14: 2005 GHG Emissions from Monterey County Government Operations



Source: AMBAG 2011, Monterey County Greenhouse Gas Emissions Inventory. Used by permission.

Monterey County General Plan

Monterey County adopted a new General Plan on October 26, 2010. The environmental impact report prepared for the 2010 General Plan contains a discussion of potential GHG emissions impacts. Policies were added to the General Plan as mitigation for these potential GHG impacts related to buildout of the General Plan. The MCAP was prepared pursuant to that mitigation and Policy OS-10.15 of the General Plan to address GHG emissions from County operations.

Monterey County Climate Action Program

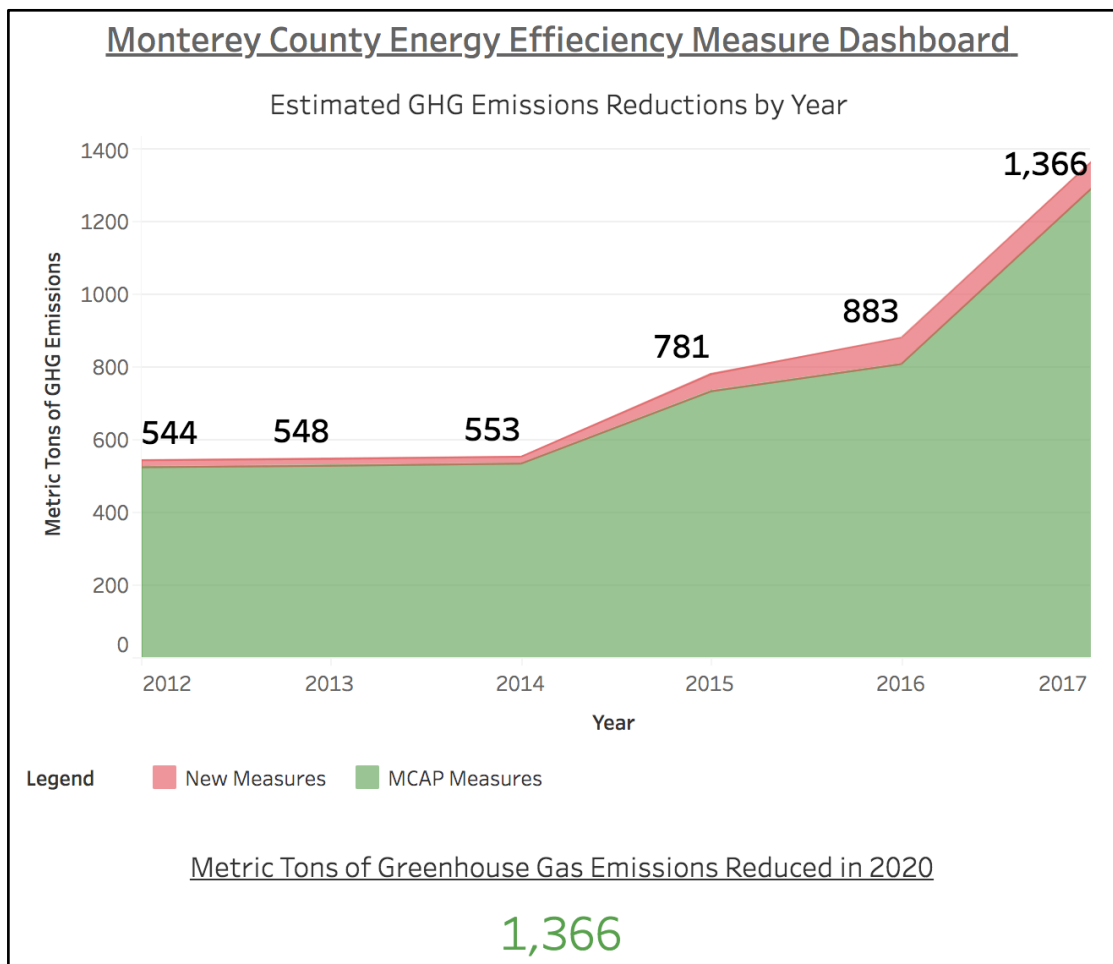
Monterey County has prepared a Municipal Climate Action Plan (MCAP) in response to the AB 32 Scoping Plan recommendation. The plan:

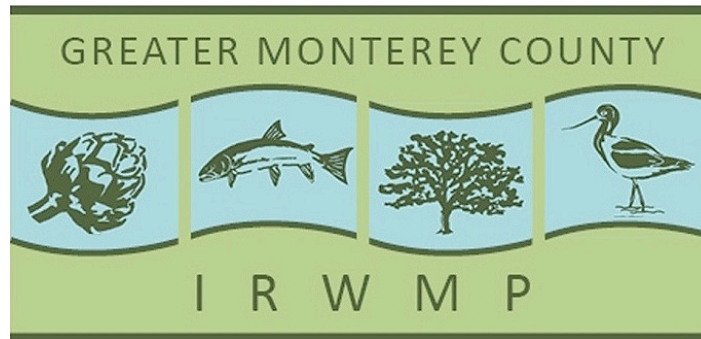
- Provides a description of the steps being taken by the County to reduce GHG emissions associated with its municipal operations (i.e., the County's day-to-day activities in providing services to Monterey residents and businesses).
- Describes three potential paths towards the County's goal of reducing GHG emissions to a level that is 15% below the 2005 emissions level before 2020.
- Serves as one component of the County's larger, community-wide Climate Action Plan, which addresses GHG emissions from the community at large.

The Monterey County Energy Efficiency Measure Dashboard on the County's website (<http://www.co.monterey.ca.us/government/departments-a-h/administrative-office/intergovernmental-and-legislative-affairs/go-green-monterey-county/energy>) provides information on estimated GHG

reductions resulting from energy efficiency measures implemented at County facilities. Figure R-15 below illustrates the dashboard as of July 2018.

Figure R-15: Monterey County Energy Efficiency Measure Dashboard





San Jerardo Co-operative, Inc.



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MEMORANDUM OF UNDERSTANDING

For Integrated Regional Water Management in the Greater Monterey County Region

1. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to recognize a mutual understanding among entities in the greater Monterey County area regarding their joint efforts toward Integrated Regional Water Management (IRWM) planning. Under this agreement, the Regional Water Management Group (RWMG) partners commit to participate in the ongoing process established pursuant to the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act (also known as Proposition 84) and develop a comprehensive Integrated Regional Water Management Plan (IRWMP) for the Greater Monterey County IRWM Region. This agreement sets forth the mutual responsibilities of the RWMG in the development of an IRWMP.

2. BACKGROUND

In November of 2002, Proposition 50 (the “Water Security, Clean Drinking Water, Coastal and Beach Protection Act”) was passed by California voters, approving Chapter 8 and the Integrated Regional Water Management Program. The purpose of the IRWM Program is to “encourage integrated regional strategies for management of water resources and to provide funding, through competitive grants, for projects that protect communities from drought, protect and improve water quality, and improve local water security by reducing dependence on imported water.” Proposition 50 amended the California Water Code to authorize the Legislature to appropriate \$500 million for integrated regional water management projects.

In November 2006, California voters passed Proposition 84, the “Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act of 2006.” Administered by the Department of Water Resources, Proposition 84 includes an additional \$1 billion in funding for the IRWM Grant Program, including \$52 million for the Central Coast hydrologic region. Proposition 1E, the “Disaster Preparedness and Flood Prevention Bond Act of 2006,” was also passed in 2006, authorizing the State to sell \$4.09 billion in bonds to rebuild and repair California’s most vulnerable flood control structures, and to protect California’s drinking water supply system by rebuilding delta levees that are vulnerable to earthquakes and storms.

In order to be eligible for grant funds through the IRWM Grant Program, a project must be contained within an adopted IRWM Plan (IRWMP) developed in accordance with guidelines set forth by the State. Three IRWMPs covering geographic areas within Monterey County were developed under Proposition 50:

- Pajaro River Watershed IRWMP (May 2007), including portions of San Benito and Santa Clara Counties
- Monterey Peninsula, Carmel Bay and South Monterey Bay IRWMP (November 2007, amended March 2009)

- Salinas Valley IRWM Functionally Equivalent Plan (May 2006, amended October 2008)

Together these plans covered most of the Salinas Valley, all of the Pajaro River watershed, all of the Carmel River and San Jose Creek watersheds, and the Monterey Peninsula. However, many key areas of Monterey County were not represented within any of these plans, leaving significant coverage voids for the purposes of IRWM planning and project implementation. These areas include, specifically: the Big Sur coastal watersheds and communities on the western side of the Santa Lucia Range, from Pt. Lobos south to the San Luis Obispo County line; the larger Salinas River watershed from the Salinas River National Wildlife Refuge at the Pacific Ocean south to the San Luis Obispo County line and including the east and west ranges of the valley; the Gabilan watershed; and portions of western San Benito County.

Representatives of the Central Coast IRWM Regions (including the three noted above plus Northern Santa Cruz County, San Luis Obispo County, and Santa Barbara County Regions) agreed during a meeting in February 2008 that the Salinas Valley plan should be expanded to include those areas of Monterey County that had not been represented in previous plans. A Regional Water Management Group has been formed to lead the effort in developing a new IRWMP which will supersede the Salinas Valley IRWM Functionally Equivalent Plan. The new Region eliminates all previous IRWM area coverage voids within Monterey County, and is called the “Greater Monterey County” Region.

This MOU recognizes the joint commitment of the undersigned parties to develop an IRWMP for the Greater Monterey County Region. The MOU does not impose any further commitments or obligations upon any signatory party other than to participate in this process of IRWMP development. The resulting IRWMP will enable agencies and organizations in the Greater Monterey County Region to apply for Proposition 84 and Proposition 1E grant funds to support water resource management projects in the Region. The IRWMP may also serve as a basis for obtaining grant funds through other sources, such as the federal Clean Water Act Section 319 Nonpoint Source Implementation Program, the U.S. Bureau of Reclamation’s Title XVI Program, and other Federal, State, and private funding programs.

3. DEFINITIONS

- 3.1 **IRWM Region (Region).** The area defined by a RWMG for the purposes of integrated regional water resource planning and project implementation. At a minimum, a Region is defined as a contiguous geographic area encompassing the service areas of multiple local agencies; is defined to maximize the opportunities to integrate water management activities; and effectively integrates water management programs and projects within a hydrologic region defined in the California Water Plan, the Regional Water Quality Control Board region, or subdivision or other region specifically identified by the Department of Water Resources.
- 3.2 **Regional Water Management Group (RWMG).** A group in which three or more local agencies, at least two of which have statutory authority over water supply or water management, as well as those other persons who may be necessary for the

development and implementation of a plan that meets the requirements of IRWM planning, participate by means of an MOU or other written agreement that is approved by the governing bodies of those local agencies.

- 3.3 **Integrated Regional Water Management Plan (IRWMP).** An IRWMP is, in essence, a plan for applying to the State for IRWM grant funds to support various water resource-related projects within a defined planning Region. The plan must be developed according to certain guidelines set forth by the State. These guidelines lead the RWMG through a process that is intended to foster integrated regional water management planning in the original spirit of the legislation.

Specifically, the guidelines ensure that a RWMG: considers the major water-related issues and conflicts within its Region; identifies goals and objectives for the Region in relation to IRWM planning; considers a broad variety of water management strategies for water resource management within the Region; identifies disadvantaged communities in the Region and takes the water-related needs of those communities into consideration; considers greenhouse gas emissions of programs and projects included in the plan; evaluates the adaptability to climate change of water management systems in the Region; and ultimately identifies the appropriate mix of water demand and supply management alternatives, water quality protections, and environmental stewardship actions to provide long-term, reliable, and high quality water supply and protect the environment. The result and culmination of this process—the *raison d'être* and “core” of the plan—is a prioritized list of projects that will be submitted to the State of California in application for IRWM grant funds.

4. GOALS

The goals of the collaborative effort undertaken pursuant to this MOU are as follows:

- 4.1 To develop and adopt a comprehensive IRWMP for the Region that will consider the strategies that are required by the State under Part 2.2 of Division 6 (commencing with Section 10530) of the California Water Code. Water management strategies that must be considered in the IRWMP include: ecosystem restoration, environmental and habitat protection and improvement, water supply reliability, flood management, groundwater management, recreation and public access, storm water capture and management, water conservation, water quality protection and improvement, water recycling, and wetlands enhancement and creation. Optional additional strategies that may be considered include: conjunctive use, desalination, imported water, land use planning, nonpoint source pollution control, promotion of the steelhead run, surface storage, watershed planning, water and wastewater treatment, and water transfers.
- 4.2 To develop a comprehensive IRWMP for the Region that incorporates water supply, water quality, flood and erosion protection, and environmental protection and enhancement objectives. At a minimum, the plan shall address all of the following:
- a) Protection and improvement of water supply reliability, including identification of feasible agricultural and urban water use efficiency strategies.

- b) Identification and consideration of the drinking water quality of communities within the area of the plan.
 - c) Protection and improvement of water quality within the area of the plan, consistent with the relevant basin plan.
 - d) Identification of any significant threats to groundwater resources from overdrafting.
 - e) Protection, restoration, and improvement of stewardship of aquatic, riparian, and watershed resources within the region.
 - f) Protection of groundwater resources from contamination.
 - g) Identification and consideration of the water-related needs of disadvantaged communities in the area within the boundaries of the plan.
- 4.3 To improve and maximize coordination of individual public, private, and non-profit agency plans, programs and projects for mutual benefit and optimal gain within the Region.
 - 4.4 To help identify, develop, and implement collaborative plans, programs, and projects that may be beyond the scope or capability of individual entities, but which would be of mutual benefit if implemented in a cooperative manner.
 - 4.5 To foster coordination, collaboration and communication between stakeholders and other interested parties, to achieve greater efficiencies, enhance public services, and build public support for vital projects.
 - 4.6 To realize regional water management objectives at the least cost possible through mutual cooperation, elimination of redundancy, and enhanced regional competitiveness for State, Federal, and private sources of grant funding.

5. MUTUAL UNDERSTANDING

- 5.1 **Geographic Scope of the Greater Monterey County IRWM Region:** The Greater Monterey County IRWM Region includes the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM Region and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Region established under Proposition 50, and in addition encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County.
- 5.2 **Regional Water Management Group for the Greater Monterey County IRWM Region:** The RWMG for the Greater Monterey County Region consists of 18 entities with responsibility and interests in management of water resources that have agreed to form for the purposes of developing an IRWMP consistent with the guidelines set forth by the State of California for integrated regional water management. The RWMG for Greater Monterey County comprises the following public, private, and non-profit entities and groups:

- Big Sur Land Trust
- California Coastal Commission
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- San Jerardo Cooperative, Inc.

- 5.3 Governance and Decision-making Related to IRWMP Development:** Governance and decision-making related to development of the IRWMP will follow the structure and procedures outlined in the Greater Monterey County RWMG Bylaws, which are incorporated by reference.
- 5.4 Adoption of the IRWMP:** Upon completion of the Greater Monterey County IRWMP, RWMG members shall each accept, approve, or adopt the plan through resolution by their governing boards or by other means according to organizational protocol.
- 5.5 Amendment of the IRWMP:** The IRWMP and prioritized project list may be amended from time to time by majority vote of the RWMG. Any RWMG member or stakeholder may request that a meeting of the RWMG be convened for the purposes of amending the IRWMP. However, it is anticipated that the IRWMP or prioritized project list will be amended no more frequently than annually.
- 5.6 Grant Applications and Awards:** The RWMG will designate a Lead Agency to apply for State IRWM grant funds for projects within the Greater Monterey County Region. The Lead Agency will be the grantee and will administer the grant on behalf of the RWMG and project proponents.
- 5.7 Project Implementation and Monitoring:** Project proponents will be responsible for implementing proposed projects and for providing project reports to the Lead Agency. The Lead Agency will be responsible for coordinating data collection and dissemination. The RWMG will be responsible for monitoring the implementation of the IRWMP.

- 5.8 **RWMG Member Roles and Responsibilities:** RWMG members will not be required, but will be expected to attend all RWMG meetings. RWMG meetings will be held on a monthly basis throughout the duration of plan development, and thereafter on a schedule to be determined most appropriate for continued integrated planning and plan updates. All member organizations will contribute staff time to participate in RWMG meetings, public workshops, and other RWMG activities, and will be expected (though not required) to assume various tasks related to IRWMP development and implementation, including participation on committees.
- 5.9 **Incorporation of New Members:** It is recognized that membership of the RWMG may change from time to time. Incorporation of new members into the RWMG will be decided on a case-by-case basis by majority vote of the RWMG. A new member will be required to sign the MOU and will be expected to actively participate as described herein. Lack of active participation by any RWMG organization may be grounds for removal from the RWMG, which would be decided by majority vote of the RWMG.
- 5.10 **Financial Costs:** RWMG activities will be funded mainly by in-kind contributions from RWMG members. All member organizations will contribute staff time to participate in RWMG meetings, public workshops, and other RWMG activities. Costs to cover consultant fees to develop and publish the IRWMP and to facilitate public workshops will be covered entirely through private grant funds that have been obtained by the Big Sur Land Trust. Funds for other costs related to IRWMP development and future plan amendments that cannot be covered through in-kind contributions will be obtained from grants or will be determined by the RWMG at that time.

6. GENERAL PROVISIONS GOVERNING MOU

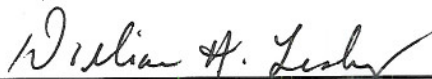
- 6.1 **Term:** This MOU shall become effective upon the date of the signature of all authorized representatives from each of the participating entities. This term shall continue in effect until terminated by the RWMG or until there are no longer any participating entities.
- 6.2 **Counterparts:** This MOU may be executed in any number of counterparts, each of which so executed shall be deemed to be an original. The counterparts shall together constitute one and the same MOU.
- 6.3 **Termination:** An entity signatory to this MOU may withdraw from participation upon 30 days advance notice to the other signatory entities.
- 6.4 **Amending the Agreement:** This MOU may be amended upon signed agreement by all authorized representatives.

- 6.5 **Relationship:** This agreement shall not be construed or deemed to create a fiscal relationship of partnership or joint venture among the parties.
- 6.6 **Good Faith:** Each RWMG member shall use its best efforts and work wholeheartedly and in good faith for the expeditious completion of the objectives of this MOU and the satisfactory performance of its terms.
- 6.7 **Rights of the Parties and Constituencies:** This MOU does not provide any added legal rights or regulatory powers to any of the signatory parties, or to the RWMG as a whole. This MOU does not of itself give any party the power to adjudicate water rights, or to regulate or otherwise control the private property of other parties. This MOU does not contemplate the parties taking any action that would adversely affect the rights of any of the parties, or that would adversely affect the customers or constituencies of any of the parties.

7. SIGNATORIES TO THE MEMORANDUM OF UNDERSTANDING

We, the duly authorized undersigned representatives of our respective entities, acknowledge the above as our understanding of the intent and expected outcome in overseeing the development and implementation of an Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region.

REGIONAL WATER MANAGEMENT GROUP



William H. Leahy, Executive Director
Big Sur Land Trust

9-10-2009

Date

Alfred L. Wanger, Deputy Director for Information
Technology and Water Quality
California Coastal Commission

Date

Kathryn Cruz-Uribe, Provost and Vice President for Academic
Affairs
California State University Monterey Bay

Date

Todd Peters, Chief Engineer
California Water Service Company

Date

Eric Tynan, General Manager
Castroville Community Services District

Date

Artie Fields, City Manager
City of Salinas

Date

Everett Kronlund, President
Coastlands Mutual Water Company

Date



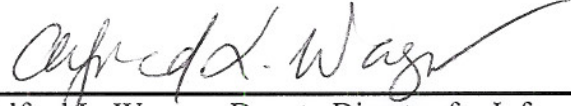
Bryan Largay, Tidal Wetland Project Director
Elkhorn Slough National Estuarine Research Reserve

12/3/09

Date

William H. Leahy, Executive Director
Big Sur Land Trust

Date


Alfred L. Wanger, Deputy Director for Information
Technology and Water Quality
California Coastal Commission

9/23/09
Date

Kathryn Cruz-Uribe, Provost and Vice President for Academic
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Todd Peters, Chief Engineer
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Affairs
California State University Monterey Bay

10/30/09

Date

Todd Peters, Chief Engineer
California Water Service Company

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REGIONAL WATER MANAGEMENT GROUP

William H. Leahy, Executive Director
Big Sur Land Trust

Date

Ross Clark, TITLE
California Coastal Commission

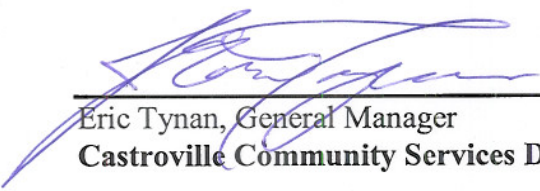
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Kathryn Cruz-Urbe, Provost and Vice President for Academic
Affairs
California State University Monterey Bay

Date

Todd Peters, Chief Engineer
California Water Service Company

Date



Eric Tynan, General Manager
Castroville Community Services District

Date

9-23-09

Denise Estrada, TITLE
City of Salinas

Date

Everett Kronlund, President
Coastlands Mutual Water Company

Date

Bryan Largay, Tidal Wetland Project Director
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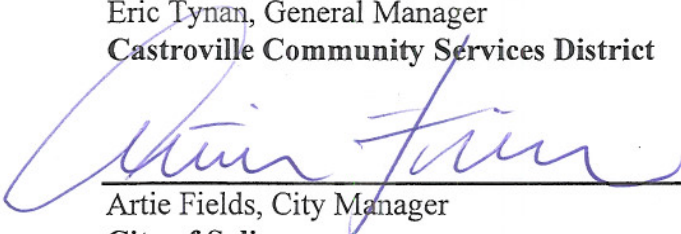
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Todd Peters, Chief Engineer
California Water Service Company

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Eric Tynan, General Manager
Castroville Community Services District

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Artie Fields, City Manager
City of Salinas

8-14-09

Date

Everett Kronlund, President
Coastlands Mutual Water Company

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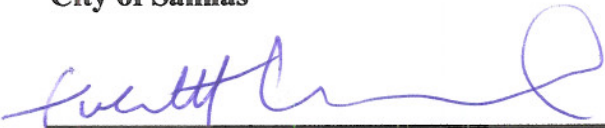
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Eric Tynan, General Manager
Castroville Community Services District

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Artie Fields, City Manager
City of Salinas

Date


Everett Kronlund, President
Coastlands Mutual Water Company

9-29-09
Date

Bryan Largay, Tidal Wetland Project Director
Elkhorn Slough National Estuarine Research Reserve

Date



Deborah Davis, Policy Director
Environmental Justice Coalition for Water

October 8, 2009

Date

Ken Ekelund, President
Garrapata Creek Watershed Council

Date

Jim Heitzman, General Manager
Marina Coast Water District

Date

Paul Michel, Superintendent
Monterey Bay National Marine Sanctuary

Date

Paul Binsacca, Board President
Resource Conservation District of Monterey County

Date

Eric Lauritzen, Agricultural Commissioner
Monterey County Agricultural Commissioner's Office

Date

Curtis V. Weeks, General Manager
Monterey County Water Resources Agency

Date

Keith Israel, General Manager
Monterey Regional Water Pollution Control Agency

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Deborah Davis, Legislative Analyst
Environmental Justice Coalition for Water

Date



Ken Ekelund, President
Garrapata Creek Watershed Council

23 Sept 2009
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Jim Heitzman, General Manager
Marina Coast Water District

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Paul Michel, Superintendent
Monterey Bay National Marine Sanctuary

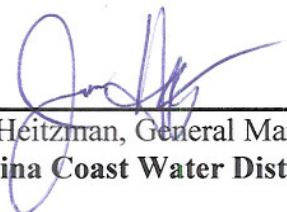
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Deborah Davis, Legislative Analyst
Environmental Justice Coalition for Water

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Ken Ekelund, President
Garrapata Creek Watershed Council

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Jim Heitzman, General Manager
Marina Coast Water District

Date

Oct. 3, 09

Paul Michel, Superintendent
Monterey Bay National Marine Sanctuary

Date

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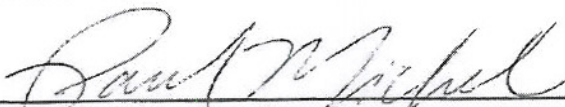
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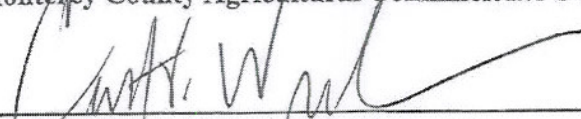
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Resource Conservation District of Monterey County

Date

Eric Lauritzen, Agricultural Commissioner
Monterey County Agricultural Commissioner's Office

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Curtis V. Weeks, General Manager
Monterey County Water Resources Agency

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Keith Israel, General Manager
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Environmental Justice Coalition for Water

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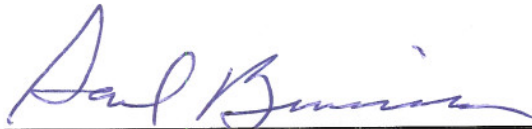
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Paul Binsacca, Board President
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8/20/09

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Monterey County Agricultural Commissioner's Office

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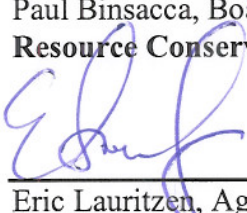
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Monterey County Agricultural Commissioner's Office

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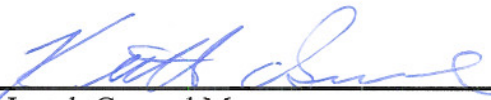
April 12, 2010

Curtis V. Weeks, General Manager
Monterey County Water Resources Agency

Date

Keith Israel, General Manager
Monterey Regional Water Pollution Control Agency

Date



Keith Israel, General Manager
Monterey Regional Water Pollution Control Agency

9-28-2009
Date

Jerri Carmo, Deputy Chief Operating Officer and Director of
Sponsored Programs, San Jose State University Research
Foundation
Moss Landing Marine Laboratories

Date

Horacio Amezquita, Manager
San Jerardo Cooperative, Inc.

Date



Jerri Carmo, Deputy Chief Operating Officer and Director of
Sponsored Programs, San Jose State University Research
Foundation
Moss Landing Marine Laboratories

10/19/05

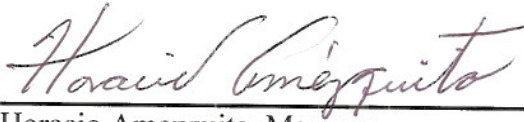
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Horacio Amezcuita, Manager
San Jerardo Cooperative, Inc.

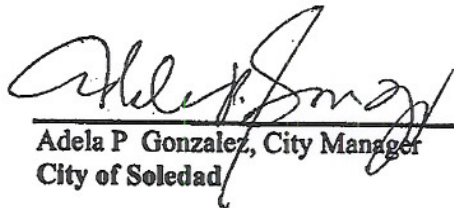
Date



Date

ADDENDUM

The organizations below have been added to the Regional Water Management Group. The RWMG voted to invite the City of Soledad to join the Group on August 17, 2011, and voted to invite the Rural Community Assistance Corporation to join on September 21, 2011, with none opposed for either vote.


Adela P. Gonzalez, City Manager
City of Soledad

8.29.12

8/29/12
Date

Brian Phillips, Regional Manager, Environmental NCA/NV
Rural Community Assistance Corporation

Date

ADDENDUM

The organizations below have been added to the Regional Water Management Group. The RWMG voted to invite the City of Soledad to join the Group on August 17, 2011, and voted to invite the Rural Community Assistance Corporation to join on September 21, 2011, with none opposed for either vote.

Adela P. Gonzalez, City Manager
City of Soledad

Date



Brian Phillips, Regional Manager, Environmental N.CA/NV
Rural Community Assistance Corporation

10-11-11

Date

ADDENDUM September 21, 2011

The organizations below have been added to the Regional Water Management Group. The RWMG voted to invite the City of Soledad to join the Group on August 17, 2011, and voted to invite the Rural Community Assistance Corporation to join on September 21, 2011, with none opposed for either vote.

Adela P. Gonzalez, City Manager
City of Soledad

Date

Brian Phillips, Regional Manager, Environmental N.CA/NV
Rural Community Assistance Corporation

Date

ADDENDUM September 19, 2012

The California Coastal Commission representative announced at the September 19, 2012 RWMG meeting that the Coastal Commission will be unable to formally adopt the IRWMP due to potential conflicts of interest, and therefore has no choice but to resign from the Regional Water Management Group. This addendum hereby acknowledges the resignation of the California Coastal Commission from the Regional Water Management Group.

ADDENDUM January 16, 2013

The Coastlands Mutual Water Company representative submitted a letter on December 22, 2012 stating their intention to withdraw from the Regional Water Management Group due to a perceived lack of benefit from their ongoing participation. This addendum hereby acknowledges the resignation of the Coastlands Mutual Water Company from the Regional Water Management Group.

Greater Monterey County Regional Water Management Group Bylaws

With Amendments through September 2018

ARTICLE I. THE GROUP

Section 1. Name. The name of this group is the “Greater Monterey County Regional Water Management Group” (RWMG).

Section 2. Composition. The RWMG is composed of 18 entities:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner’s Office
- Monterey County Resource Management Agency
- Monterey County Water Resources Agency
- Monterey One Water
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

Section 3. Notices. Any notices shall be sent to the Project Coordinator and to each of the RWMG entities by personal delivery, by email, by facsimile, or by first class mail, postage prepared in the United States Postal Service at the addresses set forth below. Notice shall be deemed effective upon delivery or transmission if delivered or sent by email or facsimile and on the third (3rd) day after mailing.

Susan Robinson, Program Director for the Greater Monterey County IRWMP PO Box 201 Cabot, VT 05647 Phone: (802) 279-4615 Email: srobinsons@frontier.com	Rachel Saunders Big Sur Land Trust 509 Hartnell Street, Monterey, CA 93940 Mail: P.O. Box 4071, Monterey, CA 93942 Phone: (831) 625-5523, ext. 109 Fax: (831) 625-0716 Email: rsaunders@bigsurlandtrust.org
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John Olson, Ph.D. School of Natural Sciences California State University Monterey Bay Building 53, 100 Campus Center Seaside, CA 93955 Phone: (831) 582-3873 Email: joolson@csumb.edu	Brenda Granillo, Interim District Manager California Water Service Company 254 Commission Street Salinas, CA 93901 Phone: (831) 757-3644 Email: BGranillo@calwater.com
J. Eric Tynan, General Manager Castroville Community Services District 11499 Geil Street (P.O. Box 1065) Castroville, CA 95012 Phone: (831) 633-2560 Fax: (831) 633-3103 Email: eric@castrovillecsd.org	Brian Frus City of Salinas, Public Works Department 200 Lincoln Avenue Salinas, CA 93901 Phone: (831) 758-7485 Fax: (831) 758-7935 Email: brianf@ci.salinas.ca.us
Donald T. Wilcox, PE Public Works Director/City Engineer City of Soledad 248 Main Street (P.O. Box 156) Soledad, CA 93960 Phone: (831) 223-5173 Email: DWilcox@cityofsoledad.com	Carl P. Holm, AICP Director RMA Monterey County Resource Management Agency 168 W. Alisal, 2nd floor Salinas, CA 93901 Phone: (831) 755-5103 Fax: (831) 755-5877 Email: HolmCP@co.monterey.ca.us
Monique Fountain, Tidal Wetland Project Director Elkhorn Slough National Estuarine Research Reserve/Elkhorn Slough Foundation 1700 Elkhorn Road Watsonville, CA 95076 Phone: (831) 728-2822 Fax: (831) 728-1056 Email: Monique@elkhornslough.org	Colin Bailey, Executive Director Environmental Justice Coalition for Water 519 12th Street, Sacramento, CA 95814 Phone: (916) 432-3529 Email: colin.ejcw@gmail.com
	Brian True, Capital Projects Manager Marina Coast Water District 11 Reservation Road Marina, CA 93933 Phone: (831) 883-5937 Fax: (831) 384-0197 Email: btrue@mcwd.org
Bridget Hoover, Director Water Quality Protection Program Monterey Bay National Marine Sanctuary 299 Foam Street Monterey, CA 93940 Phone: (831) 647-4217 Fax: (831) 647-4250 Email: bridget.hoover@noaa.gov	VACANT Monterey Co. Agricultural Commissioner's Office 1428 Abbott Street Salinas, CA 93901 Phone: (831) 759-7325 Fax: (831) 759-2268 Email: xxx@co.monterey.ca.us

Elizabeth Krafft Monterey County Water Resources Agency 1441 Schilling Place Salinas, CA 93901 Phone: (831) 755-4860 Fax: (831) 424-7935 Email: krafftea@co.monterey.ca.us	Mike McCullough, Government Affairs Administrator Monterey One Water 5 Harris Court, Building D Monterey, CA 93940 Phone: (831) 645-4618 Fax: (831) 372-6178 Email: MikeM@mrwpca.com
Kevin O'Connor, Program Manager Moss Landing Marine Laboratories 8272 Moss Landing Road Moss Landing, CA 95039 Phone: (831) 771-4495 Email: koconnor@mlml.calstate.edu	Paul Robins, Executive Director Resource Conservation District of Monterey County 744-A La Guardia Street Salinas, CA 93905 Phone: (831) 424-1036 x 124 Fax: (831) 424-7289 Email: paul.robins@rcdmonterey.org
Karen McBride, Rural Development Specialist- Environmental Rural Community Assistance Corporation 3120 Freeboard Drive #201 West Sacramento, CA 95691 Phone: (916) 447-9832 ext 1012 Email: karenm@rcac.org	Horacio Amezcuita, Manager San Jerardo Cooperative, Inc. 24500 Calle El Rosario Salinas, CA 93908 Phone: (831) 424-1947 Fax: (831) 424-1948 Email: horacioamezcuita@yahoo.com

Section 4. Incorporation of New Members. It is recognized that composition of the RWMG may change from time to time. Incorporation of new members into the RWMG will be decided on a case-by-case basis by majority vote of the RWMG, with the general assumption that a new entity will only be considered for admission into the RWMG if such admission would result in more balanced representation on the RWMG of geographic regions, disadvantaged communities, or water resource management interests within the Greater Monterey County region. A new member will be required to sign the MOU and will be expected to actively participate in regular RWMG meetings and in other RWMG activities, such as subcommittees or attendance at public workshops.

Section 5. Removal of RWMG Members. Lack of regular attendance at RWMG meetings or of active participation in RWMG activities may result in removal from the RWMG. A member may be removed from the RWMG, following 30-day written notice of a possible removal action and the reason therefore, upon the affirmative vote of a majority of RWMG members.

ARTICLE II. MEETINGS

Section 1. Meetings. RWMG meetings will be held on a monthly basis throughout the duration of development of the Integrated Regional Water Management Plan (IRWMP), unless cancelled by the Project Coordinator due to lack of business to discuss. Meetings will be held the third Wednesday of each month from 1:30PM – 3:30PM at a location to be determined each month. A call-in conference phone number will be made available for those who cannot physically attend. The RWMG meetings will be open to the public. Upon completion of the IRWMP, RWMG meetings will be held on a schedule to be determined most appropriate for continued integrated planning and plan updates.

Section 2. Attendance. The RWMG members are expected to attend all meetings scheduled.

Section 3. Special Meetings. Subject to proper notice, special meetings may be called by the Project Coordinator or by any other RWMG member regarding the development or amendment of the IRWMP.

Section 4. Conflict of Interest. Any member who believes himself/herself to have a conflict of interest in any matter shall indicate such conflict prior to discussion of the matter and shall step down during such discussion and subsequent voting.

Section 5. Requests and Considerations. All requests and/or considerations related to the RWMG shall be made in writing at least seventy-two (72) hours prior to the time of the regular scheduled meeting.

Section 6. Conduct of Meetings. Except as otherwise provided by these Bylaws, the RWMG will follow the latest version of Robert's Rules of Order for the orderly conduct of meetings.

ARTICLE III. DECISION-MAKING

Section 1. Decision-making Authority of RWMG. The RWMG is the final decision-making authority in all matters related to the IRWMP, though stakeholders and the general public will be given ample opportunity for comment and input regarding elements of the IRWMP during IRWMP development and future amendments.

Section 2. Quorum. A simple majority (50% plus one) of the RWMG shall constitute a quorum for the transaction of business.

Section 3. Voting. In order for voting to take place, there must be a quorum including at least two local agencies having statutory authority over water supply or water management. Action shall require a simple majority vote (50% plus one) of those present at the meeting, where "present" means involved in the discussion either in person or via conference call. Each RWMG entity is allowed one vote, regardless of whether or not they have contributed financially to the plan or to other RWMG activities. All votes will be counted equally. If the primary representative for a RWMG entity cannot attend a RWMG meeting, an alternate will be permitted to participate in the meeting and vote on behalf of that entity.

ARTICLE IV. DESIGNATION OF COMMITTEES

Section 1. Designation of Committees. The RWMG may designate committees to advise the RWMG in matters related to development of the IRWMP. These committees will include, at a minimum: various subcommittees to aid the RWMG in its decisions regarding specific elements of the IRWMP; a Project Review Committee to review, develop, and rank the projects submitted for inclusion in the IRWMP; and a Funding Committee to identify additional sources of potential funding for the region's water resource management projects and to support the ongoing IRWM planning process. The roles and responsibilities of each of these groups are described in the following sections.

Section 2. Executive Committee (EC): The RWMG may designate an Executive Committee. The role and authority of the Executive Committee are defined as follows:

- *Responsibilities:* The Executive Committee's specific responsibilities include:
 - Exercising limited powers of the RWMG between regularly scheduled meetings including developing meeting agendas, meeting with partner agencies regarding IRWM efforts, as well as other water-related topics such as stormwater and groundwater.
 - Acting as liaison with the Department of Water Resources staff and other state/federal agencies regarding funding opportunities.

- Serving as a sounding board for management on emerging issues, problems, and initiatives.
 - Reporting to the RWMG at the next meeting on any actions it has taken.
 - Providing oversight and direction to the Program Director including strategic planning and funding.
 - Working in concurrence with other committees established by the RWMG.
 - Signing documents approved by the RWMG.
- *Meetings:* The Executive Committee meets as needed to address matters at hand. Executive Committee members must attend all RWMG meetings and all Executive Committee meetings. If an Executive Committee member is not able to attend a RWMG or EC meeting, a proxy may be sent to no more than 25% of regularly scheduled RWMG meetings (three meetings per year). If an Executive Committee member misses more than three RWMG or EC meetings during their one-year term, the RWMG has the option of voting in a replacement to represent that member's category (i.e., conservation/watershed, disadvantaged community, agency, and water supply/management). If the Chair is absent from an EC meeting, the Vice-Chair shall facilitate the meeting, not the Chair's proxy.
 - *Members:* The Executive Committee is comprised of five individuals (not member organizations) of the RWMG as appointed and voted by other members of the RWMG. The Program Coordinator is included as one of the five participants on the Executive Committee and will participate in all meetings except in matters related to the Program Coordinator evaluation and compensation. In order to ensure the diversity of the RWMG is well represented, the following categories were identified for the four representatives: conservation/watershed, disadvantaged community, agency, and water supply/management. The members will each serve a one-year term with the option to extend one year if approved by the RWMG. No member may serve longer than two years. Reappointments or reelection of members may take place after one year has passed. Once the four members are voted in, a Chair and Vice-chair will be selected.

Section 3. RWMG Subcommittees: The RWMG will need to define certain elements of the IRWMP including regional issues and conflicts, goals and objectives, and a system for ranking projects. Subcommittees comprised of RWMG members will be created to develop recommendations to the RWMG regarding each of these plan elements. A subcommittee to review drafts of the IRWMP will also be formed. Other subcommittees may be formed as needed.

Section 4. Project Review Committee: The Project Review Committee will review all projects submitted for inclusion into the IRWMP, determine whether they meet minimum criteria, and then rank the projects according to the approved project ranking system. The Committee will recommend a ranked project list to the RWMG, which will then discuss, revise if necessary, and vote to accept a final list for inclusion in the IRWMP. The Project Review Committee will be comprised entirely of RWMG members.

Section 5. Funding Committee: A Funding Committee will be created to assist the RWMG in identifying funding sources (beyond State IRWM funds) to help implement the region's projects, as well as funds to support ongoing IRWM planning. The Funding Committee will meet two or three times a year to review projects for funding needs.

ARTICLE V. AUTHORITY OF THE RWMG

Section 1. Purpose and Role of RWMG. The primary purpose of the RWMG is to develop an IRWMP for the Greater Monterey County region, which will include a list of prioritized water resource-related

projects for potential consideration by the State's IRWM Grant Program. Following award of any IRWM grant funds, the RWMG will be responsible for tracking progress of the region's funded projects. The RWMG will also be responsible for updating and amending the IRWMP from time to time.

Section 2. Limitations of Authority. It is intended that the RWMG shall serve only in the above-stated capacities. RWMG membership does not provide any added legal rights or regulatory powers to any RWMG member, or to the RWMG as an entity. RWMG membership does not of itself give any party the power to adjudicate water rights, or to regulate or otherwise control the private property of other parties.

ARTICLE VI. BYLAW AMENDMENTS

These Bylaws may be amended by vote of the RWMG at any regularly scheduled RWMG meeting.

PASSED AND ADOPTED by the Greater Monterey County Regional Water Management Group this 17th day of February 2010.

AMENDED at the Regional Water Management Group meeting on September 21, 2011:
Amendments comprised the following:

- Added two new members: City of Soledad and Rural Community Assistance Corporation
- Updated information contained in Article IV. Designation of Committees
- Updated RWMG Member contact information (Article I, Section 3)

AMENDED at the Regional Water Management Group meeting on September 19, 2012:

- Removed one member: California Coastal Commission
- Updated RWMG Member contact information (Article I, Section 3)

AMENDED at the Regional Water Management Group meeting on January 16, 2013:

- Removed one member: Coastlands Mutual Water Company
- Updated RWMG Member contact information (Article I, Section 3)

AMENDED at the Regional Water Management Group meeting on March 16, 2016:

- Added one member: Monterey County Resource Management Agency

AMENDED at the Regional Water Management Group meeting on September 21, 2016:

- Added Article IV, Section 2: Executive Committee
- Updated RWMG Member contact information (Article I, Section 3)

AMENDED at the Regional Water Management Group meeting on December 14, 2016:

- Removed one member: Garrapata Creek Watershed Council
- Updated RWMG Member contact information (Article I, Section 3).

AMENDED September 2018:

- Updated RWMG Member contact information (Article I, Section 3)

Appendix D

Greater Monterey County Integrated Regional Water Management Plan Stakeholder Organizations

FEDERAL AGENCIES

Elkhorn Slough National Estuarine Research Reserve
NOAA National Marine Fisheries Service
NOAA Monterey Bay National Marine Sanctuary
US Bureau of Land Management
USDA Natural Resources Conservation Service
USFWS Coastal Program
USFWS Partners for Fish & Wildlife Program
USFWS Salinas National Wildlife Refuge
US Forest Service
US Geological Survey

STATE AGENCIES

California Coastal Commission
California Coastal Conservancy
California Department of Fish and Game
California Department of Public Health
California Department of Water Resources
California State Parks
Caltrans
Central Coast Regional Water Quality Control Board
State Water Resources Control Board

WATER DISTRICTS & WATER SUPPLIERS & WASTEWATER

Alco Water Service Company
Aromas Water District
Boronda Sanitation District
Buck Creek Water Company
California Americian Water
California Water Service Company
Camp Roberts
Castroville Community Services District
Coastlands Water Company
Little Bear Water Company
Marina Coast Water District
Monterey County Water Resources Agency
Monterey Regional Water Pollution Control Agency
Pajaro Sunny Mesa Community Services District
Pajaro Valley Water Management Agency
Partington Ridge
Rancho Chaparral
San Ardo California Water District
San Benito County Water District

San Lucas County Water District
Santa Lucia Preserve
Seaside Basin Watermaster
Spreckels Water Company
Water Resources Association of San Benito County

MUNICIPALITIES

City of Gonzales
City of Greenfield
City of Marina
City of Salinas
City of Soledad
King City

COUNTY GOVERNMENT, LOCAL AGENCIES, COUNCILS, DISTRICTS, & ADVISORY COMMITTEES

Association of Monterey Bay Area Governments
Fort Ord Reuse Authority
Monterey County Health Department, Division of Environmental Health
Monterey County Office of Emergency Services
Monterey County Parks
Monterey County Public Works
Monterey County Resource Conservation District
Monterey County Resource Management Agency
Monterey County Weed Management Area
Monterey Peninsula Regional Park District
Monterey Regional Waste Management District
Moss Landing Harbor District
Nacimiento Regional Water Management Advisory Committee
North Salinas Valley Mosquito Abatement District
Pajaro River Watershed Flood Prevention Authority
San Luis Obispo County Public Works Department

AGRICULTURAL REPRESENTATIVES & GROUPS

ALBA
Ag Land Trust
Agriculture Water Quality Alliance
Cattleman's Association
Central Coast Agricultural Water Quality Coalition
Central Coast Water Quality Preservation, Inc
Coalition of Central Coast Farm Bureaus
Central Coast Rangeland Coalition
Grower-Shipper Association of Central California
Monterey County Agricultural Commissioner's Office
Monterey County Farm Bureau
Monterey County Vintner & Grower Association (MCVGA)
Salinas River Channel Coalition
Salinas Valley Water Coalition / Independent Growers Association
San Bernabe Vineyards

NONPROFIT ORGANIZATIONS & CITIZEN GROUPS

1000 Friends of Carr Lake
Action Pajaro Valley
Big Sur Land Trust
California Native Plant Society, Monterey County Chapter
California Rural Legal Assistance Foundation
California Trout
CAP SLO San Ardo
Carmel River Steelhead Association
Center for Community Advocacy
CHISPA
Citizens for Responsible Growth
Clinicas de Salud del Valle de Salinas
Coastal Watershed Council
Coast Property Owners Association
Ecology Action
Elkhorn Slough Foundation
Environmental Justice Coalition for Water
Friends, Artists, and Neighbors of Elkhorn Slough
Friends of the River
Friends of the Tembladero
Garrapata Creek Watershed Council
Highway 68 Coalition
LandWatch Monterey County
Lideres Campesinas
Monterey Bay Citizen Watershed Monitoring Network
Monterey Bay Conservancy
Monterey Coastkeeper
Nacitone Watershed Group
The Otter Project
Planning and Conservation League Foundation
Poder Popular
Promotora Salud
Prunedale Preservation Alliance
Rural Community Assistance Corporation
San Jerardo Cooperative, Inc.
Santa Lucia Conservancy
Save Our Shores
Save The Whales
Sierra Club - Ventana Chapter
Surfrider Foundation
The Nature Conservancy
Trout Unlimited
Ventana Wilderness Alliance
Ventana Wildlife Society

ACADEMIC & RESEARCH INSTITUTIONS

Balance Hydrologics, Inc.
Central Coast Wetlands Group at Moss Landing Marine Laboratories
Hartnell Community College

Monterey Bay Aquarium Research Institute
Moss Landing Marine Laboratories
RMC Water and Environment
UC Berkeley Hastings Reserve
UC Cooperative Extension
UC Davis Granite Canyon Marine Pollution Studies Laboratory
UC Santa Cruz Big Creek Reserve
Watershed Institute, California State University Monterey Bay

BUSINESS ORGANIZATIONS

Big Sur Chamber of Commerce
Esalen Institute
King City Chamber of Commerce & Agriculture
Lynn and Michael Heller Landscapes
Monterey County Convention and Visitors Bureau
Monterey County Hospitality Association
Pebble Beach Company
Salinas Valley Chamber of Commerce
Soledad Mission Chamber of Commerce

ELECTED OFFICIALS

Congressman Sam Farr, District 17
Supervisor Fernando Armenta, Mo Co District 1
Supervisor Lou Calcagno, Mo Co District 2
Supervisor Simon Salinas, Mo Co District 3
Supervisor Jane Parker, Mo Co District 4
Supervisor Dave Potter, Mo Co District 5
State Assemblymember Bill Monning, District 27
State Assemblymember Luis Alejo, District 28
State Senator Anthony Cannella, California State Senate District 12
State Senator Sam Blakeslee, California State Senate District 15

CENTRAL COAST IRWM Regional Water Management Groups

Santa Barbara County
Northern Santa Cruz County
San Luis Obispo County
Monterey Peninsula, Carmel Bay, and South Monterey Bay
Pajaro River Watershed

Appendix E
Central Coast IRWM Regions
Statement of Principles
For the Proposition 50 and Proposition 84/1E IRWM Process
March 8, 2007

Background

- The State of California proposes to substantially change the Integrated Regional Water Management (IRWM) Grant Program as early as March 20, 2007. These changes could significantly affect planning and implementation of projects throughout the Central Coast Region.
- In an effort to respond to these proposed changes, which include accelerated funding for Proposition 50 and the elimination or reduction of a second round of competitive grants, regional representatives have met and agreed to develop a process to maintain an equitable distribution of IRWM funds throughout the Central Coast. However, due to the limited time available for a full stakeholder process, this statement may be modified upon mutual consent of the planning sub-regions after a complete stakeholder process.
- Regional representatives have met and agree that their long term interests are best met by working together to develop a coherent approach to benefit all planning sub-regions within the funding area.
- The region is diverse, with geographically distinct sub-regions. Some sub-regions have common/overlapping water related interests, but most water issues are more effectively managed within the six geographic sub-regions.
- Water management interests that are common across the Central Coast funding area have yet to be defined, but may include (but not be limited to) water conservation, water quality monitoring and improvement, fisheries restoration, and drought protection.

Principles

- Cooperate on a regional basis (Central Coast funding area) within the framework of the IRWM process pursuant to Prop 50 (IRWM) and Prop 84 (IRWM).
- To the extent possible, such a process should be consensus based among/across the six planning sub-regions defined in the Central Coast funding area.
- To the extent possible, geographic areas not currently covered by IRWM Plans should be brought into the IRWM planning process in the future and incorporated into adjacent planning areas.
- The six planning sub-regions (participants) agree to take coordinated action and no unilateral action in seeking Prop 84 (IRWM) funds allocated to the Central Coast area.
- The six planning sub-regions agree to coordinate their actions in seeking further Prop 50 (IRWM) funds, including supporting current changes to the State process, but acknowledge the continued competitive nature of the process.

- Benefits from the various funding sources, taken as a whole, should be shared throughout the funding area so that areas that are not funded by Prop 50 are given initial priority in allocating a portion of Prop 84 (IRWM) funds, recognizing that these areas must adhere to IRWM standards and guidelines and have sub-region and regional stakeholder support.
- The Central Coast region will, under a performance based approach to IRWM planning, continue our efforts to develop regional priorities, which includes providing added priority to projects identified in sub-region IRWM plans not previously funded by Proposition 50, and reach consensus on the equitable allocation of Proposition 84 funds in our region.
- This agreement does not affect a sub-region's ability to apply unilaterally for other recently established State grants, such as Prop 1-E funds, but best efforts should be made to coordinate with other sub-regions so as to avoid direct competition. Other funding processes (such as the State Revolving Fund) are not affected by this agreement.
- Priorities within each IRWM Plan have been determined based on the needs of the sub-region identified through a rigorous outreach and stakeholder process. These priorities were also developed to integrate or be consistent with portions of the Basin Management Plan for the Region and other applicable State and Federal management plans.
- Regional interests intend to develop a process that will address:
 - The intent of the process
 - The participants
 - The decision making process for Proposition 84 (IRWM)
 - Regional cooperation and communication in accessing funds from other grant programs
 - The term of the agreement
 - Role/opportunity for future applicants

GREATER MONTEREY COUNTY INTEGRATED REGIONAL WATER MANAGEMENT PROGRAM

DRAFT APPLICATION FORM FOR IMPLEMENTATION PROJECTS AND CONCEPT PROPOSALS 2018

GENERAL INSTRUCTIONS:

Both implementation project proposals and concept proposals are being accepted at this time. Only implementation projects, however, will be eligible for IRWM Implementation Grant funds. If you would like to submit a concept proposal, you need only complete Section I of this application.

For implementation projects: There will be two rounds of Proposition 1 IRWM Implementation Grant solicitations (Round 1 in late 2018/early 2019, Round 2 in 2020). If you are interested in having your project considered for the Round 1 solicitation, you must complete all sections of this application. If you are not interested in having your project considered in Round 1, you need only complete Sections I and II.

APPLICATIONS ARE DUE **PLACEHOLDER**

SECTION I. PROJECT SUMMARY AND IRWM OBJECTIVES

1. Project Proponent (Name of Organization):

2. Type of Entity:

- ☐ Public agency ☐ Nonprofit organization ☐ Public Utility ☐ Mutual Water Company
- ☐ Federally Recognized or State Indian Tribe

3. Name and Title of Contact Person:

4. Phone:

5. Email:

6. Project Title:

7. Type of Proposal: Is your project an implementation project (developed, with budget) or a concept proposal?

- ☐ Implementation project
- ☐ Concept proposal

8. Project Summary: Briefly describe your project (e.g., one to three paragraphs):

Please note: No project will be eligible to receive IRWM grant funds without documentation of landowner support for any and all properties on which project activities will occur.

9. Project Cost Summary: Please summarize project costs. If your project is a concept proposal you may skip this question. Note: IRWM Implementation Grant projects **require** a minimum non-State funding match of 50% of the total project costs. Projects that address a critical water resource need of a disadvantaged community or economically distressed area may be waived or may have a lower match requirement.

	\$ Amount
Requested IRWM Grant Funds	
Matching (non-State) Funds	
Other State Funds	
Total Project Cost	

10. Project Location: Projects must be located within the Greater Monterey County IRWM region,¹ or otherwise be of direct benefit to the Greater Monterey County IRWM region. Briefly, where is your project located?

11. IRWM Criteria

To be eligible for inclusion in the IRWM Plan, projects must include one or more of the following elements. Please check all that apply:

- ☐ Water reuse and recycling for non-potable reuse and direct and indirect potable reuse
- ☐ Water-use efficiency and water conservation
- ☐ Local and regional surface and underground water storage, including groundwater aquifer cleanup or recharge projects
- ☐ Regional water conveyance facilities that improve integration of separate water systems
- ☐ Watershed protection, restoration, and management projects, including projects that reduce the risk of wildfire or improve water supply reliability
- ☐ Storm water resource management, including, but not limited to, the following:
 - Projects to reduce, manage, treat, or capture rainwater or storm water
 - Projects that provide multiple benefits such as water quality, water supply, flood control, or open space
 - Decision support tools that evaluate the benefits and costs of multi-benefit storm water projects
 - Projects to implement a storm water resource plan
- ☐ Conjunctive use of surface and groundwater storage facilities
- ☐ Water desalination projects
- ☐ Decision support tools to model regional water management strategies to account for climate change and other changes in regional demand and supply projections
- ☐ Improvement of water quality, including drinking water treatment and distribution, groundwater and aquifer remediation, matching water quality to water use, wastewater treatment, water pollution prevention, and management of urban and agricultural runoff
- ☐ Regional projects or programs as defined by the IRWM Planning Act

¹ The Greater Monterey County IRWM region includes most of Monterey County, with the exception of areas that are already included in other IRWMPs (specifically, the Pajaro River Watershed IRWM region and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region). These exceptions include: land areas within the San Jose Creek and Carmel River watersheds, land areas within the Pajaro River watershed, and most of the Monterey Peninsula (the Greater Monterey County region includes and runs north from Marina). For a map of the Greater Monterey County IRWM region, please go to: <http://www.greatermontereyirwmp.org/about/background/>.

12. IRWM Plan Objectives

The following objectives have been identified for the Greater Monterey County IRWM Plan. Please select all of the objectives that the project will address, and write a very brief justification (unless it is *entirely obvious*) of how your project will address each objective. (For concept proposals, you need not provide the justification.)

	Objective	Justification
Water Supply Goal		
☐	Increase groundwater recharge and protect groundwater recharge areas.	
☐	Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.	
☐	Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.	
☐	Diversify water supply sources, including but not limited to the use of recycled water.	
☐	Maximize water conservation programs.	
☐	Capture and manage storm water runoff.	
☐	Optimize conjunctive use where appropriate.	
☐	Support research and monitoring to better understand water supply needs.	
☐	Support the creation of water supply certainties for local production of agricultural products.	
☐	Promote public education about water supply issues and needs.	
☐	Promote planning efforts to provide emergency drinking water to communities in the region in the event of a disaster.	
Water Quality Goal		
☐	Promote practices necessary to meet, or where practicable, exceed all applicable water quality regulatory standards (for drinking water, surface and groundwater quality).	
☐	Promote projects to prevent seawater intrusion.	
☐	Incorporate or promote principles of low impact development where feasible, appropriate, and cost effective.	
☐	Protect surface waters and groundwater basins from contamination and the threat of contamination.	
☐	Support research and pilot projects for the co-management of food safety and water quality protection.	
☐	Improve septic systems, sewer system infrastructure, wastewater treatment systems, and manure management programs to prevent water quality contamination.	
☐	Support research and other efforts on salinity management.	
☐	Support monitoring to better understand major sources of erosion, and implement a comprehensive erosion control program.	
☐	Promote programs and projects to reduce the quantity and improve the quality of urban and agricultural runoff and/or mitigate their effects in surface waters, groundwater, and the marine environment.	
☐	Promote regional monitoring and analysis to better understand water quality conditions.	

☐	Support research and utilization of emerging technologies (enzymes, etc.) to develop effective water pollution prevention and mitigation measures, and source tracking.	
☐	Promote public education about water quality issues and needs.	
Flood Protection & Floodplain Management Goal		
☐	Promote projects and practices to protect infrastructure and property from flood damage.	
☐	Improve flood management infrastructure and operational techniques/strategies.	
☐	Implement flood management projects that provide multiple benefits such as public safety, habitat protection, recreation, agriculture, and economic development.	
☐	Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.	
☐	Support research and monitoring efforts to understand the effects of flooding on transport and persistence of pathogens in food crop production areas.	
☐	Support management of flood waters so that they do not contaminate fresh produce in the field.	
☐	Promote public education about local flood management issues and needs.	
Environment Goal		
☐	Support science-based projects to protect, improve, enhance, and/or restore the region's ecological resources, while providing opportunities for public access and recreation where appropriate.	
☐	Protect and enhance state and federally listed species and their habitats.	
☐	Minimize adverse environmental impacts of water resource management projects.	
☐	Support applied research and monitoring to better understand environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources.	
☐	Implement fish-friendly stream and river corridor restoration projects.	
☐	Reduce adverse impacts of sedimentation into streams, particularly from roads and non-point sources.	
☐	Promote efforts to prevent, control, reduce, and/or eradicate high priority invasive species.	
☐	Promote native drought-tolerant plantings in municipal and residential landscaping.	
☐	Consider opportunities to purchase fee title or conservation easements on lands from willing sellers that provide integrated water resource management benefits. Ensure adequate funding and infrastructure to manage properties and/or monitor easements.	
☐	Support research and monitoring efforts to understand the effects of wildfire events on water resources.	
Regional Communication and Cooperation Goal		
☐	Facilitate dialogue and reduce inconsistencies in water management strategies/regulations between local, regional, state, and federal entities.	
☐	Promote dialogue between federal and state regulators and small water system managers to facilitate water quality regulation compliance.	

☐	Foster collaboration between regional entities to minimize and resolve potential conflicts and to obtain support for responsible water supply solutions and improved water quality.	
☐	Build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects.	
☐	Increase stakeholder input and public education about the need, complexity, and cost of strategies, programs, plans, and projects to improve water supply, water quality, flood management, coastal conservation, and environmental protection.	
Disadvantaged Communities Goal		
☐	Seek funding opportunities to ensure all communities have a water system with adequate, safe, high-quality drinking water.	
☐	Seek funding opportunities to ensure all communities have adequate wastewater treatment.	
☐	Ensure that disadvantaged communities are adequately protected from flooding and the impacts of poor surface and groundwater quality.	
☐	Provide support for the participation of disadvantaged communities in the development, implementation, monitoring, and long-term maintenance of water resource management projects.	
☐	Promote public education in disadvantaged communities about water resource protection, pollution prevention, conservation, water quality, and watershed health.	
Climate Change Goal		
☐	Plan for potential impacts of future climate change.	
☐	Support increased monitoring and research to obtain greater understanding of long-term impacts of climate change in the Greater Monterey County region.	
☐	Support efforts to research alternative energy and to diversify energy sources appropriate for the region, and consider options for using renewable energy where such options are integrally tied to supporting IRWM Plan objectives.	
☐	Seek long-term solutions to reduce energy consumption, especially the energy embedded in water use, with a goal to reducing greenhouse gas (GHG) emissions	
☐	Seek long-term solutions to maintain and protect existing pristine natural resources from the impacts of climate change.	
☐	Address adapting to changes in the amount, intensity, timing, quality, and variability of runoff and recharge.	
☐	Consider the effects of sea level rise on water supply conditions and identify suitable adaptation measures.	
☐	In considering ways to address IRWM Plan objectives and implement the Plan, consider where practical the strategies adopted by California Air Resources Board (CARB) in its AB 32 Scoping Plan.	
☐	Support research and/or implementation of land-based efforts such as carbon-sequestration on working lands and wildlands in the Greater Monterey County region.	
☐	Promote public education about impacts of climate change, particularly as it relates to water resource management in the Greater Monterey County region.	

SECTION II. RESOURCE MANAGEMENT STRATEGIES AND CLIMATE CHANGE

This section is required for all implementation projects. If your project is a concept proposal, there is no need to complete this section.

Note, all implementation projects in the IRWM Plan are ranked based on how well the projects address: IRWM Plan objectives (in Section I above), Resource Management Strategies, climate change adaptation, and reduction of greenhouse gas emissions. (Concept proposals are not included in the project prioritization.) How well a project scores on the Ranked Project List is one of several factors that the Regional Water Management Group will take into consideration when selecting which projects to put forward in the Round 1 and Round 2 IRWM Implementation Grant solicitations. For implementation projects, please show how your project addresses the following criteria, as applicable.

1. Resource Management Strategies

One of the goals of integrated regional water management planning is to encourage diversification of water management approaches. Please select the strategies that your project will use (check all that apply):

Reduce Water Demand

- ☐ Agricultural Water Use Efficiency
- ☐ Urban Water Use Efficiency

Improve Operational Efficiency and Transfers

- ☐ Conveyance
- ☐ System Reoperation
- ☐ Water Transfers
- ☐ Infrastructure Reliability

Increase Water Supply

- ☐ Conjunctive Management & Groundwater Storage
- ☐ Desalination
- ☐ Precipitation Enhancement
- ☐ Recycled Municipal Water
- ☐ Surface Storage
- ☐ Storm Water Capture and Management

Improve Water Quality

- ☐ Drinking Water Treatment and Distribution
- ☐ Groundwater/Aquifer Remediation
- ☐ Matching Water Quality to Use
- ☐ Pollution Prevention
- ☐ Salt and Salinity Management
- ☐ Urban Runoff Management
- ☐ Water and Wastewater Treatment

Practice Resources Stewardship

- ☐ Agricultural Lands Stewardship
- ☐ Ecosystem Restoration
- ☐ Forest Management
- ☐ Land Use Planning and Management
- ☐ Recharge Area Protection
- ☐ Sediment Management
- ☐ Watershed Management
- ☐ Environmental and Habitat Protection and Improvement
- ☐ Wetlands Enhancement and Creation

Improve Flood Management

- ☐ Flood Management

People and Water

- ☐ Economic Incentives (Loans, Grants, and Water Pricing)
- ☐ Outreach, Engagement, and Education
- ☐ Water and Culture
- ☐ Water-Dependent Recreation
- ☐ Regional Cooperation
- ☐ Recreation and Public Access

Other Resource Management Strategies

- ☐ Dewvaporation or Atmospheric Pressure Desalination
- ☐ Fog Collection
- ☐ Rainfed Agriculture
- ☐ Monitoring and Research

2. Climate Change Adaptation

a) Does your project contribute to climate change adaptation? If so, what climate change vulnerabilities in the region does your project respond to, specifically? (See Chapter R of the IRWM Plan for a description of vulnerabilities in the region.) Please describe how, and to what extent.

b) Does your project consider the effects of sea level rise on water supply conditions and identify suitable adaptation measures?

c) Does the project take into consideration changes in the amount, intensity, timing, quality and variability of runoff and recharge?

3. Reduction of Greenhouse Gas Emissions (GHGs)

a) Please describe the extent to which your project will help reduce GHGs, compared to project alternatives. *To assist you in estimating GHG emissions, please use the California Emissions Estimator Tool (CalEEMod) on the Greater Monterey County IRWM website: <http://www.greatermontereyirwmp.org/performance/>.*

b) If appropriate, describe the extent to which the project will help the region reduce GHGs over the next 20 years.

c) To what extent will the project help reduce energy consumption, especially the energy embedded in water use, and ultimately reduce GHG emissions?

SECTION III. ROUND 1 APPLICATION QUESTIONS

The following questions are what we expect to be included in the Department of Water Resources (DWR) Round 1 Implementation Grant application. Complete this section only if you would like your project to be considered for Round 1. Please answer the following questions briefly, but completely. Note that if your project is selected for the Round 1 application, you will need to be present for a Pre-application Workshop (time and location TBD) during which time DWR staff will review your project and ask questions.

1. Map

Please provide a project map.

2. How the Project Addresses the Critical Need(s) of the Region

Based on the objectives you selected in Section I Question 10 above, please describe how your project addresses the critical needs of the region.

3. Stakeholder Coordination

Please describe the nature of stakeholder coordination for planning, developing, and implementing the project.

4. Operations and Maintenance

Please describe how operations and maintenance of the project will be supported.

5. Narrative Description of Physical Benefits

Briefly describe the physical benefits of the project, background conditions, and methods used to determine the benefits.

6. Quantification of Physical Benefits

Please complete the tables below, quantifying physical benefits (if available). Use a separate table for each type of physical benefit. Please use only the metrics specified below:

For water supply produced, saved, or recycled, enter acre-feet per year (AFY)

For water quality, enter constituent concentration reduced in mg/L

For flood damage reduction, enter inundated acres reduced in acres

For habitat improved, restored or protected, enter habitat restored in acres

For fishery benefits, enter increased fishery flow rate in cubic feet per second (cfs)

For species protection, enter number of species benefited

Annual Project Physical Benefits			
Project Name:			
Type of Benefit Claimed:			
Units of the Benefit Claimed*:			
Anticipated Useful Life of Project (years):			
(a)	(b)	(c)	(d)
Physical Benefits			
Year	Without Project	With Project	Change Resulting from Project
2019			
2020			
Etc. through last year of project life			
Comments:			

Annual Project Physical Benefits			
Project Name:			
Type of Benefit Claimed:			
Units of the Benefit Claimed*:			
Anticipated Useful Life of Project (years):			
(a)	(b)	(c)	(d)
Physical Benefits			
Year	Without Project	With Project	Change Resulting from Project
2019			
2020			
Etc. through last year of project life			
Comments:			

7. Work Plan

Briefly describe your work plan, organized according to the following categories:

- a) Direct Project Administration Costs
- b) Land Purchase/Easement
- c) Planning/Design/Engineering/Environmental Documentation (including feasibility studies CEQA documentation, permitting, etc.)
- d) Construction/Implementation

Explain why the project implementation methodology was chosen, and why is this the preferred alternative.

Briefly describe the project's technical feasibility. In particular, does the project make use of or provide for new and innovative technologies?

8. Budget

Please complete the budget table below.

Project Budget					
Project serves a need of a DAC?:					
Will you be requesting a funding match waiver?:					
Category		(a)	(b)	(c)	(d)
		Requested Grant Amount	Cost Share: Non-State Fund Source (Match)	Cost Share: Other State Fund Source	Total Cost
(a)	Direct Project Administration				
(b)	Land Purchase/Easement				
(c)	Planning/Design/Engineering/ Environmental Documentation				
	(list tasks)				
(d)	Construction/Implementation				
	(list tasks)				
(e)	Grand Total				

Briefly describe how costs were derived.

Specify cost share sources. Discuss other funding sources considered. Note: Unless your project directly benefits a disadvantaged community, you must provide a minimum 50% non-State match. (If you can provide even more than that, your project will receive more points.)

9. Cost Effectiveness

Please complete the table below to demonstrate if the project is the least cost alternative.

Cost Effectiveness Analysis	
Question 1	Types of benefits provided (as shown in the Physical Benefits table above): - -
Question 2	Have alternative methods been considered to achieve the same types and amounts of physical benefits as the proposed project been identified?
	If no, why?
	If yes, list the methods (including the proposed project) and estimated costs.
Question 3	If the proposed project is not the least cost alternative, why is it the preferred alternative? Provide an explanation of any accomplishments of the proposed project that are different from the alternative project or methods.
Comments:	

10. Schedule

Provide a project schedule, using the exact same categories used for the work plan and budget.

Briefly describe how the schedule is realistic, reasonable, and accomplishable based on the state of project development (such as design phase, status of permitting, and environmental documentation).

If applicable describe:

- How CEQA will be completed within 6 months of funding award²
- Status of acquisition of all necessary permits
- How all permits required to begin construction will be acquired within 6 months of funding award

11. Regional Water Self-Reliance

Does your project help improve regional water self-reliance? Does your project include one of the following: water use efficiency, water recycling, advanced water technologies, local and regional water supply project, or improved regional coordination of local and regional water supply efforts?

² Projects must have all CEQA documentation complete and any permits necessary to begin construction acquired within six months of the final funding award. This requirement will not apply to projects requesting funding for pre-implementation activities benefiting DACs.

12. Statewide Priorities

Projects must be consistent with Statewide Priorities. Please check all that apply (see pp. 9-10 of the Prop 1 2016 IRWM Grant Program Guidelines Volume 1 for a full description of these priorities):

- ☐ Make conservation a California way of life (building on current water conservation efforts and promoting the innovation of new systems for increased water conservation)
- ☐ Increase regional self-reliance and integrated water management across all levels of government
- ☐ Achieve the co-equal goals for the Delta (providing a more reliable water supply for California and to protect, restore and enhance the Delta ecosystem)
- ☐ Protect and restore important ecosystems
- ☐ Manage and prepare for dry periods
- ☐ Expand water storage capacity and improve groundwater management
- ☐ Provide safe water for all communities (the right to safe, clean, affordable and accessible water adequate for human consumption, cooking, and sanitary purposes)
- ☐ Increase flood protection
- ☐ Increase operational and regulatory efficiency

13. Provide a lifecycle benefit for 15 years

Each construction project must have a lifecycle of at least 15 years. Describe the lifecycle of the project.

14. Nitrate, Arsenic, Hexavalent Chromium, and/or Perchlorate Contamination (AB 1249)

Will the project address contamination by nitrate, arsenic, hexavalent chromium, or perchlorate?

15. Benefits to Disadvantaged Communities or Native American Tribes

Will the project provide direct benefits to a disadvantaged community³ or economically distressed area, or address environmental justice issues? Will the project address critical water issues for Native American Tribal communities? If so, please explain.

16. Human Right to Water

Does the project assist the IRWM region to address the Human Right to Water, as stated in SB 685 (“every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes”)? If so, how?

³ “Disadvantaged communities” are defined as communities with annual median household incomes (MHI) that are less than 80% of the statewide MHI.

SECTION IV. COMPLIANCE

To be eligible for IRWM Implementation Grant funds, project proponents must comply with the following.

1. Adoption of IRWM Plan

Proposition 1 IRWM Program Guidelines require that each project proponent named in an IRWM Grant application adopt the IRWM Plan. Please check if your agency/organization:

- ☐ Has already adopted the IRWM Plan
- ☐ Hereby commits to adopting the IRWM Plan, if the project is selected for submission in an IRWM Grant application

2. Multiple Benefits

Projects must provide multiple benefits (i.e., water quality, water supply, flood protection, environmental, or community benefits). Does your project provide multiple benefits?

- ☐ No
- ☐ Yes (please list):

3. Urban Water Management Compliance

If the project proponent meets the definition of an urban water supplier (“supplier, either publicly or privately owned, that provides water for municipal purposes, either directly or indirectly, to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually”), the project proponent must meet certain requirements, including:

- DWR-approved 2015 Urban Water Management Plan
- Compliance with water use efficiency requirements (AB 1420)
- Compliance with the water metering requirements (CWC section 525)

Is your agency an urban water supplier, and if so, does it meet these requirements?

4. Agricultural Water Management Compliance

If your agency/organization meets the definition of an agricultural water supplier (a water supplier, either publicly or privately owned, that provides water to 10,000 or more irrigated acres, excluding the acreage that receives recycled water; also includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers), you must have a DWR-approved 2015 Agricultural Water Management Plan. Is your agency/organization an agricultural water supplier, and if so, does it meet these requirements?

5. Surface Water Diverter Compliance

If the project proponent is a surface water diverter, the project proponent must state whether they have submitted to the State Water Resources Control Board surface water diversion reports in compliance with requirements outlined in Part 5.1 (commencing with §5100) of Division 2 of the CWC. Is your agency/organization a surface water diverter, and if so, does it meet these requirements?

SECTION V. DWR'S EVALUATION QUESTIONS

The evaluation criteria below will be used by DWR to score applications for Round 1 of the Prop 1 Implementation Grant Program. Please "self-score" your project, using the table below.

Evaluation Criteria	Score (1 - 5 points)
Does the project assist the IRWM region to address the Human Right to Water (SB 685)?	
Does the project provide two or more benefits (e.g., water supply, groundwater recharge, water quality improvement, ecosystem enhancement, etc.)?	
Does the project provide benefits to more than one IRWM region and/or Funding Area?	
Does budget indicate leveraging of other funding sources (in addition to any required cost share)?	
Does narrative provide reasonable determination on least cost alternative?	
Does the project make use of or provide for new and innovative technologies?	
Are the work plan, schedule and budget consistent with each other and appropriate to the project?	

Comments, if needed:

HOW TO SUBMIT YOUR APPLICATION:

All project applications are due by **PLACEHOLDER**.

Please email your completed application to Susan Robinson at srobinsons@frontier.com.

If you do not have email access, please mail or hand-deliver one copy of your application to:

Bridget Hoover
Monterey Bay National Marine Sanctuary
99 Pacific Street, Building 455
Monterey, CA 93940

FOR QUESTIONS ABOUT THIS APPLICATION FORM OR THE IRWM PLANNING PROCESS:

Please visit our website or contact:

Susan Robinson
Program Director
Greater Monterey County IRWM Program
srobinsons@frontier.com
(802) 279-4615
www.greatermontereyirwmp.org

Greater Monterey County IRWMP » Economic Screening Tool

Instructions for Project Sponsors

This guide is designed to help project sponsors complete the Economic Screening Tool. This tool is intended to help project sponsors collect and share information about the potential economic benefits and costs of projects submitted for acceptance into the Greater Monterey County Integrated Regional Water Management Plan (GMC IRWMP). The goal of collecting this information is to provide GMC IRWMP project ranking and selection subcommittees information about the economic effects of individual projects to consider as part of the larger project review process. **It is not intended to serve as a benefit-cost analysis.** It is designed instead to solicit preliminary information about the types of benefits and costs the project is likely to generate.

As a project sponsor, your job is to complete the accompanying spreadsheets as completely as possible. You have two tabs to focus on:

- The **BENEFITS** tab has questions about the economic benefits your project is likely to generate
- The **COSTS** tab has questions about the economic costs of your project.

The cells in the **SUMMARY** tab are linked to information entered in the **BENEFITS** and **COSTS** tabs and the formulas in these cells calculate a summary that project reviewers may use to quickly review the overall economic effects of the project in one place. The calculations in the SUMMARY tab operate automatically as information is entered into the **BENEFITS** and **COSTS** tabs.

Answer the questions as completely as you can, based on the information you have now. Use the description boxes to explain if information is in development or will be available at a later date.

LINKS TO SECTIONS (use these links to navigate through this document quickly):

BENEFITS WORKSHEET

[*General Project Information*](#)

[*Project Effects*](#)

[*Evidence of Demand for Project's Effects*](#)

[*Distribution and Equity Considerations*](#)

COST WORKSHEET

BENEFITS WORKSHEET

General Project Information

Has an economic analysis already been completed for this project?

If any kind of economic analysis (e.g., benefit-cost analysis, cost-effectiveness analysis, feasibility analysis, etc.) has already been done, answer YES and provide a brief description of the conclusions. You may want to attach this analysis when you submit your application.

Have alternatives to this project been proposed?

If alternative solutions have been proposed to address the goals of the project, use the dropdown menu to select YES. If you know there haven't been any alternatives proposed, select NO. If you're not sure, leave the dropdown menu in the "Please Select..." position. If YES, answer the next question:

Have the alternatives to this project been analyzed for economic and technical feasibility (e.g., cost and performance?)

If so, select YES.

Is this project for a disadvantaged community (DAC)?

Use the dropdown menu to select YES or NO. You will have an opportunity to identify the DAC in the final section of this tab.

In the current set of guidelines for economic analysis from the California Department of Water Resources (DWR), DAC communities have the option of completing a cost-effectiveness analysis instead of a full benefit-cost analysis. Project reviewers will be instructed to take this into account in this screening process as well.

Project Effects

For each of these project effects below, the benefits you describe should be consistent with the benefits and project effects described in the rest of your project application.

1. Water Supply Enhancement

Will the project result in additional water supplies?

If the project will increase the amount of water available for new users or uses, answer YES to this question. Some examples include:

- Increase efficiency of current water use (e.g., through new irrigation techniques, fallowing irrigated land, or repairing leaking pipes), freeing up water for downstream users and uses.

- Increasing water availability for household or municipal use, by building new infrastructure (e.g., a new well or storage facility), assuming water is not otherwise allocated.

Provide a brief description of the how the project will accomplish the effect.

This project will primarily increase the supply of (check all that apply):

Indicate the source of the increased water supply (surface water or groundwater).

Will the project improve water supply reliability by increasing supply, reducing demand, or improving water system performance?

If the project will improve the reliability of water supplies throughout the year for end-users, answer YES to this question. Some examples include:

- The project reduces the risk or probability of an outage in the delivery of water to residential customers by upgrading aging infrastructure.
- The project increases available supply of drinking water by fixing leaks, reducing the risk of water shortages when alternative supplies aren't available.
- The project supports the installation of efficient irrigation equipment, reducing agricultural demand for water and increasing the likelihood that other water users would experience shortages.

Will the project increase storage, system capacity or otherwise decrease variability in supply?

If the project will increase water delivery capacity, storage capacity, and/or help maintain delivery and capacity during low flow months and droughts, answer YES to this question.

What is the likely end use of the additional supplies (check all that apply):

Indicate how the increased water supply is likely to be used (Agricultural use, Municipal/Domestic Use, or Environmental/Instream Flows). If, for example, the project simply conserves water and you don't know how it will be used, check UNKNOWN.

Is technical information available to estimate the quantity of additional water?

In other words, do you know how much water will be available or saved because of the project, compared to current conditions? If yes, you will be able to input this quantity in terms of acre-feet per year below.

What is the estimated quantity that will be supplied for each of these uses?

If sufficient information is available to estimate, input the amount of water the project will produce or make available in acre-feet per year. We have provided a value for this water that is supported by the literature. This value may or may not be the most appropriate value to apply to your project, but for the purposes of this screening exercise, it provides a monetary estimate to estimate the general magnitude of the economic effect.

On a scale of 1-5, how certain are these effects?

Answer this question with regard to the project's ability to produce or conserve additional water, and the likely quantity of water, if estimates are available.

- 5 – It is highly likely (almost certain) that these effects will materialize as described and quantified in the timeframe indicated. All resources are available to initiate the project, assuming it is funded, and scientific/engineering studies have demonstrated high probability of effects materializing as predicted. Resources are also secured to ensure the project will continue operating as planned over its lifespan.
- 4 – It is reasonably likely that these effects will materialize as described and quantified in the timeframe indicated. Similar projects have demonstrated a record of success. Resources are more than likely available to ensure continued operation. Some questions and uncertainties remain, but they are well characterized and resources are available to adapt the project plans if necessary to achieve the described effects.
- 3 – It is possible that these effects will materialize as described and quantified in the timeframe indicated. The answers provided here are best-guess estimates based on expert opinion and preliminary studies, but some uncertainty exists because studies and planning activities have yet to be completed to provide assurance that all resources will be in place and plans will unfold exactly as described.
- 2 – It is possible that these effects will materialize as described and quantified in the timeframe indicated, but the information provided here represents best-guess estimates based on what is generally understood about local conditions and expected project design. Studies have not yet been completed for this project specifically, and experience from other, similar projects suggests that the effects may be variable and uncertain.
- 1 – It is not certain at all that these effects will materialize. These are best-guess estimates based on what we'd like the project to accomplish, and what we think is possible with available resources.

How long would it take for these benefits to materialize?

Select from the dropdown menu the general timeframe when these benefits are expected to start. For example,

- If the project is expected to break ground in 2015, and users would begin to enjoy water supply benefits three years later, select "Within 5 years of project start."
- If the project is expected to break ground in 2015, but the project would not be fully functional and capable of producing benefits until 2021, select "Longer than 5 years after project start."
- If some benefits would start accruing during the first five years, but the project would not generate the full amount of benefits until later, select "Within 5 years of project start."

How long into the future would these benefits persist?

The answer to this question should align with the lifespan of the project. Is there an engineering lifespan that would limit the project's ability to continue providing benefits without major investment? Or does the project initiate self-sustaining changes that would continue generating the effect more or less indefinitely?

2. Water Quality Enhancement

Will the project improve water quality?

If the project will increase the quality of water available for users, answer YES to this question. Provide a brief description of the how the project will accomplish the effect.

Are there other water users in the watershed who will directly benefit from these improvements in water quality?

Indicate YES if there are clear cause/effect relationships between changes in water quality parameters and benefits to other water users. Examples may include:

- Downstream water treatment facilities that will experience reduced costs for treating water.
- Downstream water users who will face lower costs due to reduced wear and tear on pumps.
- People who enjoy sensitive species that will benefit from water quality improvements (e.g., anglers, recreators)
- People who recreate in or near the water and will be able to enjoy better quality recreational experiences because of cleaner water.

Do people currently experience increased costs associated with the water quality problems that the project would address?

Answer YES if the water quality problems that the project would address currently impose costs on any human population. Examples of costs include:

- People having to purchase bottled water due to nitrate contamination in local wells.
- Municipalities spending additional resources to remove contamination from drinking water.
- Municipalities having to pump groundwater from deeper aquifers to avoid contamination.

Will the project reduce the likelihood of water quality violations (e.g., TMDL violations):

If the project is likely to reduce the risk of water quality violations for water users and/or water managers, answer YES.

What is the primary source of the pollutants or negative water quality impacts that this project will reduce?

Choose the category that best fits the source of the pollutants that the project is targeting.

Which pollutants and/or negative effects will this project address?

Check the pollutants in the list that the project will affect.

Is technical information available to estimate the improvements described above?

If you describe the improvements in water quality in terms of specific pollutants and amount of improvement or reduction (depending on water quality parameter), select YES in the dropdown menu. If possible, please summarize this information in the space provided.

Which pollutants/effects do you have quantitative information for?

Check the pollutants in the list that you have technical, quantitative information about how the project will affect. At least one category should be checked if you answered YES to the technical information question above.

How much sediment deposition will the project avoid?

In the space provided, enter how much the project would reduce sediment deposition. An estimate for the monetary value of this reduction will be calculated automatically from the information provided.

On a scale of 1-5, how certain are these effects?

- 5 – It is highly likely (almost certain) that these effects will materialize as described and quantified in the timeframe indicated. All resources are available to initiate the project, assuming it is funded, and scientific/engineering studies have demonstrated high probability of effects materializing as predicted. Resources are also secured to ensure the project will continue to operate as planned over its lifespan.
- 4 – It is reasonably likely that these effects will materialize as described and quantified in the timeframe indicated. Similar projects have demonstrated a record of success. Resources are more than likely available to ensure continued operation. Some questions and uncertainties remain, but they are well characterized and resources are available to adapt the project plans if necessary to achieve the described effects.
- 3 – It is possible that these effects will materialize as described and quantified in the timeframe indicated. The answers provided here are best-guess estimates based on expert opinion and preliminary studies, but some uncertainty exists because studies and planning activities have yet to be completed to provide assurance that all resources will be in place and plans will unfold exactly as described.
- 2 – It is possible that these effects will materialize as described and quantified in the timeframe indicated, but the information provided here represents best-guess estimates based on what is generally understood about local conditions and expected project

design. Studies have not yet been completed for this project specifically, and experience from other, similar projects suggests that the effects may be variable and uncertain.

- 1 – It is not certain at all that these effects will materialize. These are best-guess estimates based on what we'd like the project to accomplish, and what we think is possible with available resources.

How long would it take for these water quality benefits to materialize?

Select from the dropdown menu the general timeframe when these benefits are expected to start. For example,

- If the project is expected to break ground in 2015, and users would begin to enjoy water quality benefits three years later, select "Within 5 years of project start."
- If the project is expected to break ground in 2015, but the project would not be fully functional and capable of producing benefits until 2021, select "Longer than 5 years after project start."
- If some benefits would start accruing during the first five years, but the project would not generate the full amount of benefits until later, select "Within 5 years of project start."

How long into the future would these benefits persist?

The answer to this question should align with the lifespan of the project. Is there an engineering lifespan that would limit the project's ability to continue providing benefits without major investment? Or does the project initiate self-sustaining changes that would continue generating the effect more or less indefinitely?

3. Environmental Enhancement

Will the project restore, protect, or enhance natural habitat?

If the project will improve existing habitat or create new habitat, answer YES to this question. Provide a brief description of the how the project will accomplish the effect.

Is technical information available to estimate the type, scale, and quality of the habitat affected?

Select YES or NO from the dropdown menu if you can describe the habitat type that will be affected, how many acres, and other technical details of the project's effect on habitat.

Which types and how many acres of habitat will be restored, protected, or enhanced by the project?

If sufficient information is available to estimate, check the type(s) of habitat the project would affect, and indicate how many acres. We have provided a value for each type of habitat that is supported by the literature. This value may or may not be the most

appropriate value to apply to your project, but for the purposes of this screening exercise, it provides a monetary estimate to estimate the general magnitude of the economic effect.

Will the project restore, protect, or enhance habitat for any federally or California state listed species?

Select YES or NO from the dropdown menu. If YES, indicate which species would be affected in the space provided. If you are unsure about species and/or their listing status, please click the link (blue text highlight) to be taken to an online list.

Will the protection, restoration or enhancement of habitat described above increase carbon sequestration?

Select YES or NO from the dropdown menu. If YES, and if technical information is available to estimate the amount of additional carbon (beyond what is currently sequestered) the enhanced habitat would sequester, provide the quantity of carbon sequester in terms of metric tons of CO₂ per year.

On a scale of 1-5, how certain are these effects?

- 5 – It is highly likely (almost certain) that these effects will materialize as described and quantified in the timeframe indicated. All resources are available to initiate the project, assuming it is funded, and scientific/engineering studies have demonstrated high probability of effects materializing as predicted. Resources are also secured to ensure the project will continue to operate as planned over its lifespan.
- 4 – It is reasonably likely that these effects will materialize as described and quantified in the timeframe indicated. Similar projects have demonstrated a record of success. Resources are more than likely available to ensure continued operation. Some questions and uncertainties remain, but they are well characterized and resources are available to adapt the project plans if necessary to achieve the described effects.
- 3 – It is possible that these effects will materialize as described and quantified in the timeframe indicated. The answers provided here are best-guess estimates based on expert opinion and preliminary studies, but some uncertainty exists because studies and planning activities have yet to be completed to provide assurance that all resources will be in place and plans will unfold exactly as described.
- 2 – It is possible that these effects will materialize as described and quantified in the timeframe indicated, but the information provided here represents best-guess estimates based on what is generally understood about local conditions and expected project design. Studies have not yet been completed for this project specifically, and experience from other, similar projects suggests that the effects may be variable and uncertain.
- 1 – It is not certain at all that these effects will materialize. These are best-guess estimates based on what we'd like the project to accomplish, and what we think is possible with available resources.

How long would it take for these benefits to materialize?

Select from the dropdown menu the general timeframe when these benefits are expected to start. For example,

- If the project is expected to break ground in 2015, and new habitat would begin to provide benefits for some species three years later, select “Within 5 years of project start.”
- If the project is expected to break ground in 2015, but the project would not produce meaningful ecological benefits until 2021, select “Longer than 5 years after project start.”
- If some ecological benefits would start accruing during the first five years, but the project would not generate the full amount of benefits until later, select “Within 5 years of project start.”

How long into the future would these benefits persist?

The answer to this question should align with the lifespan of the project. Is there a definite lifespan that would limit the project’s ability to continue providing benefits without major investment? Or does the project initiate self-sustaining changes that would continue generating the effect more or less indefinitely?

4. Flood Protection

Will this project reduce the risk of flooding?

If the project will reduce the magnitude, timing, or frequency of flood events, answer YES to this question. Provide a brief description of the how the project will accomplish the effect.

Will the project reduce the number of buildings and/or human lives lost in the event of a flood?

If the project is likely to have these effects on flooding, select YES in the pull-down menu.

Is the project likely to alter flood maps and/or reduce flood insurance premiums?

If modeling results have shown that the project is likely to affect flooding in such a way as to change FEMA flood maps or otherwise affect a community’s flood insurance rating, resulting in reduced premiums or insurance carriage mandates for homeowners, select YES in the pull-down menu.

Has a FEMA benefit/cost analysis been performed for the project?

If the project has already been analyzed using FEMA or similar benefit-cost tools to estimate the economic benefits of the project, select YES in the pull-down menu.

This project will reduce the... (check all that apply):

Indicate in the check boxes how the project would affect flooding.

Is technical information available to quantify the effect on flooding?

Have studies been done to describe the actual reduction in the number, magnitude, or frequency of flood events attributable to this project? Choose YES or NO in the pull-down menu.

Which of the following land use categories will experience a reduction in flood risk as a result of this project (check all that apply, provide acreage if available):

Indicate the types of land uses the project would protect from flooding. If modeling has been done to estimate the amount of acreage that would experience reduced flooding effects, input those estimates in the space provided.

Which of the following infrastructure categories will experience a reduction in flood risk as a result of this project (check all that apply):

Indicate the types of physical infrastructure the project would protect from flooding in the check boxes.

On a scale of 1-5, how certain are these effects on land use and infrastructure?

- 5 – It is highly likely (almost certain) that these effects will materialize as described and quantified in the timeframe indicated. All resources are available to initiate the project, assuming it is funded, and scientific/engineering studies have demonstrated high probability of effects materializing as predicted. Resources are also secured to ensure the project will continue to operate as planned over its lifespan.
- 4 – It is reasonably likely that these effects will materialize as described and quantified in the timeframe indicated. Similar projects have demonstrated a record of success. Resources are more than likely available to ensure continued operation. Some questions and uncertainties remain, but they are well characterized and resources are available to adapt the project plans if necessary to achieve the described effects.
- 3 – It is possible that these effects will materialize as described and quantified in the timeframe indicated. The answers provided here are best-guess estimates based on expert opinion and preliminary studies, but some uncertainty exists because studies and planning activities have yet to be completed to provide assurance that all resources will be in place and plans will unfold exactly as described.
- 2 – It is possible that these effects will materialize as described and quantified in the timeframe indicated, but the information provided here represents best-guess estimates based on what is generally understood about local conditions and expected project design. Studies have not yet been completed for this project specifically, and experience from other, similar projects suggests that the effects may be variable and uncertain.
- 1 – It is not certain at all that these effects will materialize. These are best-guess estimates based on what we'd like the project to accomplish, and what we think is possible with available resources.

How long would it take for these benefits to materialize?

Select from the dropdown menu the general timeframe when these benefits are expected to start.

How long into the future would these benefits persist?

The answer to this question should align with the lifespan of the project. Is there an engineering lifespan that would limit the project's ability to continue providing benefits without major investment? Or does the project initiate self-sustaining changes that would continue generating the effect more or less indefinitely?

5. Recreation

Will the project improve existing recreational areas or facilities and/or the quality of recreational opportunities?

If the project will affect existing recreation opportunities, either in terms of quality or quantity, select YES and describe the effect. Some examples of this type of effect may include:

- Improving water quality in areas where water-contact recreation is popular (e.g., upstream of a swimming hole)
- Improving habitat along an existing hiking trail by planting native vegetation or removing invasive species.
- Improving access to a river for small boats as part of a riparian restoration effort.

Provide a brief description of the how the project will accomplish the effect.

Are data available to quantify the current levels of recreational uses that the project might affect?

If quantitative information is available about the number of users, user-days, or other measure that describes the level of use of the particular recreational resource the project would affect, select YES. If you are unsure, leave the dropdown menu at "Please Select..." If you are confident that there are no data available, select "No."

Will the project create new recreational opportunities?

If the project will create new recreational opportunities, select yes and describe the effect. Some examples of this type of effect may include:

- Building an interpretive trail as part of an urban stormwater retrofit project.
- Opening a newly restored area of habitat to the public for birdwatching.

Provide a brief description of the how the project will accomplish the effect.

Are there similar recreational opportunities already available in the area?

For example, if the project is creating a trail, are there other trails in similar habitats or settings that are within a short drive of the project site? The relevant proximity may be subjective: think about the population the project is intended to serve and whether they already have access to a similar resource.

If so, do these recreational areas already experience high levels of use during the year?

If the answer to the previous question is YES, consider whether those comparable recreation opportunities are currently well used or over-used. Do parking lots regularly fill up? Do trails or docks suffer from heavy wear and tear and need regular repairs? Even if the use is only seasonal, the answer to this question still may be YES.

6. Energy

Will the project increase renewable energy production?

If the project will increase the supply of renewable energy, select YES in the dropdown menu. Provide a brief description of the how the project will accomplish the effect.

Is technical information available to estimate the amount of energy produced, and how?

Select YES or NO in the dropdown menu.

What type of energy technology will the project employ and what is the expected output?

If you answered YES to the preceding question, enter the quantitative details in the space provided.

On a scale of 1-5, how certain are these effects?

- 5 – It is highly likely (almost certain) that these effects will materialize as described and quantified in the timeframe indicated. All resources are available to initiate the project, assuming it is funded, and scientific/engineering studies have demonstrated high probability of effects materializing as predicted. Resources are also secured to ensure the project will continue to operate as planned over its lifespan.
- 4 – It is reasonably likely that these effects will materialize as described and quantified in the timeframe indicated. Similar projects have demonstrated a record of success. Resources are more than likely available to ensure continued operation. Some questions and uncertainties remain, but they are well characterized and resources are available to adapt the project plans if necessary to achieve the described effects.
- 3 – It is possible that these effects will materialize as described and quantified in the timeframe indicated. The answers provided here are best-guess estimates based on expert opinion and preliminary studies, but some uncertainty exists because studies and

planning activities have yet to be completed to provide assurance that all resources will be in place and plans will unfold exactly as described.

2 – It is possible that these effects will materialize as described and quantified in the timeframe indicated, but the information provided here represents best-guess estimates based on what is generally understood about local conditions and expected project design. Studies have not yet been completed for this project specifically, and experience from other, similar projects suggests that the effects may be variable and uncertain.

1 – It is not certain at all that these effects will materialize. These are best-guess estimates based on what we'd like the project to accomplish, and what we think is possible with available resources.

How long would it take for these benefits to materialize?

Select from the dropdown menu the general timeframe when these benefits are expected to start.

How long into the future would these benefits persist?

The answer to this question should align with the lifespan of the project. Is there an engineering lifespan that would limit the project's ability to continue providing benefits without major investment? Or does the project initiate self-sustaining changes that would continue generating the effect more or less indefinitely?

Will the project result in reduced energy use?

If the project will reduce energy consumption, select YES in the dropdown menu. Provide a brief description of how the project will accomplish the effect. Some examples might include:

- Reduced water use often reduces energy use because less energy is required to pump and treat the water.
- Retiring old infrastructure may reduce energy use, even if replaced with new infrastructure that may use less energy.

Is technical information available to estimate the amount of energy saved?

Select YES or NO in the dropdown menu.

How much energy will the project save?

If you answered YES to the preceding question, enter the quantitative details in the space provided.

On a scale of 1-5, how certain are these effects?

5 – It is highly likely (almost certain) that these effects will materialize as described and quantified in the timeframe indicated. All resources are available to initiate the project,

assuming it is funded, and scientific/engineering studies have demonstrated high probability of effects materializing as predicted. Resources are also secured to ensure the project will continue to operate as planned over its lifespan.

- 4 – It is reasonably likely that these effects will materialize as described and quantified in the timeframe indicated. Similar projects have demonstrated a record of success. Resources are more than likely available to ensure continued operation. Some questions and uncertainties remain, but they are well characterized and resources are available to adapt the project plans if necessary to achieve the described effects.
- 3 – It is possible that these effects will materialize as described and quantified in the timeframe indicated. The answers provided here are best-guess estimates based on expert opinion and preliminary studies, but some uncertainty exists because studies and planning activities have yet to be completed to provide assurance that all resources will be in place and plans will unfold exactly as described.
- 2 – It is possible that these effects will materialize as described and quantified in the timeframe indicated, but the information provided here represents best-guess estimates based on what is generally understood about local conditions and expected project design. Studies have not yet been completed for this project specifically, and experience from other, similar projects suggests that the effects may be variable and uncertain.
- 1 – It is not certain at all that these effects will materialize. These are best-guess estimates based on what we'd like the project to accomplish, and what we think is possible with available resources.

How long would it take for these benefits to materialize?

Select from the dropdown menu the general timeframe when these benefits are expected to start.

How long into the future would these benefits persist?

The answer to this question should align with the lifespan of the project. Is there an engineering lifespan that would limit the project's ability to continue providing benefits without major investment? Or does the project initiate self-sustaining changes that would continue generating the effect more or less indefinitely?

7. Other Community and Social Benefits

Does the project have a training or education component?

If the project will provide opportunities for the public or other stakeholders to learn new skills, gain information that could change their behavior in positive ways, or otherwise impart information, answer YES to this question. Some examples include:

- Providing training about how to install efficient lawn irrigation equipment.
- Providing interpretive walks in a natural area to local school children.
- Developing informational brochures to distribute to homeowners nearby a new low-impact stormwater facility.

Provide a brief description of the how the project will accomplish the effect.

How many people will the project reach in this capacity?

If known, provide an estimate of the number of people who will receive training or education.

Will the education or training result in any benefits not covered in categories 1–6?

If, by educating and training people, the project would produce other environmental or social benefits not described elsewhere, answer YES in the dropdown menu and describe in the space provided. Some examples may include:

- Additional water conserved as homeowners learn about and implement proper lawn care and maintenance (not quantified in benefit #1).
- Increased interaction among neighbors after being brought together for an informational event about a local stormwater project.

Does the project develop, test, or document a new technology or process for the region?:

Answer YES in the dropdown menu if the project includes any of these elements, and describe. Some examples may include:

- Field-test a new water quality sampling protocol being developed by researchers.
- Install a new monitoring system previously untested in the region, and document its functionality for future purchase decisions.

Will the project produce new data?

If the project has a data collection component and will produce new, useful data, answer YES and describe in the space provided.

How might the success or failure of the technology or process benefit others?

If there are specific ways that the actions implemented in the previous question will reduce the costs or enhance the benefits achievable by other projects or efforts, please describe in the space provided.

Will the project help to avoid, reduce, or resolve an existing resource conflict?

In cases where a project will occur in an area and with respect to a resource that has generated conflict in the past, indicate YES in the dropdown menu and describe in the space provided. Examples include:

- Threatened or actual legal action over use or misuse of a resource, or over a particular activity.
- Pending regulatory action caused by scarcity or noncompliance with legal requirements.
- Community disagreement about the best way to solve a problem.

What measurable outcomes might this project lead to?

If the project is expected to help address an existing conflict, how would it achieve a tangible result? Please be specific in your description.

Will the project promote social health or safety in ways not already documented in benefits 1–6?

If there are ways the project will affect social health or safety in ways that have not already been addressed in other benefits (e.g., reduce the risk of flooding), please choose YES in the dropdown menu and describe. If you think that specific benefits identified above affect health and safety in ways that aren't adequately captured above, you may provide additional information here.

8. Other Sustainability Benefits

Will the project improve the overall, long-term management of California groundwater resources?

Some examples include

- Reduced extraction of non-renewable groundwater
- Promoting aquifer storage and/or recharge

If you answer YES, please describe in the space provided.

Will the project provide a long-term solution in place of a short-term one?

Answer YES to this question if the project offers a solution that will be self-sustaining, or that permanently addresses underlying conditions that currently result in costs, conflict, or other issues the project will help ameliorate.

Evidence of Demand for Project's Effects

Will the project produce effects or outcomes that address documented problems related to the scarcity of a resource?

Use the dropdown menu to select YES or NO. If YES, please briefly describe. Answer YES to this question if the project is likely to produce effects that will alleviate problems related to scarcity. Examples of scarcity may include:

- Water shortages at a specific place and time (either for human use or environmental purposes).
- Congestion in existing or lack of availability of needed recreational opportunities at a specific place or time.
- Lack of flood storage or sufficient stormwater processing capacity, leading to flooding at a specific place and time.

Is the project likely to create or enhance goods or services for which there are no nearby or adequate substitutes?

Use the dropdown menu to select YES or NO. If YES, please briefly describe. Answer YES to this question if the project is likely to produce effects that are desirable and for which there is no other reasonable way to achieve the effect. Examples of this may include:

- Supplying domestic water where the only other options include trucking in water or purchasing bottled water
- Restoring native habitat in an area (e.g., urban, suburban, or agricultural) where it no longer exists.

Is the project likely to result in reduced risk of loss of life or damage to property?

Use the dropdown menu to select YES or NO. If YES, please briefly describe. Examples of this may include:

- Reducing flood or landslide hazards in a populous area.
- Reducing the risk of disruption to major transportation or communication infrastructure, or first-response and emergency facilities.

Is the project likely to result in reduced risk of disruption or restoration of critical services?

Use the dropdown menu to select YES or NO. If YES, please briefly describe. Examples of this may include:

- Upgrading water treatment or delivery infrastructure to lessen the likelihood of major service disruptions.
- Environmental enhancement projects that increase the resiliency of natural ecosystems and reduce risks to built infrastructure.

Is the project likely to result in new information or initial action required to complete a larger project that would yield more, longer-term, or more widespread benefits?

Use the dropdown menu to select YES or NO. If YES, please briefly describe. Projects that act as small-scale trials or demonstrations of new techniques often produce this type of benefit. In your description, provide evidence that this project is part of an overall strategy or plan that would yield further actions or effects that would produce additional benefits.

Distribution and Equity Considerations

Is the project likely to produce benefits that are distributed widely across many people, or concentrated among a distinct group of people?

Use the dropdown menu to select WIDELY DISTRIBUTED, CONCENTRATED, or BOTH.

Briefly describe in the space provided. The answer to this question may depend on the benefit in question and the timing of the effect. Highlight effects that may be particularly distinct.

Examples may include:

- This project will benefit a small minority community with limited access to resources. It would resolve an issue that has been a major impediment to any development and increase opportunities for future growth.
- This project would have the potential to reach all residents of a major population center. Even if per-capita effects are small, overall effects could be large over time.

Is the project likely to produce benefits that would be primarily enjoyed by a disadvantaged community?

Use the dropdown menu to select YES or NO. If YES, please identify the DAC in the space provided.

COST WORKSHEET

Has a cost estimate been developed for this project?

Use the dropdown menu to select YES or NO. If YES, please provide the total cost of the project in the space provided.

Does this cost estimate include annual operation and maintenance costs?

Use the dropdown menu to select YES or NO. If NO, please provide the additional average annual O&M cost in the space provided.

For how many years would these O&M costs be incurred?

Use the dropdown menu to select the timeframe over which O&M costs would be incurred. Usually this is the lifespan of the project.

Are these costs required to generate the benefits described in the BENEFITS WORKSHEET?

Use the dropdown menu to select YES or NO. In most cases, the answer to this question should be YES.

Are other costs required to generate the benefits described but not included in the estimate above, including in-kind donations, land acquisitions, and volunteer time?

Use the dropdown menu to select YES or NO. If YES, please describe these additional costs. Project costs should include all costs required to generate the benefits described in the BENEFITS WORKSHEET. This includes costs that may have already been incurred. Examples of these types of costs include:

- The value of land purchases already made or donated.
- The value of donated materials of any kind.
- The value of donated time, including the hours of volunteers that are part of a structured volunteer program.
- The value of staff oversight time, even if staff salary is paid for in other ways.

What is the estimated value of these other costs?

If sufficient information is known about the value of these other costs, please provide an estimate in the space provided.

Would the project generate costs for others, not reflected in the total project cost?

Use the dropdown menu to select YES or NO. If YES, please describe these additional costs. Examples of these types of costs include:

- Negative effects on nearby or downstream landowners, such as access disruptions, changes in stream flows, changes in views, or other changes that might be perceived as costs or losses of goods or services that are currently enjoyed.

Would the project be controversial, or otherwise generate conflict?

Use the dropdown menu to select YES or NO. If YES, please describe the nature of the controversy or conflict. Examples of these types of effects include:

- Nearby property owners uncertain of change.
- Implementation of an untested feature that may generate unexpected effects.
- Implementation of a solution that is unpopular to some stakeholders.

Appendix H

Water Quality Priorities

Central Coast Regional Water Quality Control Board

July 2011

This staff report provides a summary of our priorities and some of the actions we are taking in 2011 on these priorities. This is only a very brief, partial list of all the actions we are and have been taking on these and many other issues. The purpose here is to provide a summary of the most important issues and the actions we are taking.

Our highest priorities:

Preventing and Correcting Threats to Human Health
Preventing and Correcting Degradation of Aquatic Habitat
Preventing Degradation of Hydrologic Processes
Preventing/Reversing Seawater Intrusion
Preventing Further Degradation of Groundwater Basins from Salts

For each of the priorities above we are identifying or already taking specific actions, as briefly summarized below.

Preventing and Correcting Threats to Human Health

The main threats to human health are contaminants in drinking water, such as perchlorate (Olin and other sites in the northern part of our region) and nitrate (contaminated domestic wells in agriculture areas). Nitrate in groundwater is by far the most widespread threat to human health in our Region. Actions we are taking now include:

1. Investigating the extent of nitrate in groundwater and the number and location of rural residents who are at risk, and ensuring they are notified of the risk and their options. We have initiated the notification of rural residents in the Salinas Valley area in a cooperative effort with the State Board's Groundwater Ambient Monitoring Assessment program (GAMA). We are following up with additional notifications, which may exceed 10,000 residents. Some residents may be exposed to nitrate levels that are fifteen times the drinking water standard. Our notification (in cooperation with the County Environmental Health Department) includes information on sampling and analysis, nitrate treatment options, and health effects, so that home owners can make informed decisions. The State Water Board has set up a website to provide this type of information (also linked to our website), which we will also be using in our notification efforts.
2. Revising the Water Board's Irrigated Agriculture Order to include requirements for minimizing fertilizer application rates and reporting usage, and requirements for groundwater sampling and reporting so that the Water Board can prioritize and focus on areas where the threat to public health is greatest.
3. Investigating specific cases of nitrate contamination in domestic or public supply wells, which may result in staff recommendations to the Water Board regarding requirements that responsible parties provide replacement water to the well owners. These investigations include areas near San Lucas in Monterey County, Morro Bay, King City,

Anchor Point Christian High School near Gilroy, and farm labor camps. We expect this list to grow significantly in the coming months.

4. Developing a Basin Plan amendment to prohibit or limit certain high risk activities that cause pollution in groundwater recharge areas, and prohibit or limit activities that prevent groundwater recharge.
5. Improving our working relationship with local county health agencies and the State Department of Public Health to promptly address threats to human health, including exposure due to pesticides in fish, inhalation of vapors at groundwater cleanup sites, and contamination in drinking water. We have been following up on our letter to all of our County Public Health Officers last year (which received a very poor response from the Counties) on a county by county basis, prioritized by extent of threatened exposures. As a result of our follow up, Santa Barbara County staff committed to proposing well testing ordinance improvements. We have followed up with San Benito County staff and are following up with the Board of Supervisors. Monterey County already has the most extensive well testing requirements of any county in our region, although the ordinance still needs to be strengthened.
6. Continuing with petroleum and chemical leak site cleanup oversight using priority systems similar to this more general list – first priority to public health threats, and threats to more usable groundwater (including landfills with leachate).

Preventing and Correcting Degradation of Aquatic Habitat

Aquatic habitat, such as riparian areas and wetlands and their buffers zones are critically important to water quality, water supply, and the overall biological and physical health of watersheds. The loss of aquatic habitat in our Region has been increasing in some areas, especially in agriculture areas due to misconceptions about food safety. Some of the actions we are taking in 2011 include:

1. Including minimum requirements for aquatic habitat protection in the Water Board's draft Irrigated Agriculture Order.
2. Targeting more severe toxicity problems with more aggressive follow-up.
3. Including requirements for aquatic habitat protection in Total Maximum Daily Load Orders.
4. Including requirements for aquatic habitat protection in renewed municipal stormwater permits (Salinas). We already included habitat protection measures in our recent approvals of Phase II municipalities' stormwater management plans.
5. Developing a Basin Pan amendment to prohibit or limit certain activities that degrade aquatic habitat and cause subsequent discharges that degrade water quality and beneficial uses.
6. Prioritizing our oversight of projects that would potentially degrade aquatic habitat, such as construction projects in riparian areas regulated under our 401 Certification program.

7. Prioritizing enforcement actions for illegal degradation of riparian areas and wetlands.
8. Ensuring permits for discharge to surface waters are protective.

Preventing Degradation of Hydrologic Processes

Hydrologic processes include stream and river flow, surface runoff, erosion and sedimentation, recharge of groundwater, water circulation, and groundwater and surface water interaction. These processes are intricately linked to water quality and watershed health. Hydrologic processes are degraded by certain aspects of land use activities, such as overgrazing, urbanization and increasing impervious surfaces, channelization, and devegetation. Degradation can occur on a massive, watershed scale. Some of the actions we are taking in 2011 include:

1. Continuing our work with the Low Impact Development Initiative program's "Joint Effort" project. This is a collaborative project among the Water Board, Low Impact Development Initiative staff, nationally leading scientists, and municipalities, to develop a methodology that local agencies can use to determine their own hydromodification control criteria based on local conditions.
2. Including requirements for hydromodification control in upcoming permit renewals (City of Salinas), and continuing to help municipalities and consultants improve project designs to include low impact development design principles. .
3. Recommending that the State Board include adequate requirements for hydromodification control in their draft Phase II general stormwater permit.
4. Continuing implementation of two Low Impact Development grants through our Low Impact Develop Initiative program. One project is in Paso Robles and will design and build a "Clean Streets" project, similar to the nationally recognized Clean Streets projects in Seattle. The other project is in Atascadero and will design and build a parking lot with low impact development design principles. These projects will provide state of the art designs that others can use and will help Water Board staff develop more effective regulatory requirements in the future.

Preventing/Reversing Seawater Intrusion

Seawater intrusion is one of the most serious water quality issues we face on the Central Coast, resulting in enormous costs to the public as alternative fresh water supplies must be developed in intruded areas. In some areas, such as Los Osos, the rate of salt water intrusion is increasing dramatically due to over pumping in the intruded zone. Although the Regional Water Boards do not have authority to regulate pumping of groundwater (the State Water Board can exercise this authority through adjudication), Regional Water Board staff have acted to address the issue (see Accomplishments staff report, last page). Some actions we are taking in 2011 include:

1. Coordinating with State Board staff on possible actions in seawater intrusion areas. Regional Water Board staff have begun in 2010-11 to propose actions directly to the State Board (Regional actions as well as statewide general permits) and Regional staff can use the same approach to address sea water intrusion issues. We will be pursuing this possibility in 2011.

2. Pursuing actions by local agencies and purveyors in Los Osos to reduce salt water intrusion.
3. Working with local agencies to develop salt and nutrient management plans that include seawater intrusion in applicable basins for Board consideration by Feb 2014.
4. Working on hydromodification controls, as discussed above, to protect and increase groundwater recharge.
5. Working toward a Basin Plan Amendment to protect groundwater recharge areas, discussed in the first section, above, number 4.

Preventing Further Degradation of Groundwater Basins from Salts

1. Working with local agencies to develop salt and nutrient management plans for Board consideration by Feb 2014.
2. Including requirements to reduce or eliminate salt loading, with schedules and compliance monitoring, in the draft Irrigated Agriculture Order.
3. Including salt limits in individual waste discharge requirements.

Performance Measures

In addition to the priorities and actions summarized briefly above, we continue to prioritize all our work, to make sure we are focusing on the most important issues. We have also developed performance measures for much of our work, and we continue to develop additional performance measures where needed. Performance measures are an ongoing topic of discussion and development between the State and Regional Boards. Performance measures require data collection, and in some areas, we still need to develop data collection methods. Consequently, initial statewide performance measures are focused on measures with existing data availability. They tend to be more administrative performance measures, such as the number of permits renewed and the number of inspections performed.

In our office, we are using and developing performance measures that will better inform us of how we are doing in producing tangible results in our watersheds. For example, now that we have developed prioritization criteria for all our clean up sites, we are tracking how long it takes to initiate cleanup, and how long it takes to achieve some level of cleanup (such as eliminating the health risk), on the top priority sites. We are also identifying the actions we need to take on priority issues, and tracking whether or not we take those actions in a timely manner. In some of our tasks discussed in this report, such as the Basin Plan amendments noted above, we are taking much longer than anticipated. As another example, for our monitoring program, CCAMP (Central Coast Ambient Monitoring Program) to inform all of us of environmental outcomes, we are using measures like, "How many CCAMP data points are being used to inform our water quality control decisions?" We are working towards performance measures related to trends in watersheds - how many watersheds are monitored for trends, how many have enough data to support statistical trend analysis, and how many sites show improving trends or decreasing trends in key indicators?

We look forward to discussing these priorities and our actions with the Board.

Appendix I

Special Status Species with Potential to Occur in the Greater Monterey County Region

Source: Table 4.9-4 from EIR for Monterey County General Plan: Special-Status Plants with Potential to Occur in Monterey County

Common and Scientific Name	Status: Federal/State/CNPS	California Distribution	Habitats
Abbott's bush mallow <i>Malacothamnus abbottii</i>	SC/-/1B.1	Monterey County	Riparian scrub
Adobe sanicle <i>Sanicula maritima</i>	-/R/1B.1	Coastal Monterey and San Luis Obispo Counties. Historically known from the San Francisco Bay area: Alameda* and San Francisco* Counties	Moist clay or ultramafic soils, in meadows and grassland
Alkali milk-vetch <i>Astragalus tener</i> var. <i>tener</i>	-/-/1B.2	Southern Sacramento Valley, northern San Joaquin Valley, east San Francisco Bay Area	Grassy flats and vernal pool margins, on alkali soils, below 200'
Arroyo de la Cruz manzanita <i>Arctostaphylos cruzensis</i>	SC/-/1B.2	Coastal Monterey and San Luis Obispo Counties	Sandy soils, in coastal scrub, chaparral and oak woodland, valley and foothill grassland, below 500'
Arroyo Seco bush mallow <i>Malacothamnus palmeri</i> var. <i>lucianus</i>	SC/-/1B.2	Monterey County	Chaparral, meadows
Beach layia <i>Layia carnosa</i>	E/E/1B.1	Scattered occurrences along coastal California from Humboldt County to Santa Barbara County	Coastal dunes, coastal scrub on sandy soil
Brewer's spineflower <i>Chorizanthe breweri</i>	-/-/1B.3	South Coast Ranges, San Luis Obispo County	Rocky or gravelly areas in Sargent cypress forest, chaparral, oak woodland, coastal scrub in open areas on serpentinite soil
Bristlecone fir <i>Abies bracteata</i>	-/-/1B.3	Endemic to the Santa Lucia Range: Monterey and San Luis Obispo Counties	Lower montane coniferous forest on steep, rocky, fire-resistant slopes at 700–5,250'
Butterworth's buckwheat <i>Eriogonum butterworthianum</i>	SC/R/1B.3	Monterey County	Chaparral on sandstone
California screw-moss <i>Tortula californica</i>	-/-/1B.2	Known from Kern and Riverside Counties	Chenopod scrub, valley and foothill grassland/sandy soil, 10–100 meters
Calycadenia micrantha <i>Small-flowered calycadenia</i>	-/-1B.2	Colusa, Lake, Monterey, Napa, and Trinity Counties	Chaparral, Meadows and seeps(volcanic), Valley and foothill grassland/roadsides, rocky, talus, scree, sometimes serpentinite, sparsely vegetated areas
Caper-fruited Tropidocarpum <i>Tropidocarpum capparideum</i>	-/-/1B.1	Historically known from the northwest San Joaquin Valley and adjacent Coast Range foothills	Grasslands in alkaline hills below 1,500'
Carmel Valley bush mallow <i>Malacothamnus palmeri</i> var. <i>involucratus</i>	SC/-/1B.2	Monterey and San Luis Obispo Counties	Chaparral, oak woodland, talus hilltops and slopes, 1,200–2,200'
Carmel Valley cliff-aster	SC/-/1B.2	Monterey and Santa Barbara Counties	Rocky areas in chaparral

<i>Malacothrix saxatilis</i> var. <i>arachnoidea</i>			
Coast wallflower <i>Erysimum ammosiphilum</i>	–/–/1B.2	Coastal San Mateo, Santa Cruz, and Monterey Counties	Sandy soils and openings in maritime chaparral, coastal dunes, coastal scrub
Coastal dunes milk–vetch <i>Astragalus tener</i> var. <i>titi</i>	E/E/1B.1	Central coast, southern coast, including portions of Los Angeles*, Monterey, and San Diego Counties	Sandy soils of coastal bluff scrub, coastal dunes, coastal prairie on mesic or sandy depressions near the coast
Compact cobwebby thistle <i>Cirsium occidentale</i> var. <i>compactum</i>	–/–/1B.2	San Francisco and San Luis Obispo Counties	Chaparral, coastal dunes, coastal prairie, coastal scrub
Cone Peak bedstraw <i>Galium californicum</i> ssp. <i>luciense</i>	SC/–/1B.3	Monterey County	Broadleaved upland forest, cismontane woodland, lower montane coniferous forest
Congdon’s tarplant <i>Centromadia parryi</i> ssp. <i>congdonii</i> (formerly <i>Hemizonia</i>)	–/–/1B.2	East San Francisco Bay Area, Salinas Valley, Los Osos Valley	Annual grassland, on lower slopes, flats, and swales, sometimes on alkaline or saline soils, below 700'
Contra Costa goldfields <i>Lasthenia conjugens</i>	E/–/1B.1	Scattered occurrences in Coast Range valleys and southwest edge of Sacramento Valley, Alameda, Contra Costa, Mendocino, Monterey, Napa, Santa Barbara*, Santa Clara*, and Solano Counties.	Alkaline or saline vernal pools and swales, below 700'
Cook’s Tritelia <i>Tritelia ixioides</i> ssp. <i>cookii</i>	–/–/1B.3	San Luis Obispo County	Closed–cone coniferous forest, cismontane woodland, on serpentinite seeps
Davidson’s bush mallow <i>Malacothamnus davidsonii</i>	–/–/1B.2	Los Angeles, Monterey, and San Luis Obispo Counties	Coastal scrub, chaparral, and riparian woodland in sandy washes, 900–2,800'
Delicate bluecup <i>Githopsis tenella</i>	1B.1	Kern, Monterey, and Tulare Counties	Chaparral, Cismontane woodland/mesic
Dudley’s lousewort <i>Pedicularis dudleyi</i>	–/R/1B.2	Monterey, Santa Cruz*, San Luis Obispo, and San Mateo Counties	Maritime chaparral, North Coast coniferous forest, valley and foothill grassland
Dwarf Calycadenia <i>Calycadenia villosa</i>	–/–/1B.1	Known from 20 occurrences in interior foothills of South Coast Ranges, in San Luis Obispo and Monterey Counties. Historically in Kern County	Rocky sites in chaparral, oak woodland, juniper woodland, grasslands, open dry flats and hillsides, and alluvial fans, below 4,200'
Eastwood’s buckwheat <i>Eriogonum eastwoodianum</i>	–/–/1B.3	Fresno and Monterey Counties	Sandy or clay soils in cismontane woodland
Eastwood’s goldenbush <i>Ericameria fasciculata</i>	SC/–/1B.1	Monterey County	Sandy soils and openings in closed-cone coniferous forest, maritime chaparral, coastal dunes, coastal scrub
Fragrant fritillary <i>Fritillaria liliacea</i>	–/–/1B.2	Coast Ranges from Marin County to San Benito County	Adobe soils of interior foothills, coastal prairie, coastal scrub, annual grassland, often on serpentinite, below 1,350'
Gabilan Mountains manzanita <i>Arctostaphylos gabilanensis</i>	—/—/1B.2	Monterey and San Benito Counties	Chaparral, Cismontane woodland/granitic
Gowen cypress <i>Cupressus goveniana</i> ssp. <i>goveniana</i>	T/–/1B.2	Monterey County	Closed–cone coniferous forest, maritime chaparral
Hall’s tarplant	–/–/1B.1	Interior foothills of South Coast Ranges, in San	Oak woodland, grassland; in clay soil on flood

<i>Deinandra halliana</i>		Benito, Monterey, and San Luis Obispo counties	plains
Hardham's bedstraw <i>Galium hardhamiae</i>	-/-/1B.3	Monterey and San Luis Obispo Counties	Closed-cone coniferous forest on serpentinite substrate
Hardham's evening-primrose <i>Camissonia hardhamiae</i>	SC/-/1B.2	South coast ranges, Monterey and San Luis Obispo Counties	Chaparral, oak woodland on decomposed carbonate substrate
Hickman's checkerbloom <i>Sidalcea hickmanii</i> ssp. <i>Hickmanii</i>	-/-/1B.3	Monterey County	Chaparral
Hickman's cinquefoil <i>Potentilla hickmanii</i>	E/E/1B.1	Monterey, San Mateo, and Sonoma* Counties	Freshwater marshes, seeps, and small streams in open areas in coastal scrub or coniferous forest
Hickman's onion <i>Allium hickmanii</i>	SC/-/1B.2	Central coast: Monterey and San Luis Obispo Counties, especially Monterey Peninsula and Arroyo de la Cruz.	Closed-cone coniferous forest, maritime chaparral, coastal prairie, coastal scrub, valley and foothill grassland, generally +/- 150'
Hooked popcorn-flower <i>Plagiobothrys uncinatus</i>	-/-/1B.2	Monterey, San Benito, Santa Clara, and San Luis Obispo Counties	Chaparral, cismontane woodland, valley and foothill grassland, in sandy areas
Hooker's Manzanita <i>Arctostaphylos hookeri</i> ssp. <i>hookeri</i>	-/-/1B.2	Central coast, western San Francisco Bay region, Santa Cruz mountains and south to Carmel. Monterey and Santa Cruz Counties	Closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub on sandy substrate
Hutchinson's larkspur <i>Delphinium hutchinsoniae</i>	SC/-/1B.2	Monterey County	Broadleaved upland forest, chaparral, coastal prairie, coastal scrub
Indian Valley bush mallow <i>Malacothamnus aboriginum</i>	-/-/1B.2	Inner South Coast Ranges: San Benito, Fresno, and Monterey Counties	Rocky areas in chaparral and oak woodland, often in burned areas
Indian Valley spineflower <i>Aristocapsa insignis</i>	-/-/4 B.2	Inner south Coast Range, Monterey and San Luis Obispo Counties	Cismontane woodland on sandy substrate
Jolon clarkia <i>Clarkia jolonensis</i>	-/-/1B.2	Northern outer south coast ranges, Monterey County	Cismontane woodland
Kellman's bristle-moss <i>Orthotrichum kellmanii</i>	-/-/1B.2	Monterey, Santa Cruz, and San Mateo Counties	Chaparral, Cismontane woodland/sandstone, carbonate
Kellogg's Horkelia <i>Horkelia cuneata</i> ssp. <i>Sericea</i>	SC/-/1B.1	Coastal California from Marin to Santa Barbara Counties	Openings in closed-cone coniferous forest, coastal scrub, maritime chaparral, on sandy or gravelly soils
Late-flowered mariposa lily <i>Calochortus weedii</i> var. <i>vestus</i>	SC/-/1B.2	Outer south Coast Ranges, Western Transverse Range, Monterey, Santa Barbara, San Luis Obispo, and Ventura Counties	Chaparral, cismontane woodland, often on serpentinite
Lemmon's jewelflower <i>Caulanthus coulteri</i> var. <i>lemmonii</i>	-/-/1B.2	Southeast San Francisco Bay Area, south through the South Coast Ranges and adjacent San Joaquin Valley	Dry exposed slopes in grasslands and pinyon-juniper woodland, between 260-4,000 feet; blooms March-May
Little Sur Manzanita <i>Arctostaphylos edmundsii</i>	SC/-/1B.2	Central coast, Monterey County	Coastal bluff scrub, chaparral on sandy substrate
Maple-leaved checkerbloom <i>Sidalcea malachroides</i>	-/-/1B.3	North Coast and northern Central Coast: from Humboldt to Monterey County	Openings in coastal scrub, perennial grassland, Redwood forest, Douglas-fir forest, often in

			disturbed areas, 5–2,300'
Marsh microseris <i>Microseris paludosa</i>	–/–/1B.2	Coastal California from Mendocino County to San Luis Obispo County	Grassland, coastal scrub, closed–cone–coniferous forest, cismontane woodland
Mason neststraw <i>Stylocline masonii</i>	–/–/1B.1	Scattered locations from Monterey County to Los Angeles County	Chenopod scrub, pinyon–juniper woodland, in sandy washes, 300–3,900'
Menzies's wallflower <i>Erysimum menziesii</i> ssp. <i>Menziesii</i>	E/E/1B.1	North and Central coast: Fort Bragg, Monterey Bay, and Point Pinos areas in Mendocino and Monterey Counties	Localized on coastal dunes, on coastal strand areas in coastal scrub below 115'
Monterey clover <i>Trifolium trichocalyx</i>	E/E/1B.1	Monterey County	Closed–cone coniferous forest, openings, burned areas
Monterey cypress <i>Cupressus macrocarpa</i>	SC/–/1B.2	Monterey County	Closed–cone coniferous forest
Monterey Manzanita <i>Arctostaphylos montereyensis</i>	SC/–/1B.2	Central coast, Fort Ord, northern outer south Coast Range, Toro Mountain, northwestern Monterey County	Maritime chaparral, cismontane woodland, coastal scrub, sandy soils
Monterey pine <i>Pinus radiata</i>	SC/–/1B.1	Monterey, Santa Cruz, San Luis Obispo, and San Mateo Counties, Baja California, Guadalupe Island (Mexico)	Closed–cone coniferous forest, cismontane woodland
Monterey spineflower <i>Chorizanthe pungens</i>	T/–/1B.2	Monterey and Santa Cruz Counties	Coastal dunes
Moss (Norris' Beard–moss) <i>Didymodon norrisii</i>	–/–/2.2	Humboldt, Lake, Madera, and Tuolumne Counties	Cismontane woodland, lower montane coniferous forest/ intermittently mesic, rock, 600–1700 meters
Most beautiful jewel–flower <i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	–/–/1B.2	Eastern San Francisco Bay area, Central south coastal outer ranges. Alameda, Contra Costa, Monterey, and Santa Clara Counties	Chaparral, annual grassland, on ridges and slopes on serpentinite outcrops, 450–3,200'
Muir's tarplant <i>Carlquistia muirii</i>	–/–/1B.3	Fresno, Kern, Monterey, and Tulare Counties	Chaparral (montane), lower montane coniferous forest, upper montane coniferous forest.
Napa false indigo <i>Amorpha californica</i> var. <i>napensis</i>	–/–/1B.2	Monterey, Marin, Napa, and Sonoma Counties	Openings in broadleaved upland forest, cismontane woodland, chaparral, between 500–6,580 feet
Oval–leaved snapdragon <i>Antirrhinum ovatum</i>	–/–/4.2	Inner Coast Ranges from San Benito County to Kern and Ventura Counties	Clay or gypsum substrates (often alkaline) in chaparral, cismontane woodland, pinyon–juniper woodland, valley and foothill grassland, between 650–3,300'
Pacific Grove clover <i>Trifolium polyodon</i>	–/R/1B.1	Monterey County	Closed–cone coniferous forest, coastal prairie, meadows, valley and foothill grassland, in mesic areas
Pajaro Manzanita <i>Arctostaphylos pajaroensis</i>	–/–/1B.1	Pajaro Hills, Monterey County	Chaparral, in sandy areas
Pale–yellow layia	SC/–/1B.1	Ranges, Transverse Ranges, and Tehachapi	Cismontane woodland, pinyon– juniper

<i>Layia heterotricha</i>		mountains: Fresno, Kings*, Kern*, Monterey*, Santa Barbara, San Luis Obispo*, Ventura, and possibly San Benito Counties	woodland, grassland in open areas on alkaline or clay soils, below 5,250'
Palmer's Monardella <i>Monardella palmeri</i>	–/–/1B.2	Monterey and San Luis Obispo Counties	Chaparral, cismontane woodland on serpentinite
Pine rose <i>Rosa pinetorum</i>	–/–/1B.2	Monterey and San Mateo Counties	Closed–cone coniferous forest, up to 985'
Pinnacles buckwheat <i>Eriogonum nortonii</i>	–/–/1B.3	Monterey and San Benito Counties	Sandy soils in chaparral, valley and foothill grassland; often on recent burns
Prostrate navarettia <i>Navarretia prostrata</i>	–/–/1B.1	Western San Joaquin Valley, interior South Coast Ranges, central South Coast, Peninsular Ranges: Los Angeles, Merced, Monterey, Orange, Riverside, San Bernardino, and San Diego Counties	Vernal pools and mesic areas in coastal scrub and alkali grasslands
Purple amole <i>Chlorogalum purpureum</i> var. <i>purpureum</i>	T/–/1B.1	Northeastern outer south Coast Ranges, eastern Santa Lucia Mountains, Monterey County	Cismontane woodland, valley and foothill Grassland
Rayless ragwort <i>Senecio aphanactis</i>	–/–/2.2	Scattered locations in central western and southwestern California, from Alameda County to San Diego County	Oak woodland, coastal scrub, open sandy or rocky areas, on alkaline soils; 15–800 meters
Recurved larkspur <i>Delphinium recurvatum</i>	–/–/1B.2	San Joaquin Valley and central valley of the South Coast Ranges, Contra Costa County to Kern County	Subalkaline soils in annual grassland, saltbush scrub, cismontane woodland, and vernal pools
Robust spineflower <i>Chorizanthe robusta</i> var. <i>robusta</i>	E/–/1B.1	Coastal central California, from San Mateo to Monterey County	Coastal bluff scrub, coastal dunes openings in cismontane woodland, on sandy soil
Saline clover <i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	–/–/1B.2	Sacramento Valley, central western California	Salt marsh, mesic alkaline areas in grasslands, vernal pools
San Antonio collinsia <i>Collinsia antonina</i>	–/–/1B.2	Monterey County	Chaparral, Cismontane woodland
San Benito fritillary <i>Fritillaria viridea</i>	–/–/1B.2	Central Coast Ranges in San Benito, Monterey, and San Luis Obispo counties	Serpentinite outcrops, on slopes, in chaparral, 650–5,000'
San Francisco collinsia <i>Collinsia multicolor</i>	–/–/1B.2	Coastal California from San Francisco to Monterey County	Closed–cone coniferous forest, coastal scrub
San Luis Obispo sedge <i>Carex obispoensis</i>	–/–/1B.2	Outer South Coast Ranges in San Luis Obispo County	Sargent cypress forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland; often on serpentinite seeps
San Simeon Baccharis <i>Baccharis plummerae</i> ssp. <i>Glabrata</i>	–/–/1B.2	Central coast, San Luis Obispo County	Coastal scrub
Sand gilia <i>Gilia tenuiflora</i> ssp. <i>Arenaria</i>	E/T/1B.2	Monterey County	Sandy soils in maritime chaparral, cismontane woodland, coastal dunes, coastal scrub
Sandmat manzanita <i>Arctostaphylos pumila</i>	SC/–/1B.2	Central coast, especially Monterey Bay, Monterey County	Openings in closed–cone coniferous forest, maritime chaparral, cismontane woodland,

			coastal dunes, and coastal scrub, in sandy areas
Santa Cruz clover <i>Trifolium buckwestiorum</i>	–/–/1B.1	San Francisco Bay area and central coastal California, Endemic to Santa Cruz County, also known from Monterey and Sonoma Counties	Moist grassy areas on margins of broadleaved upland forest, cismontane woodland, and coastal prairie, sometimes in disturbed areas, 200–1,800'
Santa Cruz Microseris <i>Stebbinsoseris decipiens</i>	–/–/1B.2	Coastal California: scattered occurrences from Marin County to Monterey County	Grasslands, coastal prairie, and open grassy areas in other habitat types
Santa Cruz tarplant <i>Holocarpha macradenia</i>	T/E/1B.1	Coastal slope of the Santa Cruz Mountains, Monterey and Santa Cruz Counties	Coastal terrace grasslands on light sandy to sandy clay soils, below 300 feet
Santa Lucia bedstraw <i>Galium clementis</i>	–/–/1B.3	Monterey County	Lower and upper montane coniferous forest on granitic or serpentinite, rocky substrates
Santa Lucia bush mallow <i>Malacothamnus palmeri</i> var. <i>palmeri</i>	–/–/1B.2	San Luis Obispo and possibly Monterey Counties	Rocky places in chaparral
Santa Lucia mint <i>Pogogyne clareana</i>	–/E/1B.2	Monterey County	Riparian woodland
Seaside bird's-beak <i>Cordylanthus rigidus</i> ssp. <i>Littoralis</i>	SC/E/1B.1	Central and southern central coast, Monterey and Santa Barbara Counties	Closed-cone coniferous forest, maritime chaparral, cismontane woodland, coastal dunes, coastal scrub; on sandy soils, often disturbed sites
Shining Navarretia <i>Navarretia nigelliformis</i> ssp. <i>Radians</i>	–/–/1B.2	Interior foothills of South Coast Ranges from Merced County to San Luis Obispo County	Mesic areas with heavy clay soils, in swales and clay flats; in oak woodland, grassland
Showy madia <i>Madia radiata</i>	–/–/1B.1	Scattered populations in the interior foothills of the south Coast Ranges: Contra Costa, Fresno, Kings, Kern, Monterey, Santa Barbara, San Benito, San Joaquin, and San Luis Obispo Counties	Oak woodland, grassland, slopes below 3,000'
Slender Pentachaeta <i>Pentachaeta exilis</i> ssp. <i>Aeolica</i>	SC/–/1B.2	Monterey and San Benito Counties	Cismontane woodland, valley and foothill grassland
Straight-awned spineflower <i>Chorizanthe rectispina</i>	–/–/1B.3	Outer south coast ranges: Monterey, Santa Barbara, and San Luis Obispo Counties	Chaparral, coastal scrub, oak woodland; often on granitic soils, between 1,165–3,400 feet
Talus fritillary <i>Fritillaria falcate</i>	–/–/1B.2	South inner coast ranges. Alameda, Monterey, San Benito, Santa Clara, and Stanislaus Counties	Chaparral, oak woodland, closed-cone coniferous forest, on serpentinite talus
Tear Drop moss <i>Dacryophyllum falcifolium</i>	–/–/1B.3	Monterey, Santa Cruz	North Coast coniferous forest/carbonate
Temblor buckwheat <i>Eriogonum temblorense</i>	SC/–/1B.2	Kern, Monterey, and San Luis Obispo Counties	Valley and foothill grassland on clay or sandstone substrate
Tidestrom's lupine <i>Lupinus tidestromii</i>	E/E/1B.1	Coastal Monterey, Marin, and Sonoma Counties	Coastal dunes, coastal dune scrub
Umbrella larkspur <i>Delphinium umbraculorum</i>	–/–/1B.3	Monterey, Santa Barbara, San Luis Obispo, and Ventura Counties	Moist areas in cismontane woodland
Yadon's rein orchid <i>Piperia yadonii</i>	E/–/1B.1	Monterey County	Coastal bluff scrub, closed-cone coniferous forest, maritime chaparral, on sandy soils

Yadon's wallflower <i>Erysimum menziesii</i> ssp. <i>Yadonii</i>	E/E/1B.1	Monterey County	Coastal dunes
Yellow-flowered Eriastrum <i>Eriastrum luteum</i>	–/–/1B.2	Monterey and San Luis Obispo Counties	Broadleaved upland forest, chaparral, cismontane woodland

Note: For the purposes of the EIR, CEQA-defined special-status species are defined to include both listed and non-listed species that are candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS or that otherwise meet the definitions of rare or endangered under CEQA based on substantial evidence.

Status explanations:

Federal

E = listed as endangered under the federal Endangered Species Act.

T = listed as threatened under the federal Endangered Species Act.

SC = considered a species of concern by the Fish and Wildlife Service

– = no listing.

State

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

R = listed as rare under the California Endangered Species Act.

– = no listing.

California Native Plant Society (CNPS)

1B = List 1B species: rare, threatened, or endangered in California and elsewhere.

2 = List 2 species: rare, threatened, or endangered in California but more common elsewhere.

3 = List 3 species: more information is needed for this plant.

– = no listing.

.1 = seriously endangered in California

.2 = fairly endangered in California

.3 = not very endangered in California

* Populations uncertain or extirpated in the county indicated

Appendix J

Non-native Invasive Species Found in the Greater Monterey County Region

The following describes invasive non-native plant and animal species known to occur in the Greater Monterey County Integrated Regional Water Management region, compiled from various sources (as noted).

***From the Monterey County Agricultural Commissioner's website 8/30/11:
<http://ag.co.monterey.ca.us/pages/invasive-weeds>***

The rich soils and moderate climate of Monterey County make it an ideal place for invasive weed species to colonize. Invasive weeds are usually able to out-compete local native plant species for water and space because they are more prolific, have more vigorous growth, and lack predators that would otherwise help to keep them in check. They degrade habitat for other wildlife, domestic animals, recreation, and other land use activities. The agricultural industry is particularly affected by weeds; their control expense is ultimately passed on to the consumer. Weeds affect everyone, either directly or indirectly. The Agricultural Commissioner collaborates with CDFA and the University of California in the introduction and release of biological control agents throughout the county. An example of local biological pest control methods for weeds includes insects to control yellow star thistle.

Monterey County Weed Threats:

- Fertile Capeweed (*Arctotheca calendula*), rated as an "A" species by the State Department of Food and Agriculture.
- French Broom (*Genista monspessulana*), found primarily along the coast and northern Monterey County.
- Cape Ivy (*Delairia odorata*). Cape Ivy has become or is rapidly becoming an ecological disaster in most of the riparian or stream-side areas of the County, especially along the coast. This plant is capable of forming a dense vine-like growth that completely smothers all underlying vegetation.
- Arundo (*Arundo donax*): Arundo is becoming a dominant plant along the Salinas River where it is crowding out native species. Where it occurs in a river, it can restrict stream flow and enhance flooding.
- Pampas Grass (*Cortaderia selloana*)
- Purple Pampas Grass (*Cortaderia jubata*), considered to be more invasive and more prevalent in this county than other species of Pampas Grass. Most purple pampas grass infestations are seen along the coastal areas.
- Yellowstar-thistle (*Centaurea solstitialis*): Unquestionably the most serious rangeland noxious weed in the County.
- Veldt Grass (*Ehrharta calycina*)
- Taurian Thistle (*Onopordum tauricum*, rated as an "A" species by the State Department of Food and Agriculture.
- Puna Grass (*Achnatherum brachychaetum*)
- Skeletonweed (*Chondrilla juncea*), rated as an "A" species by the State Department of Food and Agriculture.
- Scotch Thistle (*Onopordum acanthium*), rated as an "A" species by the State Department of Food and Agriculture.

From Brad Oliver, Staff Biologist, Monterey County Agricultural Commissioner's Office (Comment on the Ag Commissioner List, email communication September 6, 2011):

Some other invasive ones that we don't have on the website could be considered to be of importance countywide and may be familiar to many folks: Kikuyu grass (*Pennisetum clandestinum*), Bermuda buttercup (*Oxalis pes-caprae*), iceplant (*Carpobrotus edulis*), fennel (*Foeniculum vulgare*), tamarisk (*Tamarix parviflora*), Italian thistle (*Carduus pycnocephalus*), and perennial pepperweed (*Lepidium latifolium*). ...For a marine non-native invasive plant, the wakame (*Undaria pinnatifida*), which is under eradication in Monterey Bay.

From Nikki Nedeff, Ecological Consultant (conversation June 10, 2011) – Nikki adds:

- Sticky eupatorium (*Ageratina adenophora*)

From Laura Lee Lienk, Executive Director, CSUMB Return of the Natives (email September 1, 2011) – Laura Lee adds:

- Iceplant *Carpobrotus edulis* found mainly near coast and responsible for crowding out native vegetation and associated fauna
- Fennel *Foeniculum vulgare* a rapid colonizer of disturbed spaces whose roots emit chemicals inhibiting the growth of other plants.
- Italian Thistle *Carduus pycnocephalus* a rapid colonizer of disturbed spaces, inland, ie., Carmel Valley

From SIMoN website: <http://www.sanctuarysimon.org/monterey/sections/other/invasives.php>

An "invasive species" is defined as one that is 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. ... Nonindigenous species may threaten the diversity or abundance of native species, alter the natural functioning of ecosystems, disrupt species interactions, and negatively impact commercial and recreational activities that rely on native marine resources. Found in MBNMS (for example):

- Wakame (*Undaria pinnatifida*)
- European green crab (*Carcinus maenas*)

From Elkhorn Slough website: <http://www.elkhornslough.org/research/aquaticinvaders/aquatic0.htm>

Below are the two dozen "least wanted" invasive species for the Monterey Bay region.

- Caulerpa (*Caulerpa taxifolia*)
- Wakame (*Undaria pinnatifida*)
- Smooth Cordgrass (*Spartina alterniflora*)
- Black Sea Jellyfish (*Maeotias inexpectata*)
- Spotted Jellyfish (*Phyllorhiza punctata*)
- Striped Barnacle (*Balanus amphitrite*)
- Red Swamp Crayfish (*Procambarus clarkii*)
- American Lobster (*Homarus americanus*)
- Chinese Mitten Crab (*Eriocheir sinensis*)
- Harris Mud Crab (*Rhithropanopeus harrisi*)
- Eastern Mud Snail (*Ilyanassa obsoleta*)
- Channeled Whelk (*Busycotypus canaliculatus*)
- Veined Rapa Whelk (*Rapana venosa*)
- Atlantic Ribbed Mussel (*Ischadium demissum*)
- Green Mussel (*Perna spp.*)
- Northern Quahog (*Mercenaria mercenaria*)
- False Angelwing (*Petricolaria pholadiformis*)
- Winged Oyster (*Pteria sterna*)

- Asian Clam (*Potamocorbula amurensis*)
- Northern Pacific Seastar (*Asterias amurensis*)
- Spaghetti Bryozoan (*Zoobotryon verticillatum*)
- Mediterranean Fan Worm (*Sabella spallanzanii*)
- Chameleon Goby (*Tridentiger trionocephalus*)
- Diamondback Terrapin (*Malaclemys terrapin*)

Harmful non-native animal species from conversation with Nikki Nedeff, Ecological Consultant (June 10, 2011):

- Red squirrels
- Red fox
- Bullfrogs

From California Department of Fish and Game website September 1, 2011:

http://www.dfg.ca.gov/wildlife/nongame/nuis_exo/ferret/ferret_issues_4.html

Most of the more than 50 non-native species of terrestrial mammals, birds, reptiles, and amphibians that now breed in the wild in California are kinds that were imported for pet, menagerie, or ornamental purposes and eventually escaped or were purposely released. California is now home to feral breeding populations of many types of domestic animals that had been released or escaped into the wild. Of the 22 species of non-native mammals that now exist in established breeding populations in California, 9 (over 40%) are from domestic stock: domestic rabbit, house cat, horse, burro, cattle, domestic sheep, swine, domestic goat, and fallow deer.

In assessing "the relative importance of habitat destruction, alien species, pollution, overexploitation, and disease" in the U.S., Wilcove et al. (1998) found that "... habitat loss is the top-ranked threat (in terms of the number of species it affects) for all species groups. Competition with or predation by alien species is the second-ranked threat in the overall analysis, affecting 49% of imperiled species."

From CA DFG website: http://www.dfg.ca.gov/wildlife/nongame/nuis_exo/exo_spp.html

Non-Native & Nuisance Terrestrial Vertebrates

From "A Check-List of the Amphibians, Reptiles, Birds, and Mammals of California" by W.E. Grenfell, Jr., et al. Wildlife Habitat Relationships Program, California Department of Fish and Game, 2001.

Status Code:

I	Introduced to California
I?	Introduced to California; it is not known if populations are viable through time

Amphibians

Common Name	Scientific Name	Status	Footnotes
Ambystomatidae (Mole Salamanders and relatives)			
Ranidae (True Frogs)			
Rio Grande Leopard Frog	<i>Rana berlandieri</i>	I	
Bullfrog	<i>Rana catesbeiana</i>	I	
Pipidae (Pipid Frogs)			
African Clawed Frog	<i>Xenopus laevis</i>	I	

Reptiles

Common Name	Scientific Name	Status	Footnotes
Chelydridae (Snapping Turtles)			
Snapping Turtle	Chelydra serpentina	I	
Emydidae (Box and Water Turtles)			
Painted Turtle	Chrysemys picta	I	
Slider	Pseudemys (Trachemys) scripta	I	
Trionychidae (Softshell Turtles)			
Spiny Softshell	Trionyx spiniferus	I	
Colubridae (Colubrids)			
Diamondback Water Snake	Nerodia rhombifer	I	

Birds

Common Name	Scientific Name	Status	Footnotes
Anatidae (Swans, Geese, and Ducks)			
Mute Swan	Cygnus olor	I	
Phasianidae (Quails, Pheasants, and relatives)			
Chukar	Alectoris chukar	I	
Ring-necked Pheasant	Phasianus colchicus	I	
Common Peafowl	Pavo cristatus	I	
White-tailed Ptarmigan	Lagopus leucurus	I	
Wild Turkey	Melegris gallopavo	I	
Columbidae (Pigeons and Doves)			
Rock Dove	Columba livia	I	
Eurasian Collared Dove	Streptopelia decaocto	I?	
Spotted Dove	Streptopelia chinensis	I	
Psittacidae (Lories, Parakeets, Macaws, and Parrots)			
Rose-winged Parakeet	Psittacula krameri	I?	
Blue-crowned Parakeet	Aratinga auticaudata	I	
Mitred Parakeet	Aratinga mitrata	I	
Red-masked Parakeet	Aratinga erythrogenys	I	
Black-hooded Parakeet	Nandayus nendey	I	
White-winged (Canary-winged) Parakeet	Brotogeris versicolurus	I?	
Yellow-chevroned Parakeet	Brotogeris chiriri	I	
Red-crowned Parrot	Amazona viridigenalis	I?	
Lilac-crowned Parrot	Amazona finschi	I?	
Yellow-headed Parrot	Amazona oratrix	I?	
Sturnidae (Starlings)			
European Starling	Sturnus vulgaris	I	
Emberizidae (Wood Warblers, Sparrows, Blackbirds, and relatives)			
Northern Cardinal	Cardinalis cardinalis	I	Cardinals are native to California only marginally in the Colorado River Valley, other populations are of introduced subspecies.
Passeridae (Old World Sparrows)			
House Sparrow	Passer domesticus	I	
Ploidae (Weavers and Allies)			

Orange Bishop	Euplectes franciscanus	I?	
Estrildidae (Waxbills and Allies)			
Nutmeg Manakin	Lonchura punctulata	I?	

Mammals

Common Name	Scientific Name	Status	Footnotes
Didelphidae (Opossums)			
Virginia Opossum	Didelphis virginiana	I	
Leporidae (Rabbits and Hares)			
European Rabbit	Oryctolagus cuniculus	I	
Sciuridae (Squirrels, chipmunks, and Marmots)			
Eastern Gray Squirrel	Sciurus carolinensis	I	
Eastern Fox Squirrel	Sciurus niger	I	
Castoridae (Beavers)			
Beaver	Castor canadensis	I	*Some populations were introduced into the Sierra Nevada and Southern California from stock taken from Oregon and Washington.
Cricetidae (Native Mice, Rats, and Voles)			
Muskrat	Onatra zibethicus	I	*Some populations in California were introduced.
Muridae (Old World Rats and Mice)			
Black Rat	Rattus rattus	I	
Norway Rat	Rattus norvegicus	I	
House Mouse	Mus musculus	I	
Canidae (Foxes, Wolves, and relatives)			
Red Fox	Vulpes vulpes	I	Red foxes native to California are of the subspecies V.v. necator. Members of other subspecies of red fox have been introduced to California.
Felidae			
Domestic Cat	Felis cattus	I	
Equidae (Horses)			
Feral Horse	Equus caballus	I	
Feral Burro	Equus assinus	I	
Burchell's Zebra	Equus burchelli	I	
Suidae (Pigs)			
Wild Pig	Sus scrofa	I	
Cervidae (Deer, Elk, and relatives)			
Wapiti or Elk	Cervus elaphus	I	*Elk native to California are Roosevelt (C.e. roosevelti) and tule (C.e. nannodes)) elk. Rocky Mountain elk (C.e. nelsoni) have been introduced to California.
Fallow Deer	Cervus dama	I	
Sambar	Cervus unicolor	I	
Axis Deer	Cervus axis	I	

Bovidae (Sheep, Goats, an relatives)			
Feral Cattle	Bos taurus	I	
Bison	Bison bison	I	
Blackbuck	Antilope cervicapra	I	
Barbary Sheep	Ammotragus lervia	I	
Himalayan Tahr	Hemitragus jemlahicus	I	
Feral Goat	Capra hircus	I	

Appendix K

The Role of Natural Habitat in Coastal Vulnerability and Adaptation Planning within the Greater Monterey County Region

September 2012

Authors: Katie Arkema, Meg Caldwell, Anne Guerri, Eric Hartge, Suzanne Langridge, Erin Prahler, Mary Ruckelshaus, Gregg Verutes.

Organizations: Natural Capital Project and Center for Ocean Solutions

To support decision-makers in their efforts to manage coastal resources in our changing world, The Natural Capital Project and the Center for Ocean Solutions have engaged with the Greater Monterey County Integrated Regional Water Management (GMC IRWM) planning team to assess the effects of coastal adaptation strategies and climate scenarios on the ecosystem services provided by coastal and nearshore environments. This project 1) assessed the physical vulnerability of the coast to hazards such as erosion and inundation, and 2) assessed the vulnerability of relevant infrastructure, land use types and coastal communities. This assessment can be used to identify areas for future analysis and inform project prioritization and funding. Analysis of these vulnerabilities was developed through the use of the Integrated Valuation of Environmental Services and Tradeoffs (InVEST) decision support tool—a family of tools to map and value the goods and services provided by nature. The Coastal Vulnerability¹ model was utilized for this project.

Introduction

The impacts from climate change to California's coast are evident in Monterey County. As noted in the *Climate Change Handbook for Regional Water Planning*,² sea level rise will impact the shoreline in many ways such as the increased severity of coastal erosion, the increased likelihood of coastal structure failure, and the increased likelihood of the inundation of coastal infrastructure due to storm surge. These sea level rise impacts may be enhanced by a potential increase in storm wave intensity.

In spite of these increased impacts, human activity in the ocean and along the coast continues to grow. Faced with a changing climate and this growing intensity of human activities, coastal communities must understand how development and modifications of the biological and physical environment can affect their exposure to storm-induced erosion, flooding, and inundation, both now and in future sea level rise scenarios. The InVEST Coastal Vulnerability model produces a qualitative estimate of such exposure. The model maps the location and vulnerability of populations, land use, and infrastructure near coastlines using a Vulnerability Index, which differentiates areas with relatively high or low exposure to erosion and inundation during storms. In addition, the Index can highlight the protective services offered by natural habitats—such as wetlands, dunes, and kelp forests—to coastal populations.

Methods

The Vulnerability Index produced by the Coastal Vulnerability model is the qualitative estimate of exposure to erosion and flooding. It is based on seven physical and biological characteristics of the region—geomorphology, natural habitats, relief, wave exposure, wind exposure, surge potential, and sea level change—which are ranked according to their potential for increasing or decreasing coastal hazards (Figure 1). The Coastal Vulnerability model can be used to qualitatively assess where the protective role

¹ http://ncp-dev.stanford.edu/~dataportal/invest-releases/documentation/current_release/#marine-models

² United States Environmental Protection Agency Region 9, and California Department of Water Resources (US EPA and DWR). 2011. *Climate Change Handbook for Regional Water Planning*. Available <http://www.water.ca.gov/climatechange/CCHandbook.cfm>

of natural habitats has the capacity to reduce the vulnerability of coastal communities and infrastructure. The model does not take into account coastal processes that are unique to a region, nor does it predict long- or short-term changes in shoreline position or configuration.

This analysis included two other qualitative indices, an Erosion Index and an Inundation Index, combining the physical and biological variables from the Vulnerability Index that contribute to erosion or wind-generated surge respectively. The Erosion Index combines the geomorphology, wave exposure, and natural habitat rankings. The Inundation Index combines the relief, wind exposure, surge potential, sea level rise, and natural habitat rankings. The Inundation Index accounts *only* for variables that might affect wind-generated surge (wind induced rise of the water level) and does *not* include effects of inundation from wave run-up (which is dependent on beach foreshore slope and offshore wave characteristics) or flooding from inland sources. Data for the model were collected from various sources (Table 1).

Table 1: Data inputs for InVEST Coastal Vulnerability model

Data inputs	Data source
Geomorphology	NOAA Digital Coast; Coastal Sediment Management Group website
Relief	National Map Seamless Server USGS
Dunes	Coastal Sediment Management Group website
Wetland	National Wetlands Inventory
Kelp	California Department of Fish and Game
Sea level change	California Interim Guidelines
Wind and wave exposure	Scripps Institute of Oceanography, Coastal Data Information Program

In the GMC IRWM region (Figure 2) the InVEST tool assessed the physical vulnerability to coastal hazards under three climate and two habitat scenarios using the Vulnerability Index, Erosion Index, and Inundation Index. By pairing each of the three climate scenarios with the two habitat scenarios, the analysis evaluated six total scenarios. This information was supplemented with data on prime agriculture on the coast (using the California Farmland Monitoring and Mapping data) and coastal communities (using US 2010 Census data at the census block group scale). The climate scenarios follow the State of California Sea-Level Rise Interim Guidance Document:³ 1) Baseline (Year 2000 sea level), 2) 14 inches by 2050, and 3) 55 inches by 2100. The habitat types included in the two habitat scenarios are 1) the current distribution of high (≥ 5 m) and low (< 5 m) dunes, emergent marsh (National Wetland Inventory data), and kelp (composite layer of Department of Fish Game aerial survey data 2000-2010), and 2) none of these habitats (Figure 3). These habitats were chosen according to their ability to protect the coast from erosion and flooding.

To map and interpret the Vulnerability Index values the GMC region coastline was divided into 50 m² segments and classified as highest, medium high, medium low or lowest vulnerability based on the quartiles of the full distribution of Vulnerability Index values (across all coastline segments for all six scenarios) (Table 2). This process was repeated to classify the Erosion and Inundation Indices respectively based on the quartiles of the full distribution of the Erosion Index and Inundation Index values across the different scenarios (Table 2). The Erosion and Inundation Indices are not additive.

³ Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT). 2010. State of California Sea-Level Rise Interim Guidance Document. <http://www.opc.ca.gov/2011/07/sea-level-rise-task-force-interim-guidance-document/>

However, they can suggest where erosion or wind-generated surge is the more important factor driving the Vulnerability Index.

Table 2: Quartile distribution of erosion, inundation, and vulnerability indices

	Erosion Index	Inundation Index	Vulnerability Index
Lowest	<1.34	<1.8	<3.06
Medium low	1.34–1.83	1.8–2.83	3.06–5.10
Medium high	1.83–2.36	2.83–4.24	5.10–9.58
Highest	>2.36	>4.24	>9.58

Although there is very limited water infrastructure spatial data for the GMC IRWM region, locations of people and agricultural land can suggest where the greatest concentration of water infrastructure is located. To assess the vulnerability of populations to coastal hazards, coastal segments with the highest Vulnerability Index values were selected. Then the ArcGIS Focal Statistics tool determined the average number of people at each of these 50 m² segments within a 1 km distance inland. To assess the vulnerability of prime farmland to coastal hazards, coastal segments with the highest vulnerability were selected and used to determine the number of segments within 1 km of prime farmland. In addition, available water infrastructure data were mapped for the Northern GMC region and used to determine the number of water infrastructure within 1 km of the highest vulnerability sections of the coast.

Results

Impact of Sea Level Rise on Vulnerability

The model results suggest that physical vulnerability of the GMC IRWM coastal region will increase with sea level rise (Figures 4, 5, 6 and 7), with a more than 25% increase in coastal segments that are in the highest vulnerability category with a 55-inch rise in sea level, even with habitat protection (Table 3). Associated with this increase in physical vulnerability with sea level rise is a higher percentage of people and prime agricultural land that will be highly vulnerable to erosion and flooding (Tables 4 and 5). Our analysis of the limited water infrastructure data available in the Northern GMC region suggests that with a 55-inch rise in sea level without habitat protection more than 40% of infrastructure within 1 km of the coast is within 1 km of the highest vulnerability sections of the coast (Figure 8). This analysis would benefit from the inclusion of comprehensive and specific water infrastructure data.

Table 3: Percent of highest vulnerability segments of the coast

Scenario	2000 Sea Level	14" Sea Level Rise	55" Sea Level Rise
With habitat	8%	26%	36%
Without habitat	16%	29%	40%

Table 4: Percent of coastal segments within 1 km of “Prime Agricultural” land with highest vulnerability values

Scenario	2000 Sea Level	14" Sea Level Rise	55" Sea Level Rise
With habitat	23%	33%	35%
Without habitat	32%	33%	37%

Table 5: Percent of people within 1 km of the coast that are within 1 km of the highest vulnerability segments (number of people within 1 km of highest vulnerability coastal segments).

Scenario	2000 Sea Level	14" Sea Level Rise	55" Sea Level Rise
With habitat	14% (10,000)	46% (32,000)	51% (36,000)
Without habitat	37% (26,000)	49% (34,000)	54% (39,000)

Key message: The Coastal Vulnerability model results suggest that sea level rise predicted through 2100 will lead to an increase in vulnerability, and a greater than 25% increase in coastal segments that are in the highest vulnerability category.

The Role of Natural Habitat in Mitigating Vulnerability

One strategy to reduce vulnerability is to protect the habitats that play a role in protecting infrastructure and people, such as wetlands and dunes. The InVEST Coastal Vulnerability model results indicate that habitats play the greatest protective role for communities and prime agriculture in the areas with the highest vulnerability—Moss Landing, Marina and Seaside (Figure 4, 5, 6, 7). These analyses suggest prioritizing areas within this region for habitat conservation and restoration. The results also suggest that wetland areas in the Elkhorn Slough and Salinas River region are particularly important for reducing vulnerability.

In the Northern GMC IRWM region, the presence of the highest vulnerability segments in the outer coastal region appears to be generally driven by erosion factors in the model. However, many of the Erosion Index values in this area increase from medium low to highest erosion ranking without the protective services the dune habitat in this region (Figure 9). These results suggest a focus on protecting and restoring dunes, which can protect inland communities from flooding.

Higher vulnerability segments in Elkhorn Slough and the Salinas River appear to be generally driven by wind-generated surge. However, the effect of wind-generated surge is increased without the protective services of wetland habitats in this region. (Figure 10). Wetlands attenuate waves and stabilize shorelines for protection against surge.⁴ It is important to note that inundation due to storm surge is a complex function of wave size, wave speed, shore topography, shore geography, and slope of the ocean bottom. The Inundation Index only accounts for wind-generated surge, and does not account for wave run-up. The Inundation Index also does not account for inland flooding. However, the *Climate Change Handbook for Regional Water Planning* states that increased storm severity will lead to more severe floods,⁵ suggesting that these wetland regions would be even more vulnerable to flooding than just by wind-generated surge.

Key Message: Coastal Vulnerability model results suggest that coastal habitats will play a key role in reducing the vulnerability of people and prime agricultural land to coastal erosion and flooding.

⁴ Shepard CC, Crain CM, Beck MW (2011) The Protective Role of Coastal Marshes: A Systematic Review and Meta-analysis. PLoS ONE 6(11): e27374. doi:10.1371/journal.pone.0027374

⁵ United States Environmental Protection Agency Region 9, and California Department of Water Resources (US EPA and DWR). 2011. Climate Change Handbook for Regional Water Planning. Page 4-12

Summary and Next Steps

Many response strategies regarding coastal water infrastructure development and defense are made without the benefit of both climate change and coastal protection effects on a broad range of benefits that people expect and need from well-functioning coastal ecosystems. In order to strategically shape decisions about coastal adaptation in ways that meet coastal defense objectives while also protecting or restoring coastal habitats and the full suite of services those habitats provide to people, communities must understand the costs and benefits of different adaptation responses.

The InVEST Coastal Vulnerability model results suggest that coastal habitats will play a key role in reducing the vulnerability of people and prime agricultural land to coastal erosion and flooding. Nature-based approaches to adaptation aim to preserve and restore coastal habitats such as wetlands, dunes and kelp with an outcome that is possibly less costly and less damaging to coastal ecosystems while also more resilient and flexible—allowing for adaptive management in the context of a changing climate.

Future work should focus on a few of the most vulnerable areas and habitats to examine the effects of climate change impacts and alternative adaptation strategies (e.g., restoration and conservation, relocation or retreat, infrastructure investment) and the costs and benefits associated with these adaptation approaches. Ultimately this information can be used to inform the design and execution of IRWM projects to address climate adaptation considerations and support the sustainability of local ecosystems and the benefits provided to people.

Summary:

- Coastal Vulnerability model results suggest that sea level rise predicted through 2100 will lead to an increase in vulnerability and a more than 25% increase in coastal segments that are in the highest vulnerability category.
- Coastal Vulnerability model results suggest that coastal habitats will play a key role in reducing the vulnerability of people and prime agricultural land to coastal erosion and flooding.
- In order to fully evaluate water infrastructure vulnerability and adaptation strategies, comprehensive water infrastructure data must be collected and analyzed for vulnerability to climate change.
- Future work should evaluate the costs and benefits of alternative adaptation strategies such as restoration and conservation, relocation or retreat, or infrastructure investment.

The Role of Natural Habitat in Coastal Vulnerability and Adaptation Planning Figures

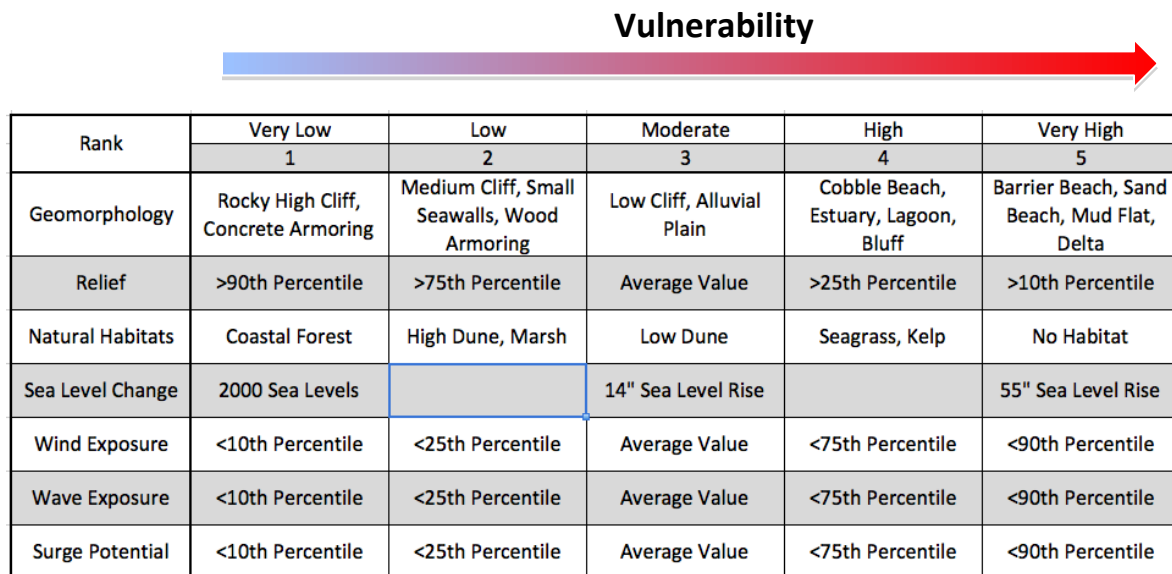


Figure 1. Data Inputs for Coastal Vulnerability Model. Using various input datasets for each of the seven biological and physical variables (Table 1), the tool generates absolute values for each of the variables (e.g., distance to shelf, average elevation in meters, wave power) for each 50 m² segment of GMC IRWM region coastline. The tool then ranks each segment of coastline for each variable from very low exposure (Rank=1) to very high exposure (Rank=5) to coastal hazards. Ranks for geomorphology and habitats are absolute and depend on categorical variables. Ranks for the other five variables are relative and depend on the distribution of values for all coastline segments. The tool then estimates exposure to coastal hazards for each shoreline segment:

$$\text{Vulnerability Index} = \sqrt{\frac{R_{\text{Habitats}} R_{\text{Geomorphology}} R_{\text{Relief}} R_{\text{SLR}} R_{\text{Wind}} R_{\text{Waves}} R_{\text{Surge Potential}}}{7}}$$

where R is rank, and subscripts for each rank indicate one of the seven variables. The value of seven is derived from the number of variables.

In those segments of shoreline where man-made armoring structures (e.g., sea walls, rock walls, revetments) were identified as geomorphic features we used a two-step process to account for the structures. First, structures were categorized as either concrete or wood. Second, those segments of the shoreline backed by concrete coastal structures were assigned a rank of 1 and those segments of the shoreline backed by wood armoring structures were assigned a rank of 2.

For more specific information about the model please see: http://ncp-dev.stanford.edu/~dataportal/invest-releases/documentation/current_release/#marine-models.

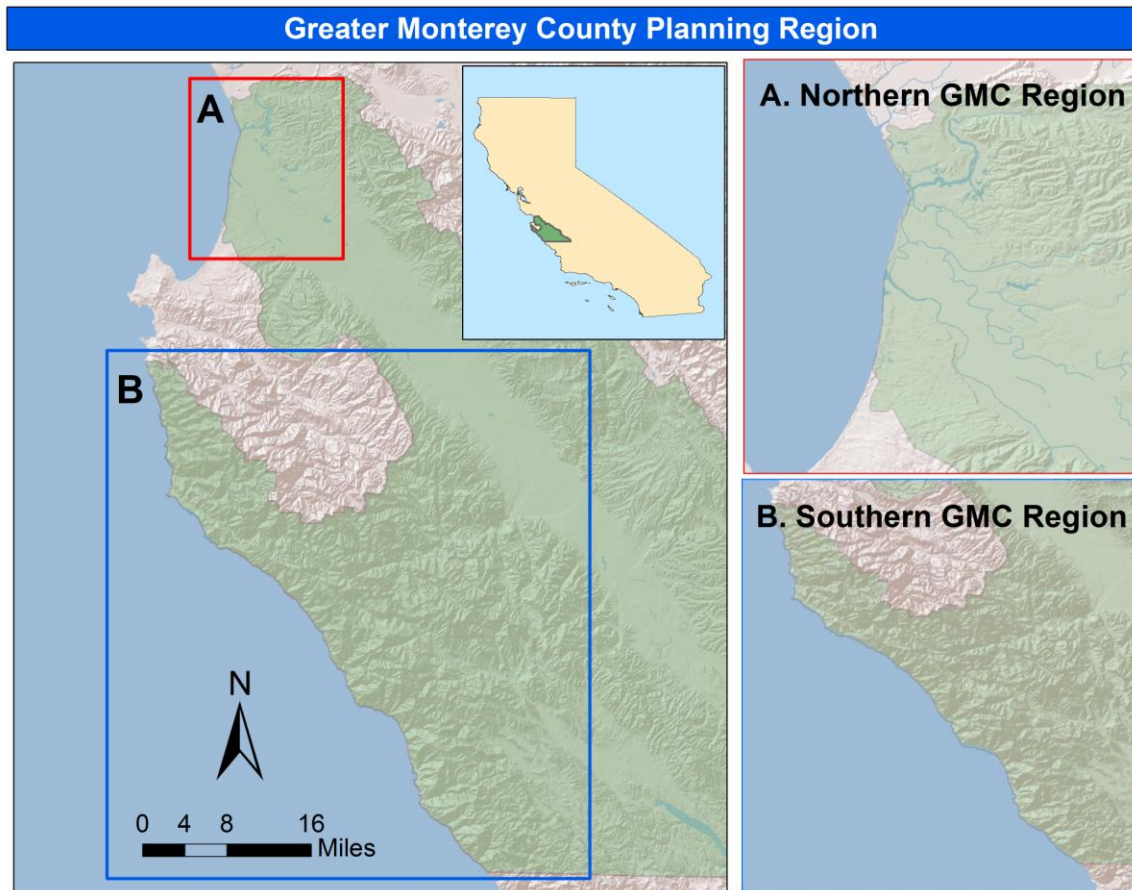
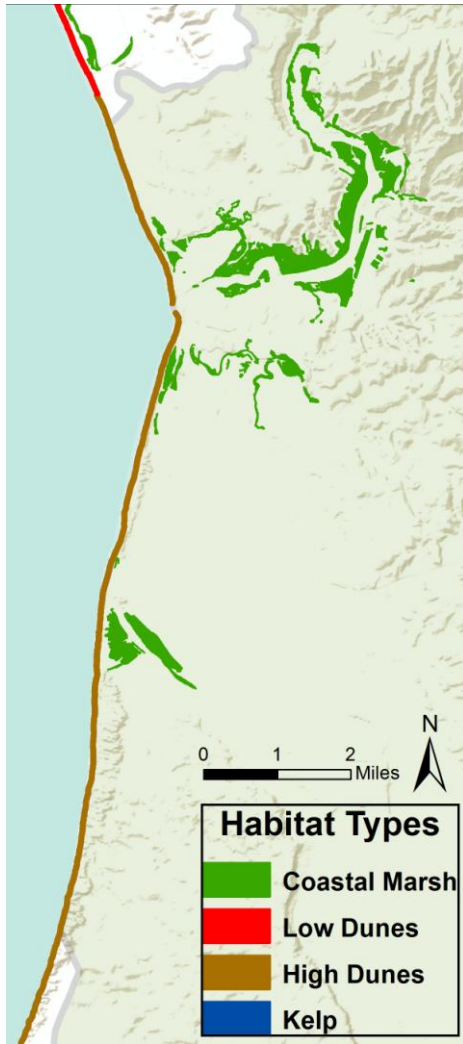
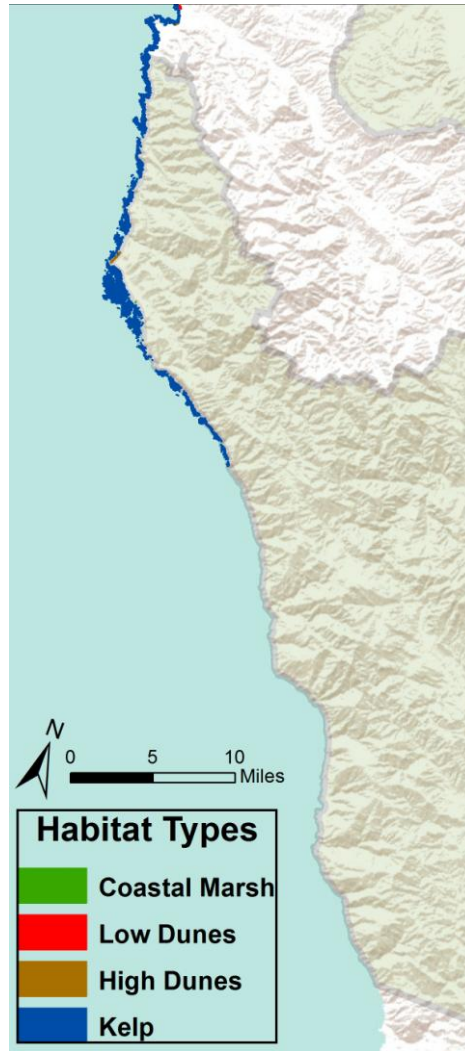


Figure 2. Greater Monterey County IRWM Planning Region. The Greater Monterey County Integrated Regional Water Management (IRWM) region includes the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region and the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region established under Proposition 50. Inset Map A outlined in red is the Northern GMC region. Inset Map B outlined in blue is the Southern GMC region.

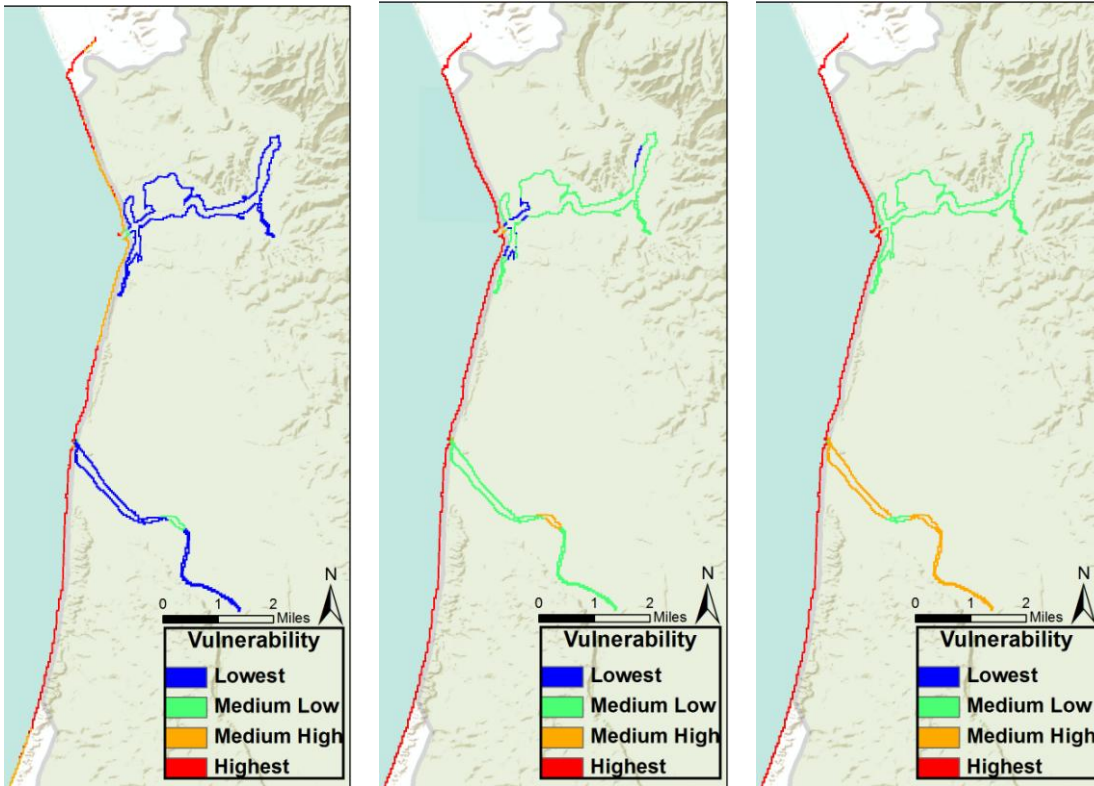


A. Northern GMC Region



B. Southern GMC Region

Figure 3. Habitat layers used in analysis. Habitat GIS layers used in the analysis in the northern and southern Greater Monterey County Integrated Regional Water Management planning regions. See Table 1 and text for more information on data layers.

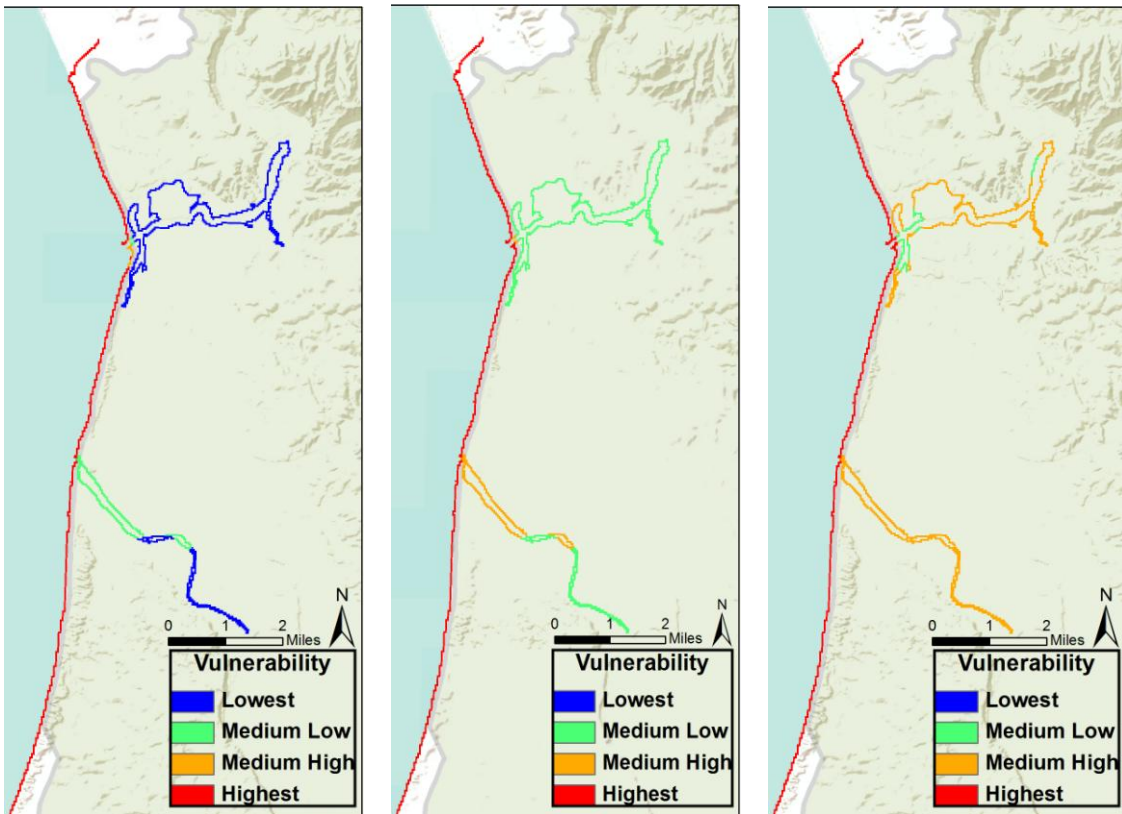


A. Year 2000 Sea Level

B. 14-inch Sea Level Rise

C. 55-inch Sea Level Rise

Figure 4. Impact of sea-level rise on vulnerability with habitat protection. Distribution of Vulnerability Index ranks at three different sea level rise scenarios with habitat protection in the northern section of the Greater Monterey County Integrated Regional Water Management planning region. Segments are 50 m². See Table 2 for quartile distributions for the Vulnerability Index.

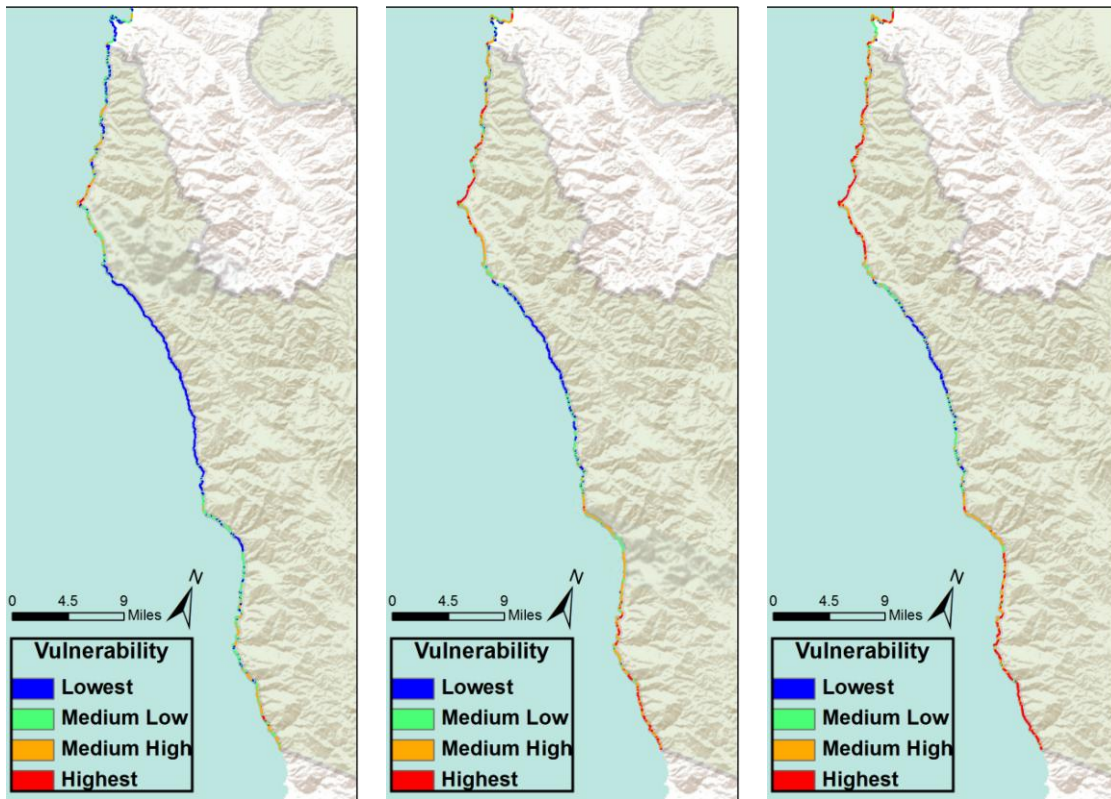


A. Year 2000 Sea Level

B. 14-inch Sea Level Rise

C. 55-inch Sea Level Rise

Figure 5. Impact of sea level rise on vulnerability with habitat loss. Distribution of Vulnerability Index ranks at three different sea level rise scenarios with habitat loss in the northern section of the Greater Monterey County Integrated Regional Water Management planning region. Segments are 50 m². See Table 2 for quartile distributions for the Vulnerability Index.

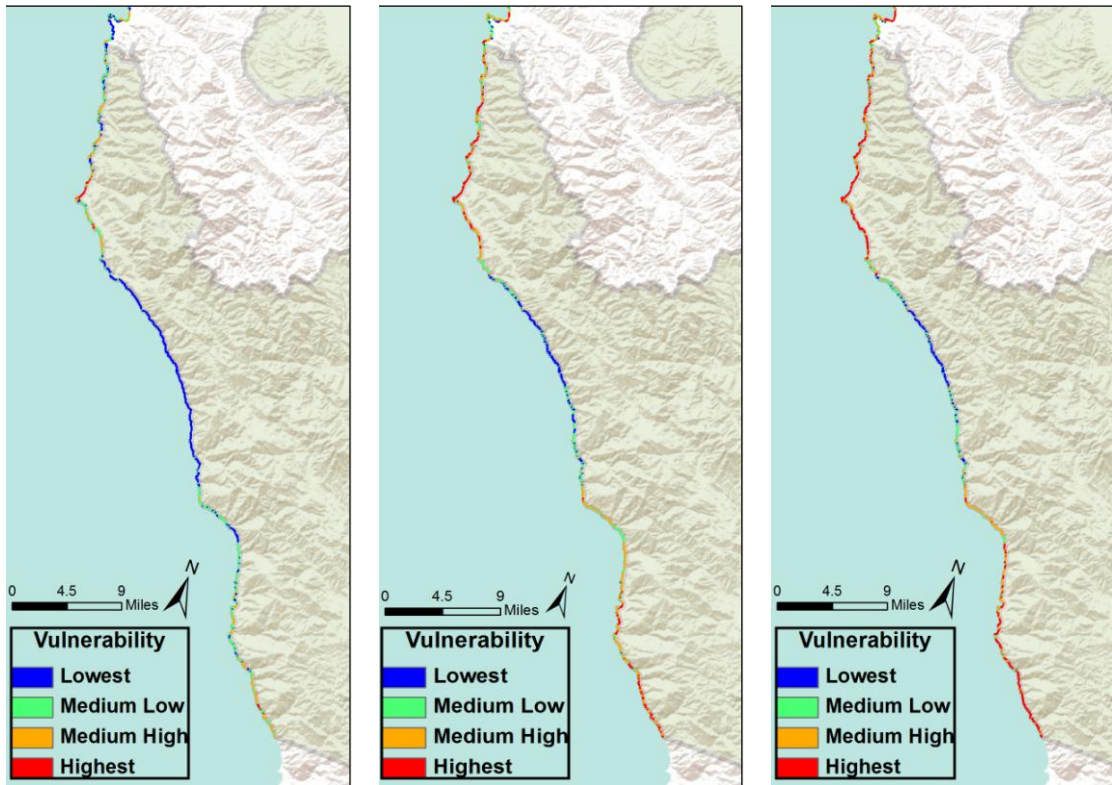


A. Year 2000 Sea Level

B. 14-inch Sea Level Rise

C. 55-inch Sea Level Rise

Figure 6. Impact of sea level rise on vulnerability with habitat protection. Distribution of Vulnerability Index ranks at three different sea level rise scenarios with habitat protection in the southern section of the Greater Monterey County Integrated Regional Water Management planning region. Segments are 50 m². See Table 2 for quartile distributions for the Vulnerability Index.



A. Year 2000 Sea Level

B. 14-inch Sea Level Rise

C. 55-inch Sea Level Rise

Figure 7. Impact of sea level rise on vulnerability with habitat loss. Distribution of Vulnerability Index ranks at three different sea level rise scenarios with habitat loss in the southern section of the Greater Monterey County Integrated Regional Water Management planning region. Segments are 50 m². See Table 2 for quartile distributions for the Vulnerability Index.

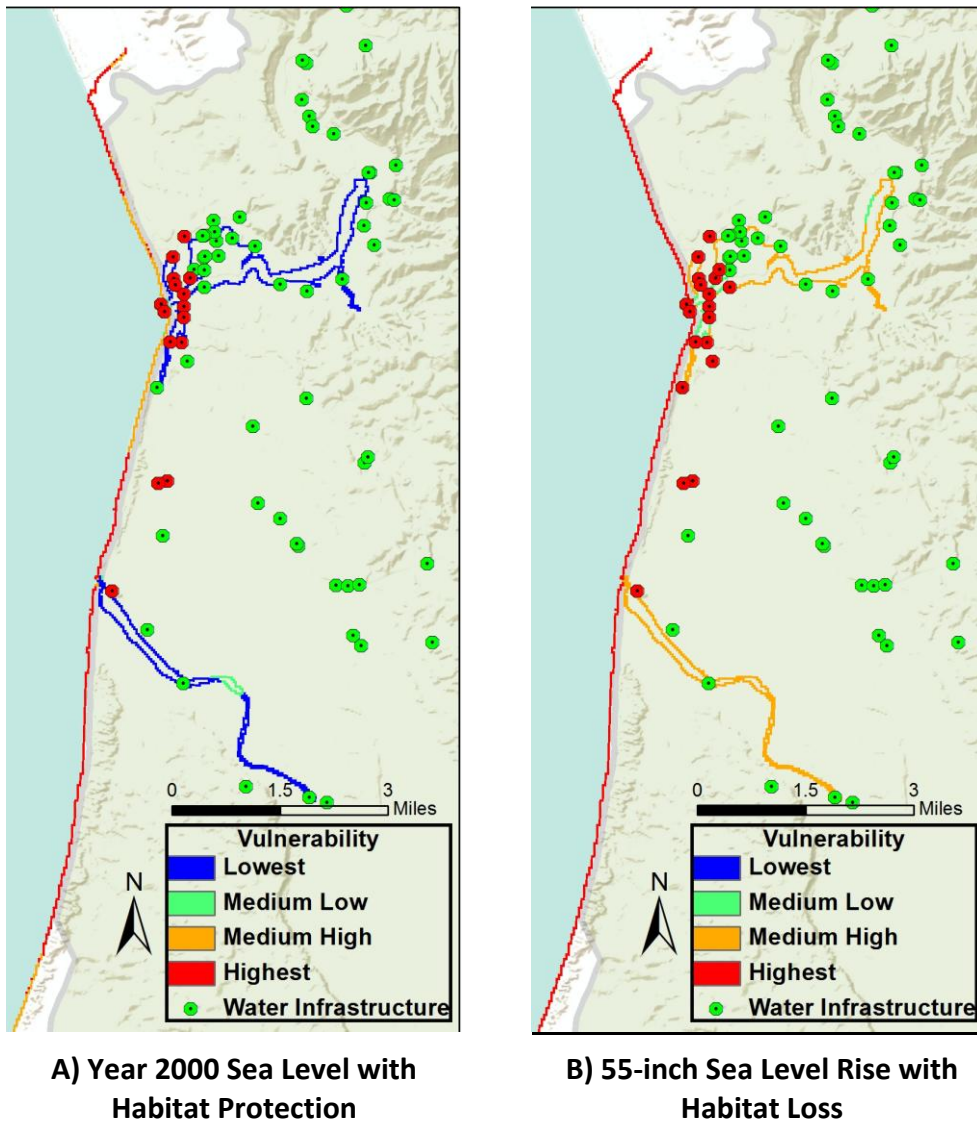
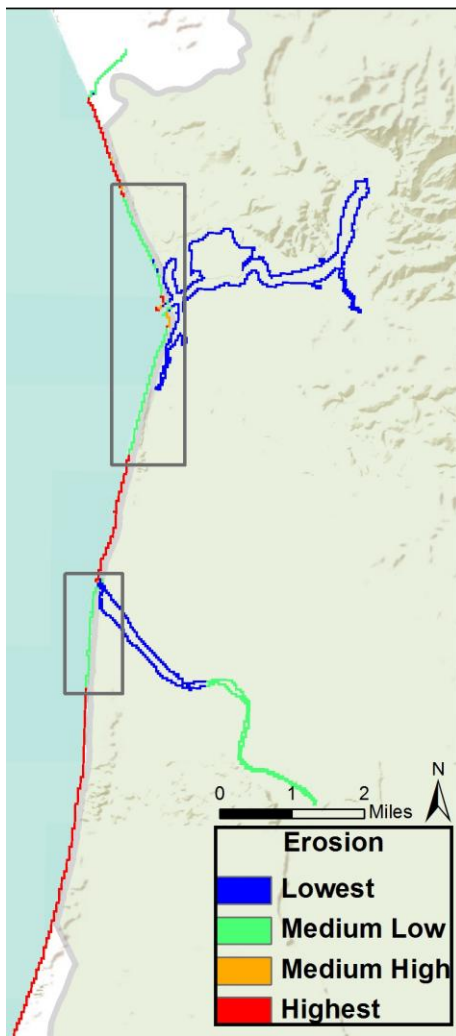
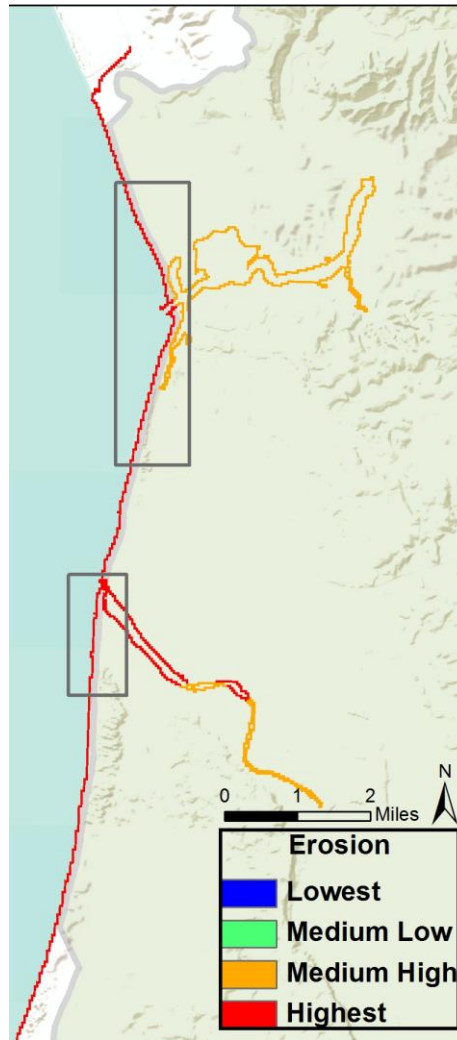


Figure 8. Vulnerability and water infrastructure. Distribution of a sample of water infrastructure (e.g., culverts, pipes, bridges) in the Northern GMC Region. The two images represent two different scenarios: A) Year 2000 sea level with habitat protection and B) 55-inch sea level rise with habitat loss. The red infrastructure is within 1 km of the highest Vulnerability Index value segments of the coastline. In (B) more than 40% of infrastructure within 1 km of the coast is within 1 km of the highest vulnerability sections of the coast. Segments are 50 m². See Table 2 for quartile distributions for the Vulnerability Index.

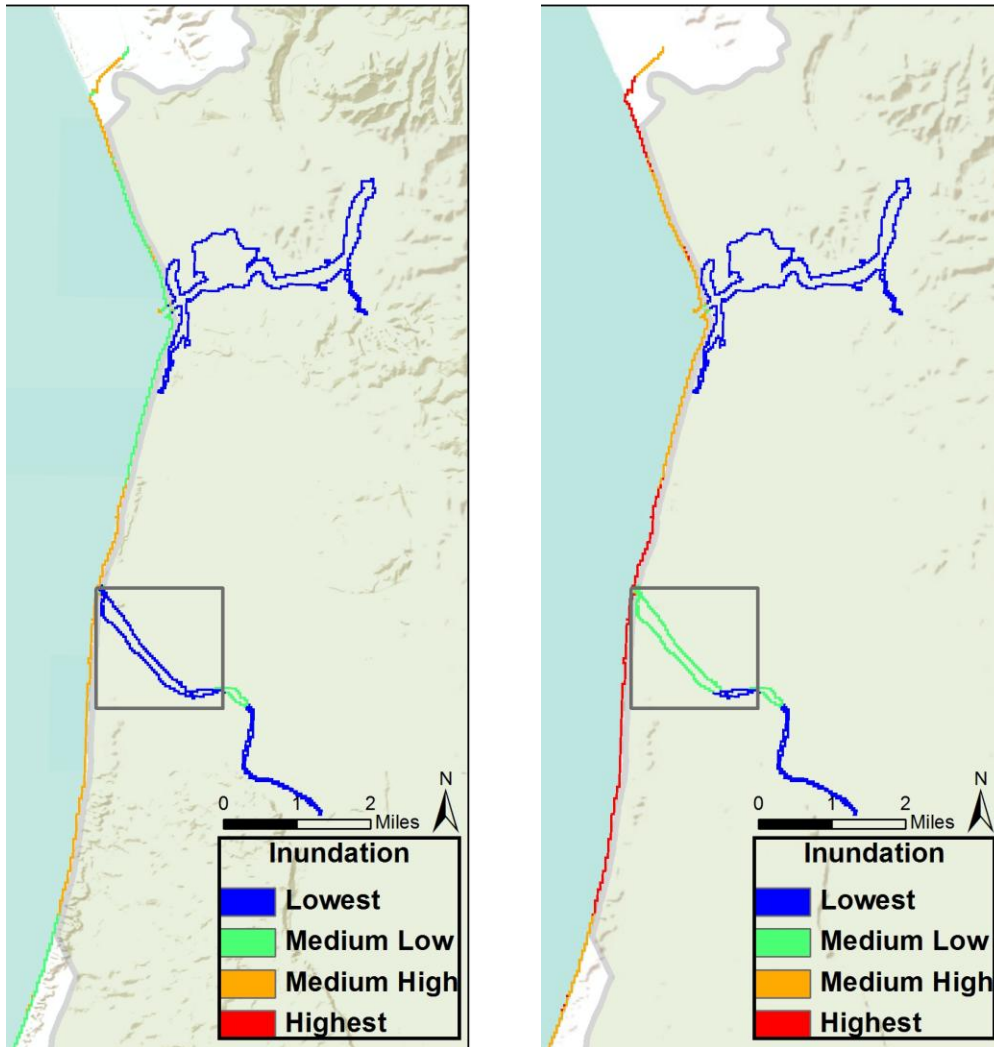


A. Erosion with Habitat Protection at Year 2000 Sea Level



B. Erosion without Habitat Loss at Year 2000 Sea Level

Figure 9. Effects of habitat on Erosion Index. Distribution of Erosion Index ranks along the northern GMC region at year 2000 sea levels in two scenarios: A) with habitat protection and B) with habitat loss. Note that the Erosion Index values of the boxed regions increase from medium low to highest erosion ranking without the protective services of habitat. See Table 2 for quartile distributions for all indices. Segments are 50 m².



**A. Erosion with Habitat Protection
at Year 2000 Sea Level**

**B. Erosion with Habitat Loss at
Year 2000 Sea Level**

Figure 10. Effect of habitat on Inundation Index. Distribution of Inundation Index ranks along the northern GMC region at year 2000 sea levels in two scenarios: A) with habitat protection and B) with habitat loss. Note that the Inundation Index values of the boxed region are increased without protective services from habitat. See Table 2 for quartile distributions for all indices. Segments are 50 m².

Appendix L

Gabilan Watershed Blueprint

INTRODUCTION

The Gabilan Watershed Blueprint is the result of a pilot project conducted by the Greater Monterey County Regional Water Management Group (RWMG) aimed at addressing and resolving water-related conflicts in the region, while promoting stakeholder collaboration and project integration. This process is called “Water Resource Project Coordination” (WRPC).

While many attempts at traditional conflict resolution in Monterey County have been made in the past, most of these attempts have failed. The RWMG concluded that a new approach was needed to foster collaboration and enable project integration to occur. In response to this need, the RWMG developed the Water Resource Project Coordination concept. The WRPC was conceived as a fact-finding process in which parties would discuss what factual questions they believed to be relevant to a decision, exchange information, identify where they agreed and where they disagreed, then seek additional information to fill gaps, address hurdles, or resolve areas of disagreement. The goal of the WRPC process was to alleviate areas of mistrust and confusion and increase collaborative dialogue so that mutual solutions could be achieved.

A pilot project to test the WRPC process in one sub-watershed area of the Greater Monterey County IRWM region – the Gabilan Watershed – was initiated in early 2011, and involved numerous stakeholders representing agricultural interests, environmental groups, government agencies, academic institutions, and interested citizens. The pilot project ended in early 2014. The process and outcomes are described in detail in Section I Integration of the Greater Monterey County Integrated Regional Water Management (IRWM) Plan.

The end product of the WRPC process was the Gabilan Watershed Blueprint. Based on the results of a stakeholder meeting held in January 2013, the RWMG’s WRPC Committee determined that the challenges to “making progress” in the Gabilan Watershed had less to do with a lack of information (e.g., scientific data) and more to do with funding constraints and other barriers. The challenges spanned such a large range of topics that the Committee felt a comprehensive “umbrella” was needed to pull it all together. That umbrella is what they termed the “Gabilan Watershed Blueprint.” The Gabilan Watershed Blueprint was envisioned as a process to address some of the major hurdles that have slowed and prevented progress in resolving problems related to water quality, and to a lesser extent flooding, in the Gabilan Watershed.

The Gabilan Watershed Blueprint is comprised of four main sections, designed to address some of the regional challenges and opportunities expressed during the January 2013 stakeholder meeting. The four Blueprint sections are: 1) The Landscape Strategy, 2) On-Farm Solutions, 3) Corporate Social Responsibility, and 4) Agency Coordination. The background for each of these sections is described briefly below, and the sections themselves follow this Introduction as “standalone” documents.

1. The Landscape Strategy

One important outcome of the stakeholder meeting held in January 2013 was a collection of visual depictions of ideal and/or desired future characteristics of the Gabilan Watershed. The purpose of the Landscape Strategy was to bring these images together in order to outline common goals for the watershed and to describe some of the common hurdles affecting the ability to advance joint work in the

watershed. The drawings contained in the Landscape Strategy section of the Blueprint distill the themes expressed in the January 2013 stakeholder drawings – flood control, water quality, habitat restoration, public access to parks and natural areas, safe community, and productive agriculture – along with the following *shared ideals*:

- Residents of Salinas will enjoy and have good access to green places, and ample outdoor education and activities will engage children and other community members in maintaining local environmental quality.
- Within city boundaries, urban runoff management practices and facilities will minimize the impact of urban impervious surfaces on storm flows to regional waterways.
- Area farms will host a variety of farm runoff water quality management techniques reflective of individual approaches and needs and innovations, resulting in cleaner waterways amidst a thriving agricultural economy.
- The Reclamation Ditch/creek system will be able to safely and effectively convey storm flows while protecting or enhancing water quality as flows are conveyed to Elkhorn Harbor. Where possible, wetlands and other wildlife habitat will be incorporated into the system's function.
- Pedestrian and bike-friendly paths connecting Salinas to regional path systems will be developed along acceptable routes.

The graphics in the Landscape Strategy will be used for continued outreach and education in the watershed.

2. On-Farm Solutions

Some of the challenges voiced at the January 2013 stakeholder meeting were the “barriers” to implementing on-farm sustainable management practices. One barrier was a simple lack of technical information regarding certain practices, such as nutrient management practices, and the lack of an industry-led approach to address the issue. In response to this challenge, a strategy was developed to help growers answer some of those questions in order to help build capacity within the local grower community for implementing sustainable management practices in the Gabilan Watershed. The On-Farm Solutions section of the Blueprint is the outcome of that effort.

The idea for On-Farm Solutions was first developed at a Grower-Shipper Association (GSA) meeting in the fall 2012, at which time the GSA’s Water Committee had identified a few priority needs for grower assistance in terms of water quality improvement. One of those needs was a focus on better understanding Nitrate Quick Tests, including how to use them, compile them, and interpret them, and their true cost to the organization.

The GSA, in association with researchers at the Watershed Institute of California State University Monterey Bay, purchased and distributed Nitrate Quick Test kits to growers in the Salinas Valley, and then tracked their use. The results of this effort were compiled into a document (Standard Operating Procedures) intended to provide growers with a comprehensive guide, in both English and Spanish, on how to perform and use soil Nitrate Quick Tests as a diagnostic tool for fertilizer management decisions. The guide is regionally specific, and addresses differences in soil sampling, frequency of testing, and interpreting nitrate results based on crop types (general categories, such as shallow-rooted vs. not, cool season crops, longer season crops) and growing environments (e.g., soil type, irrigation system, fertilizer application methods). An appendix to the guide includes a cost analysis of the Nitrate Quick Tests that are commercially available and those that growers create from multiple sources.

The On-Farm Solutions section of the Blueprint is comprised of the following documents:

- Nitrate Quick Test Standard Operating Procedures – How to Use the Nitrate Quick Test
- Nitrate Quick Test SOP – Spanish: Cómo Utilizar las Pruebas Rápidas de Nitrato
- Appendix A: Cost Analysis of Nitrate Quick Test Program – What are the True Costs to Growers?
- Apéndice A: Análisis de Costo del Programa de Pruebas de Rápidas de Nitrato: ¿Cuáles Son los Costos Reales Para los Productores?
- Appendix B: In-season Soil Nitrate Testing Explained
- Apéndice B: Explicación de las Pruebas de Nitrato en Suelos en Temporada

In addition to creating the guide, a website was developed to provide Nitrate Quick Test information for growers in the Salinas Valley, along with a database for storing the results of the testing. The website address is: www.growershipper.com/sys/static/irwmp.php. The website will be continually updated, with new information based on grower requests.

3. Corporate Social Responsibility

Like “On-Farm Solutions,” the goal of this Blueprint section was to advance agricultural sustainability in the Gabilan Watershed. With “On-Farm Solutions” working on the individual grower level, the Corporate Social Responsibility (CSR) part of the Blueprint was intended to address the next level of the agriculture industry. SureHarvest, a private consulting company that provides solutions to growers and agrifood companies pursuing sustainability strategies, was hired to lead this effort.

The goal of the effort was to initiate greater dialogue within the agricultural industry about social/environmental responsibility programs, and to encourage agricultural leaders to take a greater role in funding sustainability practices. In March 2014, SureHarvest convened an industry-focused working session in the City of Salinas to bring together CSR leaders in the agricultural community to initiate an action-oriented discussion focused on advancing business models for stewardship of Monterey Bay watersheds. The workshop was co-sponsored by Central Coast Grower-Shipper Association, Western Growers, and Monterey County Sustainability Working Group. Twenty-two industry leaders, company executives, and CSR/sustainability directors on California’s Central Coast and beyond participated in the workshop. Participants identified values, challenges, and opportunities for collaborative action across three broad categories: market and regulatory compliance; program design and core elements; and data collection, confidentiality, and information sharing. A summary report of the CSR workshop comprises this section of the Blueprint document.

4. Agency Coordination

One of the major challenges to project implementation identified during the January 2013 stakeholder workshop was permitting and regulatory compliance. Hurdles to project implementation brought about by lack of interagency coordination and difficult and confusing regulation were voiced time and time again at the January 2013 stakeholder meeting. The goal of this section of the Blueprint was to identify the regulatory constraints and challenges that projects in the Gabilan Watershed might encounter, and identify possible options for coordinating agency review and consultation. The result was a matrix summarizing primary permitting and regulatory oversight (see Table 3). At the suggestion of various agency staff, the matrix is a linked document which gets the project sponsor or member of the public to the official website of the agency.

As the final product of the WRPC process, an effort was initiated to integrate projects within the Gabilan Watershed. The project integration process proceeded in two phases: 1) review of all existing IRWM Plan projects located in the Gabilan Watershed to identify integration options, and 2) discussions with a wide

variety of project proponents to identify possible partners and integrated project components. The result was identification of several integrated multi-objective, multi-stakeholder projects that can potentially be developed and put forward for IRWM and other grant funds. These projects are briefly described in the Agency Coordination Final Report.

The Agency Coordination section of the Blueprint is comprised of the following documents:

- Final Report – Agency Coordination in the Gabilan Watershed: From the Mountains to the Sea
- Table 2 – Monterey Agency Contact List
- Table 3 – Permitting Matrix
- Table 4 – WRPC Project Integration Matrix
- Table 5 – 2012 WRPC Project List Sorted by Program

REPORT TO MAY 28, 2014 STAKEHOLDER MEETING

SUB-PROJECT: “GRAPHIC” EXPLORATION OF SHARED INTERESTS FOR MULTIPLE-BENEFIT LANDSCAPES AND PROJECTS IN THE GABILAN/REC-DITCH WATERSHED

PAUL ROBINS, RESOURCE CONSERVATION DISTRICT OF MONTEREY COUNTY

Background

One outcome of the January 2013 Water Resource Project Coordination (WRPC) stakeholder meeting was a collection of visual depictions and descriptions of ideal, desired, and/or expected future characteristics of the Gabilan Watershed. The WRPC subcommittee was struck with how closely aligned many of these depictions were, and how they could possibly act as a tool to help stakeholders of all backgrounds identify areas of agreement that could inform development of integrated projects that meet multiple objectives (social, economic, and environmental) for watershed health. This sub-project was to review the range of original drawings and descriptions and condense them into a smaller set of conceptual drawings representing the range and intersections of ideas. These conceptual drawings were then submitted for additional review and discussion with ten members of different stakeholder groups in the watershed: farmers, water managers, municipalities, urban/rural residents, community groups and academia. Preparation for and follow-up from these discussions (mostly one-on-one) was vetted through a subcommittee of five people from the Resource Conservation District of Monterey County, Monterey County Water Resources Agency, Central Coast Wetlands Group, California Rural Legal Assistance, and The Nature Conservancy.

The anticipated deliverable was a large drawing, depicting a conceptualized birds-eye view of the Gabilan/Rec Ditch watershed with “pop-out” images of conceptual multiple-benefit watershed improvement project outcomes in the different landscapes (urban, agricultural, etc.) of the region, accompanied by descriptive language and recommendations for moving forward for achievable, integrated water resource (or “watershed”) projects. An ideal outcome would have been a depiction of a common vision for the watershed, but developing such a vision would need a much more intensive, comprehensive and extensive stakeholder process. As evidenced from the original set of stakeholder drawings, while there are many areas of congruence, there remains considerable diversity of opinion on key landscape elements (e.g., Rec Ditch improvements). Regardless, the product as proposed is a step towards informing or structuring a more rigorous effort to forward good work in the region.

Context

In preparation for and in response to meeting with various stakeholders, the following reference documents were used to gain a better understanding of the local history of Gabilan and Rec Ditch watershed meetings, assessments and projects. In the interest of time, the review focused on documents developed since the floods in the late 1990s, although those documents for the most part filled in the details regarding prior work and studies. The more current documents included:

- *A Vision Plan for Carr Lake Regional Park* (CSU Pomona, 2003)
- *Reclamation Ditch Watershed Assessment & Management Strategy* (MCWRA & CSUMB, 2006)
- *The Carr Lake Project: Potential Biophysical Benefits of Conversion to a Multiple-Use Park* (CSUMB, 2012)

In the context of the individual meetings, other documents discussed included the *Zone 9 Reclamation Ditch Drainage Systems Operations* and *Carr Lake Multi-Purpose Flood Control* studies by Schaff & Wheeler in 1999 and 2002.

These reports reflect the primary concerns in the watershed: flood control, water quality, habitat restoration, and public access to parks and natural areas, all in the context of a growing urban area nested in one of the world's most productive agricultural regions, set near the heart of the Monterey Bay National Marine Sanctuary.

The Process

The following drawings were distilled from the themes expressed in the January 2013 drawings: urban parks and greenspace access, urban runoff management, agricultural water quality management, Rec Ditch management, and access from Salinas to the ocean.

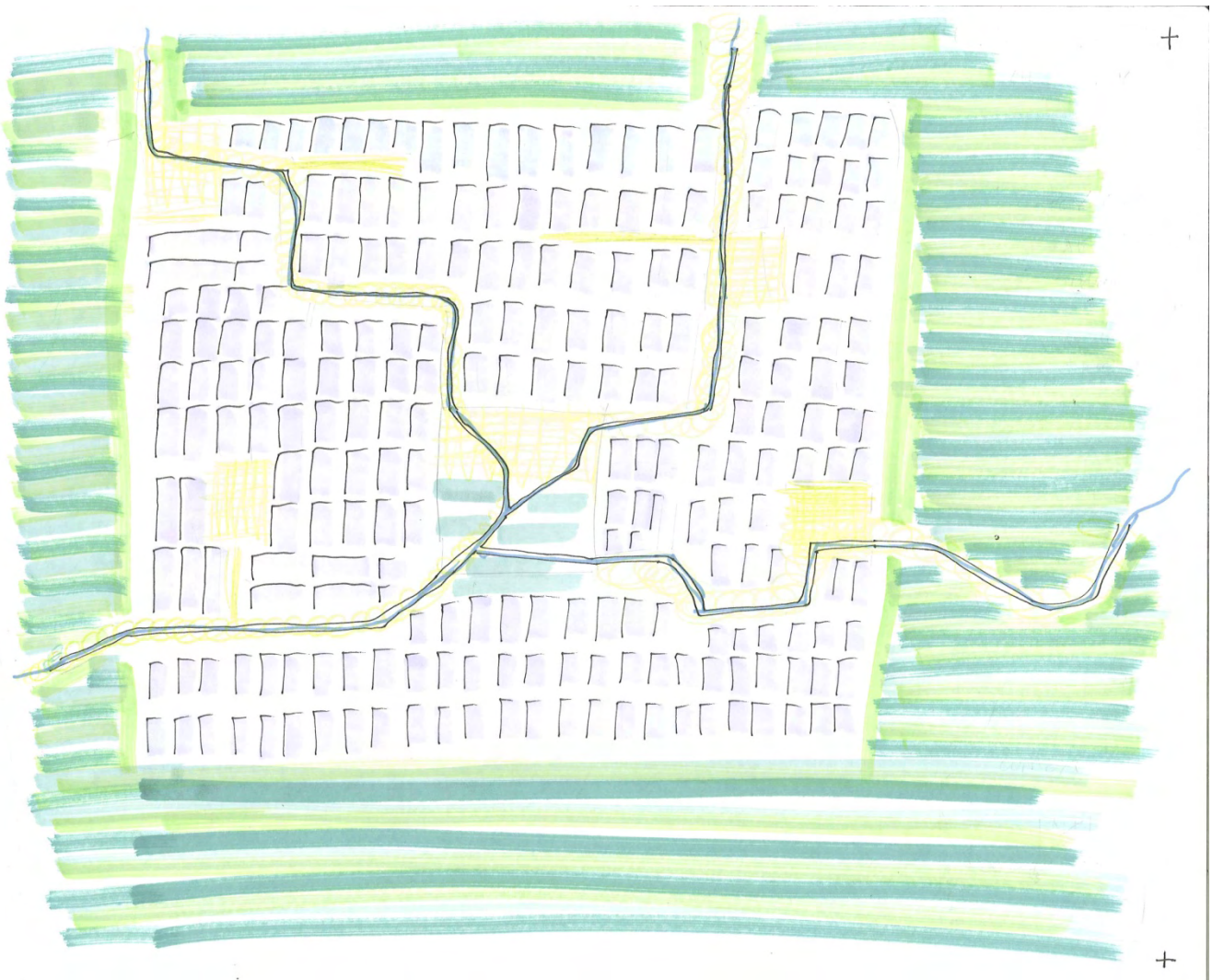


Figure 1: Conceptual graphic showing network of greenways linking neighborhoods and parks with a large, central park

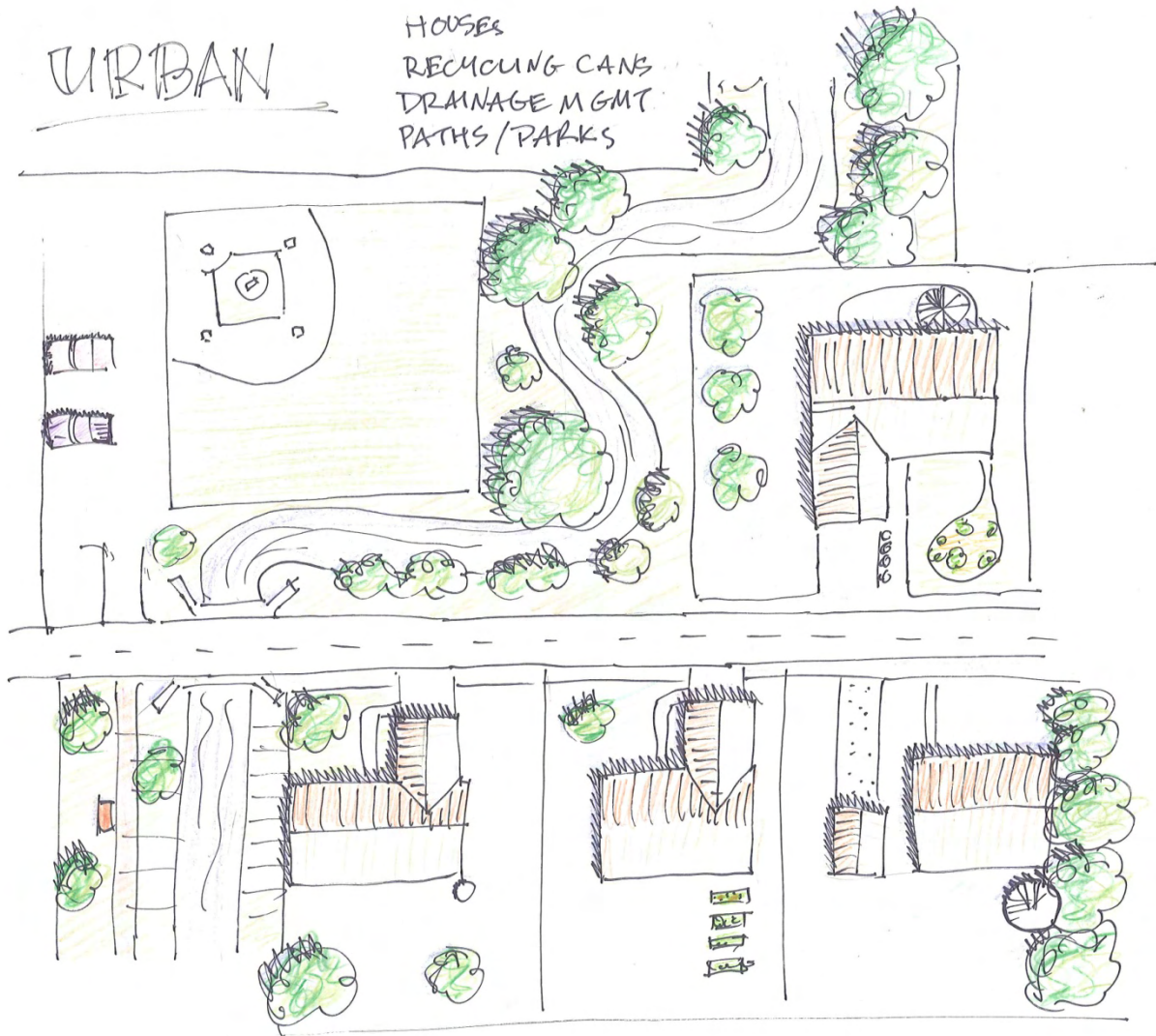


Figure 2: Illustration of suburban neighborhood with naturalized parkways, paths, and 'backyard' conservation opportunities such as vegetable gardens, rainwater catchment barrels, rain gardens, and permeable surface driveways.

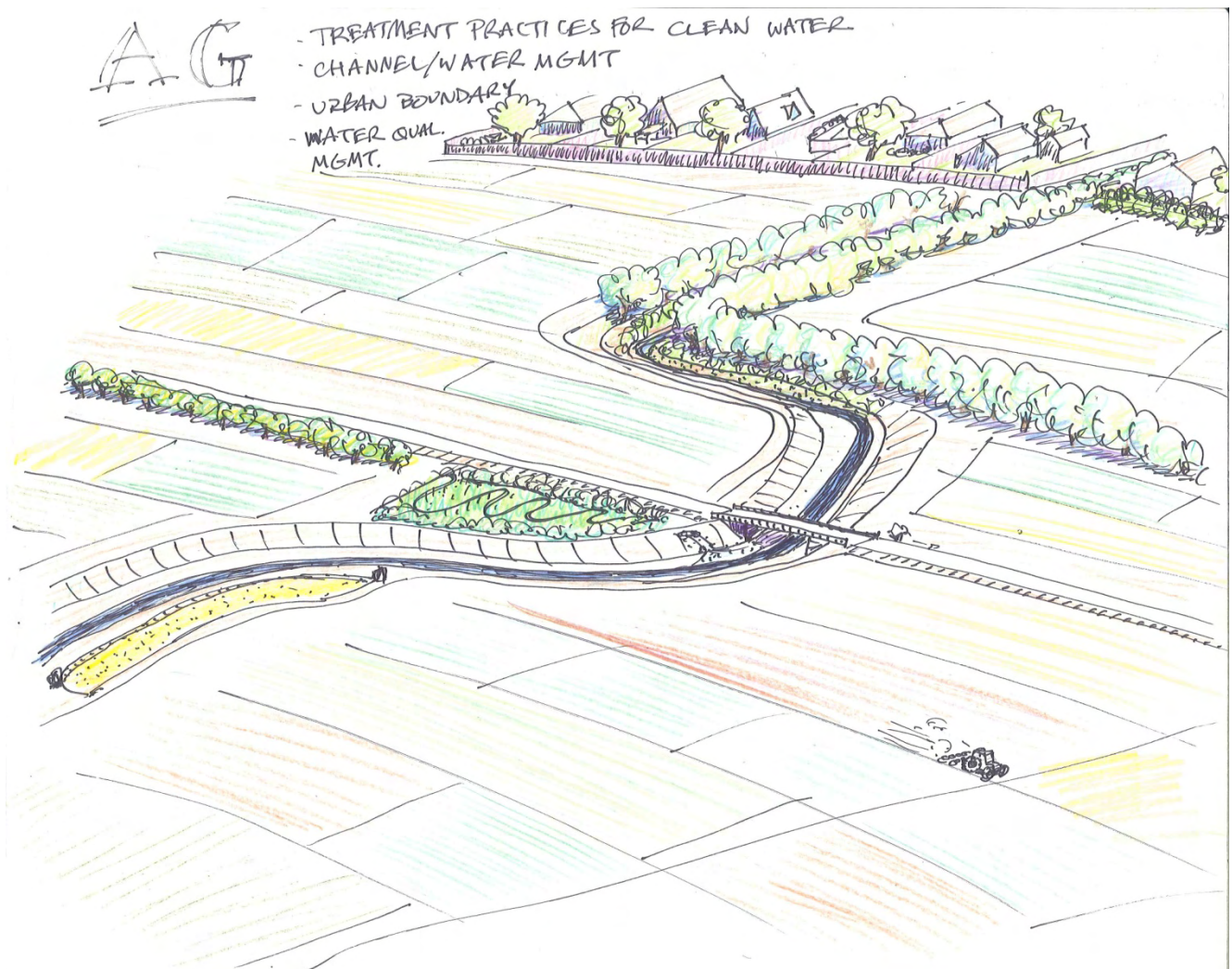


Figure 3: Illustration of agricultural landscape displaying a range of wildlife and water quality management practices reflective of the diversity of farmers and landowners. It also shows a clear urban boundary--a common interest expressed at the January 2013 workshop.

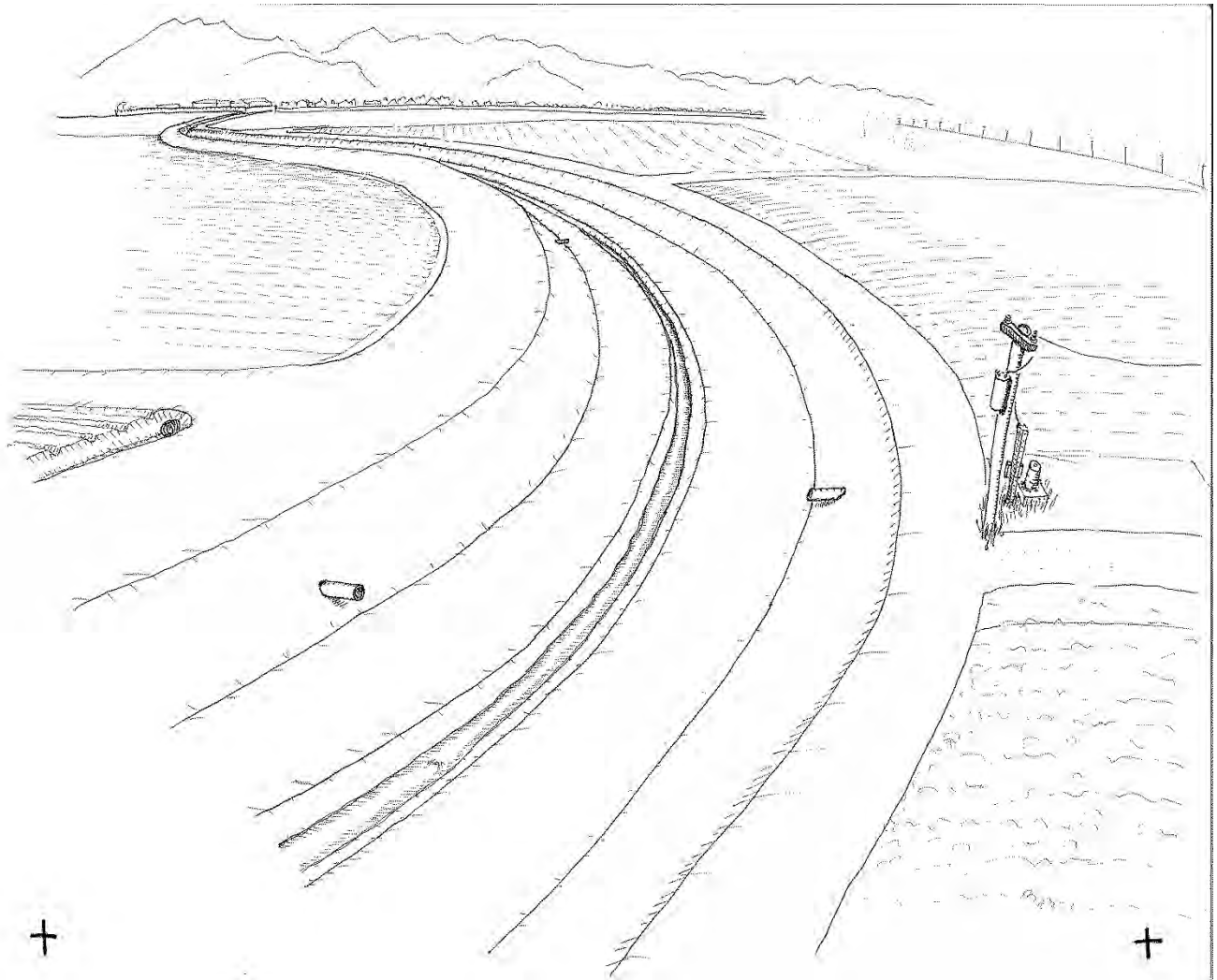


Figure 4: “Base” drawing of a bare, earthen channel in the Rec Ditch watershed used as basis for overlays of different scenarios in meetings with stakeholders.

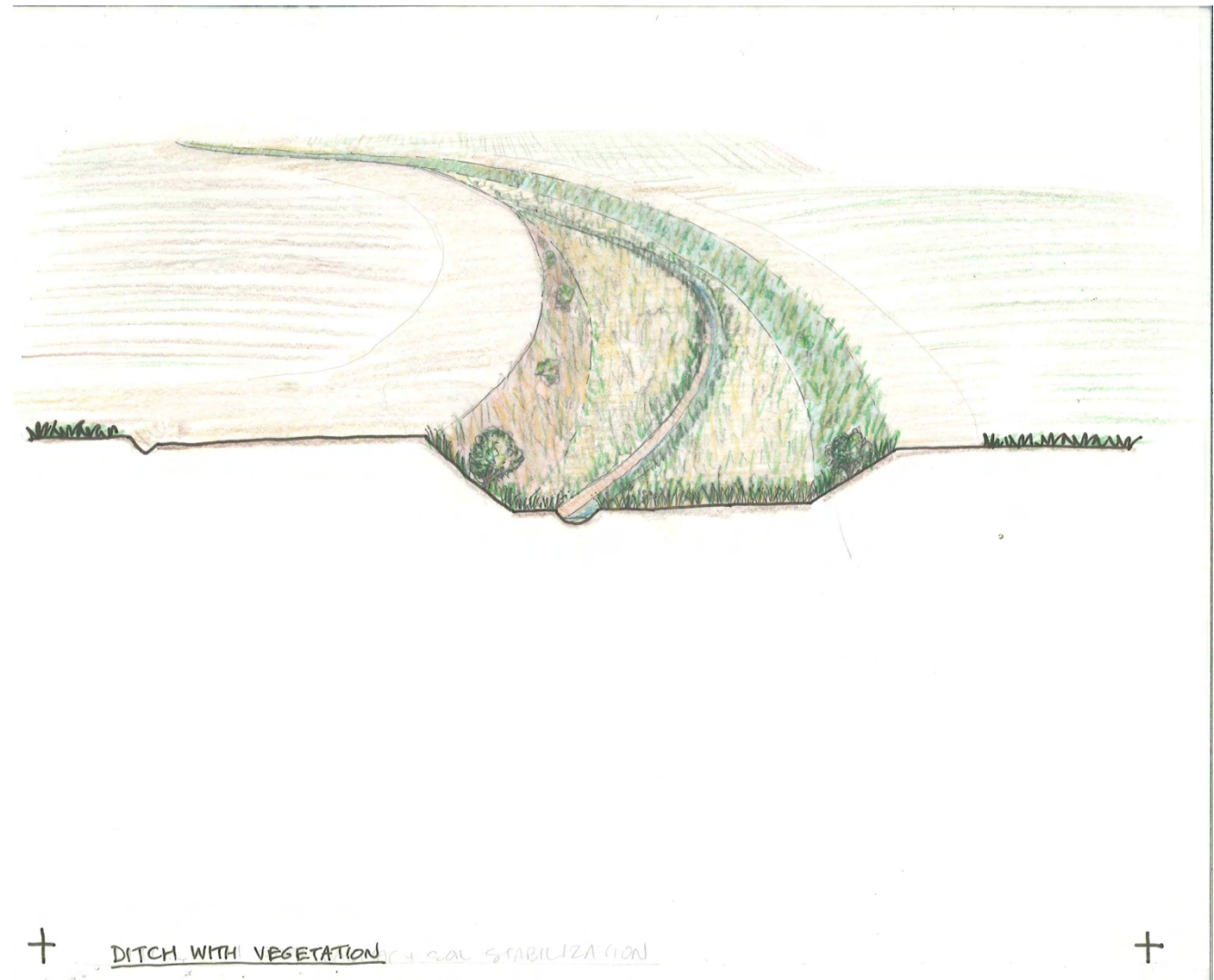


Figure 5: Tracepaper overlay of a combined section/perspective view of the ditch in Figure 4 with herbaceous vegetation from bank to bank and a meandering channel.

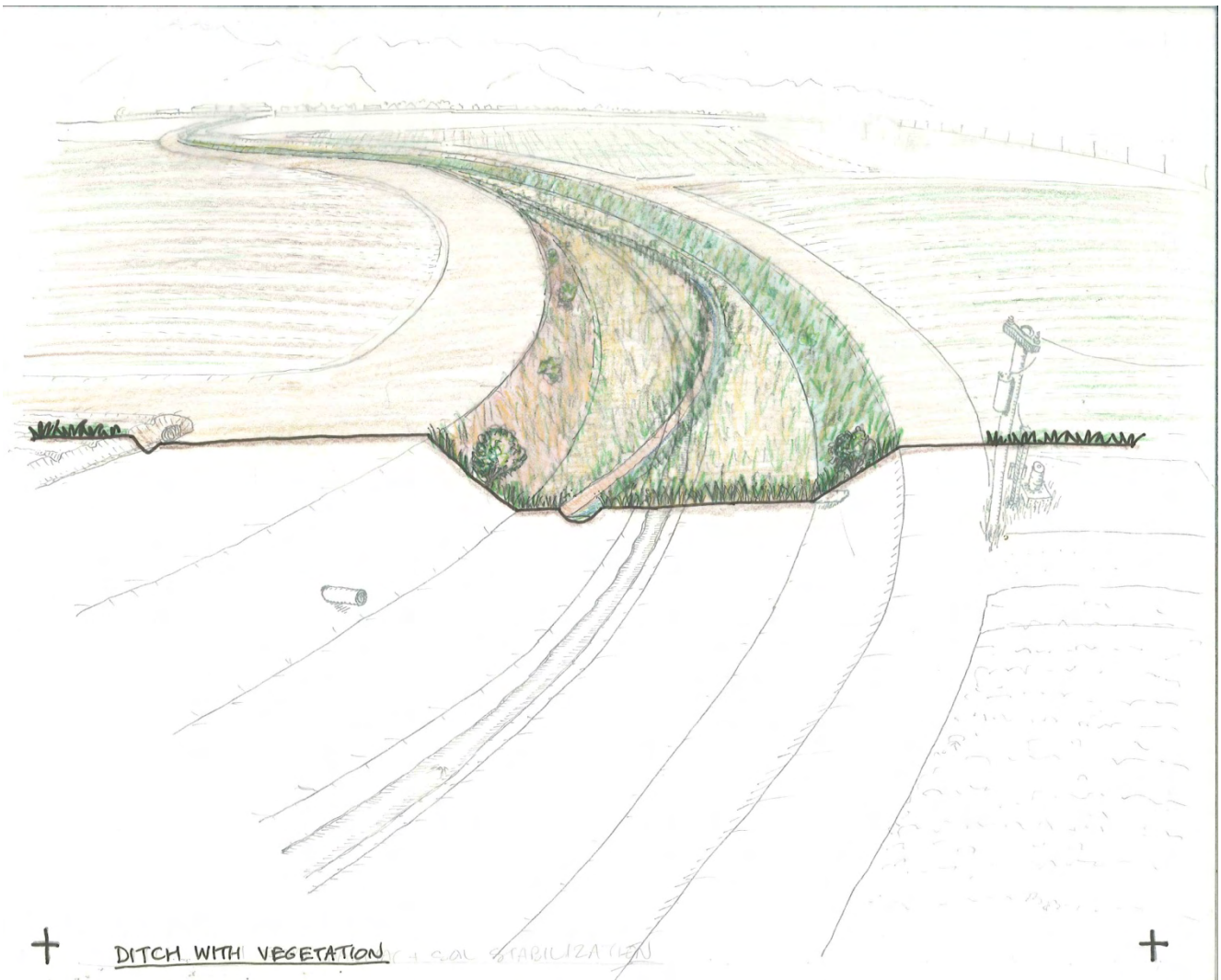


Figure 6: An overlay of Figure 5 on top of the Figure 4 base drawing.

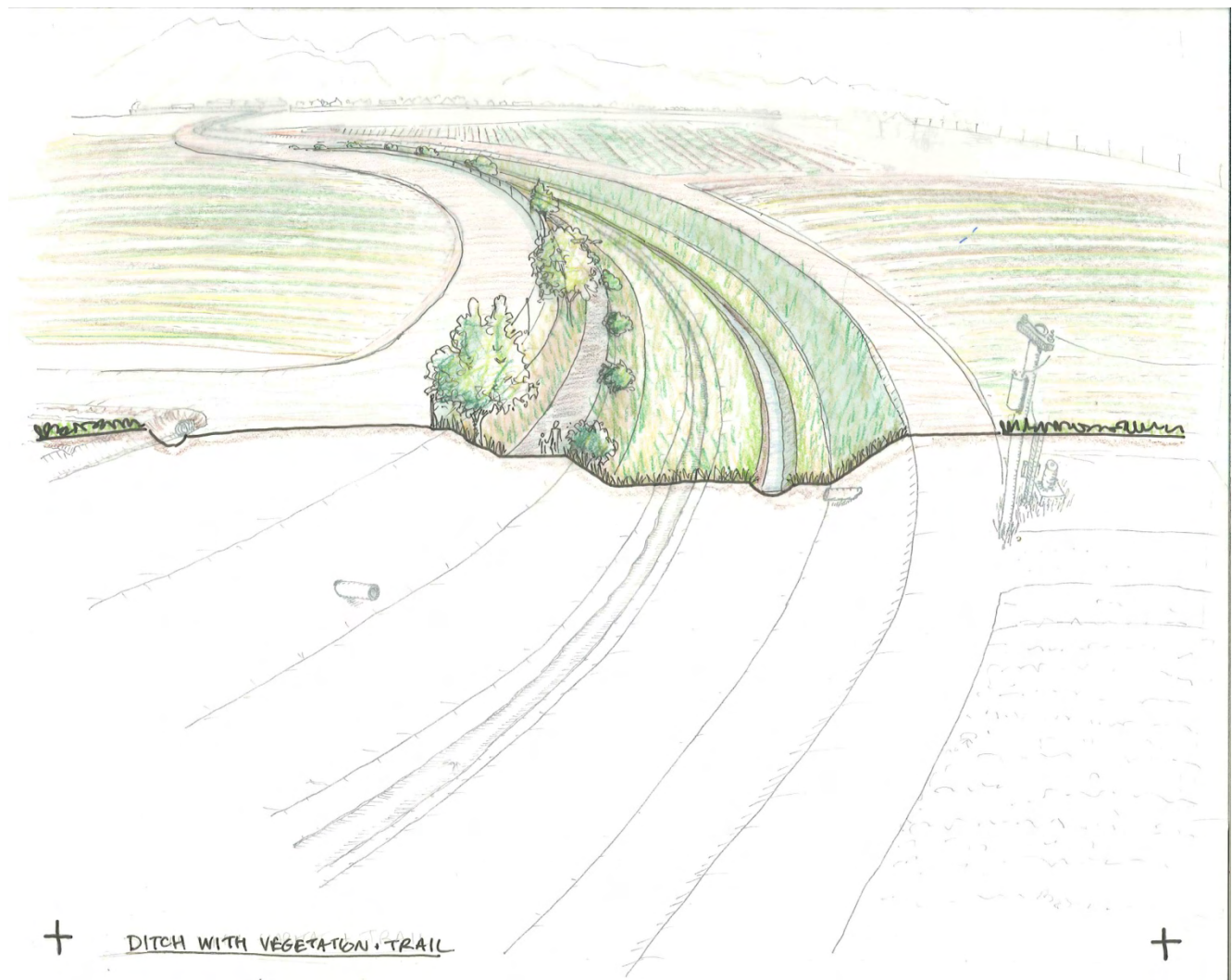


Figure 7: This image, overlaid atop the Figure 4 base drawing, illustrated a representation of a trail system incorporated into a waterway (to many stakeholders, this was specifically the “Rec Ditch”) as a means to connect urban residents with natural areas outside of Salinas and Castroville.



Figure 8: A simplified representation of the region upon which most of the January 2013 drawings focused: namely the portions of the Gabilan/Rec Ditch watershed in the Salinas Valley from immediately upstream of the City of Salinas to the ocean. Consistent with the common themes among those drawings, it shows a predominantly agricultural (and highly productive) landscape with distinct urban areas linked by roads and waterways. This drawing also features notes drawn during meetings with stakeholders adding existing trails (dashed line parallel to Hwy 1 in center left) and potential project areas along streams in the City of Salinas.

The outcomes of those meetings are expressed below in terms of areas of agreement on desired future states of the watershed and potential projects.

Shared Ideals

1. Residents of Salinas will enjoy and have good access to green places, and ample outdoor education and activities will engage children and other community members in maintaining local environmental quality.

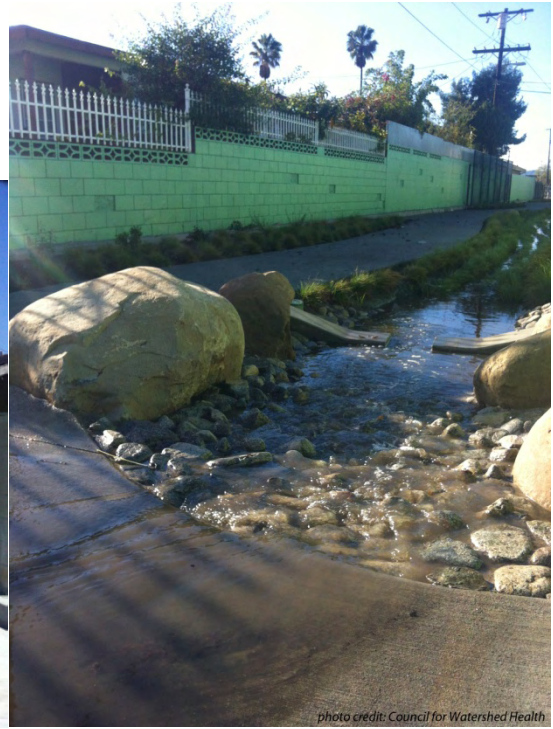
The City of Salinas is well below a national standard of 10 open space acres per 1000 people (CSU Pomona, 2003). Building Healthy Communities, other citizen groups, and the City of Salinas are eager to rectify this by creating accessible green spaces wherever possible in the city by various means, including: development of paths and parks along waterways in the city (e.g., Gabilan, Natividad, Santa Rita, and Alisal Creeks); creation of new parklands pending new developments and willing sale of farmed lands in Carr Lake; and development of “green streets” with more trees/vegetation, slower traffic, and permeable surfaces.

Community programs are needed to draw kids outdoors more to learn about nature and participate in projects that contribute to their local environment. The consensus was that we need more of this good thing. Existing efforts at the Santa Rita School and Return of the Natives were referenced.



Figures 9 & 10: Examples of means of engaging community members in improving natural and common areas in the City: vegetation planting and community murals.

New pathways or access points to parks are needed to encourage community use, help keep pedestrians off high-speed roads such as Constitution Blvd., and can be designed for maximum infiltration and native landscape value.



Figures 11 & 12: Images exemplifying urban area improvements that convert a blighted area (in this case, a regularly-flooded alleyway in Los Angeles County) into a greenway designed to accommodate winter stormwater in a naturalized manner. Source: Elmer Ave Community Alleyway Project, Los Angeles, CA



Figure 13: Many drawings at the January 2013 workshop referenced the desired for a large park at Carr Lake, and many interviewees spoke positively of the conceptual plan for such a park as developed by a team of Cal Poly Pomona graduate students in 2003. Their plan was designed to meet multiple community needs for recreation, natural areas, and flood water management.

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2. *Within city boundaries, urban runoff management practices and facilities will minimize the impact of urban impervious surfaces on storm flows to regional water ways.*

Low Impact Development techniques for new development make for more attractive neighborhoods with more shade and vegetation while enhancing local percolation of rainwater and reducing stress on the Reclamation Ditch system.

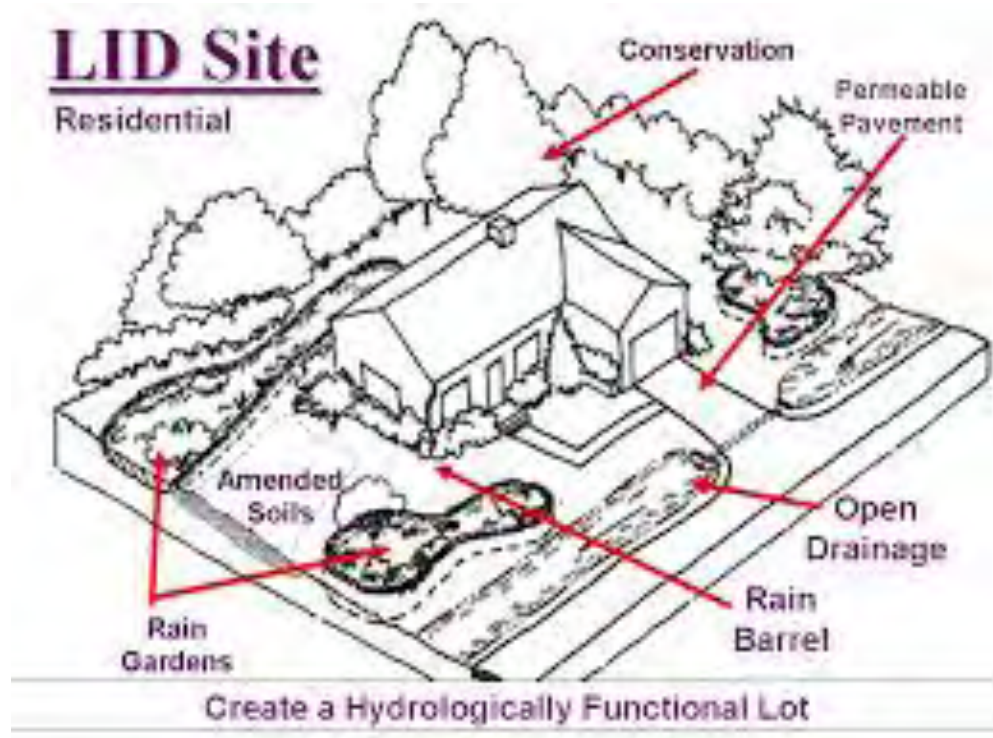


Figure 15: Conceptualized drawing of an urban lot designed to minimize runoff from the site. Future growth plans for the City of Salinas call for “Low Impact Development” (LID) techniques such as these to reduce stress on the already “maxed out” Rec Ditch system that would be anticipated as the urban “impermeable” footprint contributing runoff to the watershed is increased.



Figures 16 & 17: Pictures of lots and neighborhoods incorporating LID techniques.

Retention and Percolation ponds in parks and new developments can serve as recreation areas during dry periods, create ponds and wetland features in the winter, serve as nearby-nature year round, reduce stress on the Reclamation Ditch system and enhance local aquifer recharge.



Figures 18-20: Suburban detention basins serving multiple purposes with wildlife and recreational values.



Figure 49, above: Suitability for aquifer recharge. Areas of darkest green have the highest potential for the placement of infiltration basins.

Figure 50, right: Suitable areas were determined based on these criteria.

Based on soils and their permeability, topography, and land use (See Appendix C), an area with the highest potential suitability for recharge would have highly permeable soils, with percolation rates six inches per hour or greater. Soils that are not very permeable could also potentially contribute to re-

High
Moderately High
Moderate
Moderately Low
Low
Not Suitable

	Topography	Land Use	Soil Permeability
High	Less than 6% slope	Vacant undeveloped land; open space	6 to 20 inches per hour
Moderate	6-16% slope	Sports fields, parks; farm land adjacent to creeks	Less than 6 and more than .6 in/hr
Low	16% and greater slope	Occupied developed land	Less than .6 in/hr

Figure 21: Map developed by Cal Poly students illustrating opportunity areas in the watershed for percolating captured surface water for groundwater recharge.



Figure 105: A 25-year flood event in Carr Lake Regional Park.



Figure 22: Image developed by Cal Poly students illustrating how their Carr Lake park conceptual plan would be designed to handle a “10-year” storm event based on historical rainfall records and hydrologic modeling.

3. Area farms will host a variety of farm runoff water quality management techniques reflective of the individual approaches and needs and innovations, resulting in cleaner waterways amidst a thriving agricultural economy.

New technologies such as those using bioreactors and resin beads give farmers the flexibility to treat runoff water quality concerns while limiting food safety program liabilities associated with open ponds and vegetation. Resin bead systems allow recovery of the trapped nutrients and potential re-use by the farmer or elsewhere.

Wetlands can be designed to perform multiple functions (habitat and water quality) where land is available for the wetland and an associated food safety buffer.



Figure 23: A modification of Figure 3 incorporating comments from interviewees regarding additional farmland practices for water conservation and food safety protection: in-field soil moisture monitoring stations and low-stature “food safety” fences along waterway and pond edges to minimize small wildlife incursion into vegetable production fields.

4. The Reclamation Ditch/creek system will be able to safely and effectively convey storm flows while protecting or enhancing water quality as flows are conveyed to Elkhorn Harbor. Where possible, wetlands and other wildlife habitat will be incorporated into the system's function.

The Reclamation Ditch system is desperately in need of improvement for bank protection, strategic stormwater retention and conveyance capacity within a challenging context of water quality regulations and general public scrutiny. Any project to treat the system will be extremely costly, which will require a combination of local fund-raising (fees, bond sales, etc.) and external grants. Such a large, publicly funded project will require broad acceptance and political support and demonstrate meeting multiple criteria for conveyance and environmental quality concerns.

If a comprehensive treatment of the Rec Ditch system seems financially or politically out of reach, another approach could be to identify sets of projects to treat critical locations in the system and treat them individually as prioritized. These are identified in the studies by Schaff & Wheeler, CSUMB and CSU Pomona.

In the meantime, interviewees noted that the ditch bottom and banks can be intentionally or passively vegetated with low-statured, herbaceous vegetation that will protect the channel without inhibiting storm flows, with silt fencing on the edges and 50' bare earth buffers from edge of vegetation to crop to meet current food safety standards. The comfort level of the individual farmer and the configuration of the channel in a given locale affect how much vegetation grows in the channel, as some prefer to keep banks bare but the channel bottom "green." Some sections of ditch are less stable and may require more substantial armoring than vegetation can provide.

Incorporation of a public access element to the waterway (such as park nodes or paths) has been suggested as a possible means to expand potential funding options and public interest, but would have to overcome substantial opposition from the host agricultural community, for which a financial and political cost-benefit analysis would need to be developed considering the "heat" associated with the topic.

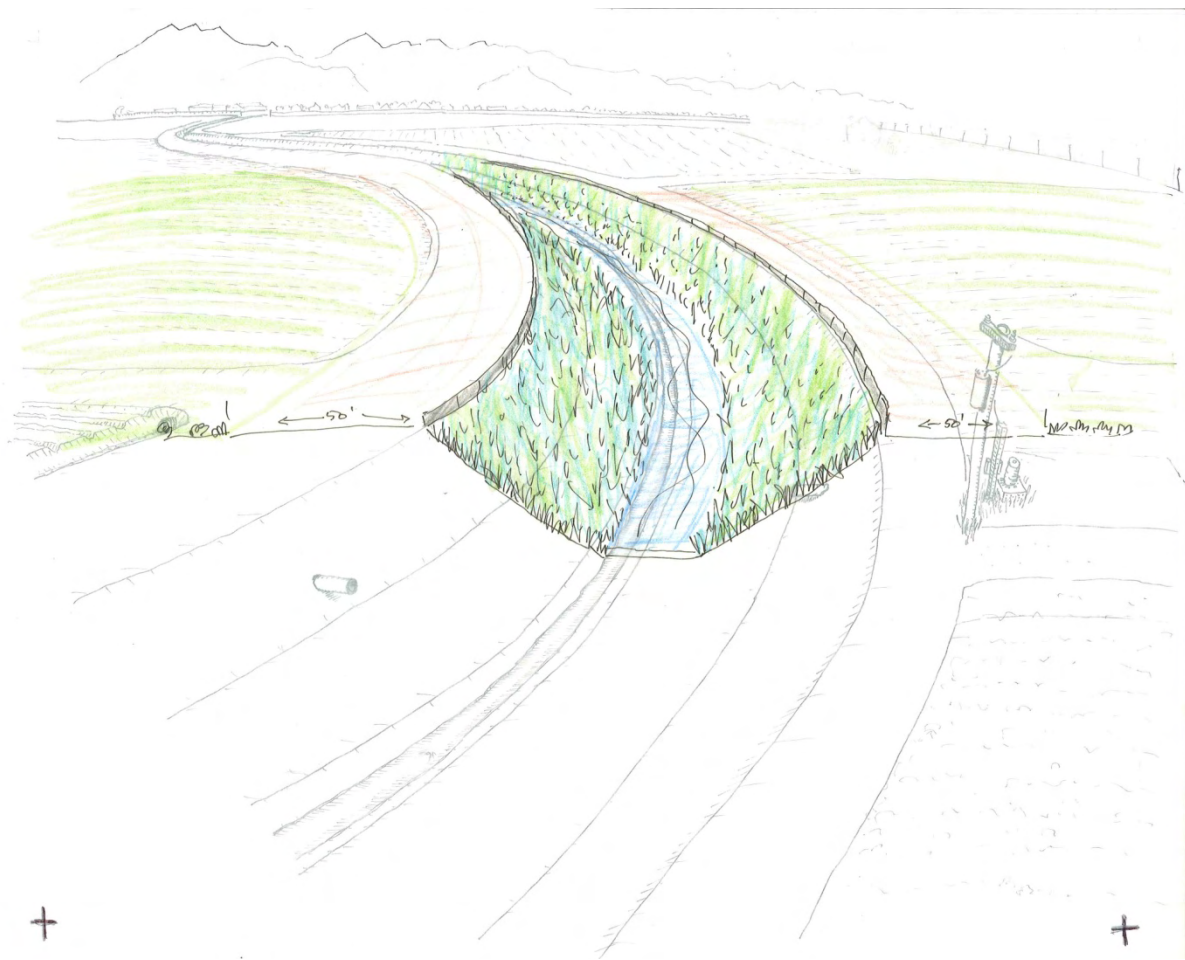


Figure 24: An overlay of the ditch schematic more illustrative of a typical Rec Ditch cross-section with "bank-to-bank" herbaceous vegetation, calling out specific elements needed to meet food safety concerns: low-stature fence and 50' bare-earth buffers between edge of vegetation and field.

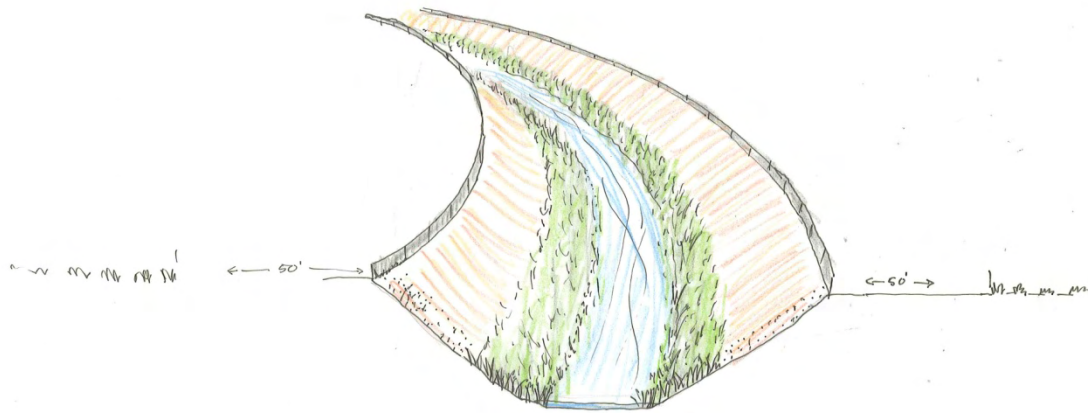


Figure 25: The most-preferred option among the farmers interviewed for a Rec Ditch cross section: namely vegetation just in the lower part of the channel where it's difficult to control, but potentially provides erosion control and may draw nutrients from the saturated soil along the channel. A bare bank is preferred by food safety inspectors, especially augmented with a low-stature fence and additional bare earth buffer.

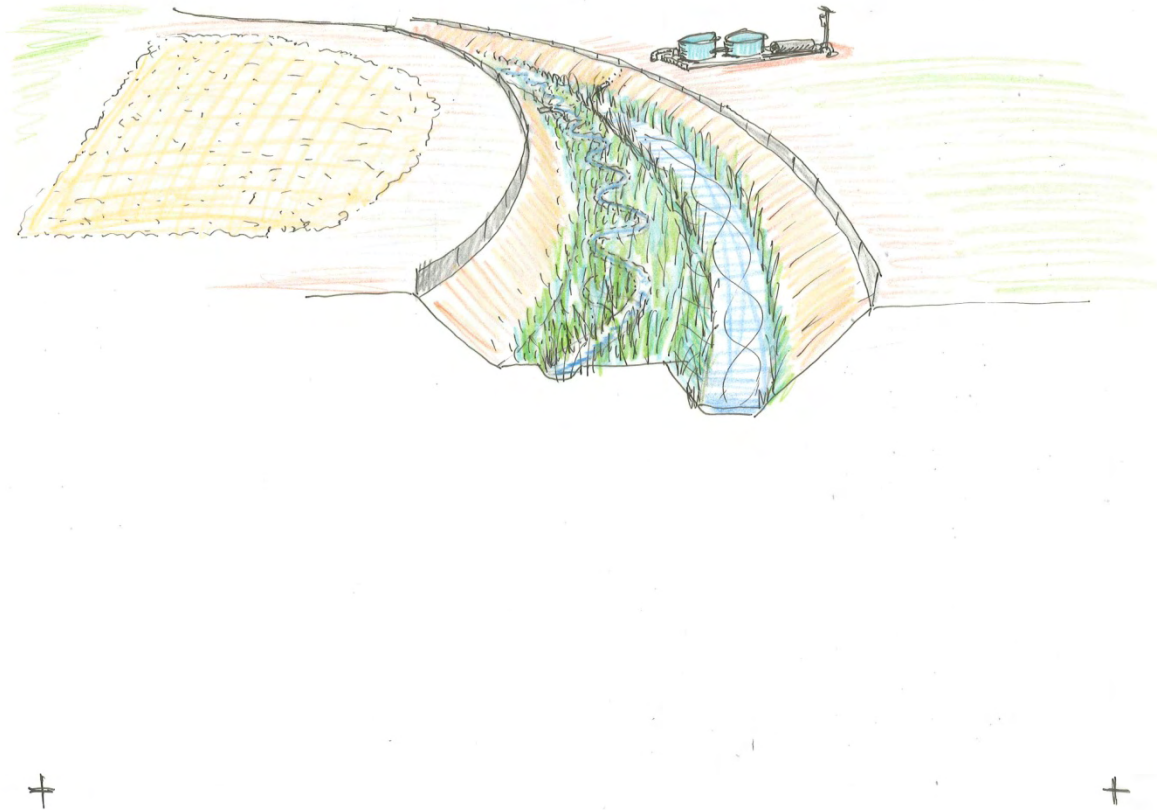


Figure 26: Illustration of an alternative ditch cross section showing several water quality treatment practices (from left to right): 1) woodchip denitrification bioreactor on edge of field outside ditch treating water before it drains into channel; 2) water quality treatment wetland on a perched “bench” through which drain waters flow before dropping into the active channel below (with food safety fence on either side of channel); 3) new intensive water treatment technologies (in tanks, for example) still in development. No single technique alone is assumed to be able to improve runoff water quality, nor is any one technique considered applicable to every situation. A future, healthy landscape is assumed to feature a variety of combinations of water quality management practices reflective of the diversity of soils, crops, hydrology, water systems and land managers.

5. Pedestrian and bike-friendly paths connecting Salinas to regional path systems will be developed along paths or nodes of least resistance.

While inclusion of a trail into the Rec Ditch cross-section was not considered a conveyance liability, it was unanimously rejected by farmers as a hazard for food safety, vandalism and general liability. Some indicated that it could only be a consideration if fencing was installed and compensation was available for the land lost to additional buffers and associated production constraints. Most of those interviewed thought there might be less controversial or challenging routes for trails between Salinas and Castroville, such as along existing right of ways, similar to the trail between Castroville and Molera Road or through easements across less productive farmland.



Figure 27: A tracepaper overlay of desired (fat grey dashed lines) and existing pathways in the watershed along with potential greenways in the city of Salinas as traced over Figure 8.

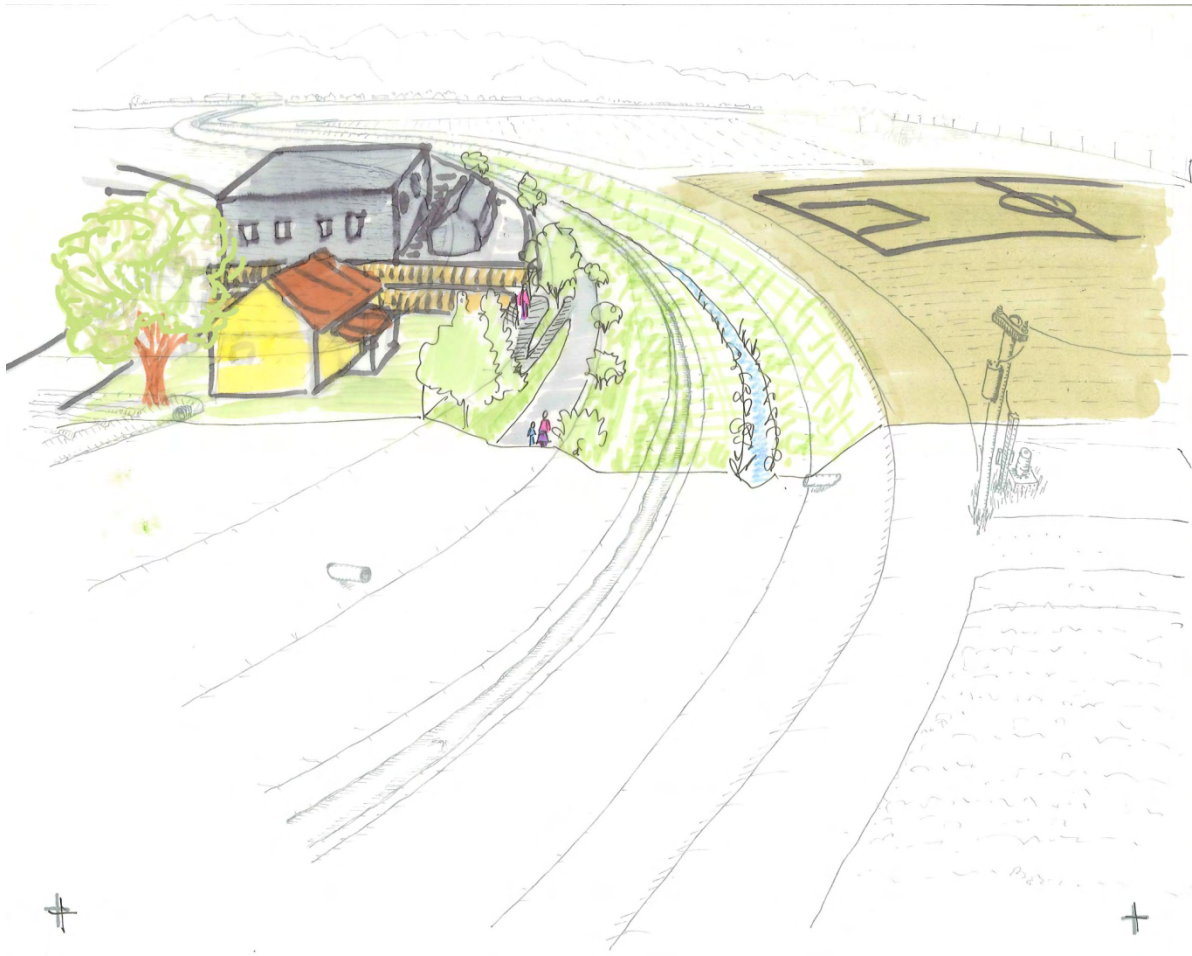


Figure 28: Conceptual image of a “parkway” trail incorporated into the right-of-way of a waterway on the edge of a park in Salinas, as overlaid upon the ditch schematic in Figure 4.



Figure 29: Existing path between Hwy 156 and farmland running from Castroville to Molera Road.

Watershed Objectives Defined at January 2013 Workshop

- Minimize Maintenance Costs
- Children in the Environment
- Sustainable Safe Ag
- Community connection to their creeks and rivers
- Healthy Families and Communities
- Clean Safe Water
- Flood Protection
- Manageable landscapes
- Safe Food Supply
- Environmental Stewardship
- Functioning drainage systems
- Buffers and Water purifying habitat
- Stormwater Management
- Recreation and Open space
- Productive Farming
- Wetland Resource Restoration and Conservation
- Education and Research
- Water Quality projects (BMPs)

Project Hurdles

- Additional Operations and Maintenance costs
- Land Owner agreements/ acquisition
- Construction Costs
- Land use changes
- Food Safety guidelines
- Lighting
- Fencing
- Public Safety
- Trespassing
- Flood protection
- Threatened and Endangered Species
- Protected habitats
- Coastal Protection
- Water Quality Regulations

HOW TO USE THE NITRATE QUICK TEST

*Standard Operating Procedures prepared for the Grower-Shipper Association of Central California by Stefanie Kortman with the assistance of Marc Los Huertos
Spanish Translation by Gabriela Alberola*

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References

Purpose of On-farm Nitrate Testing

In-field nitrate quick tests (NQTs) can be a cost effective tool to determine residual soil nitrate-nitrogen concentration and make fertilizer management decisions to match crop demand. Performing the NQT method requires no formal training, but does require the proper equipment and careful attention to follow the method. When done correctly, the test can provide a reasonably accurate estimate of residual soil nitrate-nitrogen, which can be used to improve fertilizer management decisions to meet crop needs.

DISCLAIMER

This is provided as a guide. As a compilation of existing research and resources, the GSA and its consultants can provide no guarantees regarding the performance of the test or the crops that the tool is being used to manage.

Overview of Method

The method for using in-field NQTs involves five main steps, and generally requires 30-60 minutes to complete:

- 1) Prepare a simple solution to extract nitrate from the soil.
- 2) Sample the soil in a field.
- 3) Add soil to the extracting solution.
- 4) Dip a test strip in solution and read the result.
- 5) Interpret the result for nitrate-nitrogen according to soil type and moisture.

Recommended Frequency of Performing Nitrate Quick Tests

The University of California Cooperative Extension (UCCE) has determined that testing for nitrate during early growing season and prior to the first in-season N application may provide potential to reduce fertilization rates and increase N efficiency. On the other hand, for maximum N efficiency NQT sampling can occur as often as necessary to reduce unnecessary fertilization. Table 1 provides a summary of the recommended frequency of NQT sampling according to experience with on-farm nitrate testing.

Table 1. General recommendations from the UC Cooperative Extension for when to perform NQT sampling based on experience with on-farm sampling and testing.

Experience with NQT Sampling	Frequency of NQT Sampling
Beginner	Early growing season prior to first in-season fertilization.
Experienced	At minimum- early growing season prior to first in-season fertilization. Additionally, as often as necessary ^{1,2} or resources permit.

¹Longer-season crops may require up to 3 samplings to inform fertilization decisions.

²Lettuce growers will benefit from the early season sampling prior to first in-season fertilization in addition to a second test 2-3 weeks later.

Materials¹

Supply	Retailer
Distilled Water	Orchard Supply
Calcium chloride (aquarium grade OK)	Pet stores or Amazon
Volumetrically marked centrifuge tubes	Cole Parmer
Soil sampling probe	Amazon
Bucket	Home Depot
Nitrate quick test strips ²	Hach , Ben Meadows , Cole Parmer

¹For more information on materials, please refer to the Cost Analysis of Nitrate Quick Test Program

²Retailer information corresponds to Hach, LaMotte, and Merckoquant test strips, respectively.

Soil Sampling Procedure

The goal for soil sampling is to collect many representative samples from the crop field or area in which nitrate assessment is needed, consolidate the soil samples, and combine subsamples of the soil with the extracting solution to determine nitrate and/or nitrate-nitrogen (crop-available nitrogen) concentration in soil. **If soil samples do not cover a representative area of the field, NQT results may be unreliable.**

Step 1: Using a soil probe and bucket, collect soil from throughout a crop field or area of interest, sampling soil in an “X” or “N” shape pattern that covers the sides of a field and through the middle. Field-scale results from the NQT will be more accurate the more random the sampling, and the greater the area from which samples are taken. Use Table 2 to determine how many soil samples to collect.

Table 2. Collect soil samples according to observed degree of spatial variability in your crop area/field.

Degree of spatial variability	# Soil Cores to Collect
Low variability	8-12
High variability*	15-20

**High spatial variability includes differences in soil type and/or texture (e.g. sandy, rocky, clay sections of a block); unevenness in plant establishment, irrigation and/or fertilization uniformity; uneven pest pressure; differences in drainage, slope, and/or crop residue present in the soil. If any of these factors of variability are present, or there is concern for nitrate-nitrogen differences, consider dividing the field into separate sections for soil sampling, or at the very least collect the recommended number of soil cores for high variability.*

If you do not know the soil type on your farm, you can use this [link](#) to navigate to the NRCS Web Soil Survey where you can easily input your region or even specific address to find the soil type(s) on your farm. Additionally, you can obtain a printed soil survey from the NRCS, USDA office, or local conservation office, or access a [Web version](#). There is also a free smartphone app called SoilWeb, maintained by the Soil Resource Laboratory at UC Davis, and will provide the soil type for the ground over which you stand while using the app.

Step 2: Insert the soil probe at an angle starting at the seedline and toward the fertilizer band or drip tape (Figures 1, 2, 3). The degree of the angle will depend on where in the bed the seedline and fertilizer band or drip tape are. Collect soil at a depth according to root zone depth, as described in Table 3. A soil probe may be difficult to use in heavy clay soil;

an alternative to the soil probe is a sampling trowel that can be used to obtain soil samples to the recommended depth.

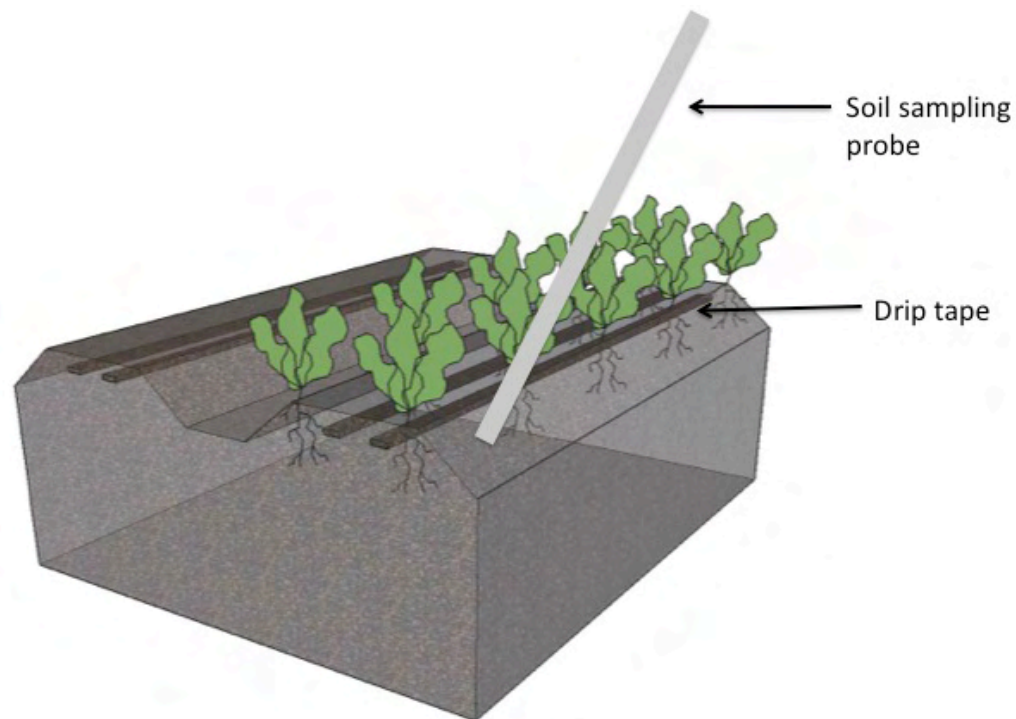


Figure 1. Example of proper soil probe placement in a bed with two lines of subsurface drip tape, where soil probe is inserted at an angle starting at the seedline and extending into the bed below the drip tape. Soil probe insertion depth depends on if plant is shallow vs. deeper rooted; 12-inch depth for deeper rooted, 6-inch for shallow. Sampling should not be restricted to one side of the bed, but should alternate either side throughout the field. Soil sampling technique would be the same with surface drip tape, or with a trowel in place of a soil probe.

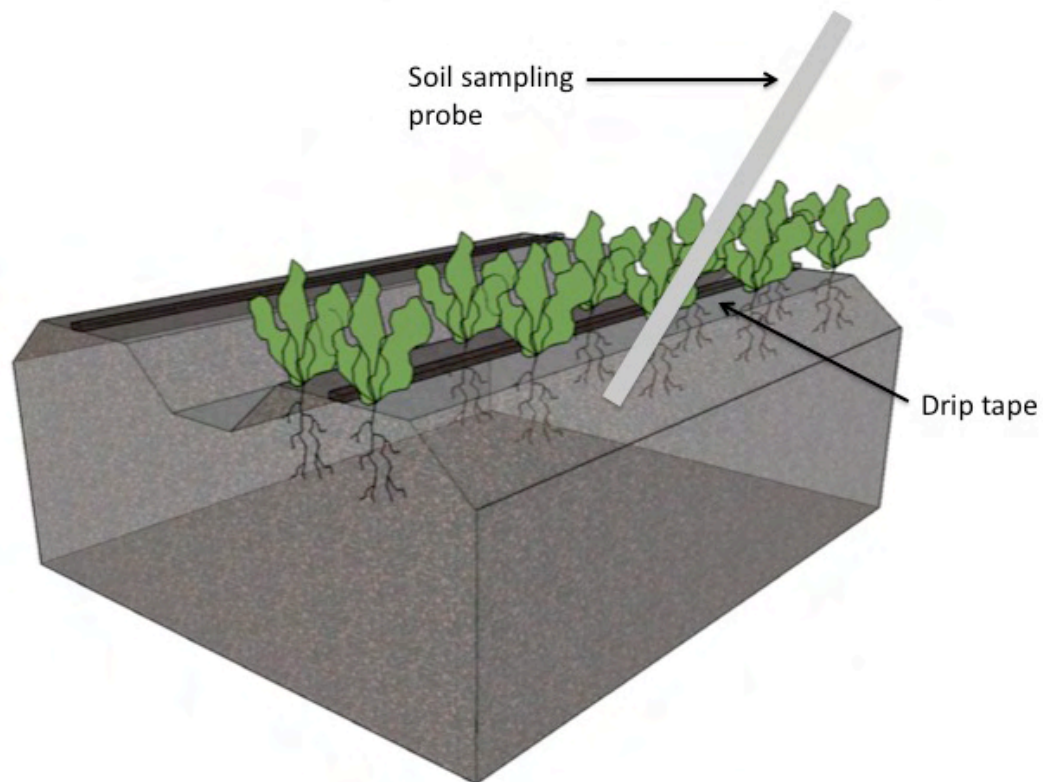


Figure 2. Example of proper soil probe placement in a bed with one line of surface drip tape, where soil probe is inserted at an angle starting at the seedline and extending into the bed below the drip tape. Soil probe insertion depth depends on if plant is shallow vs. deeper rooted; 12-inch depth for deeper rooted, 6-inch for shallow. Sampling should not be restricted to one side of the bed, but should alternate either side throughout the field. Soil sampling technique would be the same with sub-surface drip tape, or with a trowel in place of a soil probe.

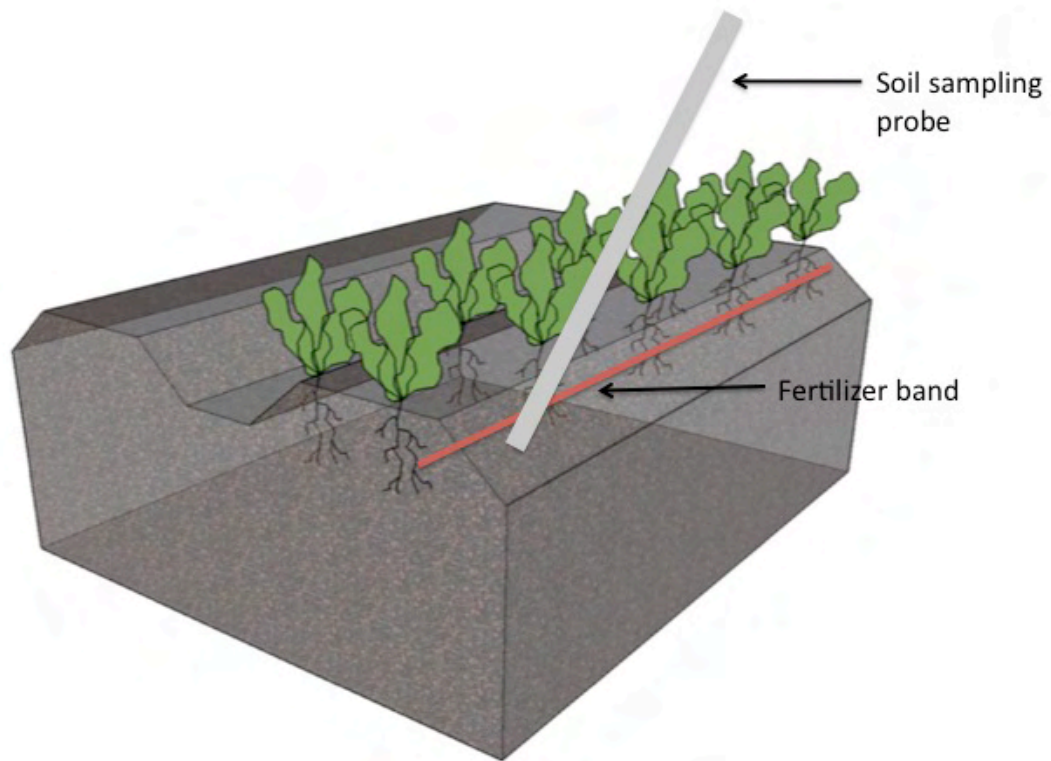


Figure 3. Example of proper soil probe placement in a sprinkler-irrigated system, where soil probe is inserted at an angle starting at the seedline and extending into the bed below the fertilizer band (but NOT immediately after fertilization). Sampling should not be restricted to one side of the bed or fertilizer band, but should alternate either side throughout the field. Soil probe insertion depth depends on if plant is shallow vs. deeper rooted; 12-inch depth for deeper rooted, 6-inch for shallow, or with a trowel in place of a soil probe.

Table 3. Depth at which to collect soil sample according to crop type

General Root Depth	Depth of Soil Sample
Non-shallow rooted crops	12 inches
Shallow-rooted crops (beans, baby lettuce, beets, grains, spinach)	6 inches

Avoid sampling from zones where fertilizer was recently applied, and where soil is too dry for root activity.

Step 3: Accumulate soil cores in a bucket. *For all soil cores, the top 2 inches of soil should be removed from the core before consolidating*, as the soil from this zone may contain high nitrate, but is unavailable for plants to access if soil is dry. When sampling is complete, homogenize soil cores by thoroughly mixing and breaking up clods. Remove any large plant material and/or rocks.

If soil is too difficult to homogenize, such as with heavy clay or gummy wet loam soils, use the “pinch” method:

- 1) Lay out soil cores, remove top 2 inches of each core, and pinch off small amounts from up and down the cores.
- 2) Mix the pinches together to equal the amount needed to add to the extracting solution (as described in “Nitrate Testing” section below).

Nitrate Testing Procedure

Step 1: Make the extracting solution by adding roughly 6 grams (about 1 teaspoon) of the calcium chloride to one gallon of distilled water, and mix thoroughly until dissolved. One gallon of distilled water and 5.6 grams of calcium chloride will be sufficient for approximately 125 tests.

Step 2: Fill volumetric container to 30 mL mark with the solution.

The above two steps can be done in advance, where the extracting solution is stored in a fridge or at room temperature for several months.

Step 3: Add soil to the container until the solution level is at the 40 mL mark. Cap container tightly and shake vigorously until all soil is broken up and dispersed in solution.

Step 4: Allow sample to sit and soil particles to settle out. This may take a few minutes or up to an hour depending on the soil type; clay soils take longer.

Soil **should not** sit in solution for more than an hour, as soil microbes continue to transform nitrogen into the nitrate form even in solution. If soil sits in solution too long, the

nitrate quick test results may reflect a final nitrate concentration that is more than what is actually present in the field, and results may not be representative of the soil you sampled.

Step 5: Dip the nitrate test strip into the clear solution near the top of the container, remove after one second and shake off excess solution on the strip. Wait 60 seconds, then compare the color on the test strip to the standard color chart provided by the test strip manufacturer. It is very important this comparison be done in good light, with a test strip that is NOT expired (expiration date is on test strip container), and IMMEDIATELY after 60 seconds from the time the test strip was dipped in solution, as the test strips may continue to develop color with time. If the color on the test strip is between 2 of the standard color chips, estimate the value of NO₃/NO₃-N based on the intensity of color on the test strip. For more accurate results, run duplicate samples for each field/soil type.

Interpreting the Results of Nitrate Quick Test Strips

Nitrate test strips may be calibrated in different units; the LaMotte Instatest and Hach Aquacheck test strips show results in equivalents of parts per million (ppm) nitrate-nitrogen (NO₃-N); the Merckoquant test strips show results in ppm of nitrate (NO₃). The following calculations in Steps 1-2 apply to the test strips that show results in ppm of nitrate (NO₃). You must perform basic calculations to determine what the test strip result means for your soil/crop/field.

For more detailed information from the UCCE on what NQT result may mean for your crop and soil in terms of the rate of crop N uptake and how to time fertilizer application accordingly, please refer to the document in Appendix A. Additionally, the [Nitrate Groundwater Pollution Hazard Index](#) can provide information to farmers interested in voluntary management practices that reduce nitrogen contamination potential in groundwater.

Determine the Correction Factor

Step 1. **Skip this step if the test strip provides results in ppm nitrate-nitrogen (NO₃-N), such as with LaMotte Instatest and Hach Aquacheck test strips.*

If the test strips are calibrated in parts per million (ppm) of nitrate (NO₃), you will need to convert the strip reading to ppm nitrate-nitrogen (NO₃-N) on a dry soil basis to determine the amount of nitrogen available to the crop. First, find the correction factor for your soil type using the chart below, and considering if your soil was wet or dry when you sampled. Dry soil will appear lighter in color, will break up more easily, and may be powdery. Moist soil will be darker in color and should hold together well.

Table 4. Correction factors for converting results from NQT to ppm nitrate-nitrogen. Use the correction factor based on soil condition at time of sample (moist or dry) and soil texture. Take an average of correction factors for multiple soil texture types if your soil includes those.

Soil Texture	Correction Factor	
	Moist Soil	Dry Soil
Sand	2.3	2.6
Loam	2	2.4
Clay	1.7	2.2

Example 1: The soil you sampled from is classified as Chualar loam, and the soil was moist when you collected the sample, thus the correction factor would be 2.

2 (for moist loam) = 2 correction factor

Example 2: If your soil is classified as more than one texture type, calculate the average of the correction factors for each texture. To do this, add the correction factors for each soil texture present in your soil and divide by the number of soil types.

Your soil is moist Gorgonio **sandy loam**, so your correction factor can be found by:

2.3 (for moist sandy) + 2 (for moist loam)= 4.3

4.3 ÷ 2 (for 2 soil texture types) = 2.15 correction factor

Determine the concentration (ppm) of nitrate-nitrogen (NO₃-N) on a dry soil basis

Step 2. **Skip this step if the test strip provides results in ppm nitrate-nitrogen (NO₃-N), such as with LaMotte Instatest and Hach Aquacheck test strips.* Convert the strip reading to ppm nitrate-nitrogen (NO₃-N) on a dry soil basis by dividing by the correction factor. Test strip reading (ppm NO₃) ÷ correction factor = ppm NO₃-N in dry soil

Example 1. Using the soil from Step 1 Example 1 (Chualar loam, correction factor=2), and a nitrate quick test trip reading of 15 ppm NO₃, the calculation would be:

15 ÷ 2 = 7.5 ppm NO₃-N in dry soil

Convert test strip result from ppm NO₃-N in dry soil to pounds of available nitrogen per acre available to the crop

Step 3. [Optional] Determine the pounds of available nitrogen per acre in your sample. To do this, use the result from Step 2 (7.5 ppm NO₃-N) to convert Nitrate-N in the soil to pounds of available nitrogen per acre in a 12" sample by multiplying the result from Step 2 by a correction factor of 4.

ppm NO₃-N in dry soil × 4 = pounds of nitrogen per acre available to the crop

7.5 × 4 = 30 pounds of nitrogen per acre available to the crop

If you collected soil sampled to a 6-inch depth, multiply by a correction factor of 2 instead of 4.

7.5 × 2 = 15 pounds of nitrogen per acre available to the crop

Sample Scenarios

Scenario 1: Moist soil is collected at a 12" depth from a crop field. You know your soil is silty clay loam, and assume equal parts clay and loam. You used nitrate test strips calibrated in parts per million (ppm) of nitrate (NO₃), and the result on the test trip was 35 ppm NO₃.

Step 1.

Determine the correction factor for your soil.

2 (for moist loam) + 1.7 (for moist clay)= 3.7

3.7 ÷ 2 (for 2 soil texture types) = 1.85 correction factor

Step 2.

Convert the strip reading of 35 ppm NO₃ to ppm Nitrate-N (NO₃-N) on a dry soil basis by dividing the strip result by the soil correction factor.

35 ÷ 1.85 = 19 ppm NO₃-N in dry soil

Step 3.

Determine the pounds of available nitrogen per acre in your sample by multiplying the result from Step 2 by 4 (for 12" soil sampling depth).

19 × 4 = 76 pounds of nitrogen per acre available to the crop

Scenario 2: You used the Web Soil Survey to determine the soil type on your field. The result, as seen in Figure 2 below, is that your crop block includes two different soil types, Clear Lake clay and Pico fine sandy loam, distributed unevenly throughout the field. For the most accurate NQT results possible, at a minimum the field should be sampled in 2 parts, thus you collect 15-20 random soil samples across the two sections of Pico fine sandy loam, and another 15-20 random soil samples throughout the Clear Lake clay section.* You assume 40% of the field is Pico fine sandy loam, and 60% is Clear Lake clay. Dry soil is collected at a 6" depth. You used nitrate test strips calibrated in parts per million (ppm) of nitrate (NO₃) (Merckoquant test strips) and the result on the test trip was 15 ppm NO₃.

**It is also important to use your own knowledge of your farm system to determine sampling needs. Consider how NQT soil sampling could be achieved to account for differences in management and/or in the soil environment that may influence the presence or absence of nitrogen available to the crops. An additional consideration is to redesign a block of field for planting based on one, or similar, soil type.*

Map Unit Legend			
Monterey County, California (CA053)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cg	Clear Lake clay, moderately wet	5.2	60.3%
Pf	Pico fine sandy loam	3.4	39.7%
Totals for Area of Interest		8.6	100.0%

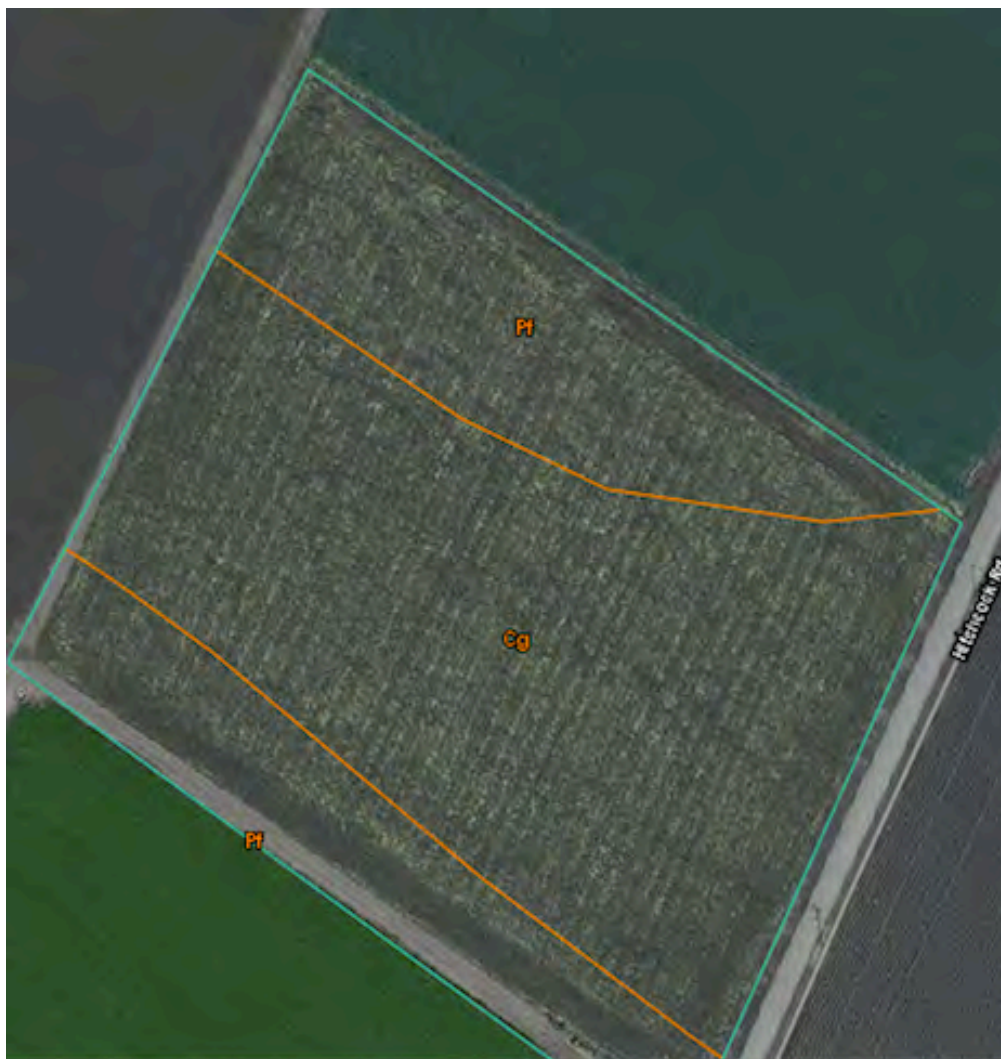


Figure 4. Example of output (cropped for better viewing) from the Web Soil Survey, including a table and a map of the soil types in a user-defined area.

Step 1.

Determine the correction factor for your soil based on dry soil constituents and estimated percent cover.

Pico fine sandy loam (estimated 30% cover in field):

$$2.6 \text{ (for dry sand)} + 2.4 \text{ (for dry loam)} = 5$$

$$5 \times 0.4 \text{ (for 40\% cover)} = 2$$

Clear Lake clay (estimated 60% cover in field):

$$2.2 \text{ (for dry clay)}$$

$$2.2 \times 0.6 \text{ (for 60\% cover)} = 1.3$$

Add correction factors for different soil types together to get the total correction factor:

$$2 \text{ (correction factor for Pico fine sandy loam)} +$$

$$1.3 \text{ (correction factor for Clear Lake clay)} = 3.3 \text{ total correction factor}$$

Step 2.

Convert the strip reading of 15 ppm NO₃ to ppm Nitrate-N (NO₃-N) on a dry soil basis by dividing the strip result by the soil correction factor.

$$15 \div 3.3 = 4.5 \text{ ppm NO}_3\text{-N in dry soil}$$

Step 3.

Determine the pounds of available nitrogen per acre in your sample by multiplying the result from Step 2 by 2 (for 6" soil sampling depth).

$$4.5 \times 2 = 9 \text{ pounds of nitrogen per acre available to the crop}$$

References

- Details on the Nitrate Quick Test - Salinas Valley Agriculture. Richard Smith, ANR Blogs. [Click here](#) for link to blog.
- Soil Nitrate-Nitrogen Quick Test. Agriculture Water Quality Alliance. [Click here](#) for link to PDF.
- Accuracy of test strips for assessing nitrate concentration in soil and water. Michael Cahn, Thomas Lockhart, Laura Murphy, UC Cooperative Extension. [Click here](#) for link to PDF.

This document is a synthesis of the works cited above, and respectful credit is given to these authors and organizations for their contributions to establishing NQT protocols and interpreting results.

Appendix A

Cost Analysis of Nitrate Quick Test Program: What are the True Costs to Growers? [Click here](#) for link to PDF in English or Spanish.

Appendix B

In-season soil nitrate testing explained. Tim Hartz, UC Davis, and Richard Smith, Monterey County UCCE. [Click here](#) for link to PDF in English or Spanish.

Nitrate Quick Test SOP Appendix A:
Cost Analysis of Nitrate Quick Test Program:
What are the True Costs to Growers?

Prepared for the Grower-Shipper Association of Central California by Jaclyn Wiley with the
assistance of Kay Mercer and Joel Wiley
Spanish Translation by Gabriela Alberola

The goal of this study is to determine the cost of implementing a nitrate quick test (NQT) program for a growing operation. Given the number of variables involved in an NQT program, it is important that growers evaluate their goals for this program and determine their needs. The following study will give growers the tools needed to evaluate and establish a cost effective nitrate quick test program.

Nitrate Quick Test Strips:

Although the University of California Cooperative Extension identified three brands of nitrate quick tests to adequately estimate soil nitrate levels, research for this cost analysis found that most industry professionals rely on the EM Quant Nitrate Test Strips (Merckoquant NO₃/NO₂). This test strip allows growers to evaluate nitrate levels on a real time basis at a smaller concentration than the other brands and does not require any additional calculations to determine the nitrate (NO₃) concentration in soil or water. It is important to note that these test strips may not be effective for soils with lower nitrate levels as they are unable to measure nitrate levels lower than 10ppm. Additionally, the Merckoquant test strips DO require additional calculations if concentration of nitrate-nitrogen (NO₃-N) is desired, which is the case for growers who are using NQT to determine residual soil nitrate-nitrogen concentration and make fertilizer management decisions to match crop demand.

All prices listed in this report are considered retail prices. Growers will need to contact vendors directly for bulk pricing as discount varies based on quantity and vendor.

Nitrate Test Strip Pricing and Details

Brand	Measurement	Price	# of Strips	Price/Strip	Retailer
Merckoquant NO ₃ /NO ₂ ²	NO3 (10-500ppm)	\$68.00	100	\$0.68	Cole Parmer
LaMotte Instatest NO ₃ /NO ₂ ¹	NO3-N (0-50ppm)	\$11.70	50	\$0.23	Ben Meadows
Hach Aquachek ¹	NO3-N (0-50ppm)	\$19.95	25	\$0.80	Hach Company

¹LaMotte and Hach test strips measure NO₃-N (i.e. crop-available nitrogen); some calculations will be necessary to determine NO₃ concentration.

²The Merckoquant test strips measure NO₃ concentration; some calculations will be required to determine soil NO₃-N concentration (i.e. crop-available nitrogen). These test strips will also require the added cost of refrigeration, either in an office or vehicle refrigeration unit.

Nitrate Test Strip Cost Evaluation

Brand	Price for 100 strips	Price for 500 strips	Price for 5,000 strips
Merckoquant NO ₃ /NO ₂	\$68.00	\$340.00	\$3,400.00
LaMotte Instatest NO ₃ /NO ₂	\$23.40	\$117.00	\$1,170.00
Hach Aquachek	\$79.80	\$399.00	\$3,990.00

Required Nitrate Quick Test Supplies:

When determining the test supplies appropriate for an operation, a series of questions need to be answered. If testing will be done in the field, a vehicle refrigerator will be needed to refrigerate Merckoquant test strips. A grower will have to decide between round or flat bottom centrifuge tubes and the quantity of tubes. You can safely estimate that each centrifuge tube has a lifetime of 100 samples. Round bottom centrifuge tubes cost less than flat bottom but will require a tube rack, while flat bottom tubes could be free standing eliminating the need for a tube rack.

Additionally, acquiring laboratory grade calcium chloride may pose a challenge for some growers as it can be considered a hazardous material. Aquarium calcium chloride, which can be purchased at most pet stores, has the necessary properties to create a soil suspension without adding the complex ordering requirements of laboratory grade chemicals.

In the three charts below, the required supplies are broken down as supplies purchased one-time, supplies to be replaced after 100 uses and supplies that are completely disposable.

Nitrate Quick Test Supplies to be Purchased Once

	Supply	Price	Quantity	Retailer
1	Centrifuge Tube Rack (Holds 16 tubes) ¹	\$31.33-\$42.70	1	Cole Parmer, Amazon
2	Scale	\$59.95-\$150.00	1	Amazon
3	Truck Refrigerator ²	\$105.95-\$200.00	1	Amazon
4	Long Handled Sampling Trowel ³	\$23.00-\$25.00	1	Amazon
5	Soil Probe ³	\$29.95-\$60.00	1	Amazon
6	Bucket	\$2.78	1	Home Depot

¹ A centrifuge tube rack is only required if a grower is using a round bottom centrifuge tube but may also be helpful when organizing tubes even when using flat bottom centrifuge tubes.

² The truck refrigerator is only required for the Merckoquant test strips.

³ A grower should decide whether to use a sampling trowel or soil probe. Although soil probes are able to take a deeper sample, they may be difficult to use in heavy clay soils. Soil probes may also cause compaction within the sample.

Nitrate Quick Test Supplies to be replaced after Approximately 100 Uses

	Supply	Price	Quantity/pack	Retailer
7	Centrifuge Tubes (round bottom) ¹	\$164.00	500	Cole Parmer
8	Centrifuge Tubes (flat bottom) ¹	\$201.00	500	Cole Parmer

*A grower should select one type of centrifuge tube and one type of calcium chloride.

* Please note that sites such as Amazon.com carry centrifuge tubes in smaller quantity making it a lower cost.

*Although centrifuge tubes are reusable items, we can estimate that one tube can be used for approximately 100 samples before needing to be replaced.

¹ A centrifuge tube rack is needed when using round bottom centrifuge tubes but may also be helpful when organizing samples even when using flat bottom tubes.

Nitrate Quick Test Supplies that are Disposable

	Supply	Price	Quantity/pack	Retailer
9	Paper Bags (lunch bag size) ¹	\$10.99-\$12.99	500	Amazon.com
10	Calcium Chloride (Laboratory grade) ^{2,3}	\$55.00-\$57.00	500 grams	Cole Parmer
11	Calcium Chloride (aquarium grade) ^{2,3}	\$8.99-\$16.99	800 grams	Amazon.com
12	Distilled Water ³	\$1.89	1 gallon	Orchard Supply

¹ One paper bag will be used per soil sample.

² Laboratory grade calcium chloride is not necessary for this use and may require additional paperwork with a vendor as it is considered a hazardous material. Aquarium grade calcium chloride is just as effective and can be purchased from any aquarium store.

³ One gallon of distilled water and 5.6 grams of calcium chloride will be sufficient for approximately 125 samples.

Supply Cost Estimates

The charts included below outline the estimated cost of supplies to maintain a nitrate quick test program. The range of costs is based on the high and low retail prices included in the charts above. To calculate the numbers below we used item numbers 1, 2, 3, 4, 6, 7, 9, 11, and 12 from the charts above as well as the Merckoquant test strips as they are the most widely used by both researchers and practitioners in the industry.

A few things to remember...

-When considering the cost of these supplies, it is important to remember that the upfront cost for the one-time purchase supplies will be the same no matter how many tests a grower plans run. However, the more tests a grower runs, the more these items depreciate and their overall cost per sample goes down.

-We can estimate that each centrifuge tube will last for approximately 100 tests before needing to be replaced. Taking this into consideration, a bag of 500 centrifuge tubes will last for 5,000 samples. After 5,000 samples a grower should consider replacing centrifuge tubes.

-One gallon of distilled water and 5.6 grams of calcium chloride will be sufficient for approximately 125 tests. If a grower purchases 500 grams of calcium chloride, and it is stored correctly, they would have enough calcium chloride to complete over 11,000 samples.

Supply Cost Estimate if a Grower Plans to Complete 100 Samples

Supplies for 100 Samples	Price per Sample	Price per 100 Samples
One Time Purchase supplies	\$2.30-\$3.61	\$229.96-\$361.43
100 Use supplies	\$1.64	\$164.00
Disposable supplies	\$0.90-\$1.00	\$89.87-\$99.87
Total	\$4.84-\$6.25	\$483.83-\$625.30

Supply Cost Estimate if a Grower Plans to Complete 500 Samples

All Supplies for 500 Samples	Price per Sample	Price per 500 Samples
One Time Purchase supplies	\$0.46-\$0.72	\$229.96-\$361.43
100 Use supplies	\$0.33	\$164.00
Disposable supplies	\$0.74-\$0.76	\$367.54-\$377.54
Total	\$1.53-\$1.81	\$761.50-\$902.97

Supply Cost Estimate if a Grower Plans to Complete 5,000 Samples

All Supplies for 5,000 Samples	Price per Sample	Price per 5,000 Samples
One Time Purchase supplies	\$0.05-\$0.07	\$229.96-\$361.43
100 Use supplies	\$0.03	\$164.00
Disposable supplies	\$0.72-\$0.73	\$3,594.49-\$3,622.49
Total	\$0.80-\$0.83	\$3,988.45-\$4,147.92

Other Associated Costs of Sampling**Labor Considerations:**

There is no consensus or standard operating procedure on sampling methodology for nitrate quick tests. Different fields, blocks and operations may take samples differently depending on the end goal. Samplers may pull anywhere from 8-20 soil sub samples to create a composite sample for testing a block. Others may take three separate samples at different points and test each one to determine whether nitrate content is consistent throughout the block. It is important to note that the more samples taken, the less variability you need to be concerned with, and the more accurate and informative the results from the NQT. Other contributing factors to take into consideration:

- Testing time may vary depending on soil type and absorption rate. A reasonable expectation of time per sample will range from 30 minutes to one hour, but may be longer for fields with more than one soil type, clayey soil that is difficult to sample and requires more time to settle in solution, high spatial variability is soil inputs and/or crop/soil environment, or crop blocks that cover greater area.
- Travel time will vary greatly depending on proximity of ranches, samplers with other tasks, and whether the sampler was already on the ranch for another task.

Estimated Labor Costs

Labor Type	Cost/hour
Grower	\$125.00
Consultant	\$70.00-\$100.00
Sampler/other staff	\$18.75-\$25.00

*Staff wage estimated at \$15.00 - \$20.00 per hour with a 25% estimate for benefits. The cost of benefits will vary based on the packages offered by the operation.

Transportation Considerations:

The costs of transportation will vary with each operation. If a vehicle has to be purchased to complete these samples, it will obviously cause a substantial increase in the cost of a sample. Each operation will have to evaluate their transportation cost as it is heavily dependent on the number of samples and the distance between ranches or blocks.

Estimated Transportation Costs

Transportation	Additional Cost (estimate)
Operation has vehicle available	Current cost to grower
Operation purchases new truck (4x4) ¹	\$27,000-35,000
Operation purchases gently used ²	\$18,000-25,000
Operation reimburses employee ³	\$0.56/mile

¹ New vehicle cost based on Ford F-150 STX 4x4 model

² Used vehicle price based on Kelley Blue Book estimate for F-150 STX 4x4 model with approximately 30,000 miles

³ Reimburse price based on IRS standard mileage rate for 2014

Space Considerations:

Cost for space for completing nitrate quick tests will also vary by operation. A grower who decides to complete samples in the field or truck will not need to have the office or lab space to complete testing. If a grower decides to complete tests in an office or lab space, we estimate that they will need a 6'x3' space for 25 samples. Agricultural office space in the Salinas area rents for approximately \$1.00-\$1.30 sq ft.

Space	Estimated Cost/sqft for ag office space	Additional sqft needed for 25 samples	price for space for 25 sample	100	500	5000
Testing completed in Field or Space Already Available	\$0.00	0	0	0	0	0
Testing completed at Office	\$1.15	18	\$20.70	\$82.80	\$414.00	\$4,140.00

*Office or lab space may not be required. Space required depends on operation preference.

*It is not likely that all samples will be processed at the same time leaving room for overlap on space requirements.

Alternatives:

- The grower can contact their fertilizer supplier or crop service company to inquire about testing. Prices vary.
- The grower can purchase testing supplies from Wilbur Ellis. Some custom sampling companies may also offer testing supplies.
- The grower could hire a third party sampling company to run nitrate quick tests. Food Safety Sampling offers these services. Prices vary based on number of samples.
- Some contractors and service companies also offer rapid result nitrate testing with in house test equipment. NH3 and Morgan Consulting offer this service. Prices vary.

It is important to note that a nitrate quick test program will not be cost effective if the test is not performed correctly. Please refer to 'How to Use the Nitrate Quick Test' for detailed information on effective sampling and processing procedures for NQT.

In-season soil nitrate testing explained

Tim Hartz, UC Davis and Richard Smith, Monterey County UCCE

The recent adoption of the new 'Ag Order' by the Central Coast Region Water Quality Control Board has increased interest in management practices that can help growers reduce nitrogen fertilization. In-season soil nitrate testing is one such practice; we have conducted dozens of field trials showing that testing soil for residual nitrate-nitrogen ($\text{NO}_3\text{-N}$) prior to sidedressing or fertigation can reliably identify fields in which N application can be reduced or postponed. UC has promoted a value of 20 parts per million (PPM) residual soil $\text{NO}_3\text{-N}$ in the root zone of vegetable crops as the action threshold. Above that level no N fertilization is required *at that time*; below that threshold, some application may be appropriate. In our contacts with growers and consultants it is clear that there are a number of questions about how to safely and efficiently use in-season soil nitrate testing. Here are answers to some questions that we have been asked repeatedly.

1. Does the 20 PPM $\text{NO}_3\text{-N}$ threshold work for all crops?

This threshold is broadly applicable across a range of common vegetable crops. That is because 20 PPM represents enough N to supply crop N uptake requirements for an extended period of time. If you take a sample of the top 12 inches of soil, that sample will represent approximately 4,000,000 lb of soil per acre; if that soil has a $\text{NO}_3\text{-N}$ concentration of 20 PPM, then the soil contains about 80 lb $\text{NO}_3\text{-N}$ per acre. Cool season vegetable crops have a characteristic N uptake pattern. During the first half of the growing season plants take up N slowly, typically no more than 1-2 lb N/acre/day. Therefore, when a soil nitrate test is taken prior to first sidedressing, a 20 PPM $\text{NO}_3\text{-N}$ value means that crop N uptake can be easily met for at least 2-3 weeks just from residual soil nitrate. From midseason until harvest, crop N uptake is much faster, 3-4 lb N/acre/day for lettuce and up to perhaps 5-6 lb N/acre/day for celery and brassica crops. A soil test taken at midseason would indicate that sufficient N is available for a couple of weeks. *The 20 PPM threshold does not apply to strawberries, which have a low N uptake rate, and can thrive with a lower level of available soil N. Also, spinach presents special challenges, which we will address in a subsequent article.*

2. Does a 20 PPM $\text{NO}_3\text{-N}$ test result mean the same thing in all fields?

Two field characteristics should be considered when evaluating an in-season soil $\text{NO}_3\text{-N}$ test result. First, what is the nitrogen supplying power of the soil? In general, soil with higher organic matter content, or in which a large amount of vegetable crop residue has recently been incorporated, will supply more nitrogen over time, thereby reducing the rate at which the current crop will deplete the residual soil $\text{NO}_3\text{-N}$. A soil with > 2% organic matter will mineralize more crop-available N than a soil with < 1%; a field in which the prior crop was spring mix will mineralize less N than a field in which the prior crop was broccoli (which leaves vastly more crop residue than spring mix). The other major factor is irrigation. A heavy textured soil being drip irrigated is likely to have much less leaching than a sandy soil being sprinkler irrigated. Where heavy leaching is experienced, the soil nitrate test would have to be repeated to ensure accuracy.

3. Do I need to maintain at least 20 PPM NO₃-N in soil throughout the growth cycle for crops to grow at a peak rate?

Absolutely not. The whole point of the test is to determine whether there is enough available soil N to carry the crop for an extended period of time. Vegetable crops can grow at peak rates until soil NO₃-N concentration is depleted to a much lower level. In evaluating the soil NO₃-N concentration at harvest in the many lettuce fertilization trials we have run, high yields were often achieved with N treatments in which soil NO₃-N ended up between 5-10 PPM at harvest. This is an important point, because if fields are managed to maintain at least 20 PPM NO₃-N right up to harvest, then a large amount of soil nitrate will be available to be leached by the germination water of the following crop, or by winter rainfall.

4. If my residual soil NO₃-N is below 20 PPM, does that mean I should apply my full N sidedress rate?

For maximum efficiency of fertilizer N recovery by the crop, it makes more sense to scale your application depending on the soil value. As previously explained, a foot of soil weighs about 4,000,000 lb/acre, so each PPM NO₃-N on a soil test represents about 4 lb N/acre. In theory, you could tailor your N application rates exactly using this relationship. However, it is more realistic to use a system in which you apply a half rate if the soil test is between 10-20 PPM, and a full rate if the test is less than 10 PPM.

5. How do I collect a sample that is representative of the root zone?

This can be a complicated topic. When sampling is performed at an early growth stage, before a sidedress or fertigation has been done, sampling in the plant row will generally do a good job. However, once an N application has been made, the soil nitrate is not uniformly distributed throughout the bed, and your sampling technique must attempt to represent the overall condition. Because different growers use different configurations of knives on sidedress rigs, and have different combinations of bed width/number of plant rows/number of drip tapes, there is no sampling protocol that works for everyone. Obviously, zones of recent banded application need to be avoided and, in the case of drip irrigation, areas of the bed that remain too dry for root activity should be avoided as well.

6. How often should soil NO₃-N sampling be done?

From the standpoint of achieving maximum N efficiency, the answer is as often as necessary to ensure that unnecessary N fertilization is minimized. For lettuce, a system of soil sampling prior to the first sidedress or fertigation, and a second test 2-3 weeks later, would provide sufficient information with which to efficiently schedule N applications throughout the season. Longer season crops like celery or cauliflower may require up to 3 samplings to inform fertilization decisions. As a practical matter, soil sampling prior to the first in-season N application offers the greatest potential for reducing fertilization rates, and increasing N efficiency. While repeat samplings can be beneficial, the logistics of sampling multiple times per crop, and responding to those results, can be challenging. Particularly for growers who have no experience with in-season soil sampling, we recommend beginning with only an early season sample. Once that practice has been integrated into your management routine, in-season sampling can be expanded.

Advancing Business Models for Agricultural Stewardship of Monterey Bay Watersheds

Convening an Agricultural Industry Roundtable on Sustainability

**Final Report
May 2014**

Prepared by
Melanie Beretti, M.A. and Andrew Arnold, M.Sc.



This report was prepared for the Water Resource Project Coordination subcommittee with funding from the Integrated Regional Watershed Management Program grant subcontract through the Monterey Bay Sanctuary Foundation.

Special thanks to the Monterey County Sustainability Working Group, Water Resource Project Coordination subcommittee, Central Coast Grower-Shipper Association and Western Growers for providing insight and support for this project!

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Executive Summary

Working in consultation with the Water Resources Project Coordination subcommittee and members of the Monterey County Sustainability Working Group, Western Growers, and the Central Coast Grower-Shipper Association, SureHarvest convened and facilitated an agricultural industry roundtable discussion on sustainability initiatives on March 28, 2014 in Salinas, California. Twenty-two industry leaders, company executives, and CSR/sustainability directors on California's Central Coast and beyond participated in the roundtable.

In large and small group discussion, participants shared experience and knowledge about a number of locally relevant sustainability topics and initiatives. Locally relevant topics discussed included:

- Industry sustainability update and trends
- Self-assessment initiatives
- Performance-based initiatives
- Certification programs
- Other sustainability tools and initiatives
- Regional projects

Together, the group discussed and attempted to answer a number of questions including: In a future with more people to feed, fewer resources, and less predictable weather, what initiatives and tools hold the most promise to benefit people, planet, and profit? How can we collaborate to build and scale-up locally-relevant sustainability initiatives? What roadblocks stand in our way? How can we clear those hurdles to do more to enhance our local economy and environment? Can we leverage the region's uniqueness and natural diversity in the marketplace, and vice versa?

Participants identified value, challenges and opportunities for collaborative action across three broad categories: Market and regulatory compliance; Program design and core elements; and Data collection, confidentiality, and information sharing. At the highest level the group expressed interest in and support for taking an industry-led proactive approach to advance sustainability for agriculture, our community and environment.

This report summarizes the group's discussion, identifies key strategic opportunities and high value next steps:

- *Support the continued development and expansion of existing tools and initiatives*
- *Improve coordination amongst industry groups, resource agencies, and nonprofits*
- *Educate buyers and consumers on ag conservation/sustainability efforts in our region*
- *Create a roadmap for the development of a collaborative sustainability program*

Background

In January 2013, the Gabilan Watershed Water Resource Project Coordination (WRPC) effort – funded through the Integrated Regional Watershed Management Program grant – convened its second stakeholder meeting. A key next step identified during this meeting was to engage agricultural leaders, company executives, and sustainability/social responsibility directors in a collaborative, proactive discussion to identify opportunities to build and strengthen the business case for sustainability and agricultural stewardship of Monterey Bay watersheds.

Sustainability initiatives across the agrifood sector have gained prevalence over the past decade to meet changing consumer demand and address increasing resource scarcity and variability. More and more companies are formalizing their sustainability programs and dedicating significant resources toward these efforts. In order for the agricultural industry to promote the widespread adoption of sustainability actions in our region, a stronger business case is needed – one that supports a collaborative, proactive and sustainable future for agriculture, our community and environment.

SureHarvest, an agribusiness sustainability consulting and software company, was contracted to convene an industry-focused workshop to gauge broader interest and opportunities to participate in the development and/or expansion of initiatives to promote sustainable watershed stewardship. This project is a critical first step toward developing and implementing a broader strategy for advancing business models for agricultural stewardship in the Monterey Bay region.

Project Description

Working in consultation with the WRPC subcommittee and members of the Monterey County Sustainability Working Group, Western Growers, and the Central Coast Grower-Shipper Association, SureHarvest facilitated an agricultural industry roundtable discussion on sustainability initiatives on March 28, 2014 in Salinas, California (Attachment 1). The Monterey County Sustainability Working Group is an agricultural industry-led network for sharing current sustainability efforts among producers, shippers and processors in the Central Coast region. Industry leaders, company executives, and CSR/sustainability directors on California's Central Coast and beyond were invited to participate in the roundtable.

The goal for this meeting was to increase participants' collective understanding of the underlying business opportunities and challenges for key sustainability initiatives and tools, and set the stage for collaborative action. The meeting was attended by five agricultural company owners/presidents, ten agricultural company sustainability directors/coordinators, three industry service providers, two agricultural association representatives, and two resource agency representatives. Participants discussed the questions: In a future with more people to feed, fewer resources, and less predictable weather, what initiatives and tools hold the most promise to benefit people, planet, and profit? How can we collaborate to build and scale-up locally-relevant sustainability initiatives? What roadblocks stand in our way? How can we clear those hurdles to do more to enhance our local economy and environment? Can we leverage the region's uniqueness and natural diversity in the marketplace, and vice versa?

Locally-relevant topics discussed included:

- Industry sustainability update and trends
- Self-assessment initiatives
- Performance-based initiatives
- Certification programs
- Other sustainability tools and initiatives
- Regional projects

Sustainability Initiatives Overview

Over the past decade a growing number of public and private initiatives and tools have been developed to ensure our food and beverage production system can sustain itself and meet the needs of our changing world. To address the social, economic and environmental issues impacting the Monterey Bay region, a number of programs, tools and initiatives stood out as being most relevant to our local agricultural industry. Below is a brief overview of the types of sustainability efforts that provided a foundation for discussion during the industry workshop.

Self-Assessment Initiatives

Self-assessment programs are designed to be voluntary and allow participants to complete an accompanying assessment (questionnaire). Self-assessments can be practice-based, performance-based, or a combination of both. Typically, these programs are used by grower-oriented trade associations to collect grower responses to crop-specific practice questions across a number of management areas such as water, energy, pests, nutrients, human resources, etc. Programs vary in their geographic focus from regional to statewide to national in scope. Growers complete assessments over multiple seasons to see how they are progressing along the sustainability continuum. Associations use the data to monitor industry progress over time through benchmarking of aggregate data and using that information for industry-level communications with the market and policy makers. Assessment results also drive targeted education and research opportunities.

Workshop participants shared their experience with a number of well-established self-assessment programs including the California Sustainable Winegrowing Program (Information about SWP is available at www.sustainablewinegrowing.org), and the California Almond Sustainability Program (Information about CASP is available at www.almondboard.com/growers/sustainability/Pages/Default.aspx), United Fresh Produce Foundation's Sustainability Guide and Self-Assessment for Fruit and Vegetable Production for individual companies to use (More information about sustainability at United Fresh is available at www.unitedfresh.org/programs).

Performance-Based Initiatives

Performance-based tools and programs are relatively new in the sustainability program landscape. The metrics-oriented programs and initiatives are introducing quantitative performance metrics that can be used to measure water use efficiency, nitrogen application,

energy efficiency, greenhouse gas emissions and other resource usage. The goal of these programs is to track performance over time to drive continuous improvement and innovation at the individual operation level as well as providing growers the ability to compare their performance against their peers. Programs are also including other members of the agrifood supply chain such as shippers, processors and distributors with performance measurement tools. Retailers and foodservice companies are easing into understanding product level sustainability where metric data is being requested from suppliers. The addition of performance metrics to practice-based programs is a next step in the evolution of sustainability programs.

Workshop participants shared their experience participating in the development of and using metrics tools such as the Stewardship Index for Specialty Crops (Information about SISC can be found at www.stewardshipindex.org) and Performance Incentives for Conservation in Agriculture (Contact Lisa Lurie with the Resource Conservation District of Santa Cruz County for more information, llurie@rcdsantacruz.org).

Certification Programs

Certification programs differ from the voluntary self-assessment programs in that they use a standard consisting of prescribed practices and in some cases, metrics to certify a certain level of performance. Growers must score above a certain threshold level in order to be certified by a third-party auditor and certification body. Certifications are most widely used for eco-labels and food safety programs.

Workshop participants shared their experience with certification programs including Sustainability in Practice (Information about SIP Certified wines available at www.sipcertified.org) and Certified Organic (More information about the National Organic Program is available at www.ams.usda.gov/AMSV1.0/nop).

Other Tools and Initiatives

Other tools and initiatives that were discussed include Western Growers ToolBox, Farmers for Water Quality and On Farm Solutions, and the Agricultural Water Quality Alliance (AWQA). Western Growers is supporting the development of a Grower ToolBox, an online platform WG intends to be a one-stop water quality, food safety and sustainability data management service available to WG members (Contact Hank Giclas at Western Growers for more information, hgiclas@wga.com). On Farm Solutions is a Central Coast grower-supported initiative currently engaged in evaluating water quality practice efficacy and facilitating information sharing and adoption amongst its members (Contact Abby Taylor-Silva with the Grower-Shipper Association, abby@growershipper.com). The AWQA has been a long-standing collaboration amongst the agricultural industry, resource agencies, and nonprofits on the Central Coast (More information available at www.awqa.org).

Regional Projects

Two regional projects aimed at addressing complex water resource management issues facing the agricultural and natural resource communities in Monterey County were discussed during the workshop. Along the Salinas River, agricultural landowners and operators have been participating in demonstration projects as part of the Salinas River multi-benefit floodplain management approach (Contact Jennifer Biringer with the Nature Conservancy, jbiringer@tnc.org). In the Gabilan and other watersheds on the Central Coast, agricultural landowners have been collaborating in wetland research and restoration projects (More information available from the Central Coast Wetlands Group - ccwg.mlml.calstate.edu/projects/current-projects).

Strategic Opportunities

Challenges to Overcome

A number of major themes were identified by the group as key challenges that need to be addressed as part of any collaborative approach to advance sustainability.

Market and Regulatory Compliance

- Companies are focusing significant time, energy and resources toward complying with water quality regulations right now. Meeting buyer sustainability requests is not as pressing an issue compared to regulatory problems being addressed and taking up staff and service provider focus and time.
- Buyer sustainability questionnaires and programs are creating additional burdens for operations. Companies are being asked to complete an increasing number of buyer sustainability/social responsibility questionnaires, but receiving little to no value from these efforts.
- The marketplace is not necessarily asking for balanced values (people, planet, profit), and purchasing decisions and supplier contracts are still heavily focused on product cost, quality and yield.
- National sustainability standards being developed will add another layer that is not consistent with what is currently in the marketplace.

Program Design and Core Elements

- Certifications were viewed as costly, may dilute individual brands, and occupy a relatively small niche in the marketplace. While certifications play a role in the marketplace, caution was raised that certifications can hinder continuous improvement and are very burdensome to obtain.
- Prescriptive initiatives constrain individual action and limit innovation and change over time.
- Large or extensive questionnaires can be overwhelming at first, and are particularly challenging when they focus on farm-level activities.
- Companies operating in this region also grow and ship throughout the U.S. and internationally, so the global context must be taken into account for any broad sustainability efforts.

- Regionally-based approaches can enhance a broader initiative and local agricultural community leadership is needed to drive any effort.

Data Collection, Confidentiality, and Information Sharing

- At the farm-level, there is resistance to data sharing, and requests for data are largely viewed as invading privacy and company trade secrets. Extrapolating production costs from metrics data is of particular concern.
- There is a general concern that any proactive initiatives and information sharing will be used to develop more regulations on the industry.
- The value of sharing information to drive innovation and demonstrate what is being done well, is not broadly recognized across the industry.
- Many operations are limited by not having adequate protocols and record-keeping tools to track and demonstrate success.
- Current lack of a confidential data and information sharing platform for industry is limiting.

Value and Opportunities

In light of the challenges and concerns discussed above, a number of possible solutions and opportunities were identified through the group discussions.

Market and Regulatory Compliance

- There is a desire to take a proactive approach with buyers to talk about sustainability and demonstrate to them what the produce industry is doing in the sustainability area.
- It is important that any program or initiative help growers comply with regulations, provide regulatory relief, or reduce the overall cost and burden associated with regulations.
- A number of participants were interested in other incentives beyond compliance that a broader sustainability program could support (e.g., ecosystem services, insurance premium reductions).

Program Design and Core Elements

- Voluntary self-assessment programs were favored over certifications by the group.
- Value was seen in practice-based programs to share information and help drive innovation, yet performance-based programs were of interest to track, measure and demonstrate progress.
- Key program elements identified by participants include: 1) that it be industry-led; 2) be updated regularly to take into consideration new science, technologies, and changing needs of the industry and community; and, 3) integrate or align with existing data and documentation requirements.
- Sustainability is about continuous improvement and programs or initiatives need to encourage change and innovation to benefit people, planet and profit.
- The sustainability efforts of an organization must be supported by top management and best lead by someone with broad understanding of sustainability and able to engage the organization broadly.

Data Collection, Confidentiality and Information Sharing

- It was broadly recognized that it is more comfortable to share quantitative information about change and improvements (e.g. percent reductions), as opposed to the raw data directly.
- Greater awareness is needed across the industry on the value and importance of information sharing (e.g. to allow industry to be proactive not reactive, to learn from peers and keep from “recreating the wheel”).
- It was recognized that a confidential, common information/data digital platform would be needed to facilitate data capture and sharing.

Strategic Opportunities

There is clear desire amongst participants for the agricultural industry to come together and take a proactive lead in sustainability. There are increasing sustainability/social responsibility initiatives coming from buyers, yet in most cases, the buyers themselves are still in the process of developing their programs for the agricultural supply chain. There is a window of opportunity for the agricultural industry to come together to help drive and create the vision of sustainability. This vision can create a working model to meet grower’s diverse needs, facilitate marketplace and consumer education, and show others how it can be done.

The Monterey County Sustainability Working Group is an established network of individuals and companies committed to sharing ideas and learning from each other about sustainability, and is a logical partner to help engage this conversation more broadly within the industry. Key industry associations that serve the growing community could also be in the position of playing a role to engage a broader conversation of sustainability. Associations serving the Monterey Bay region and the Central Coast are the Grower-Shipper Association (GSA), County Farm Bureaus, and Western Growers. Active commodity specific associations such as the California Strawberry Commission, Central Coast Vineyard Team, also have a role to play in the broader industry discussion as well to advance and promote sustainability within their respective commodity groups. Recent collaboration between MCSWG and GSA establishes a potential platform for the industry to engage further in this discussion here on the Central Coast.

Sustainability covers the broadest range of topics key to ensuring a sustainable future for agriculture, our community and environment. Any successful industry-wide initiative or program must include a clear vision of the key outcomes or value propositions to guide a program’s development. Once the overall program vision is agreed upon, there is a need to answer a number of questions and engage the right stakeholders to determine the program elements. First, you need to have a clear understanding of what the group needs and wants to accomplish out of the program. Then you need to identify who the players are and what is already happening. Lastly a clear understanding is needed of the status and availability of existing resources and tools and those that may be under development.

Using water quality as an example, one clear need from a program would be to ease compliance requirements and provide regulatory relief for the agricultural industry. There are a number of groups and organizations already actively working to address water quality issues in the region that would need to be at the table. There are also many different tools and resources being

developed to help growers measure and improve water use, nutrient use, and overall water quality that would be more readily accessible and therefore hopefully more widely used. Since so much of the activity surrounding water quality is geared to meeting regulatory requirements, a broader sustainability framework will also serve to unite the regulatory activities with other important, inter-connected issues such as habitat protection and enhancement, risk management and water supply, and more.

The value of a broader sustainability program for the industry would be to bring together the various groups, initiatives, and tools in a way that optimizes value, reduces redundancy, and drives efficiencies for the industry. An industry-led sustainability program would also serve as a platform to proactively discuss issues within the agribusiness community and to communicate with buyers and the marketplace, policy makers, regulators, political leaders, employees, activists, and the local community.

Recommendations for Next Steps

Support the continued development and expansion of existing tools and initiatives

- In light of the group's interest and support for performance-based initiatives, an emphasis should be placed on increasing industry participation in SISC case studies and internal usage of SISC metrics and the PICA program on the Central Coast.
- Western Growers was an original partner with SISC and has more recently invested in its grower ToolBox to provide tools to its membership to provide data management and analytics addressing food safety, water quality, and critical sustainability concerns confronting the industry. Given the broad commodity and geographic interest covered by WG members, the WG Toolbox will be a key initiative supporting the evolution and development of industry sustainability initiatives.
- The local and regional partnerships to restore and establish wetlands, riparian floodplain conservation for habitat and flood mitigation, as well as to identify effective technologies to improve water quality, will fit well into the development of any collective sustainability initiative. Growers that have been engaged with these projects are important spokespersons within the industry to encourage increased participation and ensure they continue to evolve to identify areas of win-wins.

Improve coordination amongst industry groups, resource agencies, and nonprofits

- The most successful examples of sustainability programs are industry-led and are often spearheaded by commodity-based or other industry associations. One of the challenges (and opportunities) on the Central Coast is the number of different industry groups and nonprofits that actively serve the agricultural community. Recently the MCSWG and GSA have started to collaborate to foster sustainability information sharing and provide a critical industry network to advance sustainability. This collaboration creates an ideal platform for the Central Coast produce industry to continue the conversation of sustainability, collaborate to expand current initiatives, and explore the development of an industry-led sustainability program. MCSWG/GSA could then potentially serve as a

liaison to coordinate with Western Growers, the Produce Marketing Association, United Fresh, and other industry associations with a broader geographic membership to address industry-wide sustainability needs.

- The Agricultural Water Quality Alliance (AWQA) is a vital network to foster and promote the voluntary, proactive collaboration between resource agencies, technical service providers, nonprofits, agricultural companies and associations, toward common water quality goals. In the past, AWQA enjoyed the broad participation of the agricultural industry through representation of the Central Coast Farm Water Quality Coalition. While the Coalition and a few company representatives are active in AWQA, there is the need for other industry associations and agricultural companies themselves to participate in AWQA to best leverage strengths and opportunities to advance common goals. Currently AWQA holds monthly meetings on the second Wednesday of each month, and industry members are encouraged to participate. While AWQA has regularly scheduled meetings, it would be worthwhile to convene a meeting focused on increasing industry participation and discussing interest and opportunities to work together to build, expand and promote sustainability/stewardship initiatives.

Educate buyers and consumers on agricultural conservation/sustainability efforts in our region

- There was a good deal of value and interest expressed by participants to be proactive with buyers to talk about sustainability and demonstrate what the produce industry is doing for sustainability. This idea has been discussed at the MCSWG as well, and it is worthwhile to pursue this idea. The MCSWG and GSA collaboration provides an excellent opportunity to continue this conversation. In addition, one of the core goals of formalizing and branding the AWQA network was to promote and educate about the good work AWQA partners are doing. Given the history of collaboration through AWQA and other innovative private-public partnerships happening on the Central Coast, there's an opportunity to collaborate on buyer as well as consumer/public education about agricultural sustainability.

Create a roadmap for the development of a collaborative sustainability program

- Given the high level of interest and participation in the workshop, and the general consensus amongst participants that a collaborative, proactive approach to sustainability is desirable, a timely next step would be to conduct a needs assessment and create a sustainability roadmap for the industry. A detailed assessment can: identify conflicting and complementary industry needs; highlight regulatory, market, environmental and social issues relevant to the region; identify key stakeholders and provide an understanding of the existing stakeholder landscape; evaluate and gauge the interest level of the broader industry in this approach; and outline a detailed strategy for stakeholder engagement and program funding models.

Appendices

1. Invitation Letter
2. Agenda
3. SureHarvest Overview Presentation



March 12, 2014

RE: Invitation to Participate in an Agricultural Industry Roundtable on Sustainability Initiatives – March 28th

Dear Industry Leader, Company Executive, and CSR/Sustainability Director:

Please **join** SureHarvest, your industry associations, and members from the Monterey County Sustainability Working Group – an industry-led network for sharing current sustainability efforts among agricultural producers, shippers and processors in the Central Coast region -- in a roundtable discussion. Together we will share experiences and discuss opportunities to build a stronger business case for widespread adoption of sustainability actions in our region.

As a **leader** in our industry and within your own company, you have unique insight and ability to truly influence change in the right direction. Help us chart the course to toward a collaborative, proactive and sustainable future for agriculture, our community and environment!

In a **future** with more people to feed, fewer resources, and less predictable weather, what initiatives and tools hold the most promise to benefit people, planet, *and* profit? How can we collaborate to build and scale-up locally-relevant sustainability initiatives? What roadblocks stand in our way? How can clear those hurdles to do more to enhance our local economy and environment? Can we leverage the region's uniqueness and natural diversity in the marketplace?

The **goal** for this meeting is to increase our collective understanding of the underlying business opportunities and challenges for key sustainability tools and initiatives. SureHarvest will capture and compile each initiative's potential benefits, outline broad strategic opportunities and identify collaborative next steps in a summary document.

Topics to be discussed include:

- Industry Sustainability Update and Trends (e.g. The Sustainability Consortium, Sustainability standard efforts)
- Performance Efforts (Stewardship Index for Specialty Crops, Performance Incentives for Conservation in Ag)
- Self-Assessment Programs (e.g. California Almond Sustainability Program, United Fresh's Self-Assessment)
- Certification Programs (e.g. Sustainability In Practice, Certified CA Sustainable Winegrowing, Fields to Ocean)
- Other Tools and Initiatives (e.g. OnFarm Solutions, Wetlands to improve water quality, Riparian floodplain enhancements to mitigate flooding, Western Grower's ToolBox, and more)

Friday March 28. 11 a.m. – 2 p.m. (lunch provided) at Grower-Shipper Association, 512 Pajaro Street, Salinas.

Sincerely,

Melanie Beretti

RSVP or questions to Melanie at mberetti@sureharvest.com or 831-262-1199

Thanks to the Water Resource Project Coordination subcommittee of the Integrated Regional Watershed Management Program grant for funding this gathering!

Today at a Glance

11:00 – 11:15	Welcome
11:15 – 11:35	Sustainability Trends
11:35 – 12:15	Initiatives Overview
12:15 – 12:30	Break/Lunch
12:30 – 1:15	Roundtable Breakouts
1:15 – 1:45	Group Discussion
1:45 – 2:00	Next Steps

We will wrap at 2:00 sharp!

Agricultural Industry Roundtable on Sustainability



March 28, 2014
11 am – 2 pm
512 Pajaro Street, Salinas, CA



SUSTAINABILITY FROM THE GROUND UP

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SUSTAINABILITY FROM THE GROUND UP

Thanks to...



Water Resource Project Coordination
subcommittee of the Integrated Regional
Watershed Management Planning grant



Thanks to **Monterey County Sustainability Working Group**
members, Western Growers, and Grower-Shipper Association



SUSTAINABILITY FROM THE GROUND UP

Goal

*...build a stronger business case for widespread
 adoption of sustainability initiatives in our region...*



SUSTAINABILITY FROM THE GROUND UP



SUSTAINABILITY FROM THE GROUND UP

Let's consider...

How to collaborate to scale-up sustainability initiatives?

What are roadblocks?

How can we clear those hurdles for win-win-win?

Can we leverage region/efforts in marketplace?

Can we leverage the market trends for our region?

 SUSTAINABILITY FROM THE GROUND UP

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Industry Sustainability Update and Trends



Andrew Arnold
Sustainability Senior Associate
SureHarvest
aarnold@sureharvest.com



 SUSTAINABILITY FROM THE GROUND UP

Sustainability Trends in Agribusiness

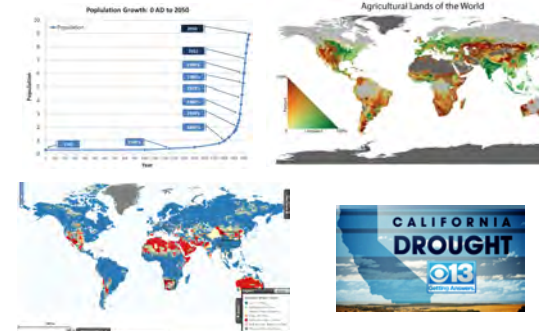


 SUSTAINABILITY FROM THE GROUND UP

Big Picture

- 9 Billion people by 2050...increasing every day
- Resource constraints – more with less
- Impact on agrifood supply chains – risks

“More with Less”



 SUSTAINABILITY FROM THE GROUND UP

California Context

- Water availability
- Water quality
- Land availability
- Labor
- Climatic uncertainty
- Other?



SureHarvest SUSTAINABILITY FROM THE GROUND UP

1. Sustainability Being Embedded into Overall Strategy
2. Greater Emphasis on Value Creation
 - Reduce Costs
 - Grow Sales
 - Manage Risks
 - Enhance Brand
3. "More with Less" is Becoming a Need to Have not a Nice to Have
 - Real Resource Constraints (e.g. water, land, etc.)
4. Trust and Transparency More Important than Ever

SureHarvest SUSTAINABILITY FROM THE GROUND UP

SP's Continuous Improvement Drives Value

CYCLE OF CONTINUOUS IMPROVEMENT

SUSTAINABLE VALUE CREATION

Alignment with the SP's of Sustainability™

SureHarvest SUSTAINABILITY FROM THE GROUND UP

The Initiative Landscape

- Self-Assessment Programs
- Performance-based Programs
- Certifications
- Buyer Programs
- Government Programs

SureHarvest SUSTAINABILITY FROM THE GROUND UP

Regional Initiative Landscape

- OnFarm Solutions
- Wetlands & water quality
- Riparian areas & flooding

SureHarvest SUSTAINABILITY FROM THE GROUND UP

Specific Initiatives Discussion



AGENCY COORDINATION IN THE GABILAN WATERSHED

FROM THE MOUNTAINS TO THE SEA

Designing and Permitting Multi-Benefit Projects:
Multiple Agencies and Stakeholders
Diverse Interests, Directives and Priorities

August 2014

AGENCY COORDINATION IN THE GABILAN WATERSHED

FROM THE MOUNTAINS TO THE SEA

Designing and Permitting Multi-Benefit Projects:
Multiple Agencies and Stakeholders
Diverse Interests, Directives and Priorities

Prepared for:

Water Resource Project Coordination Committee
for the
Greater Monterey County Integrated Regional Water Management Plan

Prepared by:
Burdick & Company

August 2014 BACKGROUND

One of the major challenges to project implementation identified during the January 2013 Water Resource Project Coordination (WRPC) stakeholder workshop was permitting and regulatory compliance. Hurdles to project implementation brought about by lack of interagency coordination and difficult and confusing regulation were voiced time and time again at the January 2013 meeting. Examples included confusion over which agency had control over waterways, coordination with and between permitting agencies, the practical and legal effects of differing biological opinions, and a general confusion over which agency managed what resources. The goal of this section of the Blueprint was to consider the regulatory constraints and challenges that projects in the Gabilan Watershed might encounter, and identify possible options for coordinating agency review and consultation.

The work effort included two primary components: data collection and strategy development.

Data Collection

The data collection component focused on:

1. Using a list of agencies provided by WRPC Committee members and other stakeholders recommended by the committee, perform a basic analysis of plans and policies, mandates, and regulations that affect Moro Cojo/Tembladero/Elkhorn Sloughs, TMDL listings, flood management, water treatment (supply and discharge) and other issues of concern in the watershed. Existing plans were evaluated to identify relevant policies and which departments within larger bureaucracies needed to be contacted.
2. Conducting meetings, phone calls and/or conference calls with agency staff to get to buy-in as well as methods for streamlining both coordination and permitting.
3. Creating a matrix (agency mandates, regulations and policies) that presents the results of the data collection and preparing a short analysis of conclusions and recommendations.
4. Performing a gap analysis with the assistance of contacted agencies with a particular emphasis on identifying contradictory strategies, mandates and/or policies. Identifying types of projects that trigger the various agency involvements and working with contacted agencies to identify possible solutions to overlapping jurisdictions, contradictory mandates or policies and other issues identified by the team and the WRPC Committee.
5. Refining and finalizing the matrix and preparing a short analysis of conclusions and recommendations.

Strategy Development

The strategy development component focused on:

1. Evaluating options for protocol/processes/options to support collaboration for assessing and/or developing projects or interacting with project sponsors.
2. Consideration of opportunities to involve other regional stakeholders, beyond the agencies in the matrix.

3. Assistance in identifying comprehensive, multi-objective, multi-stakeholder projects to serve as model pilot projects to support more detailed agency discussions concerning coordination and permitting.



DATA COLLECTION

The consulting team used the following strategies to assess possible project integration options and the corresponding permitting/regulatory challenges:

- Internet research and phone interviews with agencies regarding permitting requirements and documents
- Meetings with key agency staff to discuss permitting processes and requirements
- Preparation of a permitting requirement matrix summarizing primary permitting and regulatory oversight
- Evaluation of existing projects within the watershed to identify options for integration and consolidation
- Meetings with project proponents to discuss specific options for integrated projects
- Identification of permitting constraints or coordination challenges (based on the level of specificity of the project, i.e., the readiness to proceed)
- Identification of potential funding options for the identified projects

ENTITIES CONTACTED

The following agencies and organizations were contacted by the project team to learn more about the regulatory and permitting authorities in the region:

Big Sur Land Trust
City of Salinas
Castroville Community Services District
CSUMB Watershed Institute
CSUMB Return of the Natives
Monterey County
No Salinas Valley Mosquito Abatement Dist
Monterey Bay National Marine Sanctuary Moss
Landing Harbor District
State Water Resources Control Board/RWQCB
California Coastal Commission
California Coastal Conservancy
California Dept of Fish & Wildlife

California Dept of Public Health
Monterey Bay Citizen Watershed Monitoring
Network
California Native Plant Society
NOAA Fisheries
USDA Resource Conservation Service/local RCD
US Fish & Wildlife Service
US Army Corps of Engineers

Table 2 (attached) provides detailed contact information for all consulted agencies and organizations.

SUMMARY MATRIX

Early in the interview process it became clear that many permitting agencies were unable to define actual permitting requirements without at least a conceptual project description at hand. Agencies were contacted and asked to distinguish permitting requirements for types of projects, but could not respond to this request because permitting requirements are determined based on a variety of factors, including project location, resource(s) impacted by project construction and operation, project operational features, and jurisdiction; project type is generally not a factor in determining permit requirements. Though a project list was available, project locations were largely undefined and the range of over 30 possible projects, most candidates for substantial alteration and integration in the future, precluded any meaningful feedback. Due to time and staff constraints, the permitting technicians contacted could not provide information on the number of scenarios provided other than to indicate whether permitting alignment is generally supported within their agency (noted in Table 3, attached) and to briefly review the list of projects and provide general support of project ideas. Projects with beneficial water quality and supply impacts were generally well supported by permitting staff. Most permitting technicians recommended developing a specific project description prior to consultation and referred the consultants to general permitting requirements within their agency.

Although permitting requirements change infrequently, staff turnover can result in subtle but significant changes in interpretation or in the review process, while agency budget changes can dictate new procedures and processes, as well as staff availability. The specific attributes of a project can result in multiple departments or staffers being involved in any given permitting action.

Further, addressing a permit form requirement does not always result in a project being processed without further conversations and refinement – as not all project components can be assessed simply on the basis of information provided in response to a standardized form. The mandate to coordinate with other agencies, while common and clearly sincere, is not always supported by adequate budgeting or staffing allocations to support the detailed level of interaction that is required when considering a project that is designed to be a multi-benefit, multi-objective and multi-stakeholder project.

In short, the consensus was that presenting a matrix of applicable permits would result in the need for frequent and careful update and would not embody the nuanced complexity of permitting processes. As a result, the agencies suggested an alternative approach – develop a matrix that provides links to websites on which more specific information is provided. Hence, the decision was made to create a contact matrix with a summary statement for each agency. Table 3, attached, includes brief comments on agency jurisdiction, regulations, types of permits needed for different projects/project impacts, a list of websites with additional detailed permitting information, and project alignment opportunities, if applicable. Sections below further expand on the likely steps required to achieve a truly coordinated permitting system in the region.

GAP ANALYSIS

The gap analysis proved to be a complex undertaking with a relatively simple outcome: after many interviews and review of a wide variety of applicable plan and policy documents it became clear early in the process that integrating the results of a comprehensive analysis would far exceed the available budget, and further that the agencies contacted did not feel that an exercise of that nature would result in concrete outcomes.

- There are no natural resources in the area that are exempt or overlooked in the review process. Wetlands, riparian zones, endangered or threatened species, aesthetics/viewsheds, soil erosion and other similar issues or concerns are thoroughly covered in the planning and permitting requirements of local, state and federal agencies. Furthermore, many of the same resources are regulated by multiple agencies, and the exact location of resources often dictates the regulatory agencies involved.

- The installation of infrastructure is similarly well addressed. Storm water, water supply and treatment/distribution and sewage treatment facilities and associated infrastructure, are also well regulated and have overlapping jurisdictional considerations.
- The concern raised by the interviews and evaluation is not that a topic, issue or area is somehow missing from regulatory oversight. Nor is it that the various permitting processes are not clear, at least in their outline. Rather, the complexity of project evaluation on the part of multiple agencies does not lend itself to an informal collaborative process.
- There are local examples of processes that have been developed to expedite and coordinate project permitting, such as the Partners in Restoration program, which is active throughout the area but most particularly in adjacent Santa Cruz County.
- The gap identified as a result of considerable interviews and evaluation appears to be associated with creating a linkage between project design and the permitting process. Frequently a project will be developed based on the specific needs of a site or sponsor. That project is then refined in anticipation of probable permitting requirements. If project permitting involves multiple agencies (either as responsible or consulted entities), the dynamic involved in refining design prior to application magnifies.
- The local governments have developed processes that support early consultation, coordination among county and city departments, early coordination of design issues, and clearly understood processes for amending or revising projects in response to identified issues. However, there is no such process prior to application for simultaneous multi-agency review that would include state and federal agencies.
- To actually achieve permitting alignment would require policy-level decisions at the upper-management level of the affected agencies, and that is unlikely to occur without concerted effort dedicated to that outcome. Permitting technicians are generally not in a position to make decisions regarding permit alignment or streamlining.
- Finding ways for state and federal agencies to participate in project design problem-solving discussions would require agency commitment in the form of budget allocation for staff; at this date and in this constrained economy, it is unlikely that such a mandate would be created.
- A systematic effort to evaluate the significant number of planning documents, policies, and mandates with respect to inherent conflicts, divergence, and potential alignment is a significant work effort which would require substantial time investment on the part of the targeted agencies, which is further complicated by the lack of available funding and agency mandate.
- While agency staff are consistently supportive of multi-stakeholder/multi-benefit projects, the systems in which they function are not configured in such a way that the staff-level support can translate into an aligned permitting process. Agency staff are handicapped in their ability to participate in project-development activities by lack of budget, lack of staff time, and the internal permitting process and framework within their individual agency.

PROJECT FUNDING

Funding options for Integrated Regional Water Management (IRWM) related projects, based on research by the team, is shown in Table 1, Options for Project-specific Implementation Funding. Determination of funding options relies on a clear description of the intended and measurable project outcomes.

TABLE 1 - Options for Project-specific Implementation Funding	
Capital Improvements Program Funding (Revenue Bonds, Certificates of Participation)	
Property Tax Assessment (Assessed Valuation)	
User Fees	
State Funding	
<i>Proposition 84</i>	
Integrated Regional Water Management Grant Program	
Department of Water Resources – Local Groundwater Assistance	
Department of Public Health – Emergency and Urgent Water Protection	
State Water Resources Control Board – Storm Water Grant Program	
Local Levee Assistance Program	
Flood Protection Corridor Program	
Flood Control Subventions Program	
Urban Streams Restoration Program	
<i>Proposition 1E</i>	
Stormwater Flood Management Program	
Early Implementation Program	
<i>Proposition 50</i>	
Department of Water Resources – Water Use Efficiency Grants	
Department of Water Resources – Contaminant Removal	
Department of Water Resources – UV and Ozone Disinfection	
<i>Other State Funding</i>	
California Financing Coordinating Committee (CFCC)	
State Revolving Fund	
Safe Drinking Water SRF	
Infrastructure SRF	
Clean Water SRF	
State Water Resources Control Board – Federal 319 Program	
State Water Resources Control Board – Water Recycling Funding Program	
Department of Water Resources – New Local Water Supply Construction Loans	
Department of Housing and Community Development – Community Development Block Grant	
California Energy Commission (CEC) – Energy Financing Program	
Federal Funding	
Environmental Protection Agency, Source Reduction Assistance	
Environmental Protection Agency, Wetlands Program Development Grants	
Environmental Protection Agency, Five Star Restoration Program	
Water Resources Development Act	
National Rural Water Association (NRWA) Revolving Loan Fund	
National Park Service (NPS), Rivers, Trails, and Conservation Assistance (RTCA) Program	
U.S. Department of Agriculture (USDA) – Rural Development, Water and Waste Disposal Program	
U.S. Bureau of Reclamation (USBR), WaterSMART, Grant Programs	
U.S. Fish and Wildlife Service (USFWS), North American Wetlands Conservation Act Grant	



STRATEGY DEVELOPMENT

COLLABORATIVE PROCESS FOR EVALUATING AND DEVELOPING PROJECTS AND ANTICIPATING PERMITTING REQUIREMENTS

The following points emerged from the interviews conducted across the region:

- All contacted agencies have indicated a willingness to collaborate and coordinate to enable important projects to be implemented; however, at a project-design/permitting level, the specifics of how various project components meet or are consistent with regulatory requirements can become extremely complex.
- There is no one-size-fits-all permitting strategy; every project will have to utilize a project-specific application strategy that can be informed by available permitting and regulatory information but will not necessarily be evaluated or conditioned based on those criteria. In other words, internal decision-making and determination of appropriate project mitigation and permit requirements vary from project to project (even within a single agency) and cannot be predicted prior to engaging in the permitting process.
- One significant challenge is extremely limited staff time, which leads to unavailability for early and frequent consultation, at the conceptual level in particular. In many agencies, the individual staff responsible for identifying project-specific requirements or mitigations frequently is not available for consultation until the project application has already been submitted.
- An increasing phenomenon due to lack of budget is agencies requiring project proponents to complete extensive baseline condition analysis or other forms of data collection, in order to determine potential project mitigations or meet unfunded agency mandates.
- At this point, the design and implementation of individual projects will not be significantly impacted by this analysis unless and until an integrated multi-agency permitting alignment strategy is developed. At this point in time, it appears more realistic for projects to be designed to achieve specific objectives rather than designed to facilitate possible permitting. Further, while pursuing implementation of an individual or integrated project may lend itself to an alignment effort, there is no guarantee that the outcomes of that alignment effort would in fact affect any other project(s).
- Absent funding to support project design and evaluation, including collection of baseline data, many projects will never get to the application stage; if they do, the requirements that result from the permitting process can effectively make the project infeasible. Conversations with a wide variety of agency staff made it clear that identifying possible project-specific options and mitigations early in the process doesn't preclude other issues from being identified later in the process. Further, the

process of attempting to design mitigation into a project can have the unanticipated impact of creating more permitting complexity for the project. So (and as noted above), no individual project appears to be able to pave the way for subsequent projects and there is no method currently available for predicting the timing, expense, logistics or applicable considerations for any given project in advance of permitting application.

- Cities and counties have developed integrated permitting strategies across their own departments which have streamlined many permitting processes; however these permits do not include coordination with other regulatory entities which have their own separate processes.
- The frustration experienced by both applicants and agency staff over the complexity of permit coordination is substantial.
- There is no central authority which can serve to coordinate or expedite permitting process and procedures.
- Productive coordination cannot be achieved without development of a framework that supports both attaining agency mandates and project proponents' desired project-level outcomes – across multiple agencies.

As a result of the research effort it is clear that, without a mandate from the higher level management within the various permitting agencies, as well as an allocation of budget and staffing resources, the prospect for a fully integrated permitting strategy within this complex region remains unlikely.

Perhaps the best example of a process which has shown promise of success and is currently being implemented is the Santa Cruz Partners in Restoration Program/Santa Cruz Countywide Permit Coordination Program, sponsored by the Santa Cruz Resource Conservation District. The group has sponsored and developed funding for a coherent and organized permit alignment process, involving multiple agencies. The typical projects served by this program encompass some of the types of projects that the Gabilan area would expect (e.g., stream bank protection, grade stabilization structures, habitat restoration, sediment basis), however the more infrastructure-intensive projects that characterize the project list for the Gabilan region represent a different project focus, and one which is not currently part of the Santa Cruz program. Regulatory agencies that have signed on to this “one-stop regulatory shopping” program for Santa Cruz County include: the County of Santa Cruz, California Coastal Commission, California Department of Fish and Game, Central Coast Regional Water Quality Control Board, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and National Oceanic and Atmospheric Administration Fisheries. Development of the Program was funded primarily by the California Coastal Conservancy with additional funding from the Natural Resources Conservation Service (NRCS) and the Community Foundation of Santa Cruz County.

This program could definitely serve as a model for creating a formal alignment of agencies and regulatory programs within the Gabilan Watershed and should be considered from a funding perspective and with an implementation focus.

INVOLVEMENT OF ADDITIONAL STAKEHOLDERS

A wide variety of interviews with the preliminary list of contacts provided by the WRPC Committee resulted in the identification of few additional stakeholders to involve in the project development or permitting coordination dialogues. The IRWM program has had an extensive outreach effort. These contacts and

stakeholders were, in turn, provided to the project team as they initiated their outreach. This contact list was extensive and proved to cover virtually all of the stakeholders in the region – regulatory and non-regulatory.

It appears that the most likely constituencies for additional outreach are within the agricultural community. While individual ranchers and farmers will likely be identified in the next work effort, at this point in time the agricultural community prefers to be contacted through their professional associations or their connections within the Resource Conservation Districts (RCDs). The next round of project development will likely use contacts developed via the rest of the Blueprint effort to reach a bit deeper into the agricultural community.



DEVELOPMENT OF MODEL INTEGRATED PROJECTS

As the final product of the WRPC process, the facilitators led an effort to integrate projects within the Gabilan Watershed. The project integration process proceeded in two phases:

- 1) review of all existing IRWM Plan projects located in the Gabilan Watershed to identify integration options (see Table 5 – 2012 WRPC Project List, Sorted by Program and Table 4 – 2012 WRPC Project List Integration Matrix), and
- 2) discussions with a wide variety of project proponents to identify possible partners and integrated project components.

REVIEW OF EXISTING PROJECTS

The review of existing projects resulted in “groupings” of projects, organized by integrative themes or “integratable” places, e.g., Moro Cojo or the City of Salinas (where diverse projects could all be implemented in the same place, addressing different objectives).

The outcome of this review process was the development of six preliminary integrated project “bundles” or “suites,” containing components of 18 previous IRWM Plan projects. These options are undergoing continued refinement as stakeholders within the region will need to reach consensus as to the specific characteristics of the possible projects. The six potential project suites are as follows (project numbers correspond to those numbers in Table 5):

- Principal creek systems (Santa Rita, Natividad, Tembladero, Gabilan, Salinas River, Rec Ditch):
 - Applicable projects: 2, 11, 15, 28, and 31
 - Possible narrative: These projects are general enough to be tailored to any of the six major waterways within the watershed. An integrated project might consist of reducing septic leakage in disadvantaged communities (2) along urban waterways to address one major source of water pollution. At the same time, combining that effort with projects to restore watersheds with native plants (11), constructed wetlands (15) and improvements to engineered flood-control channels (28) would address down-stream water quality. Finally, funding a research partnership with California State University Monterey Bay (CSUMB) to

study water quality best management practices (BMPs) (31) would provide longitudinal data on the health of the watershed.

- Moss Landing:
 - Applicable projects: 13, 16, and 17
 - Possible narrative: Monterey County Water Resources Agency (MCWRA) and Monterey County Public Works could integrate three physical infrastructure projects proposed for the Moss Landing Area, consisting of improvements to the Potrero Road Tide Gates (13), the guide rail at the sanitation district (16) and the SCADA project (17). Together, these projects promise to reduce flooding and accidental sewage releases.
- Elkhorn Slough:
 - Applicable projects: 1, 14, and 27
 - Possible narrative: Combining these three projects in or adjacent to the Elkhorn Slough would yield a holistic approach to wetland health. A sustainable agriculture demonstration station (1) next to the slough would develop and disseminate knowledge about BMPs; restoring coastal dunes and wetlands in the slough (14) would improve habitat quality and ecosystem services; and mapping drainages within the slough would improve understanding of nutrient and sediment flows (27).
- Southwest Salinas:
 - Applicable projects: 22, 24 and 26
 - Possible narrative: The City of Salinas has proposed three similar, related infrastructure projects in the southwest part of the city, near Davis Road, which are ideal candidates for integration. They would consist of replacing a sewage pipeline (22), improving treatment facilities (24) and diverting urban run-off to detention ponds (26), which would reduce pollutant load entering the Salinas River.
- Boronda:
 - Applicable projects: 2, 17 and 23
 - Possible narrative: The Boronda district of Salinas, currently on the city's outskirts, is a high growth sector of the city which may facilitate the addition of 50,000 residents in coming decades. The City has proposed to improve the sanitation district's guide rail system (23) and implement the SCADA program there (17). Combined with assistance for disadvantaged communities to address septic leakages, these projects present a holistic strategy to reduce water contamination from both point and non-point sources.
- Coastal zone:
 - Applicable projects: 3, 8, 14 and 18
 - Possible narrative: These projects are geographically specific to the coastal zone where the Gabilan watershed drains into Monterey Bay. If partnerships between the proposing organizations could be formed, the result might be a stronger alliance for the health of coastal ecosystems through projects such as planning for sea level rise (3), monitoring water quality with buoys (8), restoring dunes (14) and cleaning up beaches (18).

In addition, during the interview and contact process several jurisdictions indicated a willingness and desire to rethink their project options in light of the integrated perspective. These conversations are now ongoing through the region.

INTERVIEWS WITH INDIVIDUAL PROJECT PROPONENTS – INTEGRATED PROJECT DEVELOPMENT OPTIONS

Following this initial project review and aggregation exercise, members of the project team engaged in a series of targeted interviews to advance the integration discussion and begin the process of identifying and resolving project development challenges. A series of one-on-one meetings were held across the region to discuss possible projects with the various proponents and stakeholders with respect to integration options.

As a result of these meetings, a systematic process has been identified to begin development of integrated projects with multiple stakeholders. This process will continue via coordination with the WRPC Committee. The results of the process will be integrated into the IRWM Plan as consensus is reached as to specific project descriptions, measurable outcomes and confirmed partners. A key focus of the effort will also be addressing the needs of disadvantaged communities within the project area. Preliminary indications are that the City of Salinas, the City of Castroville, the Moro Cojo area and Tembladero Slough will be areas of most immediate focus in this effort.

TABLE 2. Contacted Organizations (including regulatory and non-regulatory entities)

Entity Name	Dept/Division	Contact Person(s)	Email	Phone	Physical Address
LOCAL AGENCIES					
City of Salinas	Dept of Public Works: Engineering & Transportation, Environmental & Maintenance Svcs	Michael Ricker, Environmental Resource Planner	mikeri@ci.salinas.ca.us	831-758-7450	200 Lincoln Avenue, Salinas, CA 93901
City of Salinas	Dept of Public Works	Gary Petersen, Director of Public Works	garyp@ci.salinas.ca.us	831-758-7241	200 Lincoln Avenue, Salinas, CA 93901
City of Salinas	Planning Dept	Courtney Grossman	courtg@ci.salinas.ca.us	831-758-7486	200 Lincoln Avenue, Salinas, CA 93901
City of Salinas	Community & Economic Development Dept: Permit & Inspection Services	Walter Grant, Senior Engineer	walterg@ci.salinas.ca.us	831-758-7485	200 Lincoln Avenue, Salinas, CA 93901
Castroville Community Services District	N/A	Eric Tynan	cwderic@redshift.com	831-633-2560	PO Box 1065, Castroville, CA 95012
CSUMB Watershed Institute	N/A	Laura Lee Lienk	laura_lienk@csumb.edu	831-582-3689	Watershed Institute Building (Building 42), 100 Capmus Center, Seaside, CA 93955
CSUMB Return of the Natives	N/A	Laura Lee Lienk	laura_lienk@csumb.edu	831-582-3689	Watershed Institute Building (Building 42), 100 Capmus Center, Seaside, CA 93955
Elkhorn Slough National Estuarine Research Reserve	N/A	Bryan Largay	bryan@elkhornslough.org	831-728-2822 X 308	1700 Elkhorn Rd, Watsonville, CA
Monterey Bay Citizen Watershed Monitoring Network	N/A	Lisa Emanuelson	lisa.emanuelson@noaa.gov	(831) 647-4227	99 Pacific Street, Bldg. 455A, Monterey, CA 93940
Monterey Bay National Marine Sanctuary	N/A	Bridget Hoover	bridget.hoover@noaa.gov	831-647-4217	99 Pacific Street, Bldg. 455A, Monterey, CA 93940
Monterey County	Ag Commissioner's Ofc	Christina McGinnis	AgComm@co.monterey.ca.us	831-759-7384	1428 Abbott Street, Salinas, CA 93901
Monterey County	Water Resources Agency	Rob Johnson	johnsonr@co.monterey.ca.us	831-755-4860	893 Blanco Circle, Salinas, CA 93901
Monterey County	Environmental Health	Roger Van Horn; Richard Le Warne	vanhornrw@co.monterey.ca.us	831-755-4579	1270 Natividad, Rm 42B, Salinas, CA 82805
Monterey County	Parks	John Akeman	AkemanJD@co.monterey.ca.us	831-755-4911	320 Lincoln Ave., Salinas, CA 93901
Monterey County	Resource Mgmt Agency (includes Planning, Building, Public Works)	Tom Moss and Carl Holm	mosst@co.monterey.ca.us ; Holmc@co.monterey.ca.us	831-755-5847; 831-755-5103	168 W. Alisal, 2nd Floor, Salinas, CA 93901
Monterey County	Community and Economic Development	Alan Stumpf, Director	stumpfa@co.monterey.ca.us	831-758-7334	200 Lincoln Avenue, Salinas, CA 93901
Moss Landing Harbor District	N/A	Linda G McIntyre, General Mgr	mcintyre@mosslandingharbor.dst.ca.us	831-633-5417	7881 Sandholdt Road, Moss Landing, CA 95039

TABLE 2. Contacted Organizations (including regulatory and non-regulatory entities)

Entity Name	Dept/Division	Contact Person(s)	Email	Phone	Physical Address
Northern Salinas Valley Mosquito Abatement District	N/A	Kenneth Klemme	ken@montereycountymosquito.com	831-422-6438	342 Airport Boulevard, Salinas, CA 93905
Resources Conservation District	Monterey County	Paul Robins	info@rcdmonterey.org	831-424-1036	744 LaGuardia Street, Bldg A, Salinas, CA
STATE AGENCIES					
State Water Resources Control Board /Regional Water Quality Board	Central Coast District Office	Katie McNeill, Grants Program Coordinator	katie.mcneill@waterboards.ca.gov	805-549-3336	895 Aerovista Place, Ste. 101, San Luis Obispo, CA 93401
California Coastal Commission	Central Coast District Office	Katie Butler, Coastal Planner; Tamara Down, Water Quality Specialist	katie.butler@coastal.ca.gov ; tamara.doan@coastal.ca.gov	(831) 427-4863	725 Front Street, Suite 300, Santa Cruz, CA 95060-4508
California Coastal Conservancy	N/A	Trisha Chapman	tchapman@scc.ca.gov	510-286-1015	1330 Broadway, 13th Floor, Oakland, CA 94612-2530
California Dept of Fish & Wildlife	Marine Region - Monterey Field Office and Laboratory	Brandon Sanderson	brandon.sanderson@dfg.ca.gov	805-594-6141	20 Lower Ragsdale Dr., Suite 100, Monterey, CA 93940
California Dept of Public Health	Drinking Water Program, District 05	Jan Sweigert	jan.sweigert@cdph.ca.gov	831-655-6939	1 Lower Ragsdale Dr., Bldg 1., Ste. 120, Monterey, CA 93940
California Native Plant Society	Monterey Bay Chapter	Christopher Hauser, President; Corky Matthews, Conservation Chair	chauser@slconservancy.org ; mmatthews@slconservancy.org	831-392-6931; (831) 659-2528	PO Box 221303, Carmel, CA 93923
FEDERAL AGENCIES					
NOAA Fisheries	West Coast Region	Joel Casagrande	joel.casagrande@noaa.gov	(707) 575-6016	777 Sonoma Avenue, Room 325 Santa Rosa, CA 95404
USDA Natural Resources Conservation Service	Monterey County	Robert LaFleur, District Conservationist	robert.lafleur@ca.usda.gov	(831) 424-1036 x 101	744 LaGuardia Street, Bldg A, Salinas, CA 93905
USFWS	Salinas Service Center	Chad Mitcham	Chad_Mitcham@fws.gov	805-644-1766	744 LaGuardia Street, Bldg A, Salinas, CA 93905
USFWS Coastal Program	Salinas Service Center	Shawn Milar	Shawn_Milar@fws.gov	(831) 648-0623	744 LaGuardia Street, Bldg A, Salinas, CA 93905
US Army Corps	San Francisco Division, Ecosystem Restoration Projects	Unable to contact	N/A	(415) 503-6725	1455 Market Street, San Francisco, CA 94103

TABLE 3. Permitting Information (regulatory agencies only)

TABLE 3. Permitting Information (regulatory agencies only)				
Entity Name	Comments	Plans, policies, mandates & regs	Permitting Information Forms/permits needed	More information
Local Agencies				
City of Salinas (Bldg, Planning, Environmental Health, and Public Works)	Permit type depends on type of project, but most City permits are ministerial, not discretionary	Jurisdiction within City of Salinas limits; ditches running through city not within City's jurisdiction - most are County WRA. City stormwater and development ordinances would apply. City already applies LID strategies to all development projects.	Depends on type of project	http://www.ci.salinas.ca.us/services/engineering/planning/permit_forms.cfm
Monterey County Environmental Health	N/A	State laws pertaining to septic systems and water quality	Depends on type of project	http://www.mtyhd.org/index.php/environmental-health/environmental-health-news/administration-news/item/environmental-health-fees-for-health-permits-and-services
Monterey County Resources Mgmt Agency (Planning, Bldg, Public Works)	Often works with Coastal Commission on alignment.	County ordinances	Permit type depends on type of project	http://www.co.monterey.ca.us/rma/
Monterey Bay National Marine Sanctuary	IRWMP projects are unlikely to require a Sanctuary permit. Discharges are regulated through RWQCB, and Sanctuary is an authorizing agency, signing off and providing mitigation or requests for information. Examples of activities requiring a permit: construction, discharge, sediment collection, rock removal, moorings and buoys, temporary placement of objects.	US Code of Federal Regulations, Title 15, Part 922, National Marine Sanctuary Program Regulations.	NOAA National Marine Sanctuaries Permit Application OMB#0648-0141	On regulations and boundaries: http://montereybay.noaa.gov/resourcepro/regs-boundry.html ; On permitting: http://montereybay.noaa.gov/resourcepro/permit/permits_need.html ; http://montereybay.noaa.gov/intro/mp/regs.html#prohibitions
Moss Landing Harbor District	N/A	Jurisdiction Elkhorn Slough and Moss Landing and 2000 ft out to Ocean	Facilities Use Permit Application	http://www.mosslandingharbor.dst.ca.us/downloads/Facilities%20Use%20Permit%20Application%20-%20Master%20Form%20-%202013JUL01.pdf
State Agencies				
State Water Resources Control Board /Regional Water Quality Board	RWQCB regulates all projects with point discharges to surface water or land. Non-point discharges (including ag runoff, even from tile drains or ditches) not regulated; have close relationship working with Monterey County Dept of Public Health and Dept of Pesticide Regulation on projects affecting drinking water. Also coordinate regularly with USEPA on NPDES permits. Permits required for discharge of waste to surface waters via discrete conveyances such as ditches, pipelines (called point source pollution). Individual permits are tailored for specific discharges where as general permits cover multiple facilities within a single category like storm water point sources)	Discharges regulated under CA Water Code. Additionally, discharges to surface waters are regulated also under Clean Water Act and 40 Code of Federal Regulations (CFR).	Form 200/Waste Discharge Requirements; NPDES Permit, Form 1, 2A-F depending on type of discharge (see Application Q & A)	Discharges to land: Report of Waste Discharge (WDR)/Form 200: http://www.waterboards.ca.gov/publications_forms/forms/docs/form200.pdf ; Discharges to surface water: NPDES permit plus WDR: http://www.waterboards.ca.gov/water_issues/programs/npdes/#individual ; http://www.waterboards.ca.gov/board_decisions/adopted_orders/index.shtml ; http://www.waterboards.ca.gov/centralcoast/ http://www.waterboards.ca.gov/centralcoast/board_decisions/adopted_orders/index.shtml
California Coastal Commission, Central Coast District Office	They do not "align" (nor are interested in aligning) with other agencies' permitting processes.	PRC Sections 30000-30900, and subject to Permit Streamling Act (180 days for project decision after application deemed complete)	Application for Coastal Development Permit (same permit for all projects)	http://www.coastal.ca.gov/cdp/CDP-ApplicationForm-cc.pdf
California Dept of Fish & Wildlife	N/A	California Code of Regulations (CCR), Title 14 (Natural Resources); California Endangered Species Act	Streambed Alteration Agreement; CESA take permits; CEQA review; Application for Governmental Entity, Special District, or Nonprofit Organization Requesting to Hold or Manage Mitigation Land; Special Permits for Scientific Collecting	http://www.dfg.ca.gov/habcon/envirRevPermit/ ; http://www.dfg.ca.gov/licensing/specialpermits/
Federal Agencies				
NOAA Fisheries	N/A	Magnuson Fishery Conservation Act, Marine Mammal Protection Act, Endangered Species Act	Permits for Incidental Take of Endangered or Threatened Species; NOAA Community-Based Restoration Program Progress Reports; Estuary Restoration Act Database Projects	http://www.nmfs.noaa.gov/gpea_forms/

TABLE 3. Permitting Information (regulatory agencies only)

Permitting Information				
US Fish & Wildlife Service	N/A	Endangered Species Act, CITES, Marine Mammal Protection Act, Migratory Bird Treaty Act, Wild Bird Conservation Act, Bald and Golden Eagle Protection Act	Incidental take permit, transport permit	http://www.fws.gov/permits/ApplicationForms/ApplicationA.html , http://www.fws.gov/permits/ltr/ltr.html
US Army Corps	Standard permits required for individual projects that are likely to have a significant impact; general permits are for projects that fall within certain common categories or would have a minimal impact; LOPs are types of individual permits for an abbreviated permitting procedure	Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the obstruction or alteration of navigable waters of the United States without a permit from the Corps of Engineers; Section 404 of the Clean Water Act (33 U.S.C. 1344): Section 301 of this Act prohibits the discharge of dredged or fill material into waters of the United States without a Section 404 permit from the Corps of Engineers; Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (33 U.S.C. 1413) authorizes the Corps of Engineers to issue permits for the transportation of dredged material for the purpose of dumping it into ocean waters.	Regulates the discharge of dredged and fill material into waters of the United States, including wetlands.	http://www.spn.usace.army.mil/Missions/Regulatory/HowtoApplyforPermit.aspx ; http://www.spn.usace.army.mil/Portals/68/docs/regulatory/engform_4345_2012oct.pdf

Table 4. WRPC Project Integration Matrix

		Type										Location						Water Quality					Water Use/Supply		Flooding				Climate Change									
Applicant	Title	PL	CNST	RS	STDY	MTR	BMP	ACQ	EDU	DMD	Ag	Bay	High/Low	Urban	Wetland	Other	Nutrient mgmt	Ag runoff	Urban runoff	Shore intrusion	Sewage overflow	Sediment / Erosion	Ag	Urban	Ag	Urban	Sea level/ rise	Storm surge	Groundwater Recharge	Coastal erosion	Reef	Habitat Impairment / Restoration	Corn / Open Space	Tracking (BMP) projects				
Big Sur Land Trust, City of Salinas, CCLAMB Watershed Institute and RMA	Car Lake Property Acquisition			X wetlands & riparian			X streamside det.	X						X Salinas						X			X		X	X					X	X	X					
Central Coast Wetlands Group (CCWG)	Sustainable Agriculture and Sustainable Development - Field Station and Demonstration Area				X	X		X		X	X						X	X				X	X		X													
CCWG	Development and Evaluation of Climate Change Response Strategies	X		X												major wetlands												X	X		X							
CCWG	Coastal Wetlands Monitoring					X												X	X	X			X					X	X									
CCWG	Coastal Wetland Erosion Control and Dune Restoration			X wetlands & sand dunes									X dunes @ Moss Ldg			X					X									X								
CCWG	Water Quality Enhancement of the Tembladero Slough Phase II	X	X	X			X				X		X	X	X	X	X	X	X	X		X		X	X								X					
CCWG	Historic and Existing Drainage Network Mapping Project Phase 1				X											major wetlands									X	X												
CCWG	Study of environmental services from nutrient reducing BMPs					X	X				X						X	X				X																
CCWG	Northern Gabilan Mountain Watershed Management Project	X		X	X					X	7					X	X	X					X										X					
Central Coast RWQCB	Healthy Functioning Watersheds: Green Infrastructure and the preservation and protection of hydrologic processes	X					X							X						X				X	X				X			X						
Central Coast RWQCB	Healthy Functioning Watersheds: Irrigation efficiency and nutrient management on agricultural lands						X		X		X						X	X				X	X									X						
City of Salinas	Replacement Raw Sewage Pipeline to Monterey Regional WWT and City of Salinas Industrial Wastewater Treatment System Expansion		X											X																						X		
City of Salinas	Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements		X											X						X			X	X					X							X		
City of Salinas	Dry Weather Runoff Diversion Program	X	X											X						X			X	X														
Coastal Watershed Council	Community-based Water Research and Education	X			X				X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
CCLAMB Return of the Watershed	Return of the Native's Restoration Education Project - an RWQCB initiative			X					X													X											X					
CCLAMB Watershed Institute	Monitoring Water Quality Improvements (at RWQCB project)					X								X	X	X	X	X	X	X		X													X			
Cooley Action	Green Gardens Project								X					X				X	X	X	X				X													
Marina Coast Water District	Monterey Bay Regional Desalination Project		X									X													X													
Monterey Bay Sanctuary Foundation	Making Monitoring Count	X	X			X									X																				X			
Monterey County Coastkeeper	Maintenance and Flood Control Planning for the Old Salinas River Channel and Reclamation Ditch	X		7			X		X				X				X	X							X							X						
Monterey County Public Works	Mass Landing County Sanitation District Wastewater System Upgrade Project		X									X										X														X		
Monterey County Public Works	SCADA Project					X								X																								
Monterey County Public Works	Boronada County Sanitation District Guide Rail Upgrade Project		X											X																								
Monterey Co Water Resources Agency	Coastal Dedicated Monitoring Well Drilling		X			X														X			X	X														
Monterey Co Water Resources Agency	Implement Reclamation Ditch Improvement Plan Advisory Committee Recommendations	X	X									X, Pinto Delgaditas	X									X			X													
Monterey Co Water Resources Agency	Potrero Road Tidagales Construction Project												X														X											
RCO of Mount Co	Monterey County Integrated Watershed Restoration Program	X		X											X													X from road erosion					X					
RCO of Mount Co	Rural Roads Erosion Assistance Program for Monterey County						X		X																													
RCO of Mount Co	Livestock and Land: Rangeland and Livestock Facility Water Quality, Vegetation Management and Wildlife Enhancement Program		X	X			X		X		X						X	X				X											X					
RCO of Mount Co	Monterey County Farm Water Quality Assistance Program				X				X		X						X	X				X	X															
Rural Community Assistance Program	Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program	X				X				X																												
Save Our Shores	Save Our Shores Watershed Protection Program - Annual Coastal Cleanup Day in Monterey County			X								X																				X	X					

Legend: PL = Planning, FC = Facility Construction, RES = Restoration, S/A = Study/Assessment, MTR = Monitoring, EDU = Education/Training
 BMP = Best Management Practices, ACQ = Acquisitions, DMD = Demonstration/Pilot Project

TABLE 5. 2012 WRPC Project List Sorted by Program									
				Implementation	concept	Total		all	All programatic areas
			Could fall in Gabilan	5	8	13		UW	Upper Watershed
			In the Gabilan	11	10	21		SV	Valley Floor/Reclamation Ditch
								CR	coastal resilience
								/M	module
Project Category	Project Applicant	Project Title	Primary Contact	Email	Phone	Implementat ion or Concept Proposal?	STATUS FOR 2011 PROJECT LIST	PROJECT SUMMARY	
1	ALL	Central Coast Wetlands Group	Sustainable Agriculture and Sustainable Development - Field Station and Demonstration Area	Kevin O'Connor, CCWG	koconner@miml.calstate.edu	831-771-4495	Concept	Keep in IRWMP	This project proposes to establish a large acreage (100-640 acres) sustainable agriculture and sustainable development field research station to develop innovative sustainable land use practices for agriculture, residential and commercial development on a landscape scale. The site will provide continuous monitoring of practices to ensure that the desired outcomes are achieved, establish long term data sets and allow for new innovations and practices to be developed. The field station will also provide a demonstration area that can be reviewed and studied by other land owners and land managers to determine applicability to their individual projects or farms. The primary goal of this project is to improve water resources on and offsite in the context of modern land use.
2	ALL / I	Rural Community Assistance Corporation (RCAC)	Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program	Karen McBride	karenm@rcac.org	(916) 447-9832 ext. 1012	Implementation	New project!	Too often we read about septic effluent influencing our agricultural lands and creating public health and other environmental hazards. If these disadvantaged communities had the opportunity to create an Inspection and Monitoring Program for their community onsite wastewater systems, they would be successful in limiting public health hazards and environmental pollution. The Greater Monterey Bay Disadvantaged Community Wastewater Management Pilot Program will form a collaboration of experts, students, community leaders and local government to implement an Inspection and Monitoring program of community onsite wastewater systems. This program will include creating a local entity to manage multiple systems to ensure the systems are operating properly. The program will create an on-going operation and maintenance program, including ground water monitoring, for selected disadvantaged communities that are served by individual septic systems that may not afford traditional sewer systems.
3	ALL / M	Central Coast Wetlands Group	Development and Evaluation of Climate Change Response Strategies in the Elkhorn Slough, Gabilan and Salinas River Watersheds.	Ross Clark			Implementation	New project!	This project implements key steps in climate change planning outlined by the DWR 2011 Climate Change Handbook for Regional Water Planning. This project will further and more accurately investigate regional climate change impacts and seeks to recommend adaptation response strategies (a priority action defined within the TAC driven climate adaptation chapter of the GMCIRWMP) to address the impacts of sea level rise, storm surge, coastal inundation and coastal erosion for the Elkhorn Slough, Gabilan, and Salinas River Watersheds. The first phase of the project focuses on collecting and compiling data to further evaluate coastal inundation threats and responses in these watersheds. This data includes an inventory of water control structures that manage current flood control conveyance and topographic data using Light Detection and Ranging technology (LiDAR). The second phase of this project focuses on creating a climate change adaptation and response strategy plan followed by an economic evaluation of these different strategies. The outcome of this project will be a comprehensive report recommending feasible and long-term adaptation and response strategies to climate change impacts, necessary to prepare for future threats rather than respond to emergencies. This project will help support the climate change planning efforts of multiple stakeholders in the GMC IRWMP region. We intend to seek separate grant funds suggested by DWR available for climate planning.
4	ALL / M	Resource Conservation District of Monterey County	Monterey County Integrated Watershed Restoration Program	Paul Robins, Executive Director, RCD	paul.robins@rcdmonterey.org	831-424-1036, ext. 124	Concept	Keep in IRWMP	The Integrated Watershed Restoration Program (IWRP) for Monterey County is modeled after the IWRP pioneered in Santa Cruz County. The flagship component of IWRP is the creation of an interagency process to identify, design, and permit high priority water quality, fish passage, and wetland restoration projects. The Santa Cruz County IWRP partner organizations and agencies recognized that implementing the recommendations of multiple assessments and plans is best accomplished by bringing together federal, state, and local resource and permitting agencies to identify the highest priority projects and assisting with locating funding sources, providing technical assistance, and facilitating permitting. While in many ways this sounds potentially redundant with the mission of the Greater Monterey County IRWMP, the key distinctions with IWRP are 1) the focus on restoration projects, 2) the closely involved role of regional Coastal Conservancy staff in supporting the IWRP process and projects, and the participation of state and federal (along with local) agency representatives in the IWRP Technical Advisory Committee for a more vertically-integrated approach to facilitating, directing and supporting selected projects. As such, IWRP can be a critical asset for supporting GMCIRWMP restoration-focused projects, and it could facilitate coordination between neighboring IRWMP regions. Typical IWRP restoration projects can include rural road erosion reduction, fish passage improvement, and wetland and lagoon restoration. The individual watershed projects will be identified by the IWRP Technical Advisory Committee based on recommendations in local watershed plans, including the Coho and steelhead recovery plans developed by DFG and NMFS, or otherwise supported by state or federal resource agencies or local watershed groups. The IWRP will also support a number of potential projects recommended in other Monterey County IRWMPs for the Pajaro River and the Carmel Valley and Monterey Peninsula.
5	ALL / M	Resource Conservation District of Monterey County	Rural Roads Erosion Assistance Program for Monterey County	Paul Robins, Executive Director, RCD	paul.robins@rcdmonterey.org	831-424-1036, ext. 124	Concept	Keep in IRWMP	RCDMC will serve as the program lead with regular guidance from a Rural Roads Technical Advisory Committee, in providing education and training on rural roads drainage techniques, on-site technical assistance, and funding for road erosion assessments, project design and permitting, and road drainage project implementation. The outreach aspects of the program will include demonstration workshops and trainings, outreach material development and public communications. The TAC will help to develop and review criteria to select road association projects that will receive funding as well as assess program success. Road association projects that are selected will require 50% of the project costs to be contributed by the road association. This match share will be from in-kind services and/or cash contributions. In addition to the match share, a long-term maintenance agreement will be required as part of the project. Success will be measured by the amount of reduction in sedimentation coming from rural unsurfaced roads and from surfaced roads that are not maintained.
6	ALL / M	Resource Conservation District of Monterey County	Livestock and Land: Rangeland and Livestock Facility Water Quality, Vegetation Management and Wildlife Enhancement Program	Paul Robins, Executive Director, RCD	paul.robins@rcdmonterey.org	831-424-1036, ext. 124	Implementation	New project!	The purpose of this program is to achieve immediate and lasting reductions in nutrient, sediment and pathogen pollution to surface and ground waters and enhance wildlife habitat through implementation of BMPs on livestock facilities and rangelands in the Greater Monterey County IRWM region. The proposed program utilizes an incentives-based approach to achieve the cultural change needed for livestock facilities to voluntarily adopt management measures that improve the healthy functioning of watersheds. Projects are implemented in high priority areas identified by the TMDLs and other regional and local plans. Water quality and wildlife goals will be achieved through implementation projects, project design, technical assistance, recruitment and training. We will employ a systematic evaluation process to measure program effectiveness through participant surveys, before and after site load reduction modeling and site-specific erosion and runoff assessments.
7	ALL / M	CSUMB Watershed Institute	Monitoring Water Quality Improvements with BMPs	Marc Los Huertos, Watershed Institute	mloshuertos@csumb.edu	831-582-3209	Concept (Could be a component of an Implementation Project)	Keep in IRWMP	The Watershed Institute is offering to conduct monitoring for IRWMP projects, as requested and as needed, to test water quality as a result of urban, suburban, rural, and agricultural management practices.
8	ALL / M	Central Coast Wetlands Group	Coastal Confluence Monitoring	Ross Clark, CCWG	rclark@miml.calstate.edu	831-771-4463	Implementation	New project!	We anticipate that the cumulative results of regional water quality enhancement efforts will lead to improvements in water quality of receiving waters. We currently do not have the robust monitoring systems in place to successfully document these improvements. This project aims to expand the coverage of the continuous monitoring LOBO (Land/Ocean Biogeochemical Observatory) buoy monitoring array from the current location at the end of the Gabilan/Old Salinas River Channel (and several within the Elkhorn receiving waters) to the two additional priority coastal confluence locations that drain significant portions of the Salinas Valley (the Moro Cojo Slough and Salinas River mouth). Additional less costly nutrient monitoring equipment will be installed at the confluence of multiple sub-drainages in order to further document the cumulative effects of nutrient management strategies within the sub-drainages of each watershed. Funds will support the construction of a new LOBO buoy for the Salinas River and the refurbishment of a buoy currently being used within the Elkhorn Slough which will be redeployed within the Moro Cojo Slough. Funds will also support three years of half time staff and student support for the LOBO system including one station currently deployed within the Elkhorn Slough. This will document the enhancement of water quality within receiving waters due to watershed management practices.
9	ALL / M	Monterey Bay Sanctuary Foundation	Making Monitoring Count	Bridget Hoover	bridget.hoover@noaa.gov	(831) 647-4217	Implementation	Keep in IRWMP	This project is necessary to document the IRWMP efforts and their effectiveness throughout the Greater Monterey County region. This project will implement the tracking system developed to inventory projects designed to address the goals of improved water quality, water supply, flood control and environmental protection outlined in the IRWMP. The Monterey Bay National Marine Sanctuary's Synthesis, Analysis and Management (SAM) program initiated this effort in 2006 by conducting an initial compilation and assessment of water quality data collected on the Central Coast. This effort led to the development of the Strategic Plan for Central Coast Water Quality Monitoring Coordination and Data Synthesis. This project will further the tasks described in that plan by developing a framework for improving regional capacity to coordinate monitoring, synthesize information, communicate more effectively between key groups, understand environmental changes, and respond to changes and new knowledge with adaptive management. Water quality data have historically been stored in disparate formats at diffuse locations throughout the region, making them difficult to use collectively. Combining this with tools developed in the Tahoe Basin to measure effectiveness of practices and load reductions will be extremely valuable to the IRWM process.

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				Implementation	concept	Total		all	All programatic areas
			Could fall in Gabilan	5	8	13		UW	Upper Watershed
								SV	Valley Floor/Reclamation Ditch
			In the Gabilan	11	10	21		CR	coastal resilience
						34		/M	module
Project Category	Project Applicant	Project Title	Primary Contact	Email	Phone	Implementat ion or Concept Proposal?	STATUS FOR 2011 PROJECT LIST	PROJECT SUMMARY	
10	ALL / M	Coastal Watershed Council	Community-Based Water Research & Education	Greg Pepping, Coastal Watershed Council	gpepping@coast alws.org	(831) 464-9200	Concept	Keep in IRWMP	This project involves Community-Based Participatory Research (CBPR) with a goal of engaging diverse individuals and groups in future discussions of water supply, water quality, and other environmental issues. This approach lends greater legitimacy to future plans and actions by ensuring community involvement and has a proven track record of producing results. Outcomes from this research will help elected officials and water agency boards to best serve their constituents and establish connections that will benefit all future planning and implementation efforts. This process further benefits the entire region, as it empowers and engages the public in crucial water issues where they might not otherwise be informed or active. The Coastal Watershed Council will lead the efforts to administer the CBPR on a specific watershed by watershed basis. Ultimately, this approach could foster the creation of specific watershed management and/or restoration plans, filling a noticeable void within the region. The holistic approach of this CBPR project would also address numerous objectives in all seven goals outlined in the region's IRWMP Plan.
11	ALL / M	CSUMB Return of the Natives	Return of the Natives Restoration Education Project—an IRWMP partner	Laura Lee Lienk, RON	llienk@csumb.edu	(831) 582-3689	Concept (Could be a component of an Implementation Project)	Keep in IRWMP	The Return of the Natives Restoration Education Project (RON) is the education and outreach branch of Watershed Institute of the California State University Monterey Bay. For this IRWMP proposal, RON would like to present their organization as a partner to other IRWMP projects. They offer to bring the marriage of native plant restoration and community engagement which has become known as "community based habitat restoration" to IRWMP projects. RON's social goal is to bring people and nature together on restoration and garden projects in the watersheds of the Monterey Bay. RON's partnership has the capacity to bring tens of thousands of native grasses, forbes, shrubs, and trees to restoration projects. The plants grown by volunteers and RON staff and CSUMB students are eventually planted by these same volunteers on restoration sites. RON has the capacity to grow and out-plant from 25,000 to 50,000 native plants annually.
12	ALL / M	Ecology Action	Green Gardener Project						The Monterey Bay Green Gardener Certification Program provides bilingual, hands-on training in ecological landscaping methods for landscaping industry professionals, public agency landscape maintenance staff, and home gardeners. Green Gardener graduates are trained to be watershed stewards who are actively reducing landscape water demand and preventing urban non-point source pollution in the watersheds of the Monterey Bay National Marine Sanctuary. Individual graduates with business and/or contractors licenses are promoted to the community on www.green-gardener.org. To date, the Monterey Bay Green Gardener Program has matriculated 422 graduates, 225 of whom graduated from certification-level courses held at the Salinas Adult Education Center. In partnership with California Water Service Company, the Mission Trails Regional Occupation Program (ROP), and Hartnell College Center for Sustainable Construction, the project would: 1) Expand Green Gardener training beyond the Gabilan watershed and City of Salinas to the communities of Gonzales, Soledad, and King City. 2) Incorporate hands-on training experiences at water-wise demonstration sites on both public and private properties. Ecological landscape practices reinforced at demonstration sites include strategies for turf replacement with low-water use plants, irrigation system efficiency retrofits, graywater irrigation design, installation and maintenance, rainwater harvesting systems, and stormwater management with low-impact design methods.
13	CR	Monterey County Water Resources Agency	Potrero Road Tide Gates Construction Project	Manuel Quezada, MCWRA	quezadam@co.monterey.ca.us	(831) 755-4860	Concept	Keep in IRWMP	The Reclamation Ditch Improvement Plan by the Reclamation Ditch Improvement Plan Advisory Committee (RDIPAC) addresses the flooding, erosion, and sediment issues impacting the Reclamation Ditch system. The Potrero Road Tide Gates Project submitted here will implement recommendations by the RDIPAC. The Potrero Road Tide Gates Project will reduce the risk of flooding in the City of Salinas and surrounding areas from current and future flow rates in the system, minimizing crop damage and reducing erosion and sedimentation from widened channel sections in the Reclamation Ditch watershed.
14	CR	Central Coast Wetlands Group	Coastal Wetland Erosion Control and Dune Restoration	Cara Clark, CCWG	cclark@mlml.calslate.edu	(831) 771-4428	Implementation	Keep in IRWMP	Our proposed project will enhance and restore wetland and sand dune ecosystems in central Monterey Bay, and control erosion in salt marshes directly behind the dunes around Moss Landing. These marshes are critical buffers to prevent salt water from entering surrounding farmland, especially the Salinas Valley, yet they are eroding away at accelerating rates. Sand dunes help retain fresh water at the coast, recharge groundwater, retard saltwater intrusion, and minimize storm damage from the sea. Currently much of the physical dune structure around Monterey Bay is fairly intact, but is also highly degraded with invasive non-native plants, which continue to spread. Monterey Bay is the largest indentation widely open to the sea on the Pacific Coast of the US, with correspondingly large and ecologically important dune systems, and is the core area of the Monterey Bay National Marine Sanctuary. The target area for this project, the central Monterey Bay, has the lowest and most degraded sand dunes in the region. They will be the first to fail as sea level rises from storms. El Nino cycles, and climate change. Should they fail, salt water will overflow into the Salinas Valley, compromising one of the nation's most productive agricultural centers.
15	CR	Central Coast Wetlands Group	Water quality enhancement of the Tembladero Slough Phase II	Ross Clark	rclark@mlml.calslate.edu	(831) 771-4411	Implementation	New project!	This project is Phase II of Water quality enhancement of the Tembladero Slough and Coastal Access for the Community of Castroville, Phase I of which has been funded by the IRWMP Round 1. During Phase I, CCWG will work with County agencies, agricultural land owners and the community of Castroville for design and permitting of a select set of Water Quality/wetland management structures. These projects will utilize a variety of water quality management innovations including the treatment train approach (i.e. detention/sedimentation features, pollutant filtration/ biological degradation of pollutants and water polishing areas). During Phase II of this project, twenty acres in total (approximately six projects) will be constructed based on the plans from Phase I that support and integrate the multiple objectives of the GMCIRWMP, emphasizing urban and agricultural water quality enhancement, flood management, habitat restoration and support of various watershed planning and permit processes. Features are selected based on available space, hydrologic requirements, and adjacent land owner concerns, but preferentially support projects that enhance habitat and open space features as well as improving water quality.
16	CR / I	Monterey County Public Works	Moss Landing County Sanitation District Wastewater System Upgrade Project	Dirk J. Medema	medemad@co.monterey	(831) 784-5647	Concept	New project!	MOSS LANDING COUNTY SANITATION DISTRICT GUIDE RAIL: The goal is to improve the T-rail system and replace it with the guide rail system. This project will be under the Department of Public Works. This project is already in process however it is at the beginning stage. Planning is underway between the Wastewater Collection crew and the Bridge crew to complete the project in a timely manner. This guide rail system will last as long as the T- rail system if properly maintained. It is an effective way to ensure that pump has a good seal and the flow is diverted with out seepage. Estimated project completion is within 90 days with proper planning. This project will minimize the pump seepage and reduce the amount of Sewer System Overflow occurrences.
17	CR / I	Monterey County Public Works	SCADA Project	Dirk J. Medema	medemad@co.monterey	(831) 784-5647	Concept	New project!	SCADA -program for all County Sanitation Systems which ensures accurate monitoring for the Sanitary Sewer System. Implementing this project will be an effective way to reduce the amount of man hours as well as efficiently monitoring the system performance and avoid emergency events.
18	CR / M	Save Our Shores	Save Our Shores Watershed Protection Program - Annual Coastal Cleanup Day in Monterey County	Laura Kasa, Executive Director, Save Our Shores	lkasa@saveourshores.org	(831) 462-5660 ext. 8#	Implementation	Keep in IRWMP	Save Our Shores (SOS) has been coordinating Annual Coastal Cleanup Day (ACC) in Santa Cruz since 2007 and has grown the event from 1,929 volunteers and 42 beach sites to 3,800 volunteers and 52 beach and river sites, in just two years. While SOS has been running ACC in Santa Cruz, California State Parks had been running ACC in Monterey since 2001 and no longer had the staff or resources to continue running this event after 2009. Because of the success that SOS has had in expanding the event in Santa Cruz, State Parks and the Coastal Commission asked SOS to take over this responsibility in Monterey in 2010. SOS ran the program in Monterey based on best practices from Santa Cruz and increased the number of volunteers from the previous 1,400 average to over 2,000 the first year and increased the number of sites by including river cleanups through our partnership with Return of the Natives, and involving businesses through sponsorship and employee participation. In the coming years, volunteers will continue to gain a valuable experience in understanding the problem of marine debris and learning ways that they can help solve the problem, and the thousands of visitors that Monterey beaches attract will benefit by experiencing cleaner beaches.
19	I	Marina Coast Water District	Monterey Bay Regional Desalination Project	Jim Heitzman, MCWD	jheitzman@mcwd.org	831-883-5938	Concept	Keep in IRWMP (but changed from implementation to concept proposal)	The Regional Desalination Project will provide approximately 10,500 AFY of potable water on an average annual basis to both the California American Water Company (CalAm) and Marina Coast Water District (MCWD) service areas. The Regional Desalination Project generally consists of a reverse osmosis desalination plant to treat a mix of seawater and brackish groundwater water extracted from the seawater-intruded 180-Foot Aquifer of the Salinas Valley Groundwater Basin to produce 10 million gallons per day (mgd) of product water. Intake facilities include intake wells and an intake pipeline that will convey the extracted water to the desalination plant for treatment. The use of wells to produce the intake water has several advantages over other intake options; the subsurface intake eliminates impingement and entrainment of marine organisms, reduces the pretreatment requirements due to the improved water quality, and minimizes plant energy requirements through the use of brackish water in place of pure seawater as an intake supply. The desalination facilities will include a pretreatment system, the RO system, a post-treatment system, clearwell tanks, and brine disposal. The brine from the desalination plant will be blended with treated effluent from the Monterey Regional Water Pollution Control Agency's (MRWPCA's) Regional Treatment Plant) and disposed of via MRWPCA's existing ocean outfall. Distribution pumping and a transmission pipeline will convey the desalinated (product) water to MCWD's and CalAm's service area for potable use. The existing aquifer storage and recovery (ASR) system operated by Monterey Peninsula Water Management District (MPWMD) will be expanded as part of the project to provide additional storage capacity for the desalinated water produced by the Regional Desalination Project. The ASR facilities will be operated to provide storage capacity in the winter and peak water supply in the summer. During the wet season, water will be delivered to ASR from the desalination plant and/or the Carmel River; water from the desalination plan will be conveyed to the Terminal Reservoir and then pumped by a new ASR pump station to the wells via a new ASR pipeline. A portion of the facilities will be powered by Monterey Regional Waste Management District's cogeneration facility, reducing the carbon footprint of the Regional Desalination Project and greenhouse gas emissions.

TABLE 5. 2012 WRPC Project List Sorted by Program									
				Implementation	concept	Total		all	All programatic areas
			Could fall in Gabilan	5	8	13		UW	Upper Watershed
								SV	Valley Floor/Reclamation Ditch
			In the Gabilan	11	10	21		CR	coastal resilience
						34		/M	module
Project Category	Project Applicant	Project Title	Primary Contact	Email	Phone	Implementat ion or Concept Proposal?	STATUS FOR 2011 PROJECT LIST	PROJECT SUMMARY	
20	SV	Big Sur Land Trust, City of Salinas, CSUMB Watershed Institute & RON	Carr Lake Property Acquisition	Donna Meyers, Big Sur Land Trust	dmeyers@bigsurandtrust.org	831 625 5523 x 105	Concept	Keep in IRWMP (but changed from implementation to concept proposal)	The goal of this project is the acquisition of the 450-acre Carr Lake basin, and its conversion into parkland for the multiple uses of recreation, restored wetlands and riparian wildlife habitat, storm water detention, open space, and water quality enhancement for downstream areas including the Reclamation Ditch and the Monterey Bay National Marine Sanctuary. The restored Carr Lake Regional Park will connect via trails to Natividad Creek Park, which lies immediately upstream. Re-creation of wetlands and floodwater detention areas will provide reduction of flood impacts to the City of Salinas and to downstream agricultural and community lands. Water quality will also improve due to restored wetlands and natural vegetation, via sediment capture and the biological treatment of constituent chemicals.
21	SV / I	Monterey County Water Resources Agency	Implement Reclamation Ditch Improvement Plan Advisory Committee Recommendations	Manuel Quezada, MCWRA	quezadam@co.monterey.ca.us	(831) 755-4860	Concept	Keep in IRWMP	The Reclamation Ditch Improvement Plan was developed by the Reclamation Ditch Improvement Plan Advisory Committee (RDIPAC) to address the flooding, erosion, and sediment issues impacting the Reclamation Ditch system, a 157 square mile watershed. The desired project types submitted here will implement recommendations by the RDIPAC. Some of the recommendations include the following: Replace Potrero Tide Gates, Increase channel capacity and embankment stabilization (various locations), Bridge Replacements (12), Modify Main Street box culvert, Increase pumping capacity at pump stations (2), Comprehensive watershed assessment and management plan, Survey of existing right-of-ways.
22	SV / I	City of Salinas	Replacement Raw Sewage Pipeline to Monterey Regional WWTP and City of Salinas Industrial Wastewater Treatment System Expansion	Michael Ricker	mikeri@ci.salinas.ca.us	(831) 758-7233	Concept	New project!	The City has identified two potential projects at a conceptual development level—expanding the City's capacity to treat and reuse industrial wastewater and increasing conveyance capacity for transferring raw sewage from the City to the Monterey Regional Water Pollution Control Agency (MRWPCA) wastewater treatment plant (WWTP), for treatment, followed by reuse or disposal.
23	SV / I	Monterey County Public Works	Boronda County Sanitation District Guide Rail Upgrade Project	Dirk J. Medema	medemad@co.monterey.ca.us	(831) 784-5647	Concept	New project!	The goal is to replace the T-rail system and replace it with dual tube guide rail system. This project will be under the Department of Public Works. This project is through the beginning stage. Planning is underway between the Wastewater Collection crew and the Bridge crew to complete the project in a timely manner. This guide rail project will significantly improve performance. It is an affective way to ensure that pump has a good seal and the flow is diverted with out seepage. Estimated project completion is within 90 days with proper funding. This project will minimize the pump seepage and reduce the amount of Sewer System Overflow occurrences.
24	SV / I	City of Salinas	Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements	Michael Ricker	mikeri@ci.salinas.ca.us	(831) 758-7233	Implementatio n	New project!	This project will include new gravity sewers with capacity to collect more of the City's industrial wastewater and convey it to the IWTF, upgrades to the IWTF to treat increased industrial flows (expanded electrical system and aeration treatment and related upgrades), and a system to filter the IWTF effluent through soil at the IWTF. After extraction the water would be available for reuse. New monitoring points around the soil bed filtration system will monitor system efficiency and assess its performance and success, such as producing high quality water with low suspended solids. The City has identified multiple potential beneficial uses for treated water including the following: 1) Encourages ground water re-charge. 2) Combats saltwater intrusion. 3) Transfer to the Monterey Regional Water Pollution Control Agency for high quality diluent in its groundwater recharge project. 4) Use as low-salt feed water for potential upgrade to potable water for the City of Salinas. 5) Use after some desalting for agricultural irrigation or without desalting for non-agricultural irrigation water (golf course, playing fields, etc.). 6) Discharge to the Salinas River for reuse by others when withdrawn at the inflatable dam. The potential quantity of water now exceeds about 2,500 acre feet annually and could increase to several times that amount as the IWS grows. The water quality would be substantially improved since the effluent had filtered through the soil column, removing algae and other suspended solids and some trace constituents. For the IWS, such withdrawal would enhance both disposal pond and the percolation bed percolation rate, effectively increase effluent disposal capacity, and hence, treatment capacity.
25	SV / I	Monterey County Water Resources Agency	Coastal Dedicated Monitoring Well Drilling	Kathleen Thomasberg	thomasbergk@co.monterey.ca.us	831-755-4860	Implementatio n	New project!	The twelve dedicated monitoring wells will be drilled under the oversight of a Professional Geologist (PG). The four inch diameter wells will be drilled using Sonic drilling method that allows discrete evaluation of geology to determine where well perforations will be placed. The wells will be strategically placed in Monterey County Right-of-Way locations with the goal to fill water quality and water level data gaps in front of and behind the 2009 500 mg/L chloride seawater intrusion fronts for the Pressure 180-Ft. and Pressure 400-Ft. aquifers.
26	SV / I	City of Salinas	Dry Weather Runoff Diversion Program						The proposed project includes two phases. Both phases would protect receiving water quality, and provide water supply for reuse. The proposed project would also serve as a model of a collaborative water reclamation effort that meets Federal Clean Water Act requirements and State of California DWR IRMP goals and objectives. In Phase 1 the City would divert dry weather urban surface water discharge from south Salinas (see Figures 1 and 2) into the City's Blanco Detention Basin. Water from the Detention Basin would then be sent to the Monterey Regional Water Pollution Control Agency (MRWPCA) regional wastewater treatment plant, or to another location. The City would install a shunt at the City's former wastewater treatment plant site (TP1, see Figure 2) to connect the two existing systems. Water in the basin will settle (to remove suspended solids) and filter through the soil as a pretreatment, then flow into a junction point for transfer to the MRWPCA-operated conveyance system. Shoulder-season wet weather events could be similarly diverted, provided flows do not exceed MRWPCA capacity benchmarks. All diversions would reduce the amount of pollutants entering the Salinas River. Once reclaimed, diverted water could be used for dry-season water supply (e.g., as agricultural irrigation water). 2 In the future as part of Phase 2, dry-weather surface water runoff from the City's northern neighborhoods (North Salinas), would be similarly diverted for reuse. Surface water runoff that currently flows into the Reclamation Ditch (Rec Ditch, which flows to Monterey) would be diverted and reclaimed. This phase includes using existing water quality data for the City's stormwater outfalls (possibly supplemented with new sampling if required) and determining flow volumes from the largest sub-watershed within the City--the Rec Ditch. The City would develop site planning, design, and construction of Rec Ditch diversion facilities later as resources permit. This project also would reduce pollution to downstream receiving waters, and potentially add to recycled water supplies.
27	SV / M	Central Coast Wetlands Group	Historic and Existing Drainage Network Mapping Project: Phase 1	Kevin O'Connor, CCWG	koconner@mml.calstate.edu	831-771-4495	Concept	Keep in IRWMP (but changed from implementation to concept proposal)	This project proposes to utilize available public domain digital elevation models and orthophotography as a base for a GIS based mapping of drainage networks in the Salinas River, Elkhorn Slough, and Moro Cojo watersheds with two primary goals. The first, to recreate the pre-development drainage network of the subject area watersheds based on existing topography, historical records and field verification to determine historical surface drainage conditions. Secondly, to map the existing drainage network of the subject watersheds based on existing topography and drainage infrastructure.
28	SV / M	Monterey Coastkeeper / The Otter Project	Maintenance and Flood Control Planning for the Old Salinas River Channel and Reclamation Ditch	Steve Shimek	steve@montereycoastkeeper.org	831/646-8837 x114	Concept	Keep in IRWMP	It is very likely that the Old Salinas River Channel and the Reclamation Ditch have been dredged and further modified without permit. It is also possible that riparian vegetation has been removed without permit or Section 7 consultation. Continued dredging and riparian removal without appropriate permits is not a sustainable practice over the long run. A facilitated stakeholder process is proposed to bring people together to find common ground. Various visions for these highly modified waterways may require iterative review by consultants knowledgeable about the area and skilled in hydrology and geomorphology. Agencies such as the US EPA, RWQCB, MCWRA, NMFS, and DFG should be involved. Growers and landowners should be involved. And stakeholders such as Sierra Club, Surfrider Foundation, CA Native Plant Society, Audubon, and Monterey Coastkeeper should be involved. Such a process is the only way to bring people together, find common ground, maintain the waterways, and provide flood control. Deliverables from the process will be a 401 permit application and a Channel Maintenance Technical Memorandum.
29	SV / M	Central Coast RWQCB	Healthy Functioning Watersheds: Green infrastructure and the preservation and protection of hydrologic processes	Katie McNeill	Kmcneill@waterboards.ca.gov	805 549-3336	Concept	Keep in IRWMP	The RWQCB's Vision of Healthy Watersheds calls for watershed protection in part through the use of green infrastructure. Green infrastructure is the set of practices that mimic natural processes to retain and use stormwater. Through infiltration, evapotranspiration, and harvesting stormwater throughout the landscape, green infrastructure preserves and restores the natural water balance of a watershed. Environmental benefits include reducing flooding, improving water quality, providing habitat, reducing the urban heat island effect, mitigating global warming and increasing groundwater recharge. Healthy sustainable watersheds supported by green infrastructure use less energy for imported water, have fewer greenhouse gas emissions, and a lesser carbon footprint than unhealthy watersheds. The Water Board's goal of Healthy Watersheds is compatible, supportive, and in coordination with the larger issue (beyond water quality) of sustainability and the State's Global Warming Solutions Act. With this concept proposal the RWQCB is encouraging organizations to implement green infrastructure projects.

TABLE 5. 2012 WRPC Project List Sorted by Program									
				Implementation	concept	Total		all	All programatic areas
			Could fall in					UW	Upper Watershed
			Gabilan	5	8	13		SV	Valley Floor/Reclamation Ditch
			In the Gabilan	11	10	21		CR	coastal resilience
						34		/M	module
Project Category	Project Applicant	Project Title	Primary Contact	Email	Phone	Implementat ion or Concept Proposal?	STATUS FOR 2011 PROJECT LIST	PROJECT SUMMARY	
30	SV / M	Central Coast RWOCB	Healthy Functioning Watersheds: Irrigation efficiency and nutrient management on agricultural lands	Katie McNeill	Kmcneill@waterboards.ca.gov	805 549-3336	Concept	Keep in IRWMP	With this concept proposal the RWQCB is encouraging organizations to work with farmers to implement irrigation and nutrient management projects. The RWQCB's Vision of Healthy Watersheds calls for watershed protection through the implementation of irrigation efficiency, and nutrient as well as pesticide and sediment management on agricultural lands. This includes conducting irrigation evaluations and corresponding actions designed to address pollutant loading from tailwater, creating un-farmed buffers that improve water quality (e.g. filter and infiltrate runoff), and protecting or improving habitat (e.g. stabilize streambanks and shade streams) between intensive agriculture and wetland/riparian areas. The Central Coast Water Board has prioritized implementation in the Salinas watershed and other impaired waterbodies included in the Greater Monterey County. Irrigation and Nutrient Management, especially related to protection of shallow domestic drinking water wells continues to be one of the Water Board's highest priorities. Implementation would be carried out via various partnering organizations in collaboration with growers.
31	SV / M	Central Coast Wetlands Group	Study of environmental services from nutrient reducing BMPs	Kevin O'Connor, CCWG	koconner@mlml.calstate.edu	831-771-4495	Implementatio n	New project!	The SWRCB, CCC, and other State agencies have identified management measures (MMs) to address agricultural nonpoint sources of pollution that affect State waters. The agricultural MMs include practices and plans installed under various programs in California, called Best Management Practices (BMPs). These BMPs range in action from on-farm nutrient management to cover crops to constructed treatment wetlands. To be effective, BMPs should be targeted by location and type; however, we currently lack the information necessary for precise targeting. This project is intended to fill existing economic and ecological gaps in knowledge about select nutrient load reducing BMPs, supporting current conservation programs, and to explore innovative Payment for Environmental Services (PES) potential. Tasks include an ecosystem service assessment to identify the location and size of existing nutrient reducing BMPs; nutrient reduction research to address gaps in the understanding of the effectiveness of selected BMPs at load reduction; ecosystem service valuation to economically assess the multiple benefits of BMPs; and an ecosystem services analysis to determine if PES is feasible. The results of the project will be beneficial to many different users. In particular, the ecosystem service valuation will have widespread utility in cost benefit assessments of environmental projects, and the load reduction study will help farmers, conservation groups and regulators.
32	SV / M	Resource Conservation District of Monterey County	Monterey County Farm Water Quality Assistance Program	Paul Robins, Executive Director, RCD	paul.robins@rcd.monterey.org	831-424-1036, ext. 124	Implementatio n	Keep in IRWMP	The RCD of Monterey County, in close partnership with University of California Cooperative Extension Crop Advisors and USDA Natural Resources Conservation Service, will provide a bilingual on-farm erosion, irrigation, and nutrient management evaluation program for Monterey County farmers. The service will 1) evaluate erosion potential, irrigation system and application efficiency, and nutrient budgeting; 2) develop recommendations as needed for field configuration, soil stabilization, and refined water and nutrient applications; and 3) assist growers' voluntary implementation of those recommendations to help reduce excess soil, water and nutrient movement off area farms while optimizing farm productivity. This work is already underway on a smaller scale, and incorporation into the GMCIRWMP and the requested funding would support development of a full program for the next three years.
33	SV / M	UC Davis Marine Pollution Studies Lab	Evaluation of Potential for Stormwater Toxicity Reduction by Low Impact Development (LID) Treatment Systems	Katie Siegler	csiegler@ucdavis.edu	(831) 624-0947	Implementatio n	IMPLEMENTED through Round 1. Remove from list.	This project will evaluate the efficacy of Low Impact Development (LID) treatment components in the greater Salinas area and other areas of Monterey County in reducing the concentrations of contaminants that contribute to stormwater toxicity. Toxicity will be assessed using established U.S. EPA toxicity testing protocols. The study will (1) Evaluate toxic effects of stormwater runoff to aquatic organisms prior to treatment by bioswales or other treatment systems; (2) Evaluate efficacy of bioswales or other treatment systems to reduce stormwater runoff toxicity to aquatic organisms; (3) Determine stormwater load reduction through infiltration in LID design components; (4) Determine stormwater pollutant load reduction using a number of existing LID design components in established projects; and (5) Provide data to stormwater agencies, water quality managers, LID engineers, and others to be incorporated into future planning and management decisions to protect the Salinas River Watershed.
34	UW	Central Coast Wetlands Group	Northern Gabilan Mountain Watershed Management Project	Kevin O'Connor, CCWG	koconner@mlml.calstate.edu	831-771-4495	Implementatio n	New project!	The project consists of three phases to restore a sub-watershed within the upper Gabilan watershed, and serve as a model for restoration of watersheds within the central coast. Phase I provides the foundational watershed characterization and process analysis necessary to develop meaningful and effective watershed management. It includes a review of previous relevant studies and preparation of original analysis along with a compilation of spatial data and key watershed processes. Analysis will be integrated with research and planning projects done by others. The synthesis of this information will be used to target planning and restoration for one sub-watershed. This will be accomplished by addressing the changes in the watershed functions and processes (physical, chemical and biological) that are caused by agriculture and urban activity that affect watershed health. Additionally, we will conduct a community-based engagement process to review Phase I information and watershed management options. Phase I will result in a management methodology and a master restoration plan for one of three sub-watersheds. Phase II will develop site design for prioritized restoration locations within the chosen sub-watershed and Phase III will implement those designs.

Appendix M
Interregional Coordination between the
Greater Monterey County and
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM
Regions

Summary Report (April 18, 2014)

Project 5. Integrated Regional Water Management Inter-Regional Coordination:
Greater Monterey County and Monterey Peninsula, Carmel Bay, and South
Monterey Bay Regions

Abstract: The Greater Monterey County Integrated Regional Water Management (IRWM) region shares a border with the Monterey Peninsula, Carmel Bay, and South Monterey Bay (Monterey Peninsula) IRWM region. Along this border, the 45-square-mile Ord Community is a geographical transition zone containing areas and resources that are managed by many agencies, including some that are in both IRWM Regional Water Management Groups (RWMG). Fundamental challenges are: 1) determining which regional IRWM Plan proposed projects should be described in each IRWM Plan; 2) prioritizing projects in each region; 3) how to cooperate between regions in order to ensure that Ord Community projects do not fall into a “no man’s land” between the regions; and 4) moving projects forward that benefit both regions. This report describes the relationship between the regions, identifies resource challenges, and outlines areas of potential coordination between the regions.

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District Engineer: Larry Hampson

on behalf of the

Regional Water Management Group of the Monterey Peninsula, Carmel Bay, and
South Monterey Bay

Version Date: April 18, 2014

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Introduction and Background

In the physical transition zone between the Greater Monterey County and the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM planning regions, a fundamental issue affecting water resource management is that the Ord Community is served water from the Salinas Valley Groundwater Basin (SVGB), which is in the Greater Monterey County region, while approximately one third of the area and water demand for the Ord Community is within the Monterey Peninsula region (see [Figure 1: Jurisdictional Boundaries in the Ft. Ord Area](#)).

Another geographical peculiarity is that a portion of the Ord Community overlies the Seaside Groundwater Basin (SGB), which is a place of water supply storage and extraction for the Monterey Peninsula; however, the Ord Community portion overlying the SGB is not supplied from the SGB. This arrangement was agreed to in 1993 with the transfer of the responsibility for water supply from the United States Army (the Army) to the Monterey County Water Resources Agency (MCWRA).¹

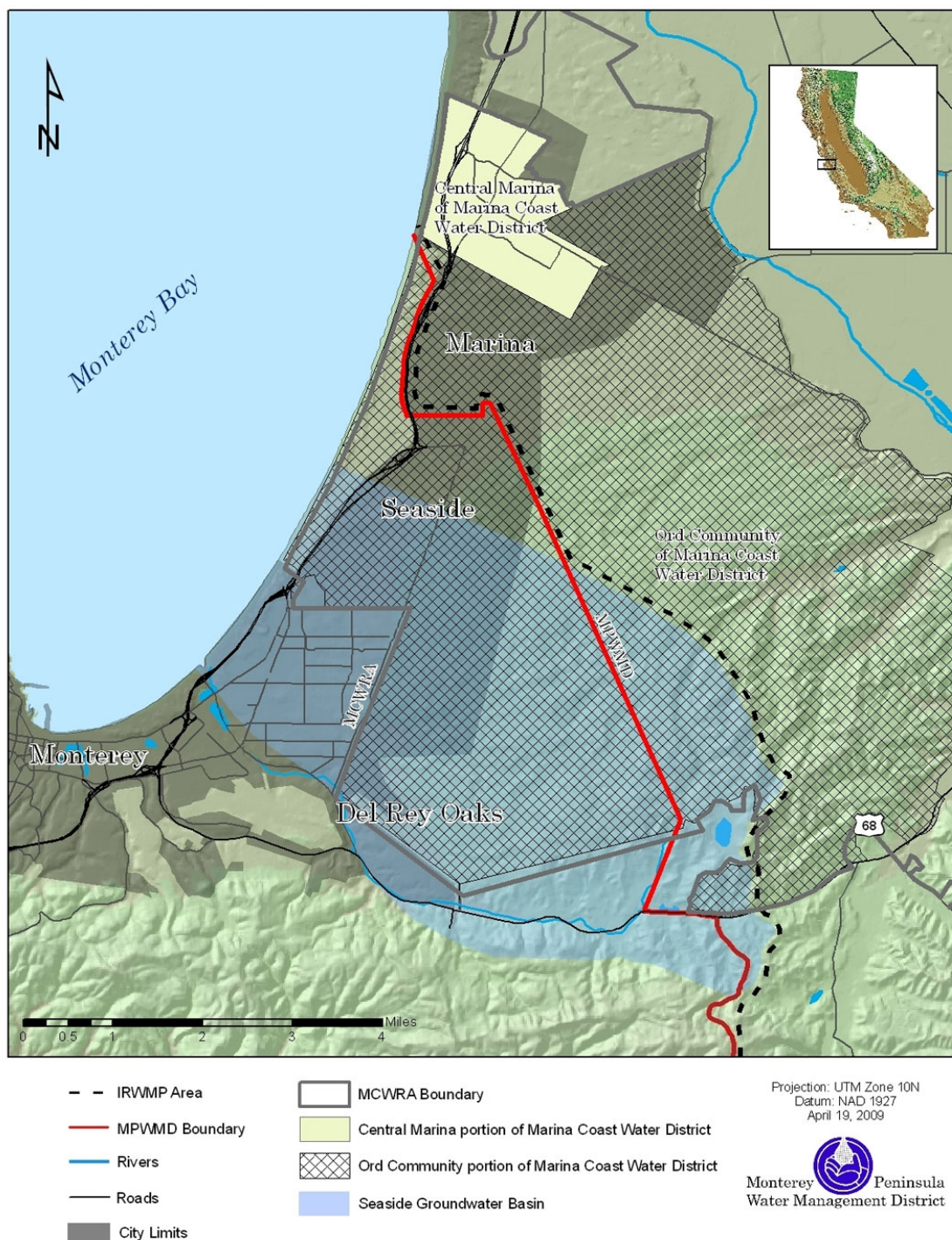
It is critical for both IRWM regions to have an understanding of the physical and jurisdictional interactions between the planning regions and for each region to understand each other's objectives and priorities. The following sections describe the work conducted by Monterey Peninsula Water Management District (MPWMD) on behalf of the Monterey Peninsula RWMG and by Susan Robinson, Program Manager for the Greater Monterey County IRWM Plan on behalf of the Greater Monterey County RWMG, to provide both regions with the basic information necessary to understand proposals within the regional and inter-regional context and to prioritize future management actions. Bulleted items indicate information to be developed or updated for the joint chapter.

The purpose of the Project Summary Report is to document how the two regions have coordinated:

- to help identify inter-regional opportunities and projects;
- to promote the cooperative development of projects that benefit both regions;
- to ensure consistency in project evaluation; and
- to promote cooperation and coordination between regions in the development and sustainable management of water resources (see pages 20, 24 and 41 of Final Guidelines).

The original nexus of this component of the IRWM planning process was the recognition in 2010 by both regions that Ord Community needs and resources were shared between the regions. For the 2010 DWR Planning Grant solicitation, both regions submitted a proposed scope of work that included addressing inter-regional issues. Subsequently, MPWMD agreed to take the lead with support from the Greater Monterey County region. At the time that the Planning Grant work was initiated, the Monterey Bay Regional Water Program/Project, the goal of which was to address water supply issues within both the Greater Monterey County and Monterey Peninsula regions, was moving through the approval process. That project is no longer being pursued by regional stakeholders, as discussed further, below. However, there are other projects being pursued by stakeholders in the region that have similar objectives, would achieve similar results if implemented, and involve regional integration, cooperation, and collaboration.

¹ The Marina Coast Water District (MCWD) subsequently won the right to provide water and sewer service to the Ord Community.

Figure 1: Jurisdictional Boundaries in the Ft. Ord Area

Relationship between IRWM Regions

This section summarizes the information presented in the Regional Acceptance Process and other communications to California Department of Water Resources (DWR) about the formation of the two regions.

The primary area where overlap may occur between the Greater Monterey County IRWM Plan and the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Plan is in the vicinity of the Seaside/Salinas Valley Groundwater Basin divide and in particular, the management of the Seaside Basin as a place of storage and extraction (see [Figure 1: Jurisdictional Boundaries in the Ft. Ord Area](#)). The Seaside Basin and Fort Ord area constitutes a geographic area within which a significant opportunity exists for stakeholders in the two IRWM planning regions to collaborate and coordinate on projects of interest to both regions.

In Bulletin 118, DWR considers the Seaside Groundwater Basin (Basin 3-4.08) to be a sub-basin of the Salinas Valley Basin (Basin 3-4). Physically, a regional analysis of groundwater levels found that the boundary between the Seaside and Salinas Valley Groundwater Basins is represented by a groundwater flow divide, which is simply the high point in the regional water-level surface between pumping depressions in Seaside, the Salinas Valley, and the El Toro Creek area. The lack of wells and water extraction in proximal areas of the former Fort Ord lands and highland areas adjacent to the Salinas Valley may encourage this divide, which acts as a “ridge” of higher groundwater levels between lower groundwater level areas in adjacent areas of Seaside and Salinas Valley. Because a large portion of these lands is controlled by the Bureau of Land Management (BLM) or are not arable lands, it is unlikely that groundwater extraction in this area would increase in the foreseeable future. It is beyond the scope of this report to describe these interactions, but extensive information may be found in the following documents:

- *Laguna Seca Subarea Phase III Hydrogeologic Update*, Prepared for the Monterey Peninsula Water Management District by Eugene B. Yates, Martin Feeney, and Lewis I. Rosenberg, November 2002
- *Seaside Groundwater Basin: Update on Water Resource Conditions*, prepared for the Monterey Peninsula Water Management District by Eugene B. Yates, Martin Feeney, and Lewis I. Rosenberg, April 14, 2005
- *Seaside Groundwater Basin Salt & Nutrient Management Plan* prepared for the Monterey Peninsula Water Management District by Hydrometrics WRI, April 2014.

Potable water is provided to customers in the Seaside basin by several dozen water distribution systems. Water production and delivery are reported annually to MPWMD by all water system operators. Over 90% of the water is delivered by a single purveyor (Cal-Am). Cal-Am operates several water distribution systems in the area, some of which are interconnected. The main system serves the Carmel Valley, Monterey Peninsula, and coastal subareas of the Seaside basin. Presently, water is obtained from approximately 17 wells along the Carmel River and eight wells in the Seaside coastal subareas. The Carmel Valley wells extract groundwater from the Carmel Valley alluvium and operate year-round. Wells in the Seaside coastal subareas are used primarily in late spring, summer, and fall. Cal-Am also operates several other water distribution systems in the Laguna Seca Subarea that it acquired from previous operators during the past 15 years, including the Hidden Hills, Ryan Ranch, and Bishop systems. The first two of these have interties with the main system, but the Bishop system does not.

The City of Seaside operates a single well in the Seaside Groundwater Basin to serve residential customers in part of the city. The principal nonpotable use of water in the basin is irrigation of golf courses. The Laguna Seca and Pasadera golf courses are in the Laguna Seca Subarea and are supplied by nearby wells. The Bayonet and Black Horse golf courses are located on the former Fort Ord military base north of Seaside and are currently being supplied with irrigation water from Marina Coast Water District (MCWD) under a five-year agreement that is set to expire in 2015.

MCWD provides municipal supply water to existing and future developed areas on the former Fort Ord military base. Within the Seaside basin, this includes the residential areas and schools surrounding the Bayonet and Black Horse golf courses. The water is obtained from wells near Marina, in the Salinas Valley Groundwater basin. Although there is currently a general prohibition on groundwater exportation from the Salinas Valley, Section 52-9 “Powers of Agency” of the MCWRA Act enabling legislation states:

The Agency has perpetual succession and may do any of the following:

(u) Prevent the export of groundwater from the Salinas River Groundwater Basin, except that use of water from the basin on any part of Fort Ord shall not be deemed an export. Nothing in this act prevents the development and use of the Seaside Groundwater Basin for use on any lands within or outside that basin.

There are a number of proposals that would link water resources in the Salinas Valley with supplies to the Seaside Groundwater Basin. Currently wastewater from the Monterey Peninsula region is conveyed to the Salinas Valley and reused for irrigating crops. There are ongoing discussions among agencies with responsibilities over these supplies, which include desalinated water, brackish groundwater near the coast, and recycled water. In addition, surface flow from the Salinas River under the unexercised SWRCB Permit No. 11043 issued to MCWRA is being considered for supplying additional water to MCWD. The following section details these water supply projects and plans.

Boundary Region Description

Fort Ord was established as a U.S. Army post by the Department of Defense in 1917 and proposed for closure in 1991 by the Base Realignment Commission. In 1994, the state legislature created the Fort Ord Reuse Authority (FORA) to oversee the reuse and redevelopment of the former military base, which includes more than 45 square miles of the former Fort Ord (also referred to as the Ord Community). A small portion of the former Ft. Ord remains under Army control and is now called the Presidio of Monterey Annex. Other property within the former Fort Ord falls under the following jurisdictions: the Bureau of Land Management, the cities of Seaside, Marina, Monterey, and Del Rey Oaks, the County of Monterey, the University of California, California State University at Monterey Bay, and the Presidio of Monterey Annex. The California Department of Parks and Recreation administers the Fort Ord Dunes State Park area that stretches along the western portion of the former Fort Ord between Highway 1 and the ocean.

Physical Setting

Former Fort Ord lands lie between Canyon del Rey and Toro Creek to the south, the Salinas Valley to the northeast, and the Pacific coast to the west. The landscape slopes gradually down toward the northwest through moderately dissected rolling hills from approximately 900 feet above sea level near Impossible Canyon to sea level. On the eastern portion of the base lie canyons and ridges that drop steeply into the bottom of the Salinas Valley. The northeast portion of the base borders ancient sand dunes within the City of Marina.

Most of the area is underlain by young terrestrial deposits. The stratigraphy includes Eolian deposits, Upper Tertiary Santa Margarita Sandstone, Plio-Pleistocene Paso Robles Formation, and Quaternary Aromas Sandstone. Interdune areas have internal drainage, whereas the dissected areas drain to the Salinas Valley either directly, or by way of Toro Creek along Highway 68 (Smith et al., 2002). A very small amount of stormwater runoff from the Fort Ord

lands may enter Canyon Del Rey near the southwest corner of the former base; however, this is likely to be from roadway runoff during intense storms.

The western portion of the base, where most development has occurred, contains deposits of Type A soils with infiltration rates of 6 to 20 inches per hour. The 85th percentile 24-hour rainfall depth is estimated at 0.7 inches (PRISM Climate Group). Currently, all rainfall percolates into this area and there is no stormwater runoff to the ocean through the barrier beach, as the last of the storm drain outfalls built for the Army base have been removed by CSUMB. Type B soils are present over the remainder of the base and have a permeability of 0.6 to 6 inches per hour. This latter area has locally resistant beds, but the overall geologic substrate has a high erosion and mass-wasting potential, as evinced by the great number of gullies, and the local presence of badlands topography and shallow landslides (Smith et al., 2002; 2004).

Because all stormwater runoff from impervious areas in the Ord Community percolates, it tends to recharge the shallow dunes aquifer in the SVGB and the shallow dunes aquifer and the upper portion of the Paso Robles formation overlying the SGB.

Jurisdictional Boundaries

Within the area shared by the two IRWM regions, responsibility for and management of groundwater, potable water, wastewater, recycled water, stormwater, desalinated water, and resources dependent on all of these waters, are divided among many stakeholders. These stakeholders range from private water distribution systems to federal agencies involved in the reuse of the former Fort Ord. However, most management responsibilities lie with the Cities of Seaside and Marina, California American Water (Cal-Am), Marina Coast Water District (MCWD), MPWMD, County of Monterey, Monterey County Water Resources Agency (MCWRA), Monterey Regional Water Pollution Control Agency (MRWPCA), Fort Ord Reuse Authority (FORA), the Bureau of Land Management (BLM), and the Department of Defense (primarily, the U.S. Army).

MCWD provides potable water and sanitary sewer collection services to existing and most future developed areas of the Ord Community. Within land overlying the SGB, this includes the residential areas and schools surrounding the Bayonet and Blackhorse golf courses. The Seaside Community Services District is currently the designated entity to provide wastewater collection service to areas east of General Jim Moore Boulevard and south of Eucalyptus Road (through a service area amendment issued by the Monterey County Local Agency Formation Commission in 1997). Water is obtained from wells near “central” Marina (the area outside of the former Fort Ord military base), in the SVGB. Both Cal-Am and the City of Seaside operate municipal supply systems in the SGB to serve residential customers within the City of Seaside (but not residents of the Ord Community overlying the SGB). Water is produced from the SGB under the supervision of a Watermaster appointed by the Superior Court. The Watermaster is comprised of overlying pumpers including the City of Seaside and Cal-Am, MPWMD, and MCWRA.

Wastewater from the Ord Community is taken to the Regional Treatment Plant operated by MRWPCA along with other communities’ wastewater, where a majority of it is recycled and used to irrigate crops in the Castroville area through the Castroville Seawater Intrusion Project (CSIP). Use of recycled water with the CSIP reduces the need for groundwater production in the Salinas Valley aquifers closest to the coast that are impacted by seawater intrusion.

Recently, there has been a focus on recreation associated with the creation of the Fort Ord Dunes State Park west of Highway 1 and the Fort Ord National Monument in the eastern half of the former Army base. Competing ballot initiatives in the November 2013 sought to modify

portions of the Base Reuse Plan by re-designating how certain lands could be used. Neither measure passed, so the Reuse Plan was not amended. However, the issues raised during the election campaign remain, including water availability, preservation or development of open space, jurisdictional claims, and the economics of base redevelopment. These issues are shared by both IRWM regions.

Water Supplies

Monterey Peninsula. The Monterey Peninsula has a current water supply replacement need of about 9,750 AFY with an additional 3,400 AFY needed for 20-year General Plan development (2014 MPWMD estimate). The Monterey Peninsula region's water supplies are legally constrained by orders from the SWRCB to cut back production from Carmel Valley and an adjudication of the SGB (currently the two primary supplies for the Monterey Peninsula). Physically, the water supply system is also old in many areas and requires re-plumbing in order to deliver water from the north (in Seaside) to the southern and eastern portions of the region. The region has evaluated up to about 150 alternatives over more than 50 years to increase supplies, but only the following projects have proven to be viable and thus have been constructed:

- (1) Aquifer Storage and Recovery - cooperatively implemented by MPWMD and Cal-Am, this project includes the diversion of excess winter/spring flows from the Carmel River system for recharge of, storage in and subsequent recovery from the SGB;
- (2) Carmel Area Wastewater District/Pebble Beach Community Services District/Pebble Beach Company Recycled Water Projects - provision of tertiary-treated, recycled wastewater for irrigation of golf course and some other recreational areas within Pebble Beach; and
- (3) Sand City Desalination Plant - provides 300 AFY to the community, including 94 acre-feet that have been committed long-term for use in areas outside the City.

The Ord Community has been allocated 6,600 AFY from the SVGB, of which just over 5,600 AFY has been committed; however, many of these commitments are intended for future developments that have not been built. As shown in **Attachment 2**, over 4,000 AFY has remained unused since the allocation system was created and water use tracked. FORA manages its groundwater allocation and sub-allocations through a Development and Resource Management Plan that annually tracks water use. The Reuse Plan anticipated that a total of 9,000 AFY would be needed to provide water for redevelopment of the former Fort Ord; therefore, a balance of 2,400 AFY of water is needed to augment the 6,600 AFY of available groundwater. A more recent analysis in the MCWD Urban Water Management Plan based on jurisdictional surveys projects that total demand in 2030 for the Ord Community will be about 8,200 AFY, which is 800 AFY less than the original Reuse Plan. It is likely that the economic downturn beginning in 2007 has influenced the perceived future demand.

Greater Monterey County. All of the water supplied to the Ord Community area of the Greater Monterey County IRWM region originates from the Salinas Valley Groundwater Basin, specifically wells in the 400-foot and deep aquifers. Two of the aquifers in the SVGB are in a condition of long-term overdraft (the 180- and 400-foot aquifers) near the coast, with seawater intrusion in the 180-foot aquifer extending more than 7 miles inland to the outskirts of the City of Salinas. MCWRA has taken steps to address this, including use of recycled water for agricultural irrigation (through the wastewater recycling facility, called the Salinas Valley Reclamation Project, and the CSIP) and use of Salinas River water to supply the CSIP area irrigators using an inflatable (rubber) dam to make seasonal impoundments from which to divert

water. However, to date, seawater intrusion has not been reversed although the rate of intrusion appears to be slowing (MCWRA, 2013). MCWRA requires that MCWD take no more than 5,200 AFY from the 180- and 400-foot aquifers in order to reduce the risk of exacerbating seawater intrusion.

Although MCWD can develop additional hydraulic capability to meet demand (i.e., install more wells) by tapping the “deep aquifer” in the SVGB to supply the allocated amount for the Ord Community, there is concern that recharge mechanisms in this aquifer may not be adequate to support additional extraction – in other words the deep aquifer could become overdrafted by additional production. MCWD has pursued a Seawater Desalination Project and a Recycled Water Project, and is also pursuing surface water rights in the Salinas Valley to meet its obligations to supply the Ord Community. Additional background on MCWD’s water supply planning for the Ord Community is provided in **Attachment 1**, including past efforts at developing regional water supply projects that provide mutual benefits to both the Greater Monterey County and Monterey Peninsula IRWM regions. The following section describes additional inter-regional water management planning efforts that have occurred due to the IRWM programs.

Water Supply Projects and Plans Related to Both IRWM Regions

The following water supply-related projects and studies are considered relevant to both the regions and/or are related to the water supply issues of the two regions.

Monterey Peninsula Water Supply Project (MPWSP)

The MPWSP proposal consists of a Cal-Am-only 9.6 million gallon per day (MGD) desalination project at a location different from the Coastal Water Project or a combination of a Cal-Am 6.4 MGD desalination project and a groundwater replenishment project (Groundwater Replenishment Project), described below.

The Cal-Am project proposal to locate a desalination plant in north Marina to supply the Monterey Peninsula region is one of the largest in California. It includes the following features: subsurface slant source water intake wells; extraction of brackish water from the SVGB; and discharge of hyper-saline brine concentrate into the Monterey Bay National Marine Sanctuary (MBNMS). A critical aspect of the Cal-Am desalination proposal is to determine what effect that extraction of subsurface water near the coast would have on Salinas Valley Groundwater Basin aquifers. Due to seawater intrusion into the aquifers, agricultural interests in the Salinas Valley are strongly opposed to removal of any water from the 180- or 400-foot aquifers near the coast and currently, MCWRA has a prohibition against new wells in the 180-foot aquifer. In addition, extraction of seawater using slant wells extending below the seafloor requires wells to be installed and operated in areas potentially affected by climate change and the associated coastal erosion triggered in part by both large storm events and rising sea levels. Discharge of brine to the MBNMS must meet newly proposed Ocean Plan Amendment standards that include dilution of the brine to no more than 5% above natural salinity at 100 meters from the discharge point (the zone of initial dilution).

The review and project selection process for the Cal-Am proposal is being conducted at the local level through a Governance Committee formed with Cal-Am, the Monterey Peninsula Regional Water Authority (MPRWA), the Monterey

Peninsula Water Management District, and the Monterey County Board of Supervisors (an example of inter-regional coordination). The Governance Committee was formed to ensure efficient and effective public input to the project.

The MPRWA is a Joint Power Authority (the Authority) that consists of the six Monterey Peninsula cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside, and the County of Monterey. The purpose of the MPWRA is to study, plan, develop, finance acquire, construct, maintain, repair, manage, operate, control and govern water projects either alone or in cooperation with other public or private non-member entities. In addition, the MPRWA established a Technical Advisory Committee to assist in carrying out the purposes and objectives of the Authority.

The CPUC will eventually rule on whether a Groundwater Replenishment Project (see description below) would be implemented to reduce the scale of the desalination and be part of the water supply solution for the Monterey Peninsula. Hearings for the Groundwater Replenishment Project are scheduled for December 2014. As Lead Agency, the CPUC will also rule on the MPWSP EIR as part of the ratemaking process for the Cal-Am project. Certification of an EIR and issuance of a Certificate of Public Convenience and Necessity is anticipated in 2015.

Monterey Peninsula Groundwater Replenishment Project.

The proposed Monterey Peninsula Groundwater Replenishment Project (Groundwater Replenishment Project) would create a reliable source of water supply by taking highly-treated water from a new advanced water treatment plant, and injecting it into the Seaside Groundwater Basin using a series of shallow and deep injection wells. The Groundwater Replenishment Project is being proposed by the Monterey Regional Water Pollution Control Agency (MRWPCA) in partnership with the MPWMD. See <http://www.mpwatereplenishment.org> for more information and maps. Once injected into the Seaside Basin, the treated water would mix with the groundwater present in the aquifers and be stored for future use. The primary purpose of the proposed project is to provide 3,500 acre-feet per year (AFY) of high quality replacement water to the Seaside Basin to allow Cal-Am to extract the same amount for delivery to its customers in the Monterey District service area, thereby enabling Cal-Am to reduce its diversions from the Carmel River system by this same amount.² Cal-Am is under a state order to secure replacement water supplies and cease overpumping of the Carmel River by January 2017. The proposed project components include the following (the geographic location in relationship to the two regions is provided in parenthesis):

- source water collection and conveyance - some proposed source waters, such as Lake El Estero Storage Management Water, would originate from land located within the Monterey Peninsula IRWM region and some

² CalAm is an investor-owned public utility with approximately 38,500 connections in the Monterey Peninsula area.

alternative source waters are located in the Greater Monterey County IRWM region³,

- treatment facilities - including both existing and proposed facilities to be located within the Greater Monterey County IRWM region at the MRWPCA's regional treatment plant,
- treated water conveyance system, including pipelines and pump station - conveyance systems would be located and pass through both IRWM regions to carry the high quality, advanced-treated water between the regional treatment plant and the SGB,
- injection wells for recharging the SGB – these would be located within the city of Seaside's portion of the former Fort Ord south of Eucalyptus Road and east of General Jim Moore Boulevard, and
- potable water distribution system improvements outside of, and south of, the Ord Community within the cities of Seaside, Monterey, and Pacific Grove.

The Groundwater Replenishment Project would assist both the Greater Monterey County and the Monterey Peninsula regional stakeholders, including RWMGs, in complying with numerous state and federal policies aimed at improved water resource management and associated societal benefits. In addition to the project objectives, the Groundwater Replenishment Project may provide public benefits and important progress toward meeting the following statewide environmental goals, policies and orders:

- The State Water Resources Control Board (SWRCB) supports the use of reclaimed water to reduce discharges of wastewater. In particular, Order WQ 84-7 says dischargers in water-short areas that propose to release treated wastewater to the ocean must evaluate the potential for water reclamation. This order was specifically recognized within the SWRCB Cease and Desist Order issued to Cal-Am (see section 19.1). The Groundwater Replenishment Project would assist in compliance with this statewide order by creating a water supply use for treated wastewater that is presently discharged to the ocean during periods when the Salinas Reclamation plant doesn't use all the secondary effluent to produce tertiary-treated wastewater for agricultural irrigators in the CSIP areas.
- The SWRCB's Recycled Water Policy (adopted May 2009 and amended April 2013) states: "We strongly encourage local and regional water agencies to move toward clean, abundant, local water for California by emphasizing appropriate water recycling." It also says, "Included in these goals is the substitution of as much recycled water for potable water as possible by 2030." The policy also states, "Groundwater recharge with recycled water for later extraction and use in accordance with this policy and state and federal water quality law is to the benefit of the people of the state of California. The State Water Board and Regional Water

³ There are several raw or source waters that would require agreements from Salinas Valley stakeholders, such as MCWRA and the City of Salinas, and others would require appropriative water rights from the SWRCB.

Boards will exercise the authority granted to them by the Legislature to the fullest extent possible to encourage the use of recycled water, consistent with state and federal water quality laws." The Groundwater Replenishment Project would satisfy this statewide policy (see: http://www.swrcb.ca.gov/water_issues/programs/water_recycling_policy/, accessed April 11, 2014).

- In 2006, Gov. Arnold Schwarzenegger signed AB 32, the Global Warming Solutions Act of 2006, which set the 2020 greenhouse gas emissions reduction goal into law. It directed the California Air Resources Board to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. Groundwater Replenishment requires much less electricity than desalination requires for the same amount of processed water. Therefore, the Groundwater Replenishment Project would help satisfy this statewide goal.
- The City of Salinas's Industrial Wastewater Treatment Facility is currently unable to meet its National Pollutant Discharge Elimination System/Waste Discharge Requirements of the Regional Water Quality Control Board on a year-round basis (City of Salinas, Industrial Wastewater Treatment Facility, 2013 Annual Report, Waste Discharge Number R3 2003 0008, WDID NO. 3 27011003, January 30, 2014). The Groundwater Replenishment Project proposes to utilize that water to augment wastewater flows to the Regional Treatment Plant to enable year-round, advanced treatment and recharge operations.

Potential sources of water for recycling include stormwater and urban runoff, and agricultural wash water that is treated, evaporated, and percolated near the Salinas River at Davis Road (about four miles upstream of the ocean). In addition, a detailed alternatives analysis is being prepared for both the Groundwater Replenishment Project Environmental Impact Report and for a U.S. Bureau of Reclamation WaterSMART Grant Feasibility Study and State Water Resources Control Board Facility Plan that includes analyzing the diversion and reuse of polluted waters in the Salinas Reclamation Ditch, the Tembladero Slough, and Blanco Drain. These sources are impaired waters on the Central Coast Region of the RWQCB list of 303(d) streams and include a variety of contaminants associated with agricultural and urban runoff. More details of the analysis of these projects will be available in the Fall of 2014. These alternatives are also discussed below under "Future Wastewater Recycling and Water Quality Projects."

Salinas and Carmel River Basins Study

In February 2014, the Monterey Peninsula Water Management District, the Monterey Regional Water Pollution Control Agency, the Monterey County Water Resources Agency, and the San Luis Obispo County Public Works Department submitted a WaterSMART grant proposal to the U.S. Bureau of Reclamation (Reclamation) for an inter-regional water supply planning study called a Basin Study.

According to Reclamation, basin studies entail basin-wide efforts to evaluate and address the impacts of climate change on future water supplies and sea level rise. Funding is available for comprehensive water studies that define options for meeting future water demands in river basins in the western United States where imbalances in water supply and demand exist or are projected. Each study would include four key segments:

- State-of-the-art projections of future supply and demand by river basin.
- An analysis of how the basin's existing water and power operations and infrastructure will perform in the face of changing water realities.
- Development of options to improve operations and infrastructure to supply adequate water in the future.
- Recommendations on how to optimize operations and infrastructure in a basin to supply adequate water in the future. (U.S. Bureau of Reclamation website, <http://www.usbr.gov/WaterSMART/bsp/>, accessed on April 10, 2014)

The study proposed by the three IRWM planning regions (Greater Monterey County, Monterey Peninsula, and San Luis Obispo County) is titled the Carmel and Salinas River Basins Study and its goals include providing an opportunity to improve collaboration between the project partners, collectively estimating and planning for changing conditions, and cooperatively identifying regional water supply opportunities in both basins. The Ord area is a key link between two of the regions as discussed elsewhere in this report and would benefit from this study as it is situated between key areas of water demand. The Ord Community overlies the Seaside Groundwater Basin (with its unique subsurface storage characteristics) and overlies and utilizes the northern area (or Pressure subarea) of the Salinas Valley Groundwater Basin.

The complexity and numerous challenges of operating the Salinas and Carmel River Basins and sub-basins have resulted in studies by the US Bureau of Reclamation (Reclamation), US Geological Survey (USGS), the US Army Corps of Engineers (Corps), US Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA), Monterey Bay National Marine Sanctuary (MBNMS) and state and local agencies. The proposed Basin Study will help water management agencies having jurisdiction in one or both basins to better collaborate and develop long-term strategies that build on an extensive array of existing analyses to focus on the imbalances between water supply and demand under the projected impacts of climate change, such as sea level rise and variations in marine influence. The goal of the study is to understand, anticipate and adapt to climate change effects on coastal resources and to support management practices that will yield sustainable water surface and groundwater supplies capable of meeting the needs of agriculture, municipal users, the environment, and recreation. A significant amount of recent and on-going work funded by the non-federal partners will contribute to the "in-kind services" cost share (in excess of \$1.2 million planned and a total of \$4.7 million since June 2013). In addition, the nonfederal partners are committed to participating and collaborating with Reclamation on data and technical needs, stakeholder engagement through the ongoing IRWM plan groups, and performing model runs with existing watershed and groundwater models to

determine the projected impacts of climate change scenarios, as well as improvements due to proposed adaptation strategies.

Information on the San Luis Obispo County region's IRWM program can be found at the following website:
<http://www.slocountywater.org/site/Frequent%20Downloads/Integrated%20Regional%20Water%20Management%20Plan/IRWM%20Plan%20Update%202014/>.

Regional Urban Water Augmentation Project (RUWAP)

The RUWAP is a joint water supply planning effort of the Marina Coast Water District and the Fort Ord Reuse Authority. The project proposes construction and operation of both a desalination component and a recycled water distribution component. The desalination component would include a plant producing between 1,273 and 1,500-acre-foot-per-year of potable water at the Marina Coast Water District Armstrong Ranch property, north of the city of Marina in Monterey County. The RUWAP desalination project component was proposed to extract seawater and potentially brackish water, produce desalinated water, and convey it to the existing District distribution systems. During the 2008-2011 timeframe, MCWD pursued a regional collaborative version of the RUWAP called the Monterey Bay Regional Desalination Project that would have provided water to areas of the Greater Monterey County and Monterey Peninsula regions. That project is no longer being pursued. Additional details about the RUWAP are provided in **Attachment 1**, Overview of the Ord Community Water Supply Planning.

Future Wastewater Recycling and Water Quality Projects

Future water supply and water quality enhancement projects also have the potential to enhance water supplies for the Salinas Valley, including the Ord Community, and to enhance water quality and habitat in the northernmost portions of the Salinas Valley and the Monterey Bay. The following potential water resources strategies could be future components of one or more regional water solutions projects. Some of these are currently being evaluated by the relevant agencies as components of recycled and potable water supply projects:⁴

1. Shared use of infrastructure for multiple benefit projects, such as RUWAP Recycled Water and/or Monterey Peninsula Groundwater Replenishment Projects, for delivering recycled water to urban irrigation users in the Marina Coast Water District's service area.
2. Provision of excess raw source water collected by Groundwater Replenishment Project facilities or facilities constructed by other local jurisdictions to existing or future agricultural irrigation users within the Castroville area of northern Salinas Valley. Excess Groundwater Replenishment-collected runoff and wastewaters would be treated by the primary and secondary wastewater systems and the Salinas Valley

⁴ These opportunities are being pursued outside of the current planning process for the Monterey Peninsula Groundwater Replenishment Project Environmental Impact Report. The current proposed project for that EIR does not include these components, except as alternatives to the proposed project.

Reclamation Project tertiary treatment system prior to storage and delivery to CSIP.

3. Increased reuse of wastewater effluent disposed via the MRWPCA's ocean outfall through increased wintertime diversion and recycling of secondary effluent.
4. Diversion, treatment, and reuse of polluted waters from several source water bodies listed on the regions list of impaired water bodies, Clean Water Act Section 303 (d) for the benefit of irrigation users or for use to augment potable supplies through groundwater replenishment (i.e., indirect potable reuse).

Regarding item #3, above, the State Water Resources Control Board prioritizes protection of the quality of the ocean waters for use and enjoyment by the people of the state, and requires control of the discharge of waste to ocean waters in accordance with the provisions contained in the California Ocean Plan 2012 (SWRCB, effective August 19, 2013). The Ocean Plan specifically seeks to limit discharges to the ocean. Increased water recycling for potable reuse associated with the Groundwater Replenishment Project has the dual benefit of reducing wastewater discharge pollutant loads and, by decreasing the size of a proposed desalination plant required to meet local water supply need, the discharge of desalination brine to the MBNMS can be reduced. These future water supply projects could capture a variety of sources for beneficial drinking water use that would otherwise flow to the ocean.

Regarding item #4 above, the Central Coast Regional Water Quality Control Board is in the process of amending its Basin Plan to include Total Maximum Daily Loads (TMDL) that will apply to several of the surface water bodies in the vicinity of the proposed project that are affected by existing "impaired" flows (RWQCB, Notice of Opportunity to Comment on the Proposed Approval of an Amendment to the Water Quality Control Plan for the Central Coastal Basin to Establish Total Maximum Daily Loads in the Lower Salinas River and Reclamation Canal Basin, and the Moro Cojo Slough Subwatershed for Nitrogen Compounds and Orthophosphate, September 3, 2013). The Groundwater Replenishment Project or one or more of these futures projects would potentially capture, treat and reuse one or more of the impaired flows as source waters for influent to the existing RTP, then for further treatment and reuse using the SVRP tertiary treatment plan, and/or the proposed Groundwater Replenishment advanced treatment facility.

Surface Water / Recycled Water Storage

The MCWD service area is located near the Salinas River, and MCWD Board of Directors has considered purchasing surface water rights in the Salinas River Basin as a means of meeting long-term (beyond 2030) demands. MCWD has previously been in negotiations with a senior (pre-1914) water right holder. No decisions have been made as to the purchase of surface water supplies, but that option is potentially available to meet additional demands beyond the 20-year planning horizon. A constraint to use of surface water is that it is unlikely to be a year-round supply due to demands by agricultural users and instream flow requirements for fisheries. Also, a second phase of the SVWP, examined at a

program level in the SVWP EIR, calls for surface water to be made available to coastal urban water agencies in the future.

Monterey County Water Resources Agency holds water right permit #11043 for 135,000 AFY of Salinas River surface water that was to be revoked by the State Water Resources Control Board (SWRCB) in August 2013. Through MCWRA staff and counsel efforts, a settlement agreement was signed and the Permit will be valid, as long as the Agency adheres to a strict, aggressive set of milestones for water project implementation. The milestones end with a project being developed and delivering water by July 2026. The water allocated to the Permit will be used to continue to remedy seawater intrusion in the Salinas Valley.

MCWD and MCWRA are also considering the potential to construct a seasonal surface water and/or recycled water storage reservoir on MCWD land south of the Regional Treatment Plant. Currently, adequate water supplies are available in the winter time; however, peak demands occur in the summer. A surface storage reservoir would reduce the seasonal inconsistencies between supply and demand (Brian True, personal communication, April 2014 and MCWRA, Regional Advisory Committee Meeting April 17, 2014 Agenda and Packet, April 2014).

Conclusion. The above projects can provide a significant opportunity for stakeholders in both IRWM planning regions to collaborate and coordinate on water management projects with potential long-term benefits for both regions.

Inter-Regional Prioritization Processes

In 2011 and 2012, the Monterey Peninsula and Greater Monterey County IRWM planning regions met separately to develop their respective IRWM Plan objectives. The following describes the activities of each region regarding prioritization of their regions' objectives.

Monterey Peninsula Region Objectives Prioritization

At the July 2012 Stakeholder meeting, stakeholders were asked to provide general comments and input to a draft set of goals and objectives revised in accordance with the 2011/2012 Guidelines from DWR and new regional circumstances and conditions. To gather meaningful feedback, the participants were also provided written forms and asked to rank draft objectives as high, medium or low priorities for the Monterey Peninsula region. In addition, the Objectives Feedback form was provided to the full list of stakeholders via email to enable those who could not attend the meeting to provide feedback on the draft objectives. The results of the July 25, 2012 stakeholder meeting, including the Objectives Feedback/Prioritization Exercise Results, are available in the Monterey Peninsula IRWM Plan, Chapter 3, Goals and Objectives.

Based upon stakeholder input (including verbal and written comments) and the Objectives Feedback/Prioritization Exercise, the draft objectives were modified and re-ordered. The 2012 objectives review process resulted in twenty five (25) total objectives, including eight (8) considered "high priority." The result of the objectives review and prioritization effort is shown in **Attachment 3**, under the column labeled: "Monterey Peninsula, Carmel Bay, and South Monterey Bay Region."

Greater Monterey County Region Objectives Prioritization

After much debate and careful consideration, the RWMG made a decision to not prioritize objectives. The rationale for this decision is as follows. The Greater Monterey County IRWM

region is a broad geographic area made up of a very diverse group of stakeholders. The RWMG itself reflects that diversity. The RWMG has aimed to be as inclusive as possible of all stakeholders in the region, encouraging their active participation in the IRWM planning process and promising serious consideration of their concerns and needs. The 57 objectives included in the IRWM Plan were based on the “issues and conflicts” perceived to exist throughout the region, as described by different groups of stakeholders in all corners of the region. The RWMG therefore recognizes that each of the objectives carries special weight and significance for at least some groups of stakeholders. By prioritizing some objectives over others, the RWMG feels they would effectively be prioritizing the needs of certain stakeholders over others. In order to maintain inclusivity, and to avoid the possibility of alienating certain groups of stakeholders or discouraging their participation in the IRWM planning process, the RWMG has therefore decided not to prioritize objectives. The project ranking system reflects that decision (Greater Monterey County RWMG, *Greater Monterey County Integrated Regional Water Management Plan*, March 2013).

Inter-Regional Coordination of Prioritization Efforts. After each region developed their individual objectives (and prioritization, as applicable), representatives of both regions developed a comparison of objectives, which is presented in **Attachment 3**. The comparison was presented at a meeting of RWMG and Ord Community representatives on February 7, 2013 (see Attachment 4 which contains the agenda, presentation, draft matrix of objectives, and summary meeting notes). In general, the two regions have similar, but region-specific, objectives in the broad categories of water supply, water quality, flood management, environmental protection, and climate change. As shown in **Attachment 3**, the revised draft matrix of objectives, the two regions have both developed objectives covering the key statewide priorities of the IRWM planning program. Some key differences in the objectives include the following:

Water Supply

- The Greater Monterey County region’s objectives are heavily influenced by the large agricultural industry throughout Monterey County’s Salinas Valley; therefore, numerous objectives are focused on issues related to agriculture production, and the environmental and water supply issues of that industry.
- Each region prioritized water supplies; however, the Monterey Peninsula includes specific requirements for meeting replacement and future demands.

Water Quality

- The Monterey Peninsula focuses more on protecting water quality for habitat and Areas of Special Biological Significance, while the Greater Monterey Plan has more of an emphasis on reducing the impacts associated with agriculture production on water quality.

Flood Protection, Floodplain Management, and Erosion Prevention

- Each region seeks to protect infrastructure and property; however, the Monterey Peninsula includes protecting habitat and taking into consideration sea level rise.

Environmental Protection and Enhancement

- The Monterey Peninsula region includes climate change in its discussion of environmental protection and in its own goal category. The Greater Monterey County region includes protection of existing pristine natural resources in its climate change category. The Greater Monterey County region includes specific objectives addressing

research and monitoring, sedimentation, native/non-native species, purchasing fee titles/easements and wildfire that are not included in the Monterey Peninsula region.

Climate Change

- The Greater Monterey County region addresses implementation of efforts such as carbon sequestration that are not addressed in the Monterey Peninsula region.

Regional Communication and Cooperation

- The Monterey Peninsula region has a more comprehensive goal statement with objectives that relate to building relationships, cooperating, collaborating integrating, and public outreach, education, and communication (including with DACs). The Greater Monterey County region has more specific details, including focusing on collaboration and reducing regulatory inconsistencies to facilitate compliance and permitting.

Disadvantaged Communities

- The Greater Monterey County region has an entire goal category dedicated to DAC objectives while the Monterey Peninsula region includes discussion of DACs in the Regional Communication and Cooperation category, above.

Ord Inter-Regional Project Coordination Activities

To adequately incorporate the priorities and select projects for the Ord Community, this report is intended to be included in the development and update of the Monterey Peninsula IRWM Plan. During the development of the updated plan, the RWMG representatives conducted additional outreach to numerous Ord Community stakeholders and engaged RWMGs and stakeholders with interest and purview in the Ord Community to meet and discuss issues. The following tasks were carried out in connection with the development of this Project Report, and in parallel with the development and update of the IRWM Plan:

- A sub-committee was established of members of the RWMG and plan preparers (Susan Robinson and Alison Imamura, DD&A) from each region that were familiar with the Ord Community area. The purpose of the sub-committee was to identify objectives and priorities and plan for Ord Inter-Regional Project activities. Both regions' representatives agreed to actively solicit projects within the Ord Community, and set a meeting to prioritize objectives. This planning occurred during meetings in January and April 2012.
- The Monterey Peninsula RWMG Representative, Larry Hampson, attended a Fort Ord Reuse Authority Water and Wastewater Oversight Committee Meeting in April 2012 to present an overview of the Monterey Peninsula IRWM Plan process and the purpose and goals of the Inter-Regional Coordination Project. Additional participation in the Inter-Regional process, including stakeholder meetings, was solicited.
- Stakeholders that have not been represented in one or the other IRWM Plan were invited to an Ord Inter-Regional Stakeholder Meeting on February 7, 2013. A list of key Ord Community Stakeholders that were invited by email and personal phone call to attend the meeting is provided in **Attachment 4** (in addition they were invited to the February 6, 2013 general stakeholder meeting about project review process for the Monterey Peninsula region).
- A focused Ord Community inter-regional public/stakeholder meeting was held on February 7, 2013 to take input on issues and to comment on priorities and objectives for the Ord Community. Meeting agendas, presentation materials, and meeting notes are provided in **Attachment 3**. Fifteen people attended the meeting, including officials from

the Army, Marina Coast Water District, City of Monterey, and the Monterey Regional Water Pollution Control Agency. The Greater Monterey County region RWMG was represented by Bridget Hoover (Monterey Bay National Marine Sanctuary) and Susan Robinson (Coordinator for Greater Monterey County). Both IRWM regions investigated any environmental justice concerns associated with the reuse of Fort Ord including noting that several areas of Fort Ord have unexploded ordnance, pre-World War II lead paint contamination, and groundwater plumes of toxic substances. However, the primary focus was on improving water supply infrastructure and augmentation of the water supply to meet anticipated Ord Community requirements.

- The issues, objectives, priorities, and projects for the Ord Community, which lies astride the common regional boundary, were identified during the meeting through the use of a draft matrix shown in **Attachment 3**, Comparison of Objectives. In addition, the meeting participants identified additional issues, constraints, and objectives for the Ord Community as described in the Summary meeting notes from the meeting that are included in **Attachment 4**.
- Certain project components described above can most appropriately fit within one region or the other; however, several have a place in both IRWM plans. Using the respective ranking system and prioritization process from each region, these components will be prioritized within the respective region.
- This project report will be presented to each of the Monterey Peninsula IRWM RWMG members prior to and as part of public hearing for plan adoption of the plan by the MPWMD Board. The draft project report will also be provided to Greater Monterey County RWMG and they will be asked to update their plan to include the results of this project.
- Each IRWM Plan will be updated to include the results of this inter-regional coordination effort, including a summary within relevant sections of the plan and attaching this report to the plan, if appropriate.
- A total of four meetings were held with representatives of the Ord Community (including one Ord-specific inter-regional meeting and three MP IRWM stakeholder meetings that included numerous representatives of the Ord Community as documented in **Attachment 5**).

Conclusions and Recommendations

The Monterey Peninsula Groundwater Replenishment Project, the Ord Community Water Supply solution (i.e., RUWAP or another solution), and the Reclamation Basin Study hold the most promise for a truly integrated water management effort with multiple benefits that would involve inter-regional cooperation between the Monterey Peninsula and the Greater Monterey County region. In the case of the Basin Study, the inter-regional coordination would extend to the San Luis Obispo IRWM Region. Other projects can provide a significant opportunity for stakeholders in both IRWM planning regions to collaborate and coordinate on water management projects with potential long-term benefits for both regions.

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Storm Water Resource Plan For the Greater Salinas Area Final

February 14, 2017

Prepared for

Monterey Regional Water Pollution Control Agency

5 Harris Court, Building D
Monterey, CA 93940

K/J Project No. 1668019*00

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- B Objectives Evaluation
- C 303(d) List of Impaired Water Bodies
- D Applicable Active NPDES Permittees
- E Response to Comments on the December 2016 Draft

List of Acronyms

BMP	best management practice
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
CO	Community Objective
CRAM	California Rapid Assessment Methodology
CSIP	Castroville Seawater Intrusion Project
CWA	Clean Water Act
DAC	Disadvantaged Community
DMS	Data Management System
EN	Environmental Objective
FM	Flood Management Objective
GAMA	Groundwater Ambient Monitoring and Assessment Program
GHG	greenhouse gas
GMC	Greater Monterey County
IP	Implementation Plan
IRWM Plan	Integrated Regional Water Management Plan
MCRMA	Monterey County Resource Management Agency
MCWRA	Monterey County Water Resource Agency
MEP	Maximum Extent Practicable
MRSWMP	Monterey Regional Stormwater Management Program
MRWPCA	Monterey Regional Water Pollution Control Agency
MS4s	Municipal Separate Storm Sewer Systems
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NPDES	National Pollutant Discharge Elimination System
Prop 1	Proposition 1 Water Quality, Supply, and Infrastructure Improvement Act
RWMG	Regional Water Management Group
RWQCB	Regional Water Quality Control Board
SB 985	Senate Bill 985
SWAMP	Surface Water Ambient Monitoring Program
SWGP	Storm Water Grant Program
SWMPU	Storm Water Management Plan Update

SWRCB	State Water Resources Control Board
SWRP	Storm Water Resources Plan
TMDL	total maximum daily load
WDR	Waste Discharge Requirement
WQ	Water Quality Objective
WS	Water Supply Objective

Section 1: Introduction and SWRP Objectives

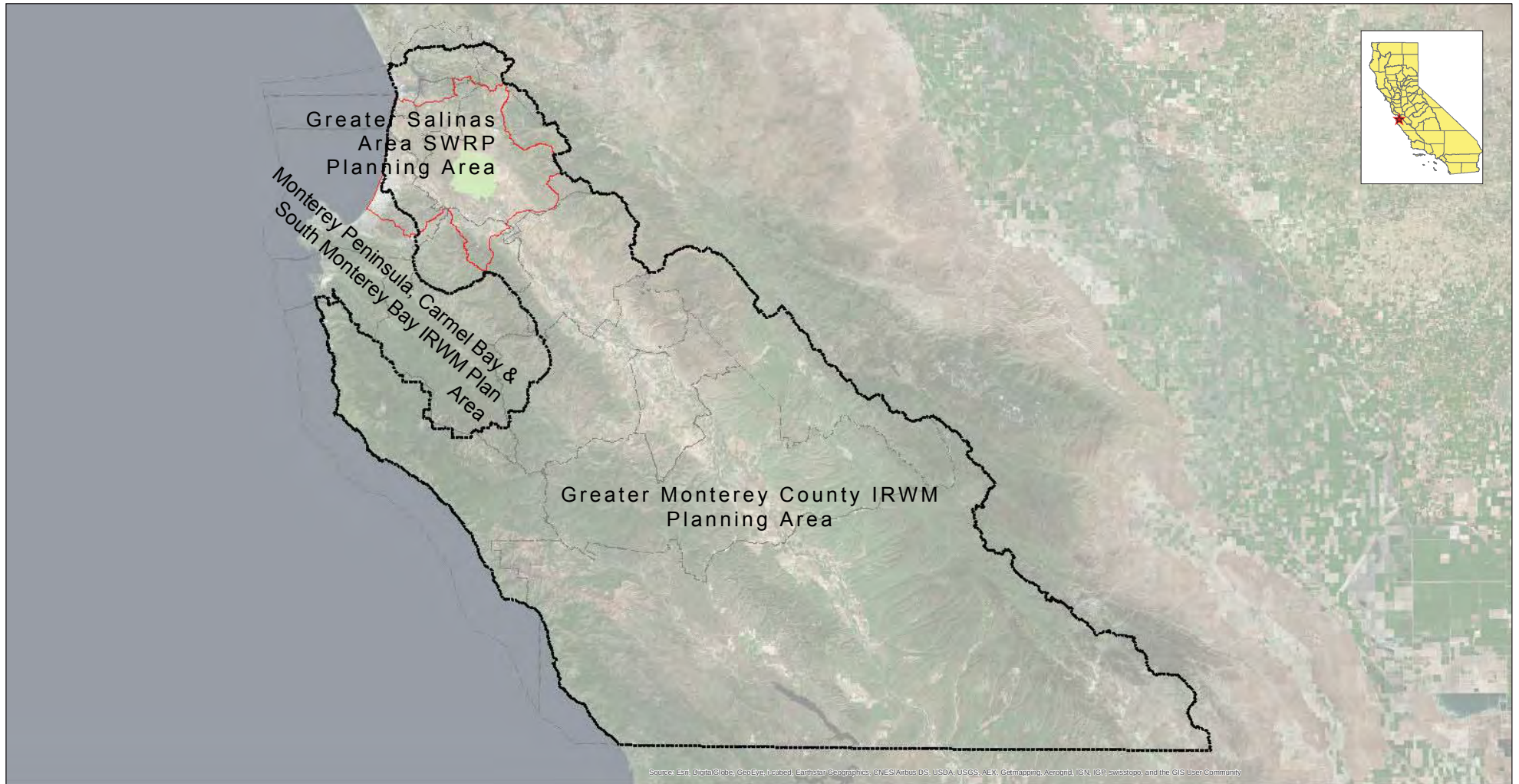
The Water Quality, Supply, and Infrastructure Improvement Act of 2014 (also known as Proposition 1 [Prop 1]) established grant and loan programs for public agencies, nonprofit organizations, public utilities, state and federally recognized Indian tribes, and mutual water companies to support planning and implementation of water projects. One of the programs created by Prop 1 is the Storm Water Grant Program (SWGP) administered by the State Water Resources Control Board (State Water Board). Senate Bill 985 (SB 985), the Storm Water Resource Planning Act, amended the California Water Code to require development of a Storm Water Resource Plan (SWRP) in order to be eligible for grants from a bond act approved after January 1, 2014; therefore, SB 985 applies to Prop 1 and applicants seeking funding from the SWGP are required to develop a SWRP or functionally equivalent plan(s). The State Water Board developed the *Proposition 1 Storm Water Resource Plan Guidelines* (SWRP Guidelines; State Water Board 2015) to assist applicants with the development of their SWRP. This SWRP was developed in accordance with the SWRP Guidelines (see Checklist and Self-Certification in Appendix A).

1.1 Plan Development

Monterey County, located in northern California, has several Integrated Regional Water Management (IRWM) groups within its boundaries; the Greater Monterey County (GMC) IRWM and the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM group as shown on Figure 1.1. The GMC IRWM group encompasses most of Monterey County including the northern portion of Monterey County where the service areas of the Monterey Regional Water Pollution Control Agency (MRWPCA), the City of Salinas (Salinas) and portions of Monterey County overlap the lower Salinas River and adjacent watersheds.

The Greater Salinas Area SWRP planning area in north Monterey County was selected to acknowledge the focus on both storm water quality and water supply problems caused by sea water intrusion along the Monterey Bay coast in the Salinas area and downstream. The GMC IRWM region receives no “imported” water (except for Salinas River water that originates in San Luis Obispo County), and therefore maintaining the region’s water supply is absolutely critical for ensuring the health, prosperity, and long-term sustainability of local communities in the region. MRWPCA and Salinas are both participants in the GMC IRWM program as well as partners in MRWPCA’s regional water program, Pure Water Monterey. Pure Water Monterey will use storm water as one of the water resources to address water supply and associated seawater intrusion issues in a critically overdrafted aquifer, the Seaside Area subbasin of the Salinas Groundwater Basin. The Pure Water Monterey project elements, including Salinas’ storm water capture, storage, and conveyance projects, are included in the adopted 2015 GMC IRWM Plan (GMC IRWM Plan), most recently updated in 2016.

The Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM are also embarking on a SWRP under a SWGP planning grant. There is a small area of overlap between the Greater Salinas Area SWRP and the Monterey Peninsula, Carmel Bay, and South Monterey Bay SWRP that is being developed. Coordination between the IRWM Regions and the SWRP development occurs through joint participation in meetings as well as in specific outreach.



Source: US Census Demographic Data

-  Greater Monterey IRWM Plan
-  Greater Salinas Area SWRP Boundary
-  Salinas City Limits
-  County Boundary



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Greater Salinas Area SWRP
Monterey County, CA

IRWM Plan and SWRP Boundaries

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Figure 1.1

The Greater Salinas Area SWRP will build on the collaborative efforts in preparing the GMC IRWM Plan and is led by MRWPCA and Salinas. MRWPCA and Salinas have selected a smaller targeted Planning Area for preparation of this Greater Salinas Area SWRP, as shown on Figure 1.2 to acknowledge the use of storm water as a resource to address seawater intrusion in the Salinas watersheds and downstream. However, this Greater Salinas Area SWRP will be incorporated into a GMCSWRP that encompasses the entire GMC IRWM area in 2017-2018 under a separate SWGP Planning Grant.

Salinas has been envisioning a wide-range of storm water management activities to address flooding, as discussed in Salinas' 2004 Storm Drain Master Plan, as well as water quality compliance with Salinas' National Pollutant Discharge Elimination System (NPDES) Phase 1 Municipal Separate Storm Sewer System (MS4) permit. This collaboration between MRWPCA and Salinas endeavors to put Salinas' storm water to regional beneficial reuse. Other documents such as the GMC IRWM Plan, Salinas Urban Watershed Management Plan (2013), and Salinas Storm Water Master Plan (2004) will be utilized and cover many of the required topics in the SWRP and will be supplemented with additional analysis and public outreach meetings. This plan was created with assistance and input from key members of the GMC IRWM Regional Water Management Group (RWMG).

This Greater Salinas Area SWRP will be submitted to the GMC IRWM RWMG and stakeholders as well as to the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM groups. In addition, the IRWM Guidelines require that SWRP be incorporated into the IRWM Plan.

1.1 SWRP Plan Objectives

The SWRP Guidelines (p. 17) include several mentions of the need for storm water management objectives as follows:

“Storm water management on a watershed basis provides for a combination of storm water management objectives and multiple benefits throughout the watershed or sub-watershed. Therefore, the Plan should discuss how the **various storm water management objectives** within the watershed will protect or improve water quality, water supply reliability, and/or achieve other objectives. The Plan should include a discussion of the added benefits to integration of multiple storm water management strategies, as compared to stand-alone projects.

The Plan must discuss how its objectives and projects fit into the broader water management goals of the applicable IRWM plan. For the purposes of receiving project implementation funding, submittal of a Storm Water Resource Plan to the applicable IRWM group (for further incorporation into an existing IRWM plan) fulfills the public agency's requirement for “incorporation.” However, the State Water Board recognizes that further collaboration and coordination with other agencies within the IRWM group is essential for long-term incorporation.”

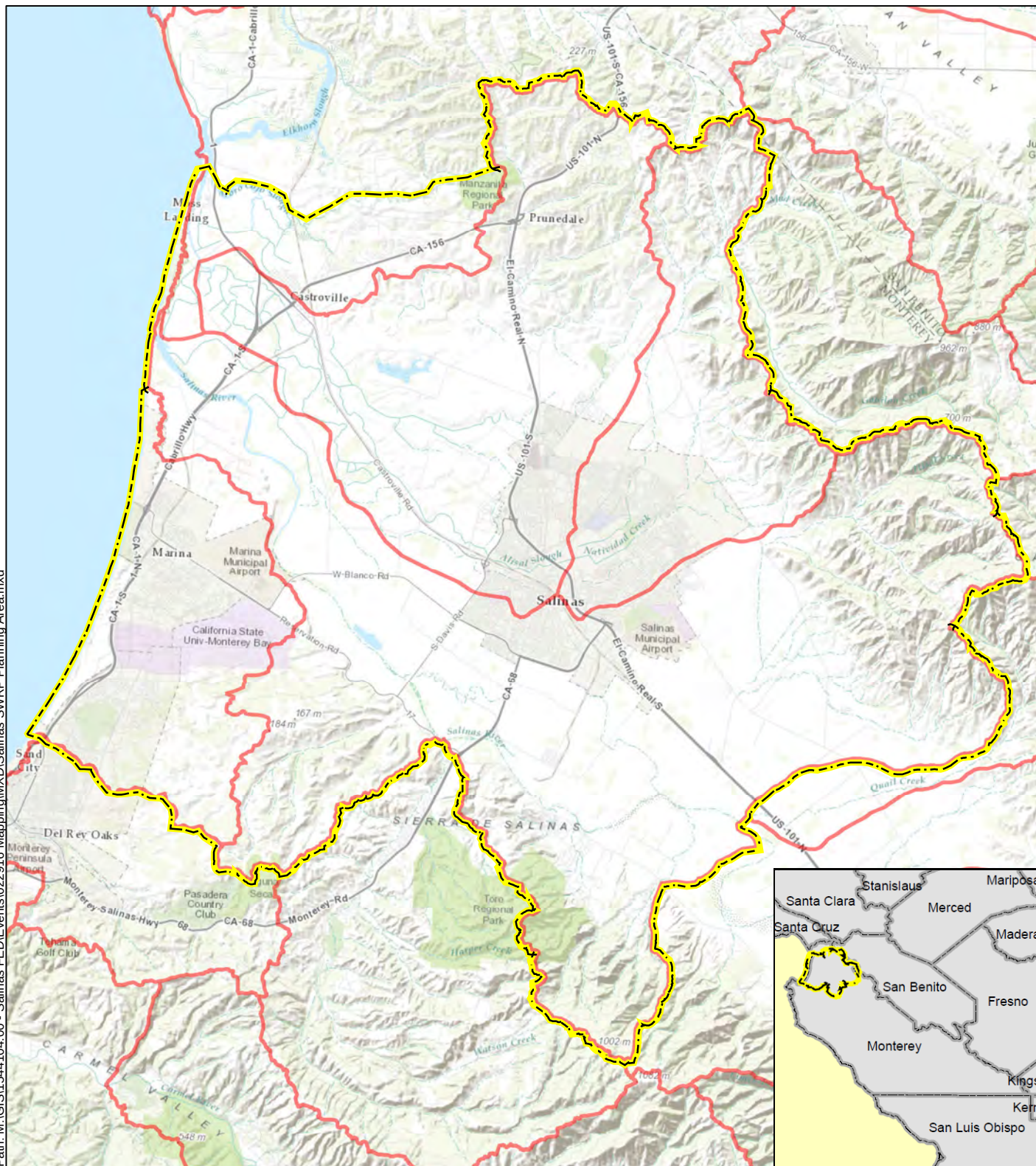
This portion of the plan describes the development of SWRP objectives and their relationship to the GMC IRWM Plan objectives. One of the key elements of SWRP projects are that they provide multiple-benefits, therefore, acknowledgement of these multiple benefits is important to establishment of SWRP objectives.

Potential storm water benefits include:

- 1) creation and restoration of wetlands,
- 2) riverside [riparian] habitats;
- 3) instream flows,
- 4) increase in park and recreation lands,
- 5) urban green space,
- 6) augments recreation opportunities for communities,
- 7) increases tree canopy,
- 8) reduces heat island effect,
- 9) improves air quality,
- 10) maximizes water quality,
- 11) maximizes water supply,
- 12) maximizes flood management,
- 13) maximizes environmental benefits, and
- 14) maximizes other community benefits.

The GMC IRWM Plan was developed based on the *Integrated Regional Water Management Guidelines for Proposition 84 and 1E*, and also includes fourteen objectives related to water management (collectively termed “IRWM Plan benefits” herein), as described in GMC IRWM Plan Section D (page D-1 to D-15; RWMG 2013). Both the SWRP Guideline benefits and the GMC IRWM Plan benefits will be considered in objectives and for the prioritization and selection of projects in Section 5.

Path: M:\GIS\1544104.00 - Salinas FED\Events\022916 Mapping\MXD\Salinas SWRP Planning Area.mxd



Total Acres: 151,791

0 0.75 1.5 3 Miles



Legend



SWRP Planning Area



USGS Hydrologic Unit Boundaries

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Greater Salinas Area SWRP
Monterey County, CA

Greater Salinas Area SWRP Planning Area

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February 2017

Figure 1.2

1.1.1 GMC IRWM Plan Objectives

According to Water Code section 79743, the projects implemented as a result of the SWRP should also address the priorities of the local regional water management group. The GMC IRWM Plan goals and objectives were identified as the major water resource issues in the region and as such, reflect water resource management values and overall priorities for the GMC region. Therefore it is natural that the Greater Salinas Area SWRP utilizes the GMC IRWM Plan goals and objectives to further define the storm water management strategies that meet the SWRP Objectives. Appendix B presents a detailed table that shows the relationship between the IRWM Plan objectives (storm water management strategies), SWRP Benefit Categories, and benefits identified by Water Code section 79747.

1.1.1.1 Basin Plan Goals Relevant to Storm Water

The Central Coast Basin Plan is the water quality control plan formulated and adopted by the Regional Water Quality Control Board for the Central Coast region (Central Coast RWQCB), which regulates water quality in the GMC IRWM region. The objective of the Basin Plan is to show how the quality of the surface and ground waters in the Central Coast Region should be managed to provide the highest water quality reasonably possible. The Basin Plan lists various water uses (Beneficial Uses), describes the water quality which must be maintained to allow those uses (Water Quality Objectives), and outlines an implementation plan for achieving those standards. In addition, the Central Coast RWB has established planning goals for water quality in the Central Coast Region (p. IV-2).

The objectives for the GMC IRWM region include meeting the water quality standards outlined in the Central Coast Basin Plan, and are consistent with the overarching planning goals promulgated by the Central Coast RWQCB.

1.1.2 Greater Salinas Area SWRP Objectives

Storm water management on a watershed basis provides for a combination of storm water management objectives and multiple benefits throughout the watershed or sub-watershed. The Greater Salinas Area SWRP Objectives are based on the Benefit Categories found in Table 3.1 of the SWRP Guidelines as follows:

- Water Quality
- Water Supply
- Flood Management
- Environmental
- Community

Applicable GMC IRWM Plan objectives are used to further describe the storm water management strategies that achieve SWRP objective(s). The following sections summarize the SWRP objectives and possible combination of strategies that will be used to prioritize storm water projects for the Greater Salinas Area SWRP. As described in the sections below, many of the storm water management strategies will meet multiple objectives; this SWRP prioritizes projects that employ multiple storm water management strategies and/or meet multiple objectives. A discussion of how SWRP Objectives relate to individual projects is included in Section 5.2.

1.1.2.1 Water Quality Objective

The main benefit of the Water Quality (WQ) Objective is increased filtration and/or treatment of runoff. There are six storm water management strategies from the GMC IRWM Plan that relate to water quality. Of these, two also meet at least one additional objective:

1. WQ.3 also relates to the Water Supply Objective in addition to the Water Quality Objective.
2. WQ.4 also helps achieve the Flood Management and Environmental Objectives in addition to the Water Quality Objective.

SWRP Objective	GMC IRWM Plan Storm Water Management Strategies
Water Quality (WQ) while contributing to compliance with applicable permit and/or TMDL requirements	WQ.1 Promote practices necessary to meet, or where practicable, exceed all applicable water quality regulatory standards (for drinking water, surface and groundwater quality).
	WQ.2 Incorporate or promote principles of low impact development where feasible, appropriate, and cost effective.
<u>Main Benefit:</u> • Increased filtration and/or treatment of runoff	WQ.3* Protect surface waters and groundwater basins from contamination and the threat of contamination.
	WQ.4* Promote programs and projects to reduce the quantity and improve the quality of urban and agricultural runoff and/or mitigate their effects in surface waters, groundwater, and the marine environment.
<u>Secondary Benefits:</u> • Nonpoint source pollution control • Reestablish natural water drainage and treatment	WQ.5 Promote regional monitoring and analysis to better understand water quality conditions.
	WQ.6 Promote dialogue between federal and state regulators and small water system managers to facilitate water quality regulation compliance.

Note:

* This Storm water Management Strategy can achieve multiple objectives as noted above.

1.1.2.2 Water Supply Objective

There are seven GMC IRWM Plan storm water management strategies that are relevant to the SWRP Water Supply (WS) Objective. Of these, one also meets at least one additional objective:

1. WS.5 also pertains to the Water Quality Objective in addition to the Water Supply Objective.

SWRP Objective	GMC IRWM Plan Storm Water Management Strategies
Water Supply through groundwater management and/or runoff capture and use	WS.1 Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.
	WS.2 Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.
	WS.3 Diversify water supply sources, including but not limited to the use of recycled water.
<u>Main Benefit:</u> • Water supply reliability • Conjunctive use	WS.4 Maximize water conservation programs.
	WS.5* Capture and manage storm water runoff.
	WS.6 Optimize conjunctive use where appropriate.
<u>Secondary Benefit:</u> • Water conservation	WS.7 Support research and monitoring to better understand identified water supply needs.

Note:

* This Storm water Management Strategy achieve multiple objectives as noted above.

1.1.2.3 Flood Management Objective

There are seven GMC IRWM Plan storm water management strategies that pertain to the SWRP Flood Management (FM) Objective. Of these, two can also include at least one additional objective:

1. FM.4 relates to the Environmental and Community Objectives in addition to the Flood Management Objective.
2. FM.5 relates to the Environmental Objective in addition to the Flood Management Objective.

SWRP Objective	GMC IRWM Plan Storm Water Management Strategies
	FM.1 Improve septic systems, sewer system infrastructure, wastewater treatment systems, and manure management programs to prevent water quality contamination.
	FM.2 Promote projects and practices to protect infrastructure and property from flood damage.
Flood Management	FM.3 Improve flood management infrastructure and operational techniques/strategies.
<u>Main Benefit:</u> • Decreased flood risk by reducing runoff rate and/or volume	FM.4* Implement flood management projects that provide multiple benefits such as public safety, habitat protection, recreation, agriculture, and economic development.
<u>Secondary Benefit:</u> • Reduced sanitary sewer overflows	FM.5* Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.
	FM.6 Support research and monitoring efforts to understand the effects of flooding on transport and persistence of pathogens in food crop production areas.
	FM.7 Support management of flood waters so that they do not contaminate fresh produce in the field.

Note:

* This Storm water Management Strategy can achieve multiple objectives as noted above.

1.1.2.4 Environmental Objective

There are 14 GMC IRWM Plan storm water management strategies that further the SWRP Environmental (EN) Objective. Of these, two also achieve at least one additional objective:

1. EN.2 also pertains to the Water Quality Objective in addition to the Environmental Objective.
2. EN.8 also pertains to the Water Quality Objective in addition to the Environmental Objective.

SWRP Objective	GMC IRWM Plan Storm Water Management Strategies
Environmental	EN.1 Promote projects to prevent seawater intrusion.
<u>Main Benefit:</u>	EN.2* Support monitoring to better understand major sources of erosion, and implement a comprehensive erosion control program.
• Environmental and habitat protection and improvement, including; ○ wetland enhancement/creation; ○ riparian enhancement; and/or ○ instream flow improvement • Increased urban green space	EN.3 Support science-based projects to protect, improve, enhance, and/or restore the region's ecological resources, while providing opportunities for public access and recreation where appropriate.
	EN.4 Protect and enhance state and federally listed species and their habitats.
	EN.5 Minimize adverse environmental impacts of water resource management projects.
	EN.6 Support applied research and monitoring to better understand environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources.
	EN.7 Implement fish-friendly stream and river corridor restoration projects.
<u>Secondary Benefit:</u>	EN.8* Reduce adverse impacts of sedimentation into streams, particularly from roads and non-point sources.
• Reduce energy use, greenhouse gas emissions, or provide a carbon sink • Reestablish of the natural hydrograph • Water temperature improvements	EN.9 Plan for potential impacts of future climate change.
	EN.10 Support increased monitoring and research to obtain greater understanding of long-term impacts of climate change in the GMC region.
	EN.11 Support efforts to research alternative energy and to diversify energy sources appropriate for the region.
	EN.12 Seek long-term solutions to reduce greenhouse gas (GHG) producing energy use.
	EN.13 Seek long-term solutions to maintain and protect existing pristine natural resources from the impacts of climate change.
	EN.14 Support research and/or implementation of land-based efforts such as carbon-sequestration on working lands and wildlands in the GMC region.

Note:

* This Storm water Management Strategy can achieve multiple objectives as noted above.

1.1.2.5 Community Objective

There are 10 GMC IRWM Plan storm water management strategies relate to the SWRP Community (CO) Objective. Of these, five can also meet at least one additional objective:

1. CO.1 furthers the Water Quality, Water Supply, Flood Management, and Environmental Objectives in addition to the Community Objective.
2. CO.4 furthers the Water Quality and Water Supply Objectives in addition to the Community Objective.
3. CO.7 relates to the Water Quality and Water Supply Objectives in addition to the Community Objective.

4. CO.9 helps achieve the Water Quality and Flood Management Objectives in addition to the Community Objective.
5. CO.11 also pertains to Water Quality and Environmental Objectives in addition to the Community Objective.

SWRP Objective	GMC IRWM Plan Storm Water Management Strategies
Community <u>Main Benefit:</u> • Employment opportunities provided • Public education <u>Secondary Benefit:</u> • Community involvement • Enhance and/or create recreational and public use areas	CO.1* Promote public education, including outreach to DACs**, about water supply, local flood management, water resources protection, pollution prevention, conservation, water quality, and watershed health issues and needs, as well as impacts of climate change, particularly as it relates to water resource management in the GMC region.
	CO.2 Consider opportunities to purchase fee title or conservation easements on lands from willing sellers that provide integrated water resource management benefits. Ensure adequate funding and infrastructure to manage properties and/or monitor easements.
	CO.3 Facilitate dialogue and reduce inconsistencies in water management strategies/regulations between local, regional, state, and federal entities.
	CO.4* Foster collaboration between regional entities to minimize and resolve potential conflicts and to obtain support for responsible water supply solutions and improved water quality.
	CO.5 Build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects.
	CO.6 Increase stakeholder input and public education about the need, complexity, and cost of strategies, programs, plans, and projects to improve water supply, water quality, flood management, coastal conservation, and environmental protection.
	CO.7* Seek funding opportunities to ensure all communities have a water system with adequate, safe, high-quality drinking water
	CO.8 Seek funding opportunities to ensure all communities have adequate wastewater treatment.
	CO.9* Ensure that DACs are adequately protected from flooding and the impacts of poor surface and groundwater quality.
	CO.10 Provide support for the participation of DACs in the development, implementation, monitoring, and long-term maintenance of water resource management projects.

Note:

* This Storm water Management Strategy can achieve multiple objectives as noted above.

** DAC=Disadvantaged Community

1.2 Plan Organization

This SWRP is divided into the following sections as outlined below:

- Section 1 – Introduction and SWRP Objectives: provides an overview of the document and identifies the storm water management objectives of this SWRP.
- Section 2 – Watershed Identification: identifies the SWRP boundary and watersheds within the planning area.

- Section 3 – Water Quality Compliance: identifies water quality issues within the major watersheds, including pollutants identified on the 303(d) list of impaired water bodies or with relevant TMDLs. This section also includes discussion of the SWRP in relation to applicable TMDL Implementation Plans (IPs) and MS4 Permits.
- Section 4 - Organization, Coordination, and Collaboration: describes the community engagement process that occurred during plan development, including identification of stakeholders, an overview of the existing GMC IRWM group, and the mechanisms used to engage stakeholders and the public in plan development.
- Section 5 - Identification and Prioritization of Projects: includes a list of previously identified projects, the process of site selection and development of SWRP projects, conceptual designs for each SWRP project, the methodology and results for quantification of water supply and water quality benefits of proposed projects, and prioritization of both SWRP and previously identified projects.
- Section 6 - Implementation Strategy and Schedule: outlines programs to assist in implementation of strategies identified in this SWRP, including community outreach during project development. This section also discusses how current monitoring required by the MS4 Permits will be utilized as part of the adaptive management process, in addition to a general schedule of SWRP milestones.
- Section 7: Education, Outreach and Public Participation.

Section 2: Watershed Identification

2.1 Watershed Description

The GMC IRWM region includes the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region and the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM regions established under Proposition 50 as shown on Figure 1.1. The GMC IRWM region is about 3,199 square miles (about 2 million acres) and includes the following six major watersheds (or portions thereof):

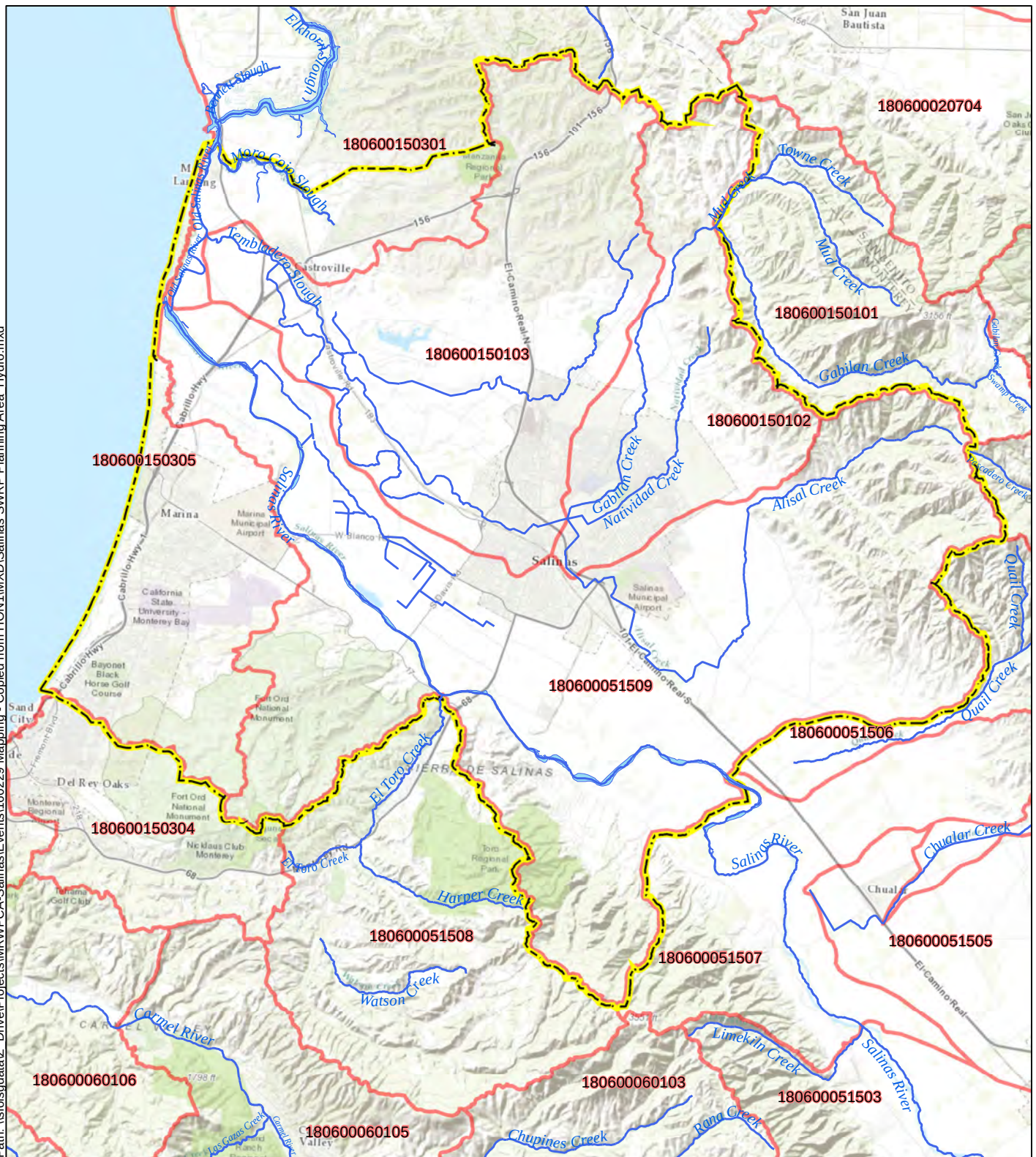
- Salinas River watershed, the largest within the region;
- Santa Lucia watershed, comprised of the numerous coastal watersheds along the Big Sur coast (including the Big Sur River watershed and Little Sur River watershed, among many others);
- Estrella River watershed which is located in the southern part of the county (most of this watershed is actually located in San Luis Obispo County);
- Bolsa Nueva watershed in the northern most part of the region;
- the Gabilan Creek watershed (which includes the Santa Rita, Gabilan, Natividad, and Alisal Creeks) also at the northern end of the county; and
- a small portion of the Estero Bay watershed at the southern end of the county along the Big Sur coast (RWMG 2014).

The drainage area for this SWRP is a portion of the GMC IRWM region and includes the Gabilan watershed, the majority of which lies in the City of Salinas limits incorporated in the GMC IRWM region as well as portions of the lower Salinas River and Bolsa Nueva watershed downstream of Salinas as shown on Figure 2.1. The total area of this Greater Salinas Area SWRP is about 237 square miles (151,000 acres). These watersheds are further broken down into subwatersheds in the vicinity of the City of Salinas, these subwatersheds are: Tembladero Slough Subwatershed and El Toro Creek – Salinas River Subwatershed. Tembladero Slough Subwatershed can be further broken down into three smaller subwatersheds: Gabilan Creek, Natividad Creek, and Santa Rita Creek (City of Salinas 2013).

2.1.1 Watershed Management Issues

Management issues in the Greater Monterey County region watersheds are typical of those in watersheds throughout coastal California. Some of the most significant watershed management issues include the decline of aquatic species, and in particular, steelhead trout, erosion, invasive species, and fire management (RWMG 2014).

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Total Acres: 151,791

0 0.75 1.5 3 Miles



Legend

-  Rivers, Streams, Creeks
-  Rivers, Streams, Creeks
-  SWRP Planning Area
-  USGS Hydrologic Unit Boundaries

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Greater Salinas Area SWRP
Monterey County, CA

Planning Area Hydrology

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February 2017

Figure 2.1

Steelhead: Critical habitat has been designated for South-Central California Coast steelhead along the entire Big Sur coast and within the Salinas River basin, which includes the Salinas River, the Salinas River Lagoon, Gabilan Creek, Arroyo Seco River, Nacimiento River, the San Antonio River, and their tributaries. The National Marine Fisheries Service has identified seven principal threats that have contributed to the destruction, modification, or curtailment of the habitat or range of the South-Central California Coast steelhead. These include:

- 1) alteration of natural stream flow patterns;
- 2) physical impediments to fish passage;
- 3) alteration of floodplains and channels, including the degradation or elimination of riparian areas;
- 4) sedimentation;
- 5) urban and rural waste discharges;
- 6) spread and propagation of exotic species (such as bass and bullfrogs that prey on juvenile steelhead, and non-native plants such as *Arundo donax* and Tamarix); and
- 7) loss of estuarine habitat.

In the Salinas River system, two major factors contributing to the decline of steelhead are reduced instream flows limiting migration into the upper tributaries, and the reduction and degradation of riparian habitat due to agriculture, building construction, and other land use practices (RWMG 2014).

Erosion: Erosion is a widespread problem in Monterey County, due in part to the erosive nature of local soils as well as from land use practices. These land use practices include farming on steep slopes, unmaintained or improperly designed dirt roads, altered water channels that increase water velocities and alter the natural sediment balance, and areas that have been denuded of vegetation by fire, overgrazing, or clearing. Erosion from roads, agriculture, and unstable stream banks may carry pollutants and can be detrimental to aquatic habitat and organisms (RWMG 2014).

Invasive Species: Invasive plant species out-compete local native plant species for water and space because they are more prolific, have more vigorous growth, and lack predators that would otherwise help to keep them in check. They degrade habitat for other wildlife, domestic animals, recreation, and other land use activities. In addition, weedy species can increase wildfire hazard and frequency, which is considered particularly problematic in Monterey County where wildfires pose a major threat. Invasive species affect terrestrial, freshwater, estuarine, and marine systems throughout the region and pose a major challenge to private landowners, farmers, ranchers, and resource managers. The invasive plant and animal species inhabiting the Greater Monterey County region are too numerous to list, but “top offenders” for non-native plants in Monterey County include: *Arundo donax*, yellow star thistle, cape ivy, French broom, pampas/jubata grass, and wakame (a marine invasive plant, which is under eradication in Monterey Bay) (RWMG 2014).

Fire Management: Portions of Monterey County, particularly the Big Sur coast area, are susceptible to major wildfires, and while wildfires are a necessary part of the natural cycle, they can cause serious degradation to water and other natural resources. Major wildfires can cause excessive erosion and impaired water quality in creeks, destroy or damage small community

water and wastewater systems, and damage public and private roads. Runoff from rain can wash debris from wildfires into coastal creeks and the ocean, with potentially detrimental effects on nearshore marine communities (RWMG 2014).

As development in the wildland/urban interface continues to grow, wildfires also pose an increasing threat to human lives and infrastructure. Fire management at the wildland/urban interface brings to fore competing interests between those whose mission it is to protect structures and those whose mission it is to protect forestlands. While foresters and environmentalists tend to consider natural fires (or when appropriate, prescribed burns) to be healthy for the forest and helpful or even necessary for reducing the intensity of wildfires, those whose job it is to fight structure fires, and certainly most homeowners, tend to consider all fires destructive and dangerous. This dichotomy poses a growing challenge for foresters, fire fighters, policy makers, land use planners, and others involved in fire management issues in the region (RWMG 2014).

2.1.2 Hydrologic Boundary Types

The IRWM Plan for the GMC is based on CalWater watershed delineation while this Greater Salinas Area SWRP is based on USGS hydrologic units as shown on Figure 3. The SWRP Guidelines allow either of these delineations for stormwater resource planning. A summary of the hydrologic boundary types is presented in Table 2.1, below.

Table 2.1 Hydrologic Boundary Type

Information Type	Description	Source
Area	3,199 square miles for GMC IRWM Region	U.S. Census Bureau data for Monterey County
	237 square miles for Greater Salinas Area SWRP	USGS Water Resources Hydrologic Unit GIS data
USGS Region Description	California Region and Central California Coastal Subregion	USGS Water Resources Hydrologic Unit Map
Watershed/ Hydrologic Region Designation	Central Coast Hydrologic Region	California Department of Forestry and Fire Protection, Fire and Resource Assessment Program, CalWater – A Standardized Set of Watersheds
CalWater Watershed Unit	Hydrologic Unit (672 square miles) Hydrologic Sub-Area (195 square miles) and a Hydrologic Area (244 square miles)	Storm Water Resource Plan Guidelines (State Water Board 2015)
Basin Planning Area	Central Coast Regional Water Quality Control Board	http://www.waterboards.ca.gov/central_coast/publications_forms/publications/basin_plan/index.shtml

Watersheds do not commonly follow corporate or municipal/county boundaries. Water that falls in one jurisdiction may flow through several more jurisdictions and numerous environmental ecosystems before it reaches its final destination. This is especially true in the Salinas area. Water that begins its journey in the relatively undisturbed Gabilan and Santa Lucia Mountains drains farmlands and other cities and developed areas before entering Salinas. Once in the Planning Area, water passes through municipal neighborhoods (i.e., City of Salinas) before re-entering farmlands, provides ecological habitat benefit before draining ultimately to Monterey Bay. On its journey, water flows through several different land uses, some more than once, and often through several different jurisdictions (City of Salinas 2013). The interrelatedness of upstream and downstream stakeholders is the main reason to address storm water and dry weather runoff concerns through projects submitted under this SWRP. It is also the reason behind the Plan's collaborative approach to management of these resources.

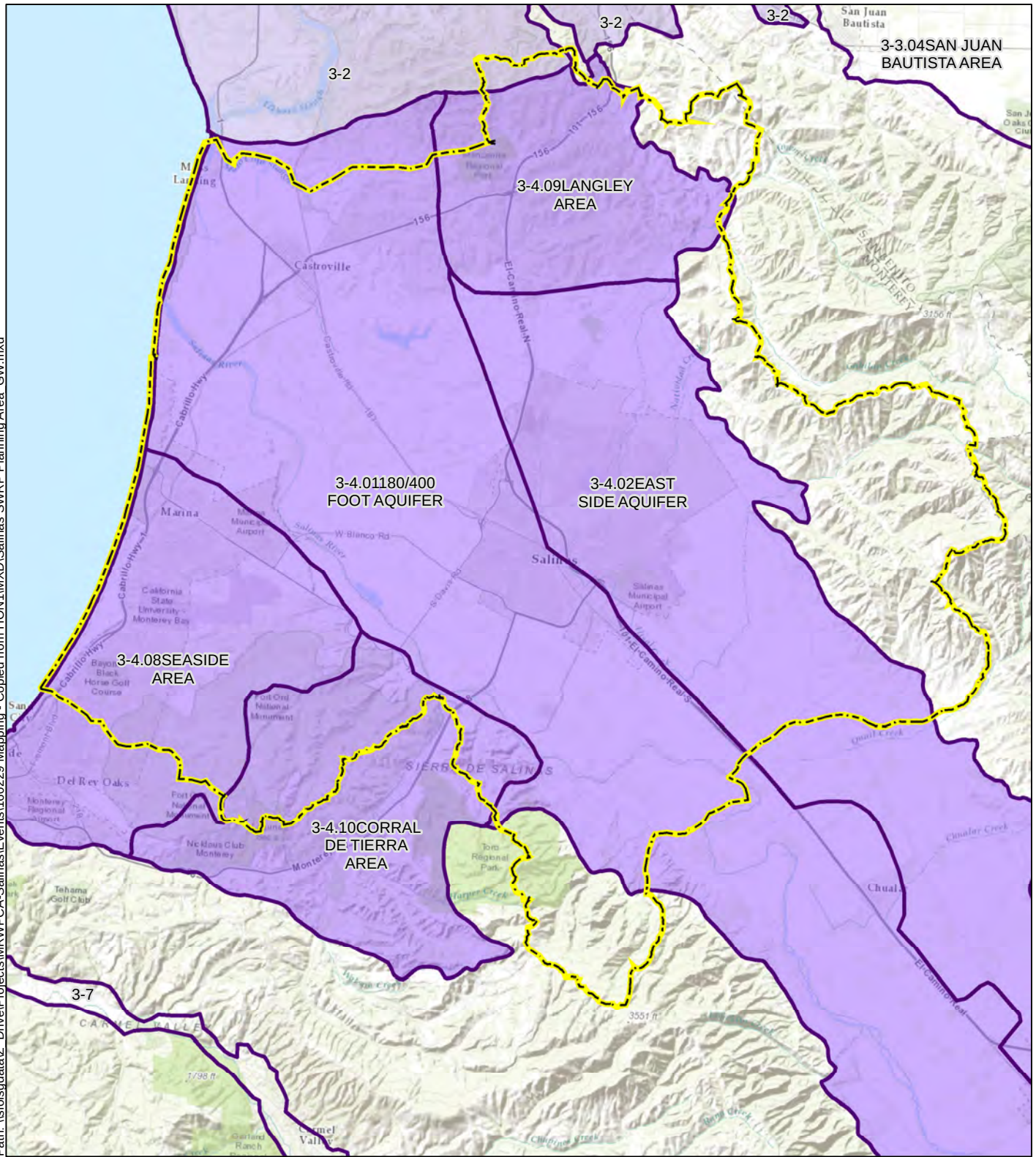
2.1.3 Groundwater Resources

The Greater Salinas Area SWRP Planning Area primarily overlies the Salinas Valley Groundwater Basin as shown in Figure 2.2. The Langley Area and East Side Aquifer are subbasins of the East Side Subarea, which consists of 87,000 acres and includes unconfined and semi-confined aquifers in the northern portion of the basin that historically received some of their recharge from percolation from stream channels on the west slope of the Gabilan Range. As a result of extractions in excess of recharge, the declines in groundwater level in the East Side subarea have increased subsurface recharge from the Pressure subarea and the Forebay subarea. The groundwater level in the East Side subarea is declining more rapidly than any other subarea in the Salinas Valley basin. The inflow from the Pressure and Forebay subareas is now a larger source of recharge than the stream channels coming from the Gabilan Range (RWMG 2014).

The 180/400 Foot Aquifer, Seaside Area, and Corral De Tierra Area are subbasins within the Pressure Subarea. The Pressure subarea includes approximately 114,000 acres between Gonzales and Monterey Bay. It is composed mostly of confined and semi-confined aquifers separated by clay layers (aquicludes) that limit the amount of vertical recharge. Three primary water-bearing strata have been identified in the Pressure subarea: the 180-Foot Aquifer, the 400-Foot Aquifer, and the Deep (900-Foot) Aquifer. The Deep Aquifer has only recently begun to be used as a water supply source (RWMG 2014).

Two major water quality problems affecting the Salinas Valley Groundwater Basin are nitrate contamination and seawater intrusion. Nitrate contamination in the Salinas Valley is due primarily to use of nitrogen-based synthetic fertilizers for irrigated agriculture, and commonly occurs in the unconfined and semi-confined aquifers that underlie areas of intense agricultural activity. However, nitrate contamination can also be caused from septic system failures, from wastewater treatment ponds located in floodplains, and from livestock waste. In 2007, 37 percent of the 152 wells sampled in the Salinas Valley Groundwater Basin showed nitrate levels greater than the maximum DWS of 45 mg/l NO₃, with concentrations highest in the Upper Valley (outside of the SWRP Planning Area) and East Side Subareas (RWMG 2014).

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Legend

- SWRP Planning Area
- DWR Groundwater Subbasins
- PAJARO VALLEY
- SALINAS VALLEY

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Monterey County, CA

Planning Area Groundwater Basins

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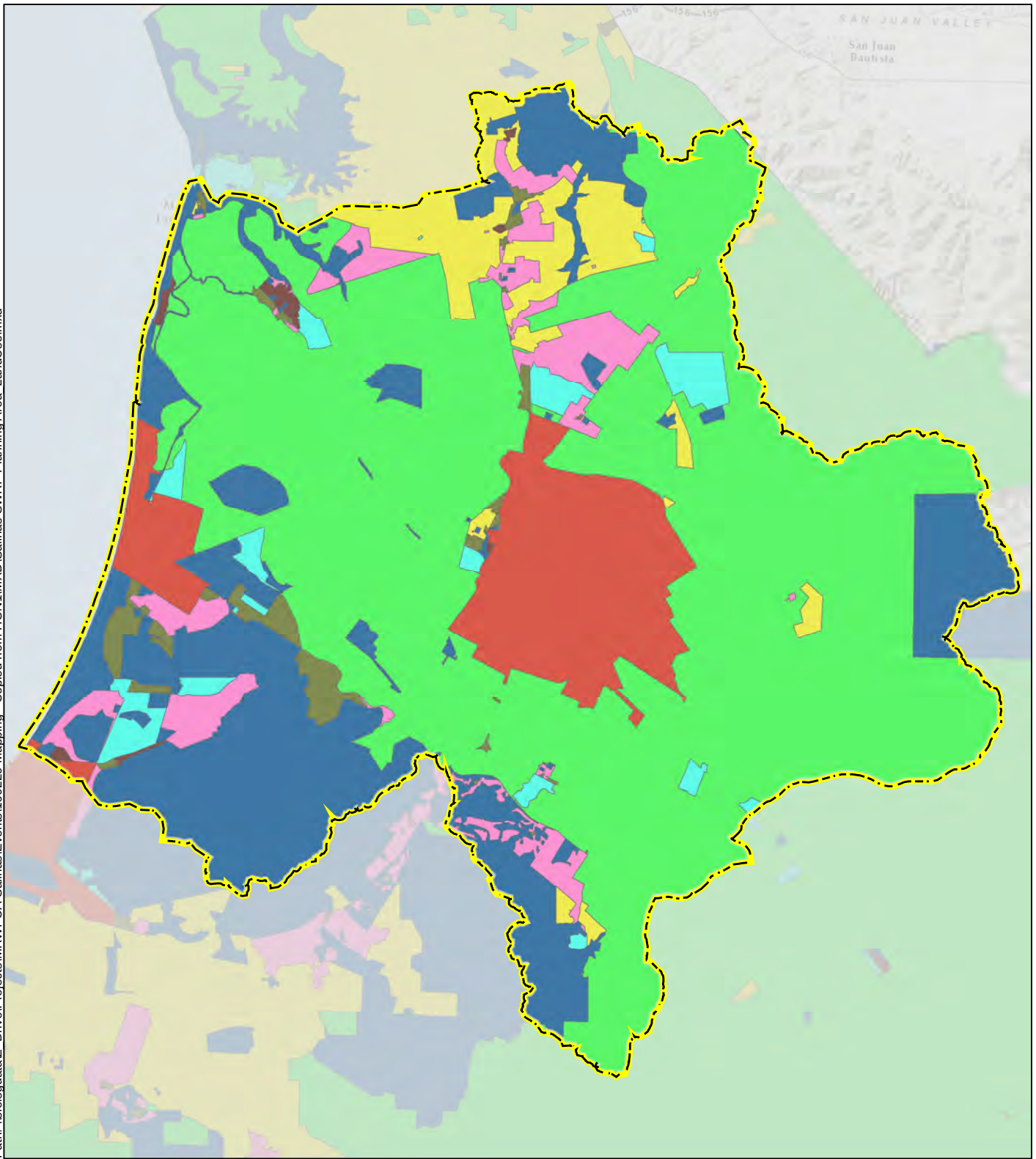
Figure 2.2

Seawater intrusion was first observed in a few wells in the Castroville area in 1932. By the 1940s, many agricultural wells in the Castroville area had become so salty that they had to be abandoned. The East Side and Pressure Subareas of the Salinas Valley Groundwater Basin are most impacted by overdraft (Monterey County Water Resource Agency 1997). Seawater has been intruding into these aquifers at a rate of approximately 28,800 AFY (Cal Water 2010b). In 2011, the total acres overlying the seawater intrusion front in the Pressure 180-Foot Aquifer equaled 28,142 acres, having advanced 351 acres since 2009. The total acres overlying the seawater intrusion front in the Pressure 400-Foot Aquifer in 2011 equaled 12,573 acres, having advanced 476 acres since 2009. Seawater has intruded approximately seven miles inland in the 180-Foot Aquifer and three miles inland in the 400-Foot Aquifer. As a result of seawater intrusion, urban and agricultural supply wells have been abandoned, destroyed, and relocated (RWMG 2014).

2.2 Land Use

The land use in the Greater Salinas Area SWRP is dominated by rural agricultural lands with some urban land uses as shown on Figure 2.3. Table 2.2 summarizes the land use distribution in the GMC IRWM Plan area, which is approximately 3,199 square miles (about 2 million acres) and the Salinas Watersheds SWRP planning area of about 237 square miles (151,000 acres). As presented in Table 2.2, 24 percent of the Greater Salinas Area SWRP Planning Area is urban (i.e., industrial, commercial, or residential), 57 percent agriculture (i.e., crop/farmland and vineyard/berries) and only approximately 19 percent of that area as natural areas. As shown in Table 2.1, most of the GMC IRWM region is annual grassland or woodland areas comprised of grazing or public land, and therefore as a whole, is largely undeveloped. In the limited areas of development, the natural watershed processes have been disrupted due to urbanization and agriculture. Critical habitat designated areas and wildlife corridors preserved as a part of local, state, or national parks and natural estuarine or coastal protected areas in the Greater Salinas Area are presented on Figure 2.4 and for the GMC IRWM region are presented on Figure 2.5.

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Legend



SWRP Planning Area

Land Use Class



High Density Residential



Medium Density Residential



Low Density Residential



Industrial



Low Density Commercial



Mixed Use (Res/Comm)



Urban Reserve



Agricultural



Open space/Public Lands

0 0.5 1 2 Miles



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Greater Salinas Area SWRP
Monterey County, CA

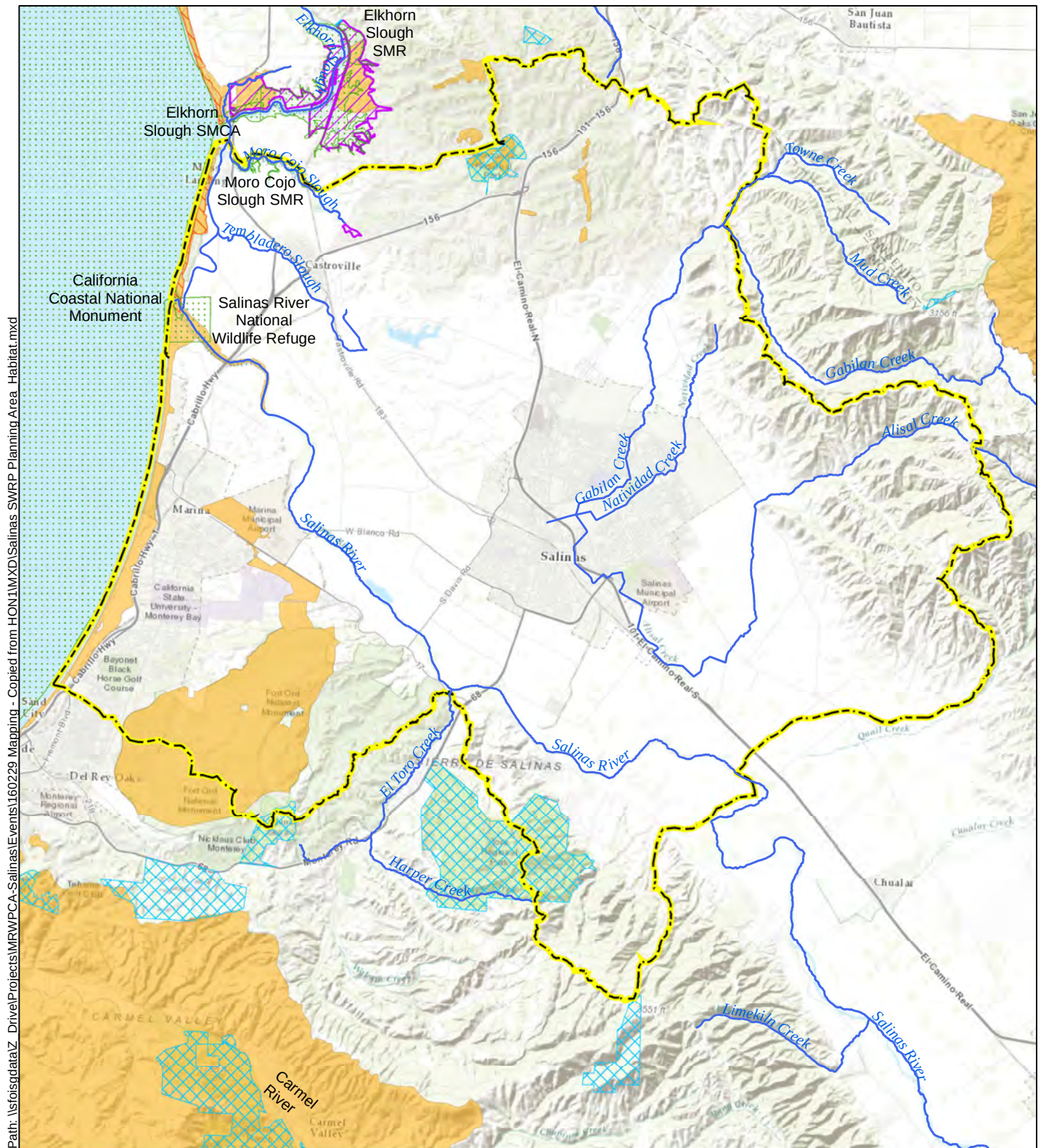
Planning Area Land Use

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February 2017

Figure 2.3

Table 2.2 Planning Area Land Use Distribution

Land Use	Total Acres	Percent of Total
Agricultural	85,822	57
High Density Residential	511	<1
Industrial	4,048	3
Low Density Commercial	2,657	2
Low Density Residential	7,236	5
Medium Density Residential	7,279	5
Open Space/Public Lands	29,170	19
Urban Reserve	14,736	10
Other	<1	<1
Total	151,459	100



Legend

- Rivers and Streams
- SWRP Planning Area
- California Dept. of Fish and Game
- California Dept. of Parks and Recreation
- County-City-Regional Parks and Preserves
- FWS Critical Habitat
- Federal Land

SMCA State Marine Conservation Area
 SMR State Marine Reserve

0 0.75 1.5 3 Miles



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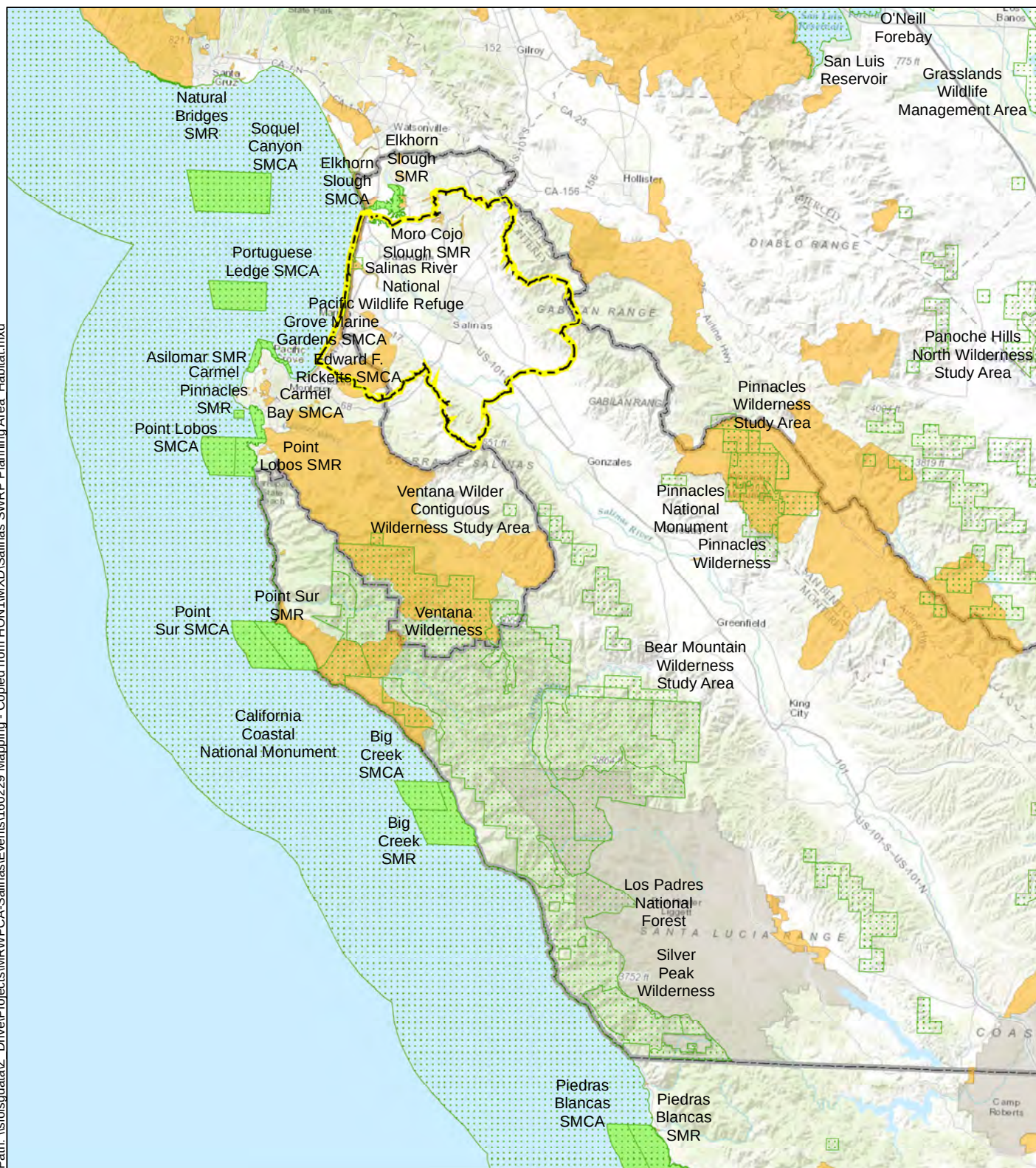
Greater Salinas Area SWRP
 Monterey County, CA

Greater Salinas Area Critical Habitat and Wildlife Corridors

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Figure 2.4

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Legend

-  SWRP Planning Area
-  Greater Monterey County IRWMP Boundary
-  FWS Critical Habitat
-  Federal Land
-  California Marine Protected Area
-  SMCA
-  SMR

0 3.5 7 14 Miles



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Greater Salinas Area SWRP
Monterey County, CA

**Greater Monterey County IRWMP
Critical Habitat and Wildlife Corridors**

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Figure 2.5

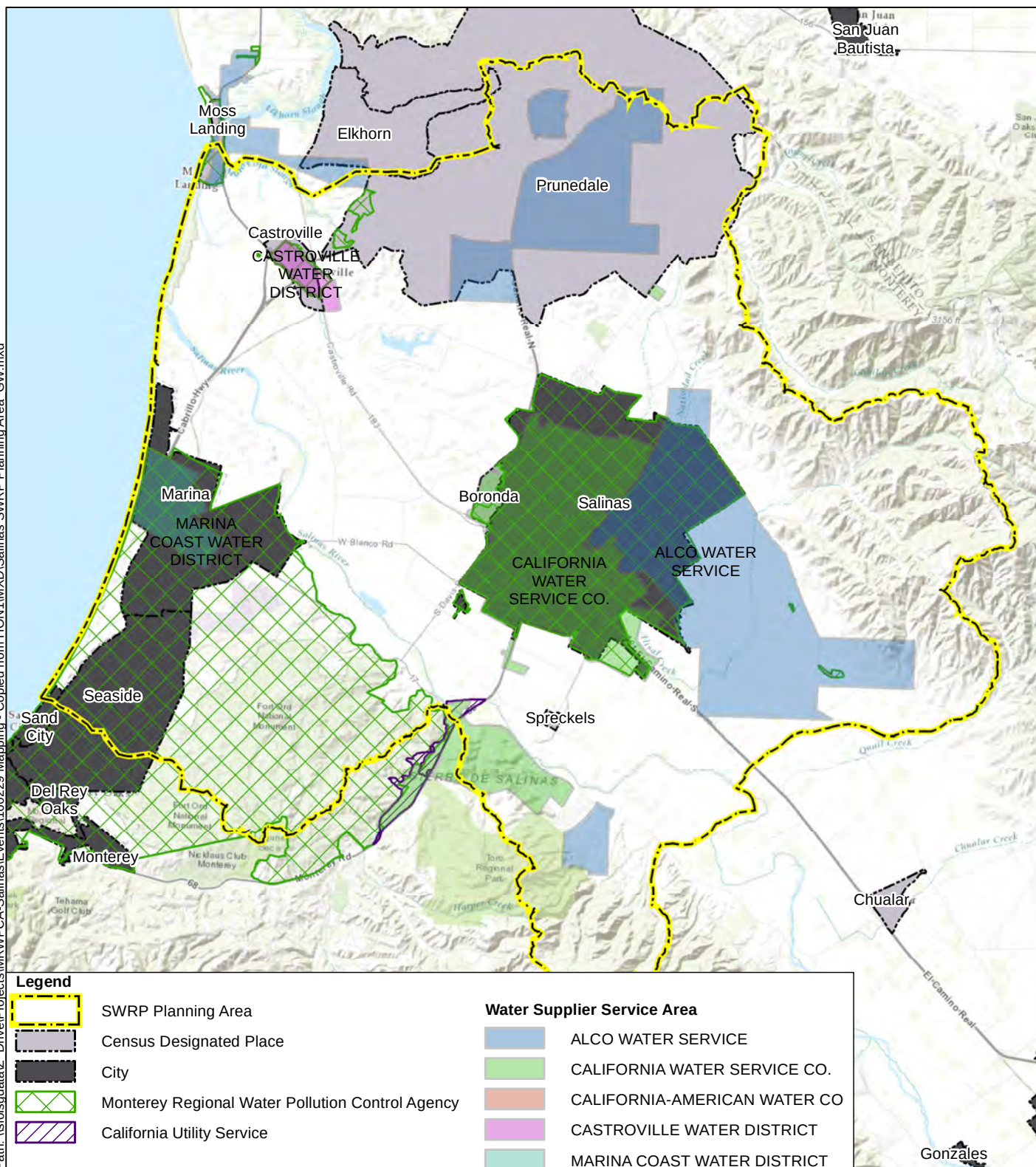
2.2.1 Water and Wastewater Service Providers

As shown on Figure 2.6, the Cities of Salinas, Marina, and Seaside are located within the Greater Salinas Area SWRP Planning Area. Unincorporated communities within the Planning Area include Prunedale, Boronda, Castroville, Moss Landing, and Spreckels. Water supply in the region is managed by several agencies, both public and private. Monterey County Water Resource Agency (MCWRA), formed in 1947, is the primary water management agency for Monterey County and is responsible for managing, protecting, and enhancing water supply and water quality, as well as providing flood protection, in the County. The MCWRA owns and operates the Nacimiento and San Antonio Dams, and is responsible for maintaining some portions of the Salinas Reclamation Ditch. Flood control also falls under the authority of municipalities throughout the region, which are responsible for storm drain maintenance and surface water disposal. Table 2.3 summarizes the water suppliers and service areas for connection greater than 200, and wastewater treatment providers within the SWRP Planning Area (RWMG 2014).

Table 2.3 Water Supply (Connections >200) and Wastewater Treatment Providers

Service Supplier	Service Area within the Greater Salinas Area SWRP	Water Supply	Wastewater Treatment
Alco Water Service Company	Service areas within the City of Salinas – north and east sides	X	
California American Water Company	Spreckels, Ralph Lane, Las Palmas, Indian Springs, Oak Hills	X	X
California Utility Service	Toro Park		X
California Water Service Company	Salinas District (including 70% of the City of Salinas, plus Bolsa Knolls, Las Lomas, Oak Hills, Country Meadows, Salinas Hills, and Buena Vista)	X	
Castroville Community Services Area	Community of Castroville	X	
Marina Coast Water District	City of Marina	X	
Monterey Regional Water Pollution Control Agency	City of Salinas, Marina, unincorporated areas within the Planning Area		X
Pajaro/Sunny Mesa Community Services District	Prunedale area	X	
Spreckels Water Company	Community of Spreckels	X	

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Greater Salinas Area SWRP
Monterey County, CA

Planning Area Internal Boundaries

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Figure 2.1

Alco Water Service

Alisal Water Corporation, dba Alco Water Service (Alco), is an investor-owned public utility water company that has been providing public utility water service to the Alisal community, which was eventually incorporated into the City of Salinas, since 1932. Alco's rates and service quality are regulated by the California Public Utility Commission (CPUC) and its water quality is regulated by both the State Water Resources Control Board- Division of Drinking Water (SWRCB-DDW), formerly California Department of Public Health (CDPH), and the CPUC. The CPUC also regulates the design, construction and operation of the utility's facilities. As of 2011, Alco maintains nine wells, six active wells and three standby wells with a combined total capacity of 15,136 million gallons per year and an existing pump capacity of 9,244 million gallons per year (RWMG 2014). Current demand within the Alco service area, based on reporting to the State Water Board, was 1,139 million gallons for the 2016 water year.

California American Water Company

California American Water Company (CalAm) is a CPUC regulated utility serving approximately 50 communities throughout the state with high-quality water and wastewater services. In the California Central Coast area, CalAm serves an estimated 120,000 people through more than 40,000 residential and business water service connections. Within the Greater Monterey County IRWM Plan area, the company provides service to approximately 3,000 water and wastewater connections. Communities served within this area include Toro, Ambler Park, Las Palmas and Spreckels, which are all located between the Monterey Peninsula and Salinas Valley. Also included are the communities of Ralph Lane and Indian Springs in Salinas, Oak Hills in northern Monterey County and Chualar in southern Monterey County. All of these systems are independent of each other. All communities that are served by CalAm within the Greater Monterey County region draw their water supply entirely from the Salinas Valley Groundwater Basin (RWMG 2014). According to CalAm's 2015 Urban Water Management Plan (2015 UWMP) for the Monterey District, 2015 demand was about 1,136 million gallons within the Greater Salinas Area SWRP Planning Area.

California Utility Service

California Utility Service (CUS) provides wastewater services to approximately 1,100 customers within the Toro area along Highway 68 south of Reservation Road, including Toro Park within the SWRP area. The CUS wastewater treatment plant is located at 16625 Reservation Road in Salinas. The utility's RWQCB waste discharge permit (R3-2007-0008), allows CUS to collect, treat, store, and discharge up to 300,000 gallons per day. The plant has been in operation since 1965 (Central Coast RWQCB 2007).

California Water Service Company

California Water Service Company (Cal Water) is a CPUC regulated and serves approximately 130,000 residents (70 percent of the urban users) in the City of Salinas and some of the surrounding areas, including the unincorporated communities of Bolsa Knolls, Las Lomas, Oak Hills, Country Meadows, Salinas Hills, and Buena Vista. Alco Water Company serves the remaining portion of the City of Salinas (RWMG 2014). According to the Cal Water Salinas District 2015 UWMP, 4,777 million gallons of groundwater was supplied within its service area in 2015.

Castroville Community Services District

The Castroville Community Services District (CCSD), formed in 1952 as the Castroville Water District, serves more than 6,800 customers in the unincorporated town of Castroville through 1,567 connections. CCSD currently delivers approximately 1,000 AFY (326 million gallons) of water, all of which comes from the Pressure subarea of the Salinas Valley Groundwater Basin. The CCSD system encompasses approximately 13 miles of pipeline and includes two water storage tanks with a capacity of 1.1 million gallons. The stored water is distributed to customers via an average pumping of 800,000 gallons/day; however, CCSD has a maximum capacity to pump up to 4.5 MGD to meet peak demands if needed (LAFCO 2006b) (RWMG 2014).

Marina Coast Water District

The Marina Coast Water District (MCWD) was formed in 1960 to provide potable water service to the community of Marina (MCWD 2011). MCWD's current service area in Central Marina encompasses 3.2 square miles. The MCWD also provides potable water delivery and wastewater conveyance services to the Ord Community. The Ord Community encompasses a 44 square mile area, of which about 20 square miles is designated for redevelopment, with the balance being parks and open space. The source of water supply for the MCWD is the Salinas Valley Groundwater Basin. MCWD owns and operates three water production wells in the Deep (900-Foot) Aquifer for the Central Marina service area, and three wells in the 400-Foot Aquifer for the Ord Community service area. MCWD is adding a new well in the Deep Aquifer. In August 2005, the Central Marina and Ord Community water systems were connected; integrated operations allow water to flow between the two systems to meet peak demands and improve overall services (RWMG 2014). According to the Marina Coast Water District 2015 UWMP, the District supplied about 4,176 million gallons in 2015.

Monterey Regional Water Pollution Control Agency

The Monterey Regional Water Pollution Control Agency (MRWPCA) owns and operates a regional wastewater treatment plant at the northern end of the City of Marina. Wastewater from the Monterey Peninsula, Salinas, Marina, Moss Landing and the Ord Community is conveyed to the plant for processing. The plant has the capacity to generate approximately 21,600 AFY of recycled water. Of that amount, 13,300 AFY of tertiary treated recycled water is delivered by the MCWRA to farmers in the Castroville region for irrigation during the irrigation season, and plans are currently underway to construct advanced water purification facilities to allow for groundwater injection as well as seasonal storage facilities that would enable the remaining 8,300 AFY of available capacity to be generated during the non-irrigation season. In addition, the City of Soledad has recently constructed a 5.5 MGD water reclamation facility at the City's wastewater treatment plant. The plant will provide tertiary treated water for agricultural and urban and landscape irrigation (RWMG 2014).

Section 3: Water Quality Compliance

The quality of surface waters in the region is greatly influenced by land use practices. Primary causes of pollutants to surface waters include urban runoff, agricultural runoff, erosion and sedimentation, and septic systems. Erosion is a widespread problem in Monterey County, due in part to the erosive nature of local soils as well as from land use practices (including farming on steep slopes, unmaintained or improperly designed dirt roads, altered water channels that increase water velocities and alter the natural sediment balance, and areas that have been denuded of vegetation by fire, overgrazing, or clearing) (City of Salinas 2013).

In the Salinas Valley, surface waters are impacted largely by intensive agricultural use (including grazing) and nonpoint source pollutants from urban uses. Salinas Valley surface waters are especially impaired by nitrates, pesticides, toxicity, and pathogens. Urban runoff from communities along the Salinas Valley impacts the Salinas River, Salinas Reclamation Ditch, and other tributaries ultimately flowing to the Monterey Bay (City of Salinas 2013).

3.1 Activities Associated with Pollution of Stormwater and/or Dry Weather Runoff

The Water Quality Control Plan for the Central Coastal Basin (page 3-1, Central Coast RWB 2016) and the City of Salinas Storm Water Management Plan (Chapter E.3 on pages 17-18, City of Salinas 2013) identified activities that can generate or contribute to the pollution of storm water or dry weather runoff, or impair beneficial use of storm water or dry weather runoff, such as:

- confined animal operations
- agricultural drains
- urban drainage
- agricultural runoff
- road construction activities
- mining
- grassland management
- logging and other harvest activities
- natural sources such as effects of fire, flood, and landslide
- roads, streets, and highways operations and maintenance
- plaza, sidewalk, and parking lot maintenance and cleaning
- fountains, pools, lakes, and lagoons maintenance
- landscape maintenance
- drainage system operation and maintenance
- waste handling and disposal
- water and sewer utility operation and maintenance

The magnitude of impact of these activities depends on the occurrence of activities within the drainage which is related to land uses and percentage of lands within the SWRP Planning Area. Based on the information found in Section 2.2, urban land uses, and their associated activities account for a small portion of land use, while agriculture accounts for a large portion of land use in the Greater Salinas Area SWRP planning area.

The discussion that follows identifies specific impaired water bodies and the permits within the Greater Salinas Area SWRP planning area.

3.2 NPDES and TMDL Compliance

The Central Coast RWQCB is the State agency responsible for identifying impaired water bodies within the Central Coast region. On August 4, 2010, the SWRCB approved the 2010 Integrated Report, which is California's 2008-2010 Section 303(d) list of impaired waters requiring TMDLs and 305(b) report on the quality of the State's waters, and on November 12, 2010 the Integrated Report was approved by the US EPA.

The State Water Board serves in an advisory capacity to the RWMG, and the RWMG works to ensure that projects included in the IRWM Plan comply with State Water Board regulations. The RWMG has made a concerted effort to incorporate the RWQCB's Water Quality Priorities as well as other Regional Board directives and initiatives into the IRWM Plan and planning process. RWMG members and project proponents work closely with the RWQCB on an individual basis to develop various plans and to implement projects. For example, MCWRA has worked closely with the RWQCB in development of the Nitrate Management Plan and other programs, including non-point source, TMDL, and other management programs (RWMG 2014).

3.2.1 TMDLS

The 1972 Federal Clean Water Act (CWA) established strategies for managing water quality, as described in Section B.6.3.a (page B-88 to B-89) of the GMC IRWM Plan. To support these strategies, Section 303(d) of the CWA requires the identification of water bodies that do not meet, or are not expected to meet, water quality standards (i.e., impaired water bodies), and requires development of a Total Maximum Daily Load (TMDL) for each listing. Figure 3.1 shows the impaired water bodies located within the Salinas Area Watersheds and Table 3.1 presents a summary of 303(d) listed impaired water bodies in the Greater Salinas Area SWRP Planning Area, the associated pollutant(s) of concern, the potential sources as reported by the Regional Water Boards, the completion date for the TMDL, and an assessment of whether the pollutant is applicable to storm water. A more detailed list is provided in Appendix C.

Table 3.1 Summary of 303(d) List of Impaired Water Bodies in the Greater Salinas Area

Project Information	Pollutants																											Potential Pollutant Sources	Regional Water Board TMDL Completion Year		
303d Listed Waterbody	Ammonia (Un-ionized)	Chlordane	Chloride	Chlorophyll-a	Chlorpyrifos	Copper	DDD (dichlorodiphenyl/dichloroethane)	Diazinon	Dieldrin	Electrical Conductivity	Enterococcus	Escherichia coli (E. Coli)	Fecal Coliform	Low Dissolved Oxygen	Nitrate	Nutrients	PCBs (polychlorinated Biphenyls)	Pesticides	Priority Organics	Sediment Toxicity	Sodium	Temperature, water	Total Coliform	Total Dissolved Solids	Toxaphene	Turbidity	Unknown Toxicity			pH	
Espinosa Slough	X							X							X			X	X	X							X	X	X	Agriculture, Urban Runoff/Storm Sewers, Nonpoint Source	2013
Natividad Creek	X											X		X	X					X		X					X	X	X	Agriculture, Grazing-Related Sources, Other Urban Runoff, Removal of Riparian Vegetation	2013
Merrit Ditch	X													X	X					X							X	X		Agriculture, Channelization, Removal of Riparian Vegetation, Source Unknown	2013
Old Salinas River				X	X			X				X	X	X	X					X							X	X	X	Agriculture, Dredging, Other Urban Runoff, Removal of Riparian Vegetation, Marinas and Recreational Boating, Natural Sources	2013
Salinas Reclamation Canal	X				X	X		X				X	X	X	X			X	X	X							X	X	X	Agriculture, Grazing-Related Sources, Urban Runoff-Industrial Permitted, Urban Runoff-Non-industrial Permitted, Urban Runoff/Storm Sewers, Natural Sources, Removal of Riparian Vegetation, Agricultural Return Flows, Agriculture - Irrigation Tailwater, Agriculture - Storm Runoff, Irrigated Crop Production, Minor Industrial Point Source, Nonpoint Source, Source Unknown	2013, 2018 ⁽¹⁾
Tembladero Slough				X	X			X			X	X	X		X	X		X		X			X				X	X	X	Agriculture, Grazing-Related Sources, Removal of Riparian Vegetation, Urban Runoff/Storm Sewers, Natural Sources, Natural Runoff/Storm Sewers, Pasture Grazing-Riparian and/or Upland, Agricultural Return Flows, Agriculture-Irrigation Tailwater, Agriculture-Storm Runoff, Irrigated Crop Production, Nonpoint Source	2013
Blanco Drain					X			X						X	X			X									X			Agriculture, Groundwater Loadings, Agricultural Return Flows, Agriculture-Irrigation Tailwater, Agriculture-Storm Runoff, Irrigated Crop Production, Nonpoint Source, Removal of Riparian Vegetation	2013
Salinas River (lower, estuary to near Gonzales Rd crossing, watersheds 30910 and 30920)		X	X		X		X	X	X	X	X	X	X		X		X	X			X			X	X	X	X	X	X	Source Unknown, Agriculture, Grazing-Related Sources, Natural Sources, Other Urban Runoff, Illegal Dumping, Natural Sources, Pasture Grazing-Riparian and/or Upland, Transient Encampments, Construction/Land Development, Point Source	2013, 2018 ⁽¹⁾
Alisal Slough (Monterey County)														X	X					X							X			Agriculture	2013
Gabilan Creek	X												X		X					X							X	X	X	Agriculture, Grazing-Related Sources, Other Urban Runoff	2013
Santa Rita Creek (Monterey County)	X											X	X	X	X						X						X			Agriculture, Other Urban Runoff, Natural Sources, Source Unknown, Urban Runoff/Storm Sewers	2013, 2018 ⁽¹⁾
Alisal Creek (Monterey County)				X									X		X						X									Agriculture, Natural Sources, Nonpoint Sources, Urban Runoff/Storm Sewers	2013, 2018 ⁽¹⁾

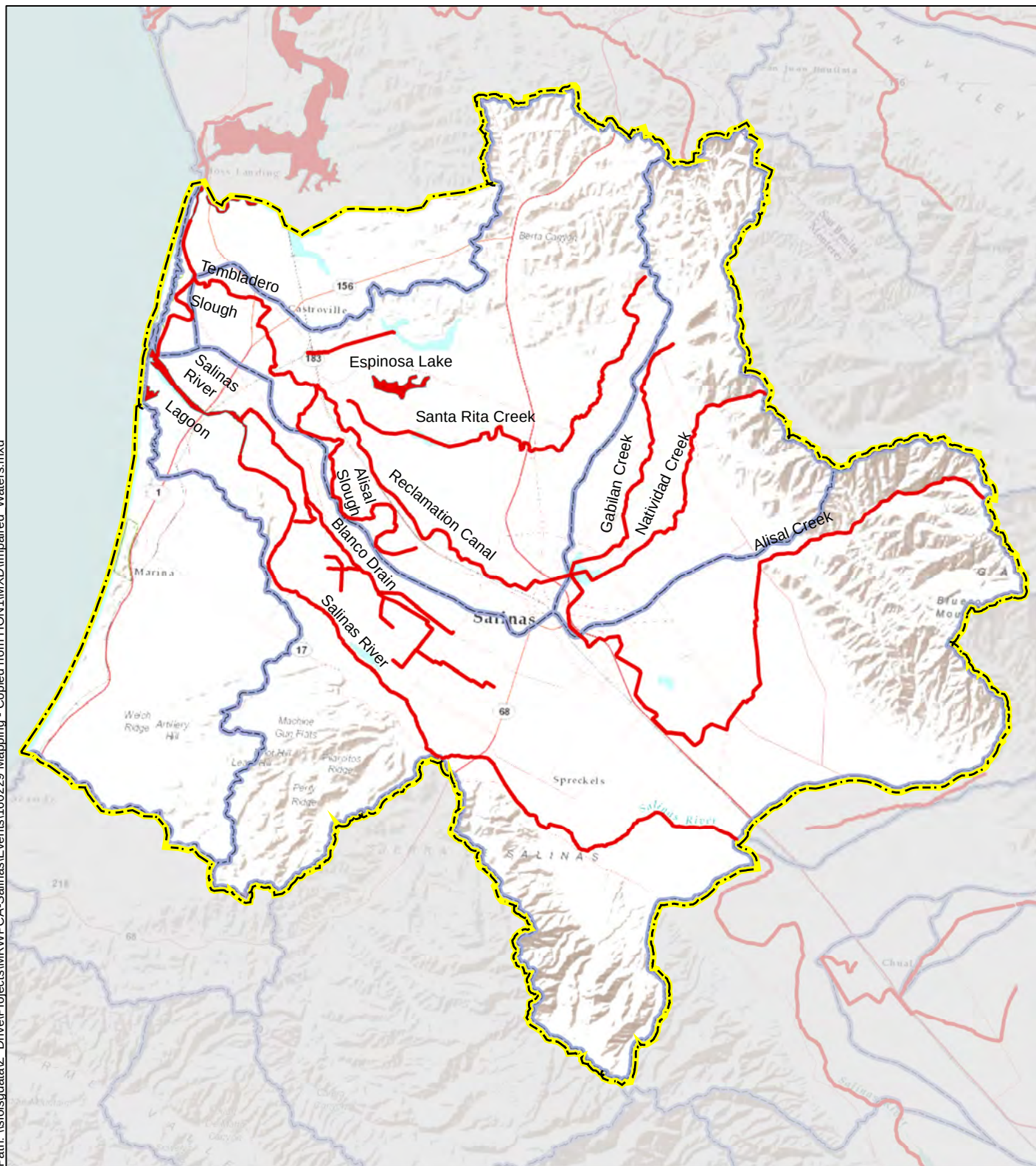
Notes:

⁽¹⁾ The following pollutants will be addressed by 2018: Sodium, Total Dissolved Solids, Chloride, and Copper.

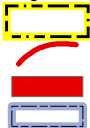
Sources:

- (a) http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml, accessed October 26, 2016.
- (b) Natural sources and those not included in MS4 or general statewide storm water permits are assumed not to be applicable to storm water discharges.

Path: \\sfsoisdata\Z Drive\Projects\MRWP\CA-Salinas\Events\160229 Mapping - Copied from HON1\MXD\Impaired Waters.mxd



Legend



- SWRP Planning Area
- Impaired Waters (2010 303(d) Lines)
- Impaired Waters (2010 303(d) Areas)
- USGS Hydrologic Unit Boundaries

0 0.75 1.5 3 Miles



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Greater Salinas Area SWRP
Monterey County, CA

Impaired Water Bodies within the Greater Salinas Area

K/J Project Number 1544104*00
February 2017

Figure 3.1

3.2.2 NPDES Permits

The CWA was amended in 1987 to include coverage for urban runoff discharges from MS4s under the NPDES, as described in Section B.6.3.a (page B-93 to B-95; RWMG 2014) of the GMC IRWM Plan and Section A.4 (page 6 to 7) of the City of Salinas *Storm Water Management Plan Update* (SWMPU). Municipalities may require coverage by a Phase I or Phase II MS4 permit, depending on the municipality's population.

Within the Greater Salinas Area SWRP Planning Area, the City of Salinas is enrolled under the Phase I MS4 Permit and is covered by an individual NPDES Phase I permit (Order No. R3-2012-0005). The City's NPDES Phase I permit was recently renewed (May 3, 2012). Storm water runoff is generated from various land uses, including urban and agricultural uses, and discharges into the Salinas Reclamation Ditch and the Salinas River. The City's NPDES permit requires the City to reduce the discharge of pollutants in storm water discharges to the maximum extent practicable (MEP) and protect water quality and beneficial uses. The Order also contains: effectiveness assessment measures, including water quality monitoring, detailed best management practices (BMP) assessment requirements, and water quality action levels, designed to provide information about the effectiveness of efforts to reduce pollutant discharges and protect water quality and beneficial uses.

In addition, the Order contains requirements for identifying dominant watershed processes that are impacted by storm water management and are necessary to protect water quality and beneficial uses, and for developing control measures to protect and restore those processes (RWMG 2014). The City of Salinas developed the SWMPU which describes control measures and BMPs for protecting area water quality from storm water and non-storm water discharges, particularly for the urbanized portion of the watershed (City of Salinas 2013).

In addition, within the Greater Salinas Area SWRP Planning Area, the City of Marina is enrolled under the Phase II General Permit for Stormwater Discharges, as well as Monterey County and the cities of Soledad and King City within the GMC Region (RWMG 2013). The City of Marina joined with Monterey County and several Monterey Peninsula cities to apply as co-permittees under a single Plan, called the Monterey Regional Storm Water Management Program (MRSWMP). The MRSWMP covers the cities and the unincorporated areas of Monterey County that have been designated by the U.S. Census Bureau as being "Urbanized Areas" and that are within the County's legal jurisdictional boundary. The purpose of the MRSWMP is to implement and enforce a series of BMPs designed to reduce the discharge of pollutants from the MS4s to the "maximum extent practicable," to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act (RWMG 2014).

Storm water discharges associated with construction activity, industrial activity, and utilities other than water suppliers may also be covered by statewide general permits under NPDES. Table 3.2 summarizes the applicable, active NPDES permits issued for the Greater Salinas Area; a list of the applicable, active NPDES permits is included as Appendix D.

Table 3.2 NPDES Permits Issued by the Central Coast RWQCB – Greater Salinas Area

Type of Permit	Total (a)
Industrial Storm water	56
Construction Storm water	67
Phase I Municipal MS4	1
Phase II Small MS4	2
WDRs (see Section 3.3.1)	4
a. Based on the State Water Board website, accessed October 26, 2016 (https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility)	

3.3 Other Permits

All projects proposed and implemented as part of the Greater Salinas Area SWRP and GMC IRWM Plan will comply with applicable town, city, and county storm water documents and ordinances, including the SWMP (City of Salinas 2013) and the Monterey County Public Works Department, Planning Department, and Redevelopment & Housing Office (RWMG 2014). All projects will also comply with applicable state and federal regulations, including the California Environmental Quality Act (Public Resources Code § 21000 et seq.), the Clean Water Act, the Safe Drinking Water Act, applicable water rights permits and licenses, State Water Board plans and policies, State and Regional Water Board water quality control plans and policies (Wat. Code, § 10562, subd. (b)(5)), NPDES permits, Areas of Special Biological Significance Compliance Plans (State Water Board Resolution 2012-0012), conditional waivers issued by State and/or Regional Water Boards (Wat. Code, § 10562, subds. (b)(5) & (6).), and the Mosquito Abatement and Vector Control District Law (Division 3, Chapter 1 of the Health and Safety Code beginning with Article 2000.) (State Water Board 2015).

3.3.1 WDRs

According to the California Code of Regulations, Title 27 section 20090, there are nine categories of discharges that are regulated by the Waste Discharge Requirements (WDRs) Program: sewage, wastewater, underground injection, Regional Water Board cleanup actions, gas condensate, soil amendments, drilling waste, reuse, and waste treatment in fully enclosed units. Some entities within the Greater Salinas Area have wastewater discharge permits, such as the Monterey Regional Water Pollution Control Agency. However, waste discharge permits do not typically apply to storm water discharges as storm water discharges are regulated under other permits, as discussed in Section 3.2.

3.3.2 Consistency with California Health and Safety Code – Pest and Mosquito Abatement

As mentioned in Section 2.2, all projects implemented from this SWRP and the the GMC IRWM Plan will comply with the Mosquito Abatement and Vector Control District Law (Division 3, Chapter 1 of the Health and Safety Code beginning with Article 2000.) (State Water Board 2015). The City of Salinas SWMP includes a summary of implementation plans for complying with BMPs for development and development planning and storm water retrofits (Salinas SWMPU Table J.2 and K.2). This includes the condition that all private Priority Development Projects must include documentation of Conditions of approval or other legally enforceable agreements or mechanisms that require the granting of site access to all representatives of the City, local mosquito and vector control agency staff, and Central Coast RWQCB staff, for the sole purpose of performing O&M inspections of the installed flow control and treatment BMPs. Furthermore, the Northern Salinas Valley Mosquito Abatement District was contacted during the development of the GMC IRWM Plan.

3.3.3 Modification of a River or Stream Channel

As projects in this SWRP are implemented, some projects may result in the modification of a river or stream channel. These types of projects may require additional permitting for compliance with Clean Water Act Sections 404 and 401 as well as California Department of Fish and Wildlife regulations. In addition, the GMC IRWM Plan includes the Water Quality objective to “incorporate or promote principles of low impact development (LID) where feasible, appropriate, and cost effective.” RWMG entities are working with the Central Coast RWQCB on the Central Coast Joint Effort for LID and Hydromodification Control (described in Section B.6.3.b, Voluntary Water Quality Programs).

Implementing LID and hydromodification controls can also reduce the impacts to river and stream channels by reducing peak flows. The RWMG is interested in promoting LID practices in the GMC IRWM region, and will continue to work with the RWQCB on the Central Coast Joint Effort and with local agencies to encourage the implementation of LID practices, where appropriate (RWMG 2014 page N-7 to N-8). The Greater Salinas Area SWRP also supports LID practices in the limited acreage of urbanized areas within the planning area.

3.4 Monitoring

The Greater Salinas Area SWRP, the GMC IRWM Plan, the implementation of projects, along with associated monitoring data, will be tracked using a Data Management System (DMS) that takes advantage of database systems developed by statewide efforts. Because the GMC IRWM Plan does not have an ongoing secure funding source for data management, the RWMG has opted to utilize existing State database frameworks including, for surface water quality, those developed by the California Surface Water Ambient Monitoring Program (SWAMP) and by the California Environmental Data Exchange Network (CEDEN). Wetland and riparian habitat conditions will be measured and documented using the California Rapid Assessment Methods (CRAM), and groundwater data will reside in GeoTracker using the Groundwater Ambient Monitoring and Assessment (GAMA) database. The IRWM Plan Coordinator will work closely with the Data Management Coordinator (or in absence of a Data Management Coordinator then a subcommittee of the RWMG) to track project implementation (RWMG 2014, page J-1).

Inclusion of SWRP projects into the GMC IRWM Plan will allow tracking of SWRP activities within the GMC IRWM Plan tracking.

All projects must adhere to certain State guidelines for monitoring in order to be implemented through the IRWM Plan (RWMG 2014, page J-4). These include:

- Projects that involve surface water quality must meet the criteria for and be compatible with SWAMP, http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml).
- All projects that involve groundwater quality must meet the criteria for and be compatible with GAMA, <http://www.waterboards.ca.gov/gama/>).
- All projects that involve wetland restoration must meet the criteria for and be compatible with the State Wetland and Riparian Area Monitoring Plan (WRAMP, http://www.waterboards.ca.gov/mywaterquality/monitoring_council/wetland_workgroup/docs/2010/tenetsprogram.pdf)

Section 4: Organization, Coordination, Collaboration

4.1 Local Agencies and Non-Governmental Organizations

This plan was prepared in coordination with members of the GMC RWMG and more specifically in close coordination between those entities in the Salinas area. This Greater Salinas Area SWRP serves as the foundation for development of the final SWRP for the GMC IRWM Area which will be integrated into the IRWM Plan upon its completion; therefore involvement from RWMG members was critical.

The GMC RWMG has a history of collaboration and is the group responsible for development of the IRWM Plan (RWMG 2014). The GMC RWMG consists of 18 organizations as described in the IRWM Plan (RWMG 2014). The member entities include government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests. SWRP implementation is occurring under the auspices of the GMC RWMG. Of the 19 member organizations, seven have statutory authority over water supply and/or water management within the GMC region. These members are charged with implementing the GMC IRWM Plan. Table 4.1 lists the member organizations/stakeholders and their type.

Table 4.1 GMC RWMG Members

Stakeholder	Type/Classification
Big Sur Land Trust	Non-profit organization
California State University Monterey Bay	Educational organization
California Water Service Company	Private water company
Castroville Community Services District	Water service district
City of Salinas	Government agency
City of Soledad	Government agency
Elkhorn Slough National Estuarine Research Reserve	Environmental interest organization
Environmental Justice Coalition for Water	Non-profit organization
Garrapata Creek Watershed Council	Environmental/community interest organization
Marina Coast Water District	Water service district
Monterey Bay National Marine Sanctuary	Environmental interest organization
Monterey County Agricultural Commissioner's Office	Agricultural interest organization
Monterey County Water Resources Agency	Water service district
Monterey Regional Water Pollution Control Agency	Government agency

Stakeholder	Type/Classification
Moss Landing Marine Laboratories	Educational organization
Resource Conservation District of Monterey County	Agricultural/Community interest organization
Rural Community Assistance Corporation	Community interest organization
San Jerardo Cooperative, Inc.	Community interest organization

In addition, MS4 operators such as Salinas and Monterey County are participants in both the GMC IRWM as well as the SWRP. MS4s are regulated by the Central Coast RWQCB. Other Agency stakeholders include entities that have influence, policy control, and regulatory authority and include: cities throughout the region, County of Monterey Environmental Health Department, Association of Monterey Bay Area Governments, Federal Natural Resources Conservation Service, National Oceanic Atmospheric Administration, agriculture (and the Agricultural Waiver Program administered by the RWQCB), and the Watershed Institute of California State University, Monterey Bay (City of Salinas 2013). Water demand and existing supplies associated with development projects are coordinated between the city government agencies within the Planning Area and local and regional water agencies. Monterey County Resource Management Agency (MCRMA) consults with MCWRA on water supply and flood/drainage matters in all parts of Monterey County and with the Monterey County Environmental Health Bureau regarding water quality issues.

An example of collaboration and coordination is in the north Monterey County in the Salinas Watersheds where significant water quality and water supply issues occurs. Several of the agencies serving coastal communities located within the Planning Area, are unique within the GMC IRWM in that they:

- (1) they are located within some of the more populous areas within the county, (2) are located at the discharge end of the Salinas River, and (3) are impacted to a greater extent by sea level rise and salt water intrusion into the groundwater.

Due to these unique challenges these local agencies have collaborated within the GMC IRWM framework to address local and region-wide issues unique to northern Monterey County. Agencies such as City of Salinas and MRWPCA, who are active members of the RWMG and have also joined together in the preparation of this Salinas Watershed Area SWRP which will lay a strong foundation for the SWRP for the full GMC IRWM area. By working together these agencies can maximize the usage of storm water and dry weather runoff as a resource. No new or altered governance structures are necessary to support collaboration between these two local agencies.

The development and implementation of this SWRP relies on the continued collaboration between MRWPCA and the City of Salinas, two entities that have had a proven, successful working relationship for many years. This ongoing partnership will culminate in the submittal of this plan to the two regional IRWM groups; the GMC IRWM as well as the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM regions shown on Figure 1.1. Several of the projects the City of Salinas and MRWPCA have collaborated on and submitted under this plan

(Section 5) continue to promote the activities of the Monterey Regional Storm Water Management Program by supporting many of the program elements required by the NPDES MS4 Phase I and Phase 2 Permits that have regulatory coverage over this area. By collaborating within the Greater Salinas Area Planning Area and creating a SWRP specific to this area, the City of Salinas, MRWPCA, and other local agencies including Monterey County Public Works can maximize resources, funding, and prioritize projects that will provide multiple benefits across the northern Monterey County region. A comprehensive list and evaluation of projects is included in Section 5.

As described earlier, this plan was created in close relationship to other plans and programs established by local agencies. Most notably and as discussed previously this plan was developed under the GMC IRWM program and plan. As a Phase 1 MS4, the City of Salinas is both a large and significant portion of the Greater Salinas Area SWRP Planning Area as well as an important collaborator in the development of this plan. As such this plan was created in close relationship with the City of Salinas SWMP Update. To comply with and meet its Municipal Permit requirements, as a part of the Storm Water Management, the City of Salinas collaborated with various City departments (e.g., police and fire departments) and outside agencies including but not limited to Salinas Valley Solid Waste Authority (SVSWA), Household Hazardous Waste Facility, Monterey County Environmental Health Department, and Republic Services and committees such as 3R and CCRMC.

Salinas' SWMP indicates that the City's storm water ordinances as well as Municipal Code, General Plan, Grading Standards, and Storm Water Development Standards regulates the City's storm water infrastructure and management approach to development. For example, the City has implemented numerous BMPs that include trash control and trash disposal requirements that are embedded in various provisions of the City ordinances, reduction of trash discharges to the MS4, and removal of trash that has entered into the MS4

As described in Section 3.2, Monterey County and several Monterey Peninsula cities regulated under the Phase 2 MS4 to apply as co-permittees under a single MRSWMP which was initiated in 2006. Within the Greater Salinas Area SWRP planning area, there are certain locations of unincorporated Monterey County that are regulated under the Phase 2 MS4 and a representative from Monterey County Public Works has regularly attended the SWRP meetings.

Non-government organizations (NGOs) were also involved during the development of the plan content and submitted many of the projects under this plan. Collaboration with NGOs is important in that NGOs can provide essential leadership and expertise in planning, project design, implementation, and community engagement as well as finding alternative sources of funding. As an example, the Big Sur Land Trust is providing the project planning experience and funding to purchase properties within the Carr Lake area within central Salinas. The Big Sur Land Trust, a non-profit organization, is collaborating with Salinas to purchase this farmland with the plan of converting to an open space and recreational area with added flood control, water quality improvements, and wetland habitat restoration. More details about this project other projects with NGO collaboration are included in Section 5.

Another example of coordination with NGOs is in regards to Salinas' partnership with the Salinas Valley Solid Waste Authority and the non-profit organization Ecology Action which are cooperating in conducting Our Water, Our World (OWOW). OWOW targets two of the most commonly used residential pesticides which can often be found in local runoff and wastewater

treatment plant discharges (City of Salinas 2013). Other NGOs that were involved in the planning process included San Jerardo Cooperative, Inc., Central Coast Wetlands Group, Elkhorn Slough Estuarine Research Reserve, Environmental Justice Coalition for Water, and Monterey Bay National Marine Sanctuary whose representatives attend and participated in the meetings for this Greater Salinas Area SWRP.

As described earlier, this Greater Salinas Area SWRP includes the participation of Salinas and Monterey County who participate and implement their own authorities and mandates to address storm water and dry weather runoff management activities as part of their MS4 permit requirements. Salinas has been collaborating with the Big Sur Land Trust, a non-profit organization noted earlier, on the multi-benefit Carr Lake land purchase and restoration project. In addition, as described further in Section 5, Salinas has been collaborating extensively with MRWPCA, another public agency, to divert and beneficially reuse storm water and dry weather runoff under the Pure Water Monterey program. This activity to divert storm water and dry weather runoff achieve the management objectives of the Plan described in Section 1. The ultimate treatment and groundwater recharge of the diverted storm water and dry weather runoff, which is comingled with wastewater, benefits both public water purveyors as well as privately owned water utilities such as California Water Service Company in Salinas which is a member of the GMC IRWM RWMG. This not only creates additional water supply but also addresses the significant seawater intrusion that occurs in North Monterey County.

4.2 Community Participation

Just as local agencies and NGOs were involved in development of the IRWM Plan, the RWMG encouraged local community stakeholder participation during the development of this SWRP. During IRWM Plan development, community involvement was accomplished through the establishment of a website and public workshops. Community stakeholders were notified and informed of IRWM Plan developments through brochures, newspapers, website postings, emails, and personal communication. Similarly, during the development of this SWRP several RWMG meetings were held in which the SWRP was the focus of the meeting. Five RWMG meetings were held on July 20, August 17, September 21, October 19, November 16 and December 14, 2016 in which the SWRP was discussed. Community stakeholders were notified via the IRWM website (<http://www.greatermontereyirwmp.org/>) and via email. During these meetings stakeholder were given the opportunity to discuss and review the content of the SWRP and to review and comment on the draft versions. See Appendix E for submitted comments and their responses.

Community participation was important during SWRP development in that it fosters outreach, participation, and involvement of disadvantaged communities (DACs), local tribes, the general public, and specific audiences such as local ratepayers, developers, locally regulated commercial and industrial stakeholders, and nonprofit organizations. As an example, one consistent member of the RWMG meetings during SWRP preparation is the San Jerardo Cooperative, Inc. which is cooperative housing complex for low-income farm working families and represents a DAC. Input from stakeholders such as these was critical in development of this plan and during identification of projects.

Section 5: Identification and Prioritization of Projects

5.1 Introduction of Projects

Projects presented in this section were selected as part of this Greater Salinas Area SWRP for prioritization and evaluation against storm water related criteria. Projects selected for this SWRP were originally part of the 2011, 2014, and 2016 project submissions for the GMC IRWM Plan. An initial pre-screening of projects for inclusion and evaluation under this plan were based on the following criteria: (1) if the project had a storm water or flood management focus with clear water supply, water, quality, flood management, environmental, or community benefits; and (2) if the projects were located within the Greater Salinas Area planning area. Therefore, although some projects may be developed in isolation geographically, the projects share in the management of the same watershed. A total of 18 projects were initially identified and were screen down to the 13 projects described in Sections 5.1.1 – 5.1.13 below and as shown on Figure 5.1. Brief project introductions and summaries are included in the following subsections as well as updates to the projects as of the one-on-one interviews with project proponents.

5.1.1 Coastal Wetland Erosion Control and Dune Restoration

Project Applicant:

Central Coast Wetlands Group (CCWG)

Main Benefit Categories Met:

Water Quality; Water Supply; Flood Management; Environmental; Community

Requested Amount:

\$1,070,164

Match Funds:

\$356,721

Benefit Metrics Value(s):

- 126 acres restored

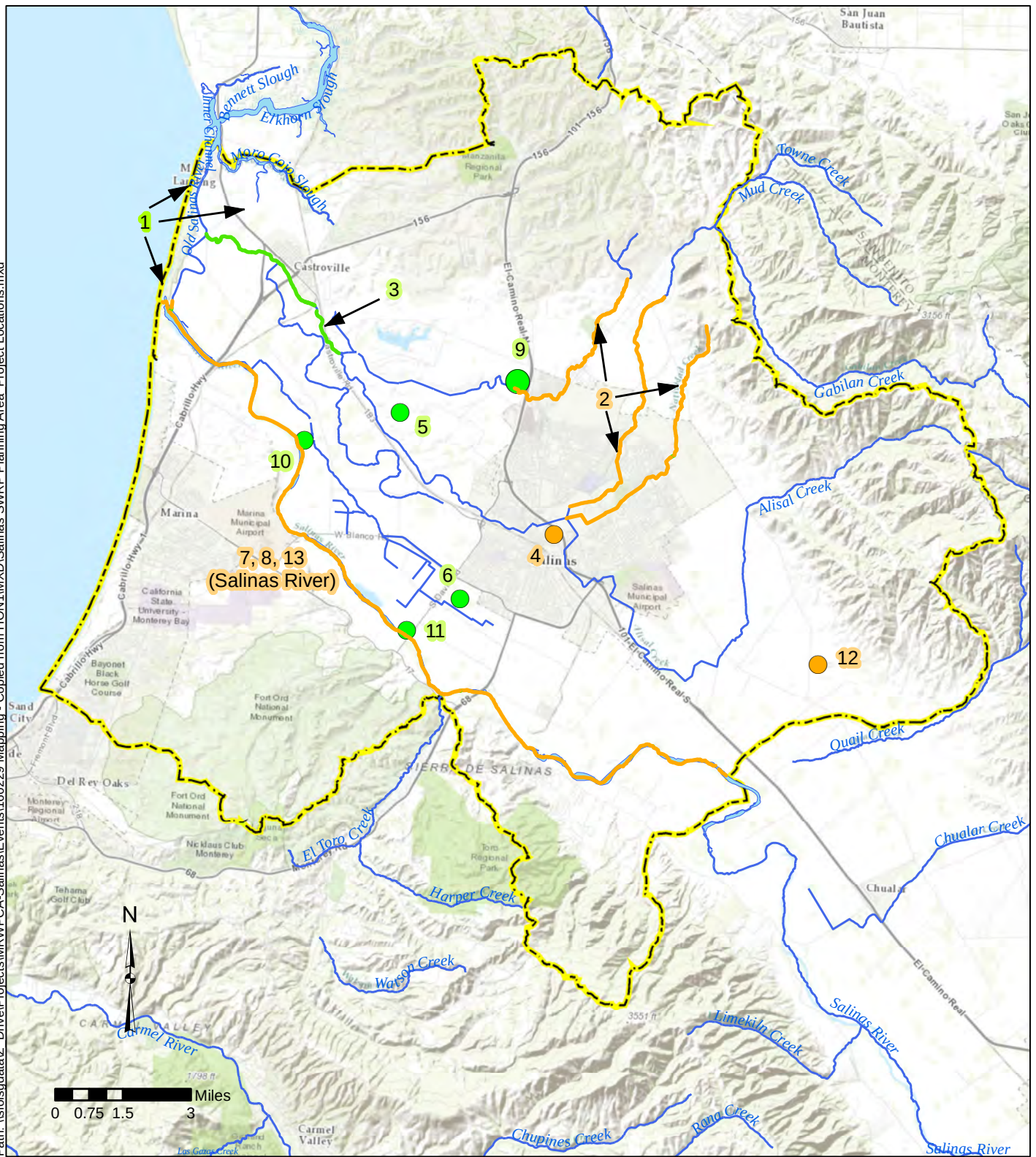
Project Updates (2016):

- Signed Memorandum of Understanding with State Parks to maintain dunes in the future.
- CCWG has completed an area of the project upstream of the Old Salinas River area since submission of project proposal form.

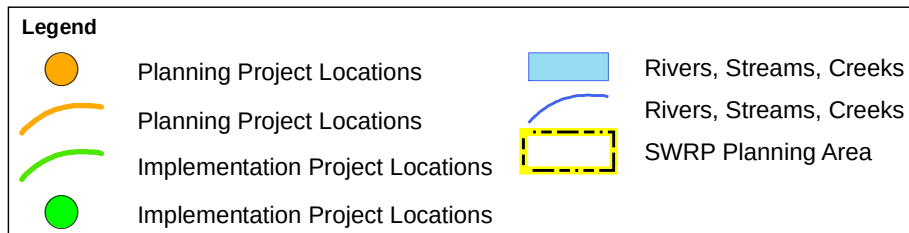
Project Summary:

This project will enhance and restore wetland and sand dune ecosystems in central Monterey Bay and control erosion in salt marshes directly behind the dunes around Moss Landing. Marshes are critical buffers to prevent salt water from entering surrounding farmland in the Salinas Valley, but they are eroding away at accelerating rates. Sand dunes retain fresh water at the coast, recharge groundwater, retard saltwater intrusion, and minimize storm damage from the sea. During storm events, the sand dunes and wetlands prevent flooding downstream in urban and agricultural areas, preventing runoff (and garbage and pollutants) from choking conveyance systems. Much of the dune structure around Monterey Bay is degraded with invasive non-native plants. The target area for this project, central Monterey Bay, has some of the most impacted sand dunes in the region and may be the first to fail as sea level rises, leading to salt water overflows into the Salinas Valley, compromising one of the nation's most productive agricultural areas.

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Total Acres: 151,791



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Greater Salinas Area SWRP
Monterey County, CA

Greater Salinas Area SWRP Project Locations

K/J Project Number 1544104*00
February 2017

Figure 5.1

5.1.2 Northern Gabilan Mountain Watershed Management Project

Project Applicant:

Central Coast Wetlands Group (CCWG)

Main Benefit Categories Met:

Water Quality; Water Supply; Flood Management; Environmental; Community

Requested Amount:

\$841,961

Match Funds:

\$280,654

Benefit Metrics Value(s):

- Miles of river restored to be quantified once final sites are selected.

Project Updates (2016):

- Project is still in planning phase and final sites need to be selected

Project Summary:

This project consists of three phases to restore a sub-watershed within the upper Gabilan watershed, and serve as a model for restoration of watersheds within the Central Coast. Phase I provides the foundational watershed characterization and process analysis necessary to develop meaningful and effective watershed management. It includes a review of previous relevant studies and preparation of original analysis along with a compilation of spatial data and key watershed processes. Analysis will be integrated with research and planning projects done by others. The synthesis of this information will be used to target planning and restoration for one sub-watershed. This will be accomplished by addressing the impacts to watershed functions and processes (physical, chemical and biological) caused by agriculture and urban activity such as decreased infiltration to groundwater, emergence of invasive species, and degeneration of natural flows. Additionally, a community-based engagement process will be conducted to review Phase I information and watershed management options. Phase I will result in a management methodology and a master restoration plan for one of three sub-watersheds. Phase II will develop site design for prioritized restoration locations within the chosen sub-watershed and Phase III will implement those designs.

5.1.3 Water Quality Enhancement of the Tembladero Slough Phase II

Project Applicant:

Central Coast Wetlands Group (CCWG)

Main Benefit Categories Met:

Water Quality; Flood Management;
Environmental; Community

Requested Amount:

\$727,650

Match Funds:

\$242,550

Benefit Metrics Value(s):

- 60 acres restored

Project Updates (2016):

- Project sites are still changing
- 2 of the 5 project sites are currently funded for construction. Others are still in planning phase.

Project Summary:

This project is Phase II of *Water Quality Enhancement of the Tembladero Slough and Coastal Access for the Community of Castroville*, Phase I of which has been funded by the IRWM Plan Round 1. During Phase I, CCWG will work with County agencies, agricultural landowners and the community of Castroville for design and permitting of a select set of water quality/wetland management structures. These projects will utilize a variety of water quality management innovations including the treatment train approach (i.e. detention/sedimentation features, pollutant filtration/ biological degradation of pollutants and water polishing areas). During Phase II of this project, twenty acres in total (approximately six projects) will be constructed based on the plans from Phase I that support and integrate the multiple objectives of the GMC IRWM Plan, emphasizing urban and agricultural water quality enhancement, flood management, habitat restoration and support of various watershed planning and permit processes. Features are selected based on available space, hydrologic requirements, and adjacent landowner concerns, but preferentially support projects that enhance habitat and open space features as well as improving water quality.

5.1.4 Carr Lake Riparian Habitat Restoration Plan

Project Applicant:

City of Salinas and Big Sur Land Trust (BSLT)

Main Benefit Categories Met:

Water Quality; Water Supply; Flood Management; Environmental; Community

Requested Amount:

\$250,000

Match Funds:

\$250,000

Benefit Metrics Value(s):

- 73 - 480 acres restored

Project Updates (2016):

- BSLT updated the date of purchase for the first property (1/27/2017)
- Purchasing one of three family-owned properties. In talks to purchase remaining at a later time
- Timeline for achieving project is approximately 5 years
- Purchased site will remain in active cultivation during initial planning process

Project Summary:

The Carr Lake Project is an effort to turn the agricultural area into a multi-use facility that will provide much needed open space and recreational facilities, as well as providing benefits such as improved peak flood control and water quality, and restoring wetland habitat areas. The City of Salinas is working with the Big Sur Land Trust (BSLT) to acquire properties in the Carr Lake Area. BSLT will be acquiring 73 acres (the Ikeda property) of the 480 acres that comprise Carr Lake by January 27, 2017. This project would begin the planning process working collaboratively to plan for/design the restoration of wetlands and stream beds that will greatly improve the water treatment capacity of this site. This project would also design public access for the residents of Salinas who are vastly underserved by open space and park lands. It is expected that this initial planning process will also look towards future acquisition of the remaining farmlands to consider how they may also be used to transform drainage ditches to convey and treat storm water.

5.1.5 Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements

Project Applicant:

City of Salinas

Main Benefit Categories Met:

Water Quality; Water Supply; Flood Management; Environmental; Community

Requested Amount:

\$10,720,000

Match Funds:

\$7,190,000

Benefit Metrics Value(s):

- Pollutants removed/reduced:
 - 90 lb/yr Ammonia as N (Unionized)
 - 1,904 lb/yr Ammonia as NH₃
 - 332,127 lb/yr Chloride
 - 50 Chlorophyll a (water column)
 - 5 lb/yr Chloropyrifos
 - 311 lb/yr Diazinon
 - 2,003,288 lb/yr Dissolved Solids (Total)
 - 40,563 lb/yr Nitrate as N
 - 2,017 lb/yr OrthoPhosphate as P
 - 216,783 lb/yr TSS Pollutant Load Reduced
- At least 2,500 acre-feet per year (AFY) of storm water treated/captured

Project Updates (2016):

- Project received Storm Water Grant Program Proposition 1 Round 1 Implementation Funding which is matched with local funds
- Project to be powered by solar installed as of November 2016

Project Summary:

This project will improve the City of Salinas' Industrial Wastewater System (IWS) and includes: new gravity sewers with increased capacity to collect the City's storm water runoff and industrial wastewater and convey it to the City's Industrial Waste Treatment Facility (IWTF); electrical and treatment equipment expansions and upgrades to the IWTF to treat the increased flows; and a system to filter IWTF effluent through soil on site. New monitoring points around the soil bed filtration system will monitor system efficiency and assess its performance, such as producing water quality water and suspended solids. The City has identified multiple potential beneficial uses for the infiltrated water including the following: 1) groundwater recharge; 2) combat saltwater intrusion; 3) high quality diluent in the MRWPCA groundwater recharge project; 4) low-salt feed water for potential upgrade to potable water for the City of Salinas; 5) non-agricultural irrigation water (golf course, playing fields, etc.) or agricultural irrigation (after desalting); and 6) discharge to the Salinas River for reuse by others downstream. The potential quantity of water exceeds about 2,500 AFY and could increase to several times that amount as the IWS grows. The water quality of the collected influent would be substantially improved since the effluent had filtered through the soil column, removing algae and other suspended solids and some trace constituents. For the IWS, such withdrawal would enhance both disposal pond and the percolation bed percolation rate, effectively increase effluent disposal capacity, and hence, treatment capacity.

5.1.6 City of Salinas and MRWPCA Storm Water Diversion Implementation and Water Supply

Project Applicant:

City of Salinas and Monterey Regional
Water Pollution Control Agency (MRWPCA)

Main Benefit Categories Met:

Water Quality; Water Supply; Flood
Management, Environmental; Community

Requested Amount:

\$730,000

Match Funds:

\$366,000

Benefit Metrics Value(s):

- Pollutants removed/reduced:
 - 90 lb/yr Ammonia as N (Unionized)
 - 1,904 lb/yr Ammonia as NH₃
 - 332,127 lb/yr Chloride
 - 50 Chlorophyll a (water column)
 - 5 lb/yr Chlorpyrifos
 - 311 lb/yr Diazinon
 - 2,003,288 lb/yr Dissolved Solids (Total)
 - 40,563 lb/yr Nitrate as N
 - 2,017 lb/yr OrthoPhosphate as P
 - 216,783 lb/yr TSS Pollutant Load
- 1,400 AFY of storm water treated/captured

Project Updates (2016):

- Project received Storm Water Grant Program Proposition 1 Round 1 Implementation Funding which will be matched with local funds

Project Summary:

This project focuses on storm water management and water reclamation/water supply. The project will divert dry weather urban surface water discharge from south Salinas into the City's Blanco Detention Basin. Water from the detention basin will then be sent to the MRWPCA regional wastewater treatment plant. Once reclaimed, diverted water could be used for dry-season water supply (e.g., as agricultural irrigation water). In parallel, wet weather and dry weather surface water runoff from the City's northern neighborhoods will be similarly diverted for reuse. Surface water runoff that currently flows into the Reclamation Ditch will be diverted and reclaimed. After treatment, MRWPCA will direct the recycled water to where it will mitigate seawater intrusion and provide additional water for agriculture in the northern Salinas River valley as part of the Castroville Seawater Intrusion Project (CSIP). This project will reduce pollution to downstream receiving waters, and potentially add to recycled water supplies.

5.1.7 Salinas River Flood Risk Reduction and Habitat Improvement Project

Project Applicant:

Monterey County Water Resources Agency (MCWRA)

Main Benefit Categories Met:

Water Supply; Flood Management; Environmental; Community

Requested Amount:

\$787,500

Match Funds:

\$262,500

Benefit Metrics Value(s):

- 100 acres restored; 100,000 cubic yards of sediment removed

Project Updates (2016):

- Project received set of 5 year permits
- A pilot project was conducted upstream of Planning Area near King City
- Project team is gauging interest in downstream portion of Salinas River (within Planning Area) as the land is privately owned and will require public and private partnership

Project Summary:

The project provides long-term guidance and outlines maintenance procedures that will be used along the Salinas River mainstem and portions of San Lorenzo Creek, Bryant Canyon Channel, and Gonzales Slough to conduct stream maintenance activities (i.e., non-native and native vegetation treatment, sediment management) on a voluntary basis to maximize flood flow capacity and minimize bank erosion, while minimizing environmental effects, helping to protect against flooding during and after major storm events. Furthermore, the removal of invasive species (such as *Arundo*) not only improves conveyance capacity of the channel, but also frees up additional water supply for groundwater infiltration. As conditions change or are updated, or as environmental regulations evolve, the project would also evolve to keep pace. MCWRA proposes to administer the project for up to 10 years. The central tenet of the project is that maintenance activities are conducted using an informed and systematic approach to minimize stream impacts while providing improved flow conveyance.

5.1.8 Salinas River Flood Risk Reduction Project

Project Applicant:

Monterey County Water Resources Agency
(MCWRA)

Main Benefit Categories Met:

Water Supply; Flood Management;
Environmental; Community

Requested Amount:

\$420,000

Match Funds:

\$140,000

Benefit Metrics Value(s):

- None identified

Project Updates (2016):

- No project updates

Project Summary:

The project will fund the preparation of a combined National Environmental Policy Act/California Environmental Quality Act (NEPA/CEQA) document for the Salinas River Flood Risk Reduction Project, which allows channel maintenance activities on the mainstem of the Salinas River. MCWRA has partially funded this effort but additional funding is requested to complete the work, allowing the Salinas River Flood Risk Reduction Project to be implemented. Flooding of agricultural lands within the Salinas Valley, adjacent to the river, has occurred during conditions when in-channel sandbars and riparian vegetation including invasive plants impede high flows. Additionally, limited flood flow capacity in high rainfall years has caused damage or destruction to public infrastructure and private property. Furthermore, the removal of invasive species (such as *Arundo*) frees up additional water supply for groundwater infiltration. As such, MCWRA developed and administers the Salinas River Flood Risk Reduction Project to enhance flood protection, improve riparian habitat and reduce flood damage.

5.1.9 Water Supply Reliability Project

Project Applicant:

Monterey County Water Resources Agency
(MCWRA)

Main Benefits Categories Met:

Water Supply; Flood Management;
Environmental; Community

Requested Amount:

\$2,605,800

Match Funds:

\$868,600

Benefit Metrics Value(s):

- None identified

Project Updates (2016):

- Jarvis Lateral portion of project is partially designed.

Project Summary:

The Water Reliability Project is designed to address the deferred maintenance and improvement of MCWRA facilities used in its operations. The age of many of the facilities critical to the operation of the MCWRA are 20 to 60 years old. While operational, most of these older facilities have had maintenance or improvements, due to new requirements, deferred. This project consists of several discrete maintenance tasks and improvements at several facilities including the Nacimiento Dam and Hydroelectric Facility, San Antonio Dam, Reclamation Ditch, Castroville Seawater Intrusion Project, and Salinas River Diversion Facility. Performing these maintenance tasks and improvements are critical to MCWRA's operations that provide conservation, flood control, recreation, fight seawater intrusion, and increase water source diversity.

5.1.10 Blanco Drain Diversion to MRWPCA Regional Treatment Plant

Project Applicant:

Monterey Regional Water Pollution Control Agency (MRWPCA)

Main Benefits Met:

Water Quality; Water Supply, Flood Management; Environmental; Community

Requested Amount:

\$2,000,000

Match Funds:

\$4,362,065

Benefit Metrics Value(s):

- 8,000 AFY of storm water diverted, treated and reused

Project Updates (2016):

- Project received Storm Water Grant Program Proposition 1 Round 1 Implementation Funding which will be matched with local funds

Project Summary:

The Monterey Regional Water Pollution Control Agency and Monterey County Water Resources Agency are working collaboratively to help divert, convey and treat agricultural return water from the Blanco Drain for maximum beneficial use. The flows from the Blanco Drain would be received at the minimum primary and secondary wastewater treatment. Depending on the time of year, the flows would undergo additional treatment at either the advanced water treatment facilities for the Pure Water Monterey project or the water would be sent to the tertiary treatment plant and then moved to the growers in the CSIP area as recycled water. This project will require a new pump station and conveyance appurtenances to deliver the water to MRWPCA's Regional Treatment Plant. Flows in the Blanco Drain peak in the summer months yet have continuous flow during the winter months. Diverting flows from the Blanco Drain during the summer will help bolster flows in the Regional Treatment Plant which will lead to an increase the amount of water to be recycled and reused by the urban and agriculture sectors.

5.1.11 Storm Water Return Facilities from the Salinas Industrial Wastewater Facility to the MRWPCA Salinas Pump Station

Project Applicant:

Monterey Regional Water Pollution Control Agency (MRWPCA)

Main Benefit Categories Met:

Water Quality; Water Supply; Flood Management; Environmental; Community

Requested Amount:

\$5,000,000

Match Funds:

\$2,500,000

Benefit Metrics Value(s):

- 8,000 AFY of storm water diverted

Project Updates (2016):

- Project received Storm Water Grant Program Proposition 1 Round 1 Implementation Funding which will be matched with local funds
- Project to be powered by solar installed as of November 2016

Project Summary:

The City of Salinas and MRWPCA are working collaboratively to utilize existing infrastructure to help divert, store, convey and treat storm water and industrial waste water for maximum beneficial use. This project will repurpose existing infrastructure to bring back water from the Salinas Industrial Waste Facility Ponds to the Salinas Pump station. The new source waters would include the following: 1) water from the City of Salinas agricultural wash water system; 2) storm water flows from the southwestern part of the City of Salinas; 3) surface water and agricultural tile drain water that is captured in the Reclamation Ditch; and 4) surface water and agricultural tile drain water that flows in the Blanco Drain. The storm water would be stored in the ponds and conveyed to MRWPCA's Regional Wastewater Treatment Plant (RTP) and treated to recycle it for injection into the Seaside Groundwater Basin (and later extracted for replacement of existing municipal water supplies) and to provide an additional 8,000 AFY of recycled water for agricultural irrigation in northern Salinas Valley through the CSIP system.

5.1.12 Disadvantaged Community Water Quality and Conservation Program

Project Applicant:

San Jerardo Cooperative, Inc.

Main Benefits Categories Met:

Water Quality; Water Supply; Flood Management; Environmental; Community

Requested Amount:

\$2,500,000

Match Funds:

None (DAC exemption)

Benefit Metrics Value(s):

- 25 AFY of wastewater treated/reused
- About 350 DAC residents served

Project Updates (2016):

- County recently made some improvements to the drainage onto the property which has temporary reduced flooding
- In the planning phase to do a water recycling study however the engineering and consulting company recently backed out
- Currently working with MCWRA and nearby farmers to formulate water management best practices to help with onsite flooding

Project Summary:

The Program will address severe water supply and water quality needs for three Disadvantaged Communities. The Alpine Court and San Vicente Road communities in rural south Monterey County have drinking water wells with samples testing in excess of public health standards for nitrates. Septic systems on sites are aging and one has been deemed in need of complete replacement. The contaminated wells and failing septic systems will be replaced with new, deeper well installations and upgraded wastewater systems. The Wastewater Treatment Plant at the San Jerardo Cooperative will be upgraded to meet State guidelines and County code requirements to allow recycled treated water to be used for on-site irrigation. In addition, storm water improvements will be installed at the entrance to the Cooperative to divert storm related flows and prevent seasonal flooding of public roadways. Finally, a water conservation program consisting of installation of “water saver” plumbing fixtures, grey water connections, rainwater collection features and low water use landscaping will be included for all three projects participating in the Disadvantaged Community Program. The program will include workshops with training provided by Ecology Action.

5.1.13 Salinas Multi- Benefit Floodplain Management

Project Applicant:

The Nature Conservancy

Main Benefits Met:

Water Supply; Flood Management;
Environmental; Community

Requested Amount:

\$866,053

Match Funds:

\$288,684

Benefit Metrics Value(s):

- 92 miles of Salinas River restored

Project Updates (2016):

- No project updates
- Project proponent was not able to be reached for one-on-one project interview process

Project Summary:

The Multi-Benefit Salinas River Management Project is a collaborative partnership with growers, water resource managers, county, state and federal agencies, conservation groups and other stakeholders to develop an adaptive approach to flood risk reduction, groundwater recharge, community health and safety, and riparian and coastal biodiversity. Partners will organize into 'management neighborhoods' to model flood risk, nutrient fate and transport, and water balance to design integrated management strategies to build consensus on existing conditions, costs of different management strategies, and how to optimize benefits. Strategies will include off-channel flood attenuation and storage areas (e.g., ponds, bypasses, compound channels), coordinated passive and active management of native vegetation for enhanced habitat, flood conveyance, and water quality treatment; and removal of Arundo. Market mechanisms and tools, such as risk pools, cost shares, and benefits transfers, will be developed in coordination with regulatory agencies, industry and other partners to maximize positive outcomes across socioeconomic and ecological benefits.

5.1.14 Projects Removed from Consideration

As noted earlier, there were five projects that were removed from consideration in the evaluation and prioritization process. These projects were initially considered because they met the two pre-screening criteria outlined in Section 5.1 (i.e., perceived to be storm water related and were located within the Planning Area). The projects had initially passed the pre-screening criteria based upon the information provided in the project proposal forms, however, upon deeper review and evaluation of each of the five projects, it was evident they would not provide well defined storm water or dry weather runoff benefits within the Planning Area. Several of the projects were removed because they were either geographically outside of the Planning Area, were still in a planning stage from a timing perspective and/or were for monitoring which would assist in assessing benefits, but do not derive specific benefits. Many of the projects will be considered in the larger GMC SWRP slated for development in 2017 but did not fit into this focused Greater Salinas Area SWRP. Most of the projects were removed from consideration during the one-on-one interviews with the project proponents (see Section 5.3 for more information about the interview and collaboration process with the project proponents). The five projects that were removed are:

- The MCWRA Salinas Valley' Water Project, Phase II
- The following three projects from the Central Coast Wetlands Group:
 - Development and Evaluation of Climate Change Response Strategies in the Elkhorn Slough, Gabilan and Salinas River Watersheds
 - Study of Environmental Services from Nutrient Reducing BMPs
 - Expansion of the Coast Confluence Water Monitoring System to Support The Greater Monterey IRWM Plan
- The Monterey Bay Sanctuary Foundation's Making Monitoring Count project

5.2 SWRP Objectives

Project's proposal forms submitted to the GMC IRWM contained a section in which project proponents were provided the opportunity to identify which GMC IRWM Plan Objectives were relevant to their specific project. As the GMC IRWM Plan is based on a watershed, by extension the GMC IRWM Plan Objectives are also based on watersheds and therefore meet the SWRP Guidelines (SWRCB 2015) recommendation to use watershed goals and objectives.

A subset of the GMC IRWM Plan Objectives that were storm water or dry weather run off related formed the list of SWRP Objectives, as described in Section 1.1. Table 5.1 summarizes how the thirteen projects meet the SWRP Objectives. This table provides a preliminary check to make sure that the projects selected for prioritization (see Section 5.3 below) at minimum meet storm water and dry weather runoff related goals and objectives specific to the Greater Salinas Planning Area. The quantity and type of objectives each project met does not have bearing on the project evaluation and prioritization but rather provides a gauge on how well each project fits into this focused Greater Salinas Area SWRP. Projects met between 7 and 35 of the total 45 objectives. Most of the projects met at least one objective in each of the five categories (i.e., water supply, water quality, flood management, environmental, and community).

5.3 Approach for Evaluation and Prioritization of Projects

This section outlines the approach taken in the evaluation and prioritization of projects. The method used in this SWRP is based upon the SWRP Guidelines (SWRCB 2015) which recommend a project prioritization and screening process that involves both tangible (i.e., quantitative) benefit and intangible benefit evaluations. As stated in Section 5.1, projects were initially pre-screened and resulted in the 13 projects selected for evaluation under this plan because the projects provide storm water or flood management focus with clear benefits and are located within the planning area. Three scoring categories were developed for this plan and are presented below:

1. Scoring Category 1: Two questions regarding project funding availability and project location and land access, as further described in Section 5.2.1.
2. Scoring Category 2: A multiple benefits analysis based upon the main and additional benefits provided in Table 4 of the SWRP Guidelines (SWRCB 2015), as further described in Section 5.2.2.
3. Scoring Category 3: A quantitative metrics-based benefit analysis based upon the quantitative metrics suggested in the SWRP Guidelines (SWRCB 2015), as further described in Section 5.2.3.

A total of 250 points are distributed between the three scoring categories with 80 points for Scoring Category 1; 50 points for Scoring Category 2 and 120 points for Scoring Category 3. The distribution of the total points to the three scoring categories reflects both the relative importance derived from the SWRP guidelines as well as a means of balancing the merits of each project. Points were assigned to a variety of elements within each scoring category and summed to give a total score per category as detailed in Sections 5.3.1- 5.3.3 below.

Each of the categories were then summed at the end to give a total project score. Projects were ranked based on their total scores. The scoring process is summarized in Table 5.2.

Projects were evaluated based upon their project proposal forms submitted to the GMC IRWM and also during one-on-one interviews with the SWRP consultant team and the project proponent. Since the projects were selected from a 2016 GMC IRWM project solicitation targeting storm water projects, the interview component allowed proponent entities to provide valuable updates to their projects such as changes in secured funding, new or altered commitments from outside entities towards shared future costs (i.e., operations and maintenance, volunteer hours, etc.), new developments in progress and status of the project (i.e., secured land access, etc.), and any other pertinent changes to the project since the time the project form was submitted. Additionally, interviews provided an opportunity for the SWRP author team to review and assess the claimed storm water related benefits of each project. Proponents were asked to support claims made for various benefits (both main and additional) as well as identify quantitative metrics-based benefits.

Table 5.2 Project Prioritization, Scoring, and Metrics Analysis

Project Information			Scoring Category 1: Project Funding and Land Availability				Scoring Category 2: SWRP Multiple Benefits Analysis																				Scoring Category 3: SWRP Quantitative Benefit Metrics Analysis				Project Scoring and Prioritization
Project Number	Project Applicant	Project Title	Categories:				Water Quality			Water Supply			Flood Management		Environmental					Community			No. of SWRP Main Benefits Met (8 max)	No. of SWRP Secondary Benefits Met (9 max)	Total No. of Intangible Objectives-based Benefits (19 max)	Category 2 Score (50 max)	Benefit Metrics Analysis Type	Quantitative Benefit Metrics Value	Summary of SWRP Relative Benefits	SWRP Project Score (250 max)	
			Permanent Funding to achieve benefit?	Project located on lands with Public ownership?	Category 1 Score (80 max)	Match Provided	Increased filtration and/or treatment of runoff	Nonpoint source pollutant control	Reestablished natural water drainage and treatment	Water supply reliability	Conflicts use	Water conservation	Decreased flood risk by reducing runoff rate and/or volume	Reduced sanitary sewer overflows	Environmental and habitat protection and improvement	Reduced energy use, greenhouse gas emissions, or provides a carbon sink	Reestablishment of the natural hydrograph	Increased urban green space	Water temperature improvements	Employment opportunities provided	Public education	Community involvement							Enhance and/or create recreational and public use areas		Scoring: (4 points for each benefit)
6	City of Salinas / MRWPCA	City of Salinas/MRWPCA A Stormwater Diversion Implementation and Water Supply	Y	Y	80	\$366k	X	X		X	X	X	X	X				X	X	X	X		7	6	13	40	Volume of SW captured, Pollutants reduced, Volume of GW recharged, Volume of runoff reduction	90 lb/yr Ammonia as N (Unionized), 1,904 lb/yr Ammonia as NH3, 332,127 lb/yr Chloride, 50 Chlorirphyll a (water column), 5 lb/yr Chloropyrifos, 311 lb/yr Diazinon, 2,003,288 lb/yr Dissolved Solids (Total), 40, 563 lb/yr Nitrate as N, 2,017 lb/yr OrthoPhosphate as P, 216,783 lb/yr TSS Pollutant Load Reduced. 1,400 AFY volume treated/captured	◓	240	
5	City of Salinas	Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements	Y	Y	80	\$7.2m	X	X		X	X	X	X	X				X	X	X	X		7	6	13	40	Volume of SW captured, supply augmented, reduced sanitary sewer flows; Pollutants reduced	+ 2,500 ac-ft/yr	◑	210	
11	MRWPCA	Stormwater Return Facilities from the Salinas Industrial Wastewater Facility to the MRWPCA Salinas Pump Station	Y	Y	80	\$2.5m	X	X		X	X	X	X	X				X	X	X	X		7	6	13	40	Volume of water diverted (via Reclamation Ditch); Pollutants reduced	8,000 AFY	◑	210	
1	Central Coast Wetlands Group	Coastal Wetland Erosion Control and Dune Restoration	Y	Y	80	\$356k	X	X	X	X			X		X	X	X		X	X	X	X	6	7	13	38	Area restored (acres); Nitrate reduction; Flood attenuation; Size of DAC population served	126 acres restored	◑	178	
12	San Jerardo Cooperative, Inc	Disadvantaged Community Water Quality and Conservation Program	Y	Y	80	DAC exempt	X		X	X	X	X		X		X			X	X	X	X	7	5	12	38	Volume of water treated; Size of DAC population served;		◑	178	
3	Central Coast Wetlands Group	Water Quality Enhancement of the Tembladero Slough Phase II	Y	Y	80	\$243k	X	X	X				X		X	X	X		X	X	X	X	5	6	11	32	Area restored (acres); nonpoint source pollutant control; size of DAC population served	60 acres restored	◑	172	
10	MRWPCA	Blanco Drain Diversion to MRWPCA Regional Treatment Plant	Y	N	40	\$4.4m	X	X		X	X	X	X		X				X	X	X	X	7	4		36	Volume of water diverted, treated, reused; Pollutants reduced	8,000 AFY	◑	166	
7	MCWRA	Salinas River Flood Risk Reduction and Habitat Improvement Project	Y	N	40	\$263k			X	X	X	X		X		X				X	X	X		6	4	10	32	Area river restored; Pounds of sediment removed	100 acres restored; 100,00 cubic yards sediment removed	◑	162
2	Central Coast Wetlands Group	Northern Gabilan Mountain Watershed Management Project	Y	N	40	\$281k	X	X	X	X			X		X		X		X	X	X	X	6	6	12	36	Environmental habitat restoration; Flood attenuation; Pollutants reduced;	(To be quantified when final sites are selected)	◑	106	
4	City of Salinas and Big Sur Land Trust	Carr Lake Riparian Habitat Restoration Plan	N	N	0	\$250k	X	X	X	X	X		X		X	X	X	X	X	X	X	X	8	7	15	46	Area restored (acres); Pollutants reduced; Volume of SW captured, treated, and reused; Size of DAC population served	73-480 acres restored	◑	106	
9	MCWRA	Water Supply Reliability Project	Y	Y	80	\$869k			X	X		X	X		X					X			4	2	6	20			○	100	
8	MCWRA	Salinas River Flood Risk Reduction Project	N	Y	40	\$140k				X	X	X	X		X		X			X	X	X	6	3	9	30			○	70	
13	The Nature Conservancy	Salinas Multi- Benefit Floodplain Management	N	N	0	\$289k		X	X	X	X		X	X	X				X	X	X		6	5	11	34	Area or length of river restored, non-native removal	92 miles of river restored (total Salinas River); x miles in Greater Salinas Area SWRP	◑	64	

5.3.1 Scoring Category 1 Development and Analysis

Under the guidance for prioritizing storm water and dry weather runoff capture projects, the SWRP Guidelines (SWRCB 2015) recommend projects or programs supported by proponent entities that will create, “permanent, local, or regional funding.” During evaluation of the project proposals information regarding available funding was provided, however, a deeper discussion regarding project funding occurred during the project interviews. If projects were able to secure some sort of permanent funding to achieve the claimed benefits they were assigned a yes (i.e., “Y”) for a value of 40 points in Table 5.2. Projects without any other funding commitments were assigned a no (i.e., “N”) for a value of 0 points in Table 5.2.

In addition to funding, the SWRP Guidelines (SWRCB 2015) recommends projects “use existing publicly owned lands and easements” in accordance with the Water Code §10562(e). During evaluation of the project proposals limited information regarding the project’s use of publicly owned lands or easements was available, therefore, during the project interviews additional site location and land agreements information was obtained directly from the project proponents. Similar to the scoring for the funding question, projects were assigned a yes (i.e., “Y”) for a value of 40 points if land access or agreements were available and were assigned a no (i.e., “N”) for a value of 0 points if these access or agreements weren’t available. Projects were assigned either a total of 0, 40, or 80 points for Scoring Category 1 based on the answers to the funding and project land access questions. Scoring Category 1 was assigned a weight of 30 percent in Table 5.2.

5.3.2 Scoring Category 2 Development and Analysis

A multiple benefit analysis was performed and is based on the main and secondary (i.e., additional) benefits list from SWRP Guidelines (SWRCB 2015). There are 17 benefits total which fall under five broad categories: water quality, water supply, flood management, environmental, and community. In Table 5.2 a main benefit was shaded in gray to distinguish it apart from the secondary benefits. The SWRP Guidelines require that projects meet “at least two or more” main benefits and as many secondary benefits as possible. In order to include the benefit analysis in the ranking and prioritization of projects, points values were assigned to the benefits with main benefits being allotted 4 points each and secondary benefits being allotted 2 points each.

Each of the 13 projects was evaluated against each of the 17 benefits. Projects were given an “X” signifying a claimed specific benefit. If a benefit was not claimed by a project proponent the space was left blank. The number of main and secondary benefits were totaled in Table 5.2 and multiplied by the assigned point value. Points were totaled for each project, with a maximum of 50 points allowed for Scoring Category 2.

An initial cursory review of the project proposals provided the information used to interpret and dispersed benefits claimed by each project proponent. This resulted in an initial set of main and secondary benefits allocated to each project. During project interviews this initial set was refined further based on discussions with the project proponents. In some instances benefits initially given to a project were taken away and in other instances more benefits were awarded.

This allowed project proponent entities to defend benefits claimed for their projects as well as explain why certain benefits may be too difficult to claim and therefore would not be relevant to their project goals.

5.3.3 Scoring Category 3 Development and Analysis

The purpose of Scoring Category 3 is to add a quantitative metrics-based approach to capture the tangible benefits provided by each project and to demonstrate the specific benefits each project will have on the Planning Area. The quantitative metrics evaluation was based on the criteria described below and documented in Table 5.2.

The approach included first identifying a quantitative metric that is specific to one or more main and secondary benefits (herein referred to as “benefit metrics”). Benefit metrics were developed from the information provided in the project form in combination with the one-on-one project interviews with the proponents. Some projects had a range of benefit metrics such as acres or length of area restored, population size, pounds per year of pollutants reduced, acre-feet per year of volume of water diverted and/or treated, etc. with varying quantities. Once the benefit metric was identified for a given project, a value was identified. As an example, Project 1, the Central Coast Wetlands Group’s Coastal Wetland Erosion Control and Dune Restoration Project is claiming 126 acres of restored dunes. Not all projects have a reported quantifiable value(s) for the benefit metrics at this time. Some projects while they had identified a benefit metrics were not able to quantify the metric(s) due to the project still being in the planning stages. For these cases benefit metrics were identified without any corresponding values so that these can be quantified at a later time.

While most of the projects have some sort of calculable benefit metrics value, not all have benefit metrics that are comparable either because they are completely different metrics types or were reported in different units. Since most of these project specific benefit metrics aren’t directly analogous, a visual comparative ratings system was developed. The comparative ratings system is based on visual circles that are either empty (not filled), one quarter filled, half filled, three quarters filled, or completely filled. Points were assigned to each quantity of fill, as follows:

- Empty circles (○) were assigned a value of 0. This rating meant the project was not able to identify benefit metrics with current quantifiable values or values to be calculated later.
- One quarter filled circles (◐) were assigned a point value of 30. This rating meant the project was able to identify one or more benefit metrics however could not quantify the metric(s) at this time.
- Half-filled circles (◑) were assigned a point value of 60. This rating meant that the project met all of the criteria of the previous rating (one quarter-filled circle) and in addition were able to identify one or more benefit metrics with at least one corresponding quantified values. Projects were kept from a higher rating (see above) if the value quantities were low, the metrics had minimal or insignificant perceived storm water impact, or if only one of several metrics was able to be quantified.
- Three quarter filled circles (◔) were assigned a point value of 90. This rating meant that the project met all of the criteria of the previous two ratings (one quarter- and half-filled circles) and in addition were able to identify one or more benefit metrics with at least one

corresponding quantified values. Projects were given this rating if they had higher quantity values or had more impactful or significant storm water benefit metrics than rating 2 (see above).

- Completely filled circles (●) were assigned a point value of 120. This rating meant that the project met all of the criteria of the previous three ratings (one quarter-, half-, and three quarter-filled circles) and in addition were able to identify one or more benefit metrics with one or more corresponding quantified values. Projects were given the full rating score if they were able to identify multiple benefit metrics with corresponding values for each. Each benefit metric must also be deemed to have higher quantity values and more impactful or significant storm water benefit metrics than the previous three ratings.

Several projects in the evaluation did not include clear and defined quantitative benefits metrics values. A summary of the assigned scoring and the quantitative benefit metrics values for each project is included in Table 5.2.

5.4 Project Prioritization and Selection

To summarize Section 5.3, up to 80 points were available for Scoring Category 1, up to 50 points were available for Scoring Category 2, and up to 120 points were available for Scoring Category 3 for a maximum score of 250 points. The distribution of points between the scoring categories is significant in that the way in which each category's total score was developed is based on the perceived importance of each criterion in the SWRP Guidelines (SWRCB 2015). For example, the land and funding availability questions (i.e., Scoring Category 1) and the ability to identify and quantify benefit metrics (i.e., Scoring Category 3) were perceived as more important in the guidelines than the ability for each project to have multiple benefits. Also since it was evident that most projects had multiple benefits; therefore, while important, Scoring Category 2 does not provide a means to discern the relative merit of each project as they would score similarly to each other so was given a modest distribution of total points towards Scoring Category 2.

Table 5.2 presents the current prioritization of projects. In total, 13 projects were prioritized and ranked yielding total scores from 64 points to 240 points based on the scoring system developed in Section 5.3. The scores developed in this SWRP are for the purposes of prioritizing and ranking projects as required by the SWRP Guidelines. The purpose is to identify and develop projects with clear storm water and dry weather runoff goals that also provide multiple public water quality and supply benefits, and have been identified, prioritized, and selected based on a metrics-driven analysis. The relative prioritization of projects in this plan does not restrict any project from applying to or attaining State grant money funded by any bond measure approved by voters after January 2014, which includes Proposition 1 funding for implementation.

Section 6: Implementation Strategy and Schedule

This section presents an initial implementation strategy and schedule for this Greater Salinas Area SWRP; the GMC SWRP will revisit and update implementation strategies and schedules.

6.1 Resources for Implementation

The Greater Salinas Area SWRP serves as the foundation for the development of the SWRP for the GMC SWRP, both of which will be submitted to the RWMG for the GMC IRWM Region for incorporation into the GMC IRWM Plan. As part of the RWMG, a “permanent” Funding Committee has been convened to identify sources of funding for the IRWM Plan projects and programs, which by extension include SWRP projects. These funding sources include private foundation grants; State IRWM, storm water, grant funds, and state and federal water quality grant funds; monetary contributions from RWMG entities; and in-kind staff time contributed by members of the RWMG. The Funding Committee is also investigating other potential means of long-term support, including:

- Collaboration with other agencies and organizations, external to the RWMG, that share similar goals and that might benefit from IRWM Plan and SWRP implementation, for donation of financial contributions or other resources toward the IRWM planning effort.
- Potentially, grant funds from America’s Great Outdoors (AGO) Initiative. The IRWM Plan and SWRP goals and objectives support most of the priority themes for the AGO.

Ongoing IRWM planning and “maintenance” by the Funding Committee for the IRWM Plan and SWRP includes:

- Approximately 4-8 RWMG meetings a year, which will focus on alternative sources of funding for IRWM Plan and SWRP projects and programs, ongoing water resource issues in the region, integration of projects, the Water Resource Project Coordination process, ongoing outreach and assistance to DACs, and opportunities for collaboration between RWMG members.
- Project solicitations for the IRWM Plan, which will occur about every 18 months.
- Committee work associated with the project solicitations (e.g., project ranking and project review).
- Project monitoring and Plan performance evaluation, which is expected to occur bi-annually.

In addition to seeking financial support for the ongoing IRWM planning process, the Funding Committee is also tasked with identifying alternative, non-IRWM sources of grant funds and other means to help implement projects and programs in the IRWM Plan. Potential funding sources include (where appropriate):

- Federal grant programs such as U.S Fish and Wildlife Service grants, National Fish and Wildlife Federation grants, Economic Development Administration grants, U.S. Department of Agriculture grant programs, U.S. Bureau of Reclamation Title XVI funds, U.S. Department of Agricultural Natural Resources Conservation Service Environmental Quality Incentives Program grants.
- State grant programs such as Department of Fish and Game Fisheries Restoration Grant Program funds; State Coastal Conservancy funds; State Water Resources Control Board Cleanup and Abatement Account grants, Supplemental Environmental Protection grants, and other water quality grants; and State Department of Water Resources grants.
- Local funds such as Transportation Agency for Monterey County grants
- Private grants such as California State Parks Foundation, Elkhorn Slough Foundation, Monterey Bay Sanctuary Foundation, Monterey County Agricultural and Historical Land Trust, and corporate gifts.
- Ratepayer fees
- Special taxes, assessments, and fees
- Loans such as the Clean Water State Revolving Fund loan.

6.2 Implementation Projects and Programs

The Greater Salinas Area SWRP is developed by entities with experience in developing and utilizing practices to ensure effective implementation of planning efforts.

The following projects and programs submitted to the Greater Salinas Area SWRP achieve multiple benefits and will ensure effective implementation by achieving plan storm water objectives:

- *Project 1: Coastal Wetland Erosion Control and Dune Restoration, Central Coast Wetlands Group
- Project 2: Northern Gabilan Mountain Watershed Management Project, Central Coast Wetlands Group
- *Project 3: Water quality enhancement of the Tembladero Slough Phase II, Central Coast Wetlands Group
- *Project 4: Carr Lake Riparian Habitat Restoration Plan, City of Salinas and Big Sur Land Trust
- **Project 5: Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements, City of Salinas

- **Project 6: City of Salinas/MRWPCA A Stormwater Diversion Implementation and Water Supply, City of Salinas / MRWPCA
- *Project 7: Salinas River Flood Risk Reduction and Habitat Improvement Project, MCWRA
- Project 8: Salinas River Flood Risk Reduction Project, MCWRA
- *Project 9: Water Supply Reliability Project
- **Project 10: Blanco Drain Diversion to MRWPCA Regional Treatment Plant, MRWPCA
- **Project 11: Stormwater Return Facilities from the Salinas Industrial Wastewater Facility to the MRWPCA Salinas Pump Station, MRWPCA
- *Project 12: Disadvantaged Community Water Quality and Conservation Program, San Jerardo Cooperative, Inc
- Project 13: Salinas Multi-Benefit Floodplain Management, The Nature Conservancy

As described in Section 5.1, the projects with a single * have progressed through planning and some design while the projects with a double asterisk ** have completed design and have funding for implementation. Table 5.2 in Section 5 identifies the projects and the corresponding SWRP objectives that are met.

6.3 Implementation Strategy

6.3.1 Submittal to Applicable IRWM Plan

The Greater Salinas Area SWRP will be submitted to the Greater Monterey IRWM RWMG for incorporation into the GMC IRWM Plan.

The Greater Salinas Area SWRP will serve as the foundation for the development of the GMC SWRP. The GMC SWRP is anticipated to be completed in 2018, therefore the content of this Greater Salinas Area SWRP will be incorporated into the future GMC SWRP.

The GMC SWRP will provide coverage for the GMC IRWM Region. The RWMG will be involved in all aspects of the GMC SWRP development (as they have in the development of the Greater Salinas Area SWRP) including all major decision points and milestones. Upon completion of the GMC SWRP, the RWMG will approve and adopt the SWRP, and will incorporate it into the IRWM Plan (either by reference or as an appendix).

6.3.1.1 Adaptive Management – Maintaining a Living Document

Once the Greater Salinas Area SWRP is folded into the GMC SWRP, the GMC SWRP will be considered a living document that will contain clear procedures for the RWMG to update the plan, track plan performance, and evaluate future projects. The Greater Salinas Area SWRP content will be updated as part of the GMC SWRP.

Ongoing adaptations to the GMC SWRP may include: recharacterization of water quality priorities; source assessment re-evaluation; effectiveness assessment of projects; updated metrics-based, quantitative analysis; adding or removing projects; and identification of completed projects.

6.3.2 Responsibilities

As part of the GMC IRWM, the RWMG will be responsible for the implementation of the future GMC SWRP. The RWMG consists of most of the SWRP project proponents, including:

- Big Sur Land Trust
- Central Coast Wetlands Group
- City of Salinas
- MRWPCA
- MCWRA
- San Jerardo Cooperative, Inc.

While not a member of the RWMG, the Nature Conservancy (as well as other regional stakeholders) is invited to attend RWMG meetings, participate in workshops, and provide input and comments on the SWRP.

As previously stated, this Greater Salinas Area SWRP was developed to support the storm water portion of the Pure Water Monterey Project. This SWRP, as well as the GMC SWRP involves close collaboration and coordination between the City of Salinas and MRWPCA. The two SWRPs span two IRWM groups and will involve cooperation between these regions in preparation and review of the SWRPs.

Project 5, Project 6, Project 10, and Project 11 are all part of a larger regional storm water project which was recently awarded \$10 million of Proposition 1 funding. These individual projects can be completed as standalone projects. The project partners include the City of Salinas and MRWPCA, and as a regional project has the support of the following: California Association of Sanitation Agencies; Monterey Regional Storm Water Management Program; City of Salinas; Monterey County; Luis A Alejo, Assemblymember, 30th District, California State Representative; GMC Integrated Regional Water Management Program; Monterey Bay National Marine Sanctuary; William W Monning, Senator, 17th district, California State Senate; Monterey County Resource Management Agency; Mark Stone, Assemblymember, 29th District, California State Representative; David Pendergrass, Mayor, City of Sand City; Monterey Peninsula Water Management District; Dale Huss, Chairman, Water Quality & Operations (joint venture MCWRA and MRWPCA); Monterey County Water Resources Agency; Grower-Shipper Association of Central California; Monterey County Farm Bureau.

Project 4: Carr Lake Riparian Habitat Restoration Plan is a joint effort between the City of Salinas and the Big Sur Land Trust. Big Sur Land Trust will be the owner of 73-acres of the Carr

Lake property and is working with the other landowners for conservation easements in Carr Lake. The City of Salinas owns adjoining property and/or has easement access where some infrastructure will be located.

6.3.3 Community Participation

Development and implementation of the Greater Salinas Area SWRP included input from the RWMG through regular RWMG meetings. In addition to those meetings, both MRWPCA and the City of Salinas held public meetings and were active in public education and outreach. These public meetings presented updates and information to the MRWPCA Board, Salinas City Council and other members of the public regarding the project elements.

In addition, members of MRWPCA staff give presentations regarding the MRWPCA/City of Salinas Storm Water Collection, Conveyance, Treatment and Reuse for the Salinas Region project at local city council meetings and often provide tours of the treatment and pumping facilities to interested persons and parties. MRWPCA advertises public meetings on their website, posting both full agendas, meeting packets, and approved meeting minutes for those interested in either attending or following MRWPCA activities (http://www.mrwPCA.org/about_governance_public_meetings.php).

Similarly, the City of Salinas maintains a website and public Facebook page. Both are used to advertise community meetings. The City's website maintains current meeting agendas and minutes for City Council, Board, and Commission meetings. These meetings are televised live on local TV station (Channel 25) and rebroadcast at 2:00 pm, and 7:00 pm on the Wednesday, Friday, Saturday, and Monday following City Council, Board, and Commission meetings. City leadership meeting agendas and minutes can be found on their website (http://www.ci.salinas.ca.us/leadership/agendas_minutes.cfm).

Pure Water Monterey has created a website (<http://purewatermonterey.org/>) and maintains an active public Facebook page (<https://www.facebook.com/PureWaterMonterey/>) and Twitter accounts as part of their public education and outreach program. The group led a panel discussion on the collaborative process for the project with the WaterReuse Association in March 2016. A public hearing was held in October 2015 to discuss the EIR.

6.3.4 Implementation Status Tracking

Plan performance tracking of the GMC SWRP (which will incorporate the Greater Salinas Area SWRP) will be conducted every two years or as appropriate as part of the IRWM Plan Performance Review. The review will evaluate progress made toward achieving IRWM Plan and by extension, SWRP objectives. Progress toward meeting IRWM Plan and SWRP objectives is directly tied to the implementation of projects, which will be tracked using the Data Management System described in Section 6.4. Two tables will be generated with each Plan Performance Review to show: 1) that the RWMG is implementing projects listed in the IRWM Plan/SWRP, and 2) that the RWMG is efficiently making progress towards meeting the objectives of the IRWM Plan/SWRP. As appropriate, project implementation will be tracked using the "Conservation Action Tracker" database, which is a data system for tracking land-use management improvements in the Central Coast region.

6.3.5 Timeline

As discussed previously, the Greater Salinas Area SWRP will be incorporated into the GMC SWRP, which will be adopted by the GMC IRWM Plan. Therefore, the mechanisms needed to implement the Greater Salinas Area SWRP, including funding strategies, responsibilities, tracking, and participation is already identified and has been in place through the RWMG, which will ensure SWRP implementation.

Implementation of specific projects identified in the SWRP is primarily dependent on funding, as well as project status. Table 6.1 below summarizes the funding status and when benefits are expected to be realized for each of the SWRP projects that were prioritized.

Table 6.1 SWRP Project Status and Completion Timeline

Project		Status	Completion Timeline ^(a)
1	Coastal Wetland Erosion Control and Dune Restoration	Active	0-5 Years
2	Northern Gabilan Mountain Watershed Management Project	Active	5-10 Years
3	Water quality enhancement of the Tembladero Slough Phase II	Active	0-5 Years
4	Carr Lake Riparian Habitat Restoration Plan	Active	0-5 Years
5	Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements	Active	0-5 Years
6	City of Salinas/MRWPCA A Stormwater Diversion Implementation and Water Supply	Active	0-5 Years
7	Salinas River Flood Risk Reduction and Habitat Improvement Project	Planned	5-10 Years
8	Salinas River Flood Risk Reduction Project	Planned	5-10 Years
9	Water Supply Reliability Project	Planned	5-10 Years
10	Blanco Drain Diversion to MRWPCA Regional Treatment Plant	Active	0-5 Years
11	Storm Water Return Facilities from the Salinas Industrial Wastewater Facility to the MRWPCA Salinas Pump Station	Active	0-5 Years
12	Disadvantaged Community Water Quality and Conservation Program	Active	0-5 Years
13	Salinas Multi- Benefit Floodplain Management	Planned	5-10 Years
(a) Assumes adequate funding and access to property.			

6.3.6 Federal, State, and Local Permits

There are a number of permits and permissions that must be obtained to implement the SWRP and its projects, including but not limited to:

- Federal

- National Environmental Policy Act
- Section 401 and 404 of the Clean Water Act
- State
 - California Environmental Quality Act
 - California Department of Fish and Wildlife Lake/Streambed Alteration Permit
 - General Permit for Discharges of Storm Water Associated with Construction Activity
 - Regional Water Quality Control Board NPDES permits and/or WDR
- Local
 - City/County development and encroachment permits
 - Municipal Storm water compliance
 - Local pretreatment programs

As part of the GMC IRWM Plan, the RWMG works to build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects. The Permit Streamlining Task Force holds meetings between federal, state, and local regulatory agencies, other water agencies, and project proponents to facilitate the permitting, planning, and implementation of water-related projects. It is anticipated that these meetings will be held during project planning and construction phases. These mechanisms developed for the GMC IRWM Plan will also be used for implementation of SWRP projects.

6.4 Implementation Performance Measures

6.4.1 Outcomes

The projects and programs from Section 5 were identified to ensure effective implementation of the SWRP and achieve multiple benefits for the Greater Salinas Area SWRP and GMC SWRP areas. Table 6.2 shows both the number of projects submitted to the Greater Salinas Area SWRP (out of 13 total) that will address each objective:

Table 6.2 Summary of Multiple-Benefits of Greater Salinas Area SWRP Projects

	Number of Projects (out of 13)	
	Main Objective	Secondary Objective
Environmental	13	12
Community	13	12
Flood Management	13	3
Water Supply	12	8
Water Quality	9	12

The table indicates that the Main Objective “best addressed” by projects submitted for the Greater Salinas Area SWRP is Environmental, Community and Flood Management, followed by Water Supply, then Water Quality. All of the projects are considered multi-benefit projects. Note that most of the projects meet every objective at least to some extent. Therefore, the implementation of the SWRP is expected to result in the following outcomes for the Greater Salinas Area:

1. Environmental:
 - a. Environmental and habitat protection and improvement
 - b. Reduced energy use, reduced greenhouse gas emissions, and/or additional locations for carbon sinks
 - c. Reestablishment of natural hydrographs
 - d. Water temperature improvements
2. Community:
 - a. Increased employment opportunities
 - b. Increased public education
 - c. Increased community involvement
3. Flood Management:
 - a. Decreased flood risk by reducing runoff rate and/or volume
 - b. Reduced sanitary sewer overflows
4. Water Supply:
 - a. Increased water supply reliability
 - b. Increased conjunctive use of groundwater and surface water (storm water)
 - c. Water conservation
5. Water Quality:
 - a. Increased filtrations and/or treatment of runoff
 - b. Greater non-point source pollution control
 - c. Reestablishment of natural water drainage and treatment

With every SWRP review and update, the objectives will be reviewed to assess the extent to which they are being achieved. As the GMC SWRP and IRWM Plan processes continue, new projects will be developed, either as concept proposals or as full implementation projects, to address the gaps in achieving the goals and objectives of the SWRP and IRWM Plans.

6.4.2 Quantification of Storm Water Management

Based on the projects prioritized for implementation by the Greater Salinas Area SWRP described in Section 5.1, this section summarizes the expected quantifiable storm water

benefits. As projects/programs are developed and implemented, it is anticipated that quantifiable benefits will be greater than originally estimated, especially in relation to Community benefits. The following projects include quantifiable benefits:

- Project 1 Coastal Wetland Erosion Control and Dune Restoration
- Project 2 Northern Gabilan Mountain Watershed Management Project
- Project 3 Water Quality Enhancement of the Tembladero Slough Phase II
- Project 4 Carr Lake Riparian Habitat Restoration Plan
- Project 5 Integrated Industrial Wastewater Conveyance and Treatment Facility Improvements
- Project 6 City of Salinas and MRWPCA Storm Water Diversion Implementation and Water Supply
- Project 7 Salinas River Flood Risk Reduction and Habitat Improvement Project
- Project 9 Water Supply Reliability Project
- Project 10 Blanco Drain Diversion to MRWPCA Regional Treatment Plant
- Project 11 Storm Water Return Facilities from the Salinas Industrial Wastewater Facility to the MRWPCA Salinas Pump Station
- Project 12 Disadvantaged Community Water Quality and Conservation Program
- Project 13 Salinas Multi- Benefit Floodplain Management

Community:

Project 12 will replace the drinking water system, install deeper wells, and upgrade wastewater systems of the two DAC communities of Alpine Court and San Vicente Road. In addition, the Wastewater Treatment Plant at the San Jerardo Cooperative will be upgraded to meet State guidelines and County code requirements to allow recycled treated water to be used for on-site irrigation. In addition, storm water improvements will be installed at the entrance to the Cooperative to divert storm related flows and prevent seasonal flooding of public roadways. Implementation of this project will benefit about 350 residents of these three DACs.

Environmental:

The following projects will benefit the environment:

- Project 1 will enhance and restore wetland and sand dune ecosystems in central Monterey Bay, and control erosion in salt marshes directly behind the dunes around Moss Landing.

- Project 2 consists of three phases to restore a sub-watershed within the upper Gabilan watershed, and serve as a model for restoration of watersheds within the Central Coast.
- Project 3 will implement a variety of water quality management innovations including the treatment train approach (i.e. detention/sedimentation features, pollutant filtration/ biological degradation of pollutants and water polishing areas) over twenty acres.
- Project 4 will turn the Carr Lake agricultural area into a multi-use facility that will include restoring wetland habitat areas.
- Project 7 provides long-term guidance and outlines maintenance procedures that will be used along the Salinas River mainstem and portions of San Lorenzo Creek, Bryant Canyon Channel, and Gonzales Slough to conduct stream maintenance activities (i.e., non-native and native vegetation treatment, sediment management) on a voluntary basis to maximize flood flow capacity and minimize bank erosion, while minimizing environmental effects, helping to protect against flooding during and after major storm events.
- Project 13 will design integrated management strategies to build consensus on existing conditions, costs of different management strategies, and how to optimize benefits. Strategies will include off-channel flood attenuation and storage areas (e.g., ponds, bypasses, compound channels), coordinated passive and active management of native vegetation for enhanced habitat, flood conveyance, and water quality treatment; and removal of Arundo.

Collectively, implementation of these projects will results in over 359 acres of restored habitat.

Flood Management:

The following projects will maximize and/or augment water supply through flood management:

- Project 5 will increase the collection and conveyance capacity of the City of Salinas' Industrial Wastewater System and upgrade the treatment capacity of the City's Industrial Waste Treatment Facility. This will allow the City capture storm water and divert it for treatment, in addition to industrial wastewater, for beneficial reuse. The new gravity sewers will be sized prevent overflows.
- Project 6 will divert wet weather flows from the City of Salinas' northern neighborhoods into the City's Blanco Detention Basin, which will send the water to the MRWPCA regional wastewater treatment plant for treatment and then injected into the groundwater basin. Implementation of this project will divert and reclaim surface water that would normally have entered the City of Salinas' sanitary sewer system, therefore protecting against sewer overflows.
- Project 10 will divert, convey and treat agricultural return water from the Blanco Drain for maximum beneficial use. This project will collect storm water from the southwestern part of the City of Salinas and from 6,400 acres of agricultural lands. Implementation of this

project will divert and reclaim surface water that would normally have entered the City of Salinas' sanitary sewer system, therefore protecting against sewer overflows.

- Project 11 will repurpose existing infrastructure to bring back water from the Salinas Industrial Waste Facility Ponds to the Salinas Pump station for conveyance to MRWPCA's Regional Wastewater Treatment Plant and treatment for injection into the Seaside Groundwater Basin. New diversions include diverting storm water away from the City's sanitary sewer to the industrial wastewater pipeline, thus reducing the chances of overflow.
- Project 12 will upgrade the San Jerardo Cooperative Wastewater Treatment Plant to allow treated storm water to be used for on-site irrigation. In addition, improvements will be installed at the entrance to the Cooperative to divert storm-related flows and prevent seasonal flooding of public roadways.

Water Supply:

Projects 5, 6, 9, 10, and 11 all improve and/or construct infrastructure to divert and convey surface water runoff to the MRWPCA Regional Wastewater Treatment Plant for treatment and injection into the Seaside Groundwater Basin. Project 12 will divert storm water that would normally cause seasonal flooding of roadways to an upgraded water treatment plant that will produce recycled water for reuse as on-site irrigation. Collectively, implementation of these projects will result in 3,900 AFY captured for beneficial use.

Water Quality:

The following projects will assist in meeting NPDES permits held by the City of Salinas and/or co-permittees of the Monterey Regional Storm Water Management Program by either directly treating runoff or restoring watershed processes to naturally treat or reduce polluted runoff:

- Project 1 will restore wetland and sand dune ecosystem, remove invasive non-native plants in the Central Monterey Bay.
- Project 2 will restore a subwatershed within the upper Gabilan watershed.
- Project 3 Phase II will construct 6 projects that will utilize a variety of water quality management innovations including the treatment train approach (i.e. detention/sedimentation features, pollutant filtration/ biological degradation of pollutants and water polishing areas).
- Project 4 is an effort to turn the agricultural area into a multi-use facility that will provide much needed open space and recreational facilities, as well as providing benefits such as improved peak flood control and water quality, and restoring wetland habitat areas.
- Project 5 will improve the City of Salinas' Industrial Wastewater System (IWS) and increase the capacity to collect the City's storm water runoff and industrial wastewater and convey it to the City's Industrial Waste Treatment Facility (IWTF).

In total, implementation of these projects will result in 1,300 tons of pollutant load reduction, 1,000,000 cubic yards of sediment removed, and 8,000 AFY of storm water treated.

6.4.3 Decision Support Tools, Monitoring, and Information Management

Progress toward meeting SWRP objectives is directly tied to the implementation of projects. The implementation of projects, along with associated monitoring data, will be tracked using a Data Management System (DMS) that takes advantage of database systems developed by statewide efforts. Because neither the Greater Salinas Area SWRP, GMC SWRP, nor the GMC IRWM Plan have ongoing, secure funding sources for data management, the RWMG has opted to utilize existing State database frameworks including, for surface water quality, those developed by the California Surface Water Ambient Monitoring Program (SWAMP) and by the California Environmental Data Exchange Network (CEDEN). Wetland and riparian habitat conditions will be measured and documented using the California Rapid Assessment Methods (CRAM), and applicable groundwater data will reside in GeoTracker using the Groundwater Ambient Monitoring and Assessment (GAMA) database.

The DMS for the GMC IRWM region includes data validation and quality assurance for the set of standardized key metadata fields. The data system provides a portal to data sets (measurements) hosted by the data generating organizations or those that have been integrated to regional, statewide, or national databases, including Wetland Tracker, CalDUCs, and CEDEN. The RWMG and its designated Data Coordinator is responsible for ensuring that data gets uploaded to the appropriate State database.

If a project requires monitoring, the project proponent is responsible for both development of the project-specific monitoring plans and for all monitoring activities. The project-specific monitoring plan requirements will vary based on the type of project being implemented. All projects must adhere to certain State guidelines for monitoring in order to be implemented through the IRWM Plan, and by extension, the SWRP. Through project-specific monitoring efforts, the Conservation Action Tracker, and measurable objectives, the RWMG intends to demonstrate over time that the GMC IRWM Plan and SWRP are meeting their goals and objectives.

The project-specific monitoring plan requirements will vary based on the type of project being implemented. All projects must adhere to certain State guidelines for monitoring in order to be implemented through the IRWM Plan and the SWRP. These include:

- Projects that involve surface water quality must meet the criteria for and be compatible with SWAMP, (http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml).
- All projects that involve groundwater quality must meet the criteria for and be compatible with GAMA, (<http://www.waterboards.ca.gov/gama/>).
- All projects that involve wetland restoration must meet the criteria for and be compatible with the State Wetland and Riparian Area Monitoring Plan (WRAMP, http://www.waterboards.ca.gov/mywaterquality/monitoring_council/wetland_workgroup/docs/2010/tenetsprogram.pdf)

Any projects that do not fall into one of the above categories must, at minimum, address the following:

1. Clearly and concisely (in a table format) describe what is being monitored for each project. Examples include photo monitoring, water depth, flood frequency, and effects the project may have on habitat or particular species (before and after construction), etc.
2. Measures to remedy or react to problems encountered during monitoring. An example would be to coordinate with the Department of Fish and Game if a species or its habitat is adversely impacted during construction or after implementation of a project.
3. Location of monitoring (with a map).
4. Monitoring frequency.
5. Monitoring protocols/methodologies, including who will perform the monitoring.
6. Procedures to ensure the monitoring schedule is maintained and that adequate resources (budget) are available to maintain monitoring of the project throughout the scheduled monitoring timeframe.

6.4.4 Mechanisms to Adapt Project Operations and Plan Implementation

Through project-specific monitoring efforts, the Conservation Action Tracker, and measurable objectives, the RWMG will adapt project operations and plan implementation to ensure that IRWM Plan and SWRP goals and objectives are being met.

Plan Performance Review discussed in Section 6.3 includes an adaptive management process that will enable the RWMG to respond to lessons learned from the project monitoring efforts and to utilize new information, particularly as new data regarding climate change impacts and vulnerabilities for the GMC region become available. With this information, the RWMG may choose to modify IRWM Plan and SWRP objectives, the measurability of those objectives, the use of resource management strategies, or the project review process; and these decisions will, in turn, dictate the types of projects that will be prioritized and implemented in the future.

6.4.5 Mechanisms to Share Performance Data

The DMS for the GMC IRWM region provides a portal to data sets (measurements) hosted by the data generating organizations or those that have been integrated to regional, statewide, or national databases such as:

- **Central Coast Action Tracker:** The Central Coast Action Tracker is an effort between the RWMG and the Central Coast Resource Conservation Districts. The Action Tracker will be an online tool (currently under construction) that will allow project proponents to register and update information on conservation projects across the region in order to track efforts and improve stakeholders' ability to evaluate collective impacts and effectiveness. The vision is to create a new website which will detail information on

various conservation and water quality related projects throughout the Central Coast, including those from the IRWM Plan. Website: <https://www.ccactiontracker.org/>

- GAMA: All projects that involve groundwater quality must meet the criteria for and be compatible with Gama. Website: http://www.waterboards.ca.gov/gama/geotracker_gama.shtml
- SWAMP: Projects that involve surface water quality must meet the criteria for and be compatible with SWAMP. Website: http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml
- CEDEN: CEDEN was created by the State Water Resources Control Board with support from the Surface Water Ambient Monitoring Program (SWAMP) to include all available statewide data (such as that produced by research and volunteer organizations). Website: <http://www.ceden.org/>
- Wetland Tracker: Projects that involve wetland restoration must be uploaded to the California Wetland Tracker. Website: <http://www.californiawetlands.net/tracker/>
- CalEEMod: CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. We are requiring all IRWM Plan projects to do the CalEEMod assessment, summaries of which can be entered in the Action Tracker. Website: <http://www.caleemod.com/>

Section 7: Education, Outreach, Public Participation

7.1 Community Participation in Plan Implementation

As described in Section 4.2, there is a history of community outreach during plan development and implementation in the GMC IRWM region, and there are existing mechanisms to support continued outreach. Examples of community outreach plans and efforts are described in the GMC IRWM Plan (RWMG 2014) and the outreach mechanisms and approaches established in the GMC IRWM Plan will be utilized for implementation of this SWRP. Likewise under the permits and programs established in the Salinas SWMP Update (City of Salinas 2013) a number of community outreach and participation measures were outlined and will be utilized for implementation of this SWRP. Salinas comprises a large portion of the urbanized SWRP Planning Area that forms the basis of this SWRP, as such a number of these existing programs and tools provided the necessary basis of community outreach and involvement that were utilized during plan development. A few examples of these are outlined below.

Salinas has conducted a multi-faceted education program which includes staff and private sector training, target education and community outreach (City of Salinas 2013). Salinas also maintains a website identifying upcoming management activities and public engagement meetings that allow opportunities for the public to engage in the following: comment on major technical and policy issues related to the development and implantation of plans and projects; participate in major decisions, processes, or milestones; and engage in project design and implementation (City of Salinas 2013). At a project specific level, as for those projects selected and implemented under this SWRP, the City will notify the public of upcoming activities via this website.

Salinas has also established involvement from targeted audiences such as school children, disadvantaged communities, public agencies and quasi-governmental organizations, development community, commercial and industrial, business community, residential community, non-English speaking community, the general public, and any other communities associated with high-priority storm water issues (City of Salinas 2013). Salinas has also begun a program educating elementary-level school children in environmental topics such as basic hydrology, ecology, water cycle, and water pollution prevention practices as outlined in the Salinas SWMP Update (City of Salinas 2013).

In addition to the City of Salinas, stormwater education and outreach is provided by the Monterey Regional Stormwater and Education Alliance (SEA) which includes involvement from the following entities:

- City of Carmel-by-the-Sea,
- City of Del Rey Oaks,
- City of Monterey,
- City of Pacific Grove,
- City of Sand City,
- City of Seaside,

- County of Monterey,
- Carmel Unified School District,
- Pacific Grove Unified School District,
- Monterey Peninsula Unified School District,
- Pebble Beach Company,
- Association of Monterey Bay Governments,
- Monterey Bay National Marine Sanctuary.

The goal of the Monterey Regional SEA is to meet the requirements of the Clean Water Act through regional partnerships by preventing urban runoff, protecting public health, and enhancing the environmental quality of watersheds and beaches. The Monterey Regional SEA provides many educational opportunities including providing home maintenance, home repair, gardening, household hazardous waste disposal, and recycling tips; providing free education materials online for local schools, households, and businesses; and providing free classroom informative talks and experiments for grades K-12.

The Planning Area established in this SWRP includes climate-vulnerable communities such as those located near coastal regions affected by issues such as sea level rise and salt water intrusion in the groundwater. These coastal communities are included in planning efforts through the participation of organizations such as Monterey Bay National Marine Sanctuary as well water purveyors within the SWRP Planning area that serve areas overlying seawater intrusion including California Water Service Company

Involvement with DACs is critical in establishing multi-benefit projects. As described in the IRWM Plan and utilized for implementation in this SWRP, projects are reviewed for potential impacts to DACs and for potential environmental justice concerns as part of the regular project review process. If impacts to DACs or potential for environmental concerns are found within a project the issue will be discussed with the project proponent, mitigating factors will be evaluated, and a decision will be made as to include the project in the plan. Additional information regarding this issue is summarized in the IRWM Plan, Section H.2 (page H-7) (RWMG 2014). As an example during RWMG meetings the San Jerardo Cooperative, a community interest organization representing a cooperative housing complex for low-income farm working families located just outside the City of Salinas participated in monthly RWMG meetings between July and December 2016 when this SWRP was developed.

Section 8: References

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- City of Salinas. *Stormwater Management Plan Update*. July 2013.
http://www.environmentalsalinas.com/sites/default/files/pdf/Stormwater_Management_Plan_Update_Salinas.pdf
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- Regional Water Management Group (RWMG). *Integrated Regional Water Management Plan for the GMC Region*. April 2013. With Amendments through August 2014.
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- California Regional Water Quality Control Board Central Coast Region (Central Coast RWQCB). *Water Quality Control Plan for the Central Region*. 2016.
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- Central Coast RWQCB. *Staff Report for Regular Meeting of February 9, 2007*. January 2007.
- Marina Coast Water District. *2015 Urban Water Management Plan*. June 2016. Prepared by Schaaf & Wheeler.
http://www.mcwd.org/docs/engr_files/MCWD_2015_UWMP_Final.pdf
- State Water Resources Control Board (State Water Board). “June 2014-November 2016 Urban Water Supplier Report Dataset (Excel).” Accessed 01 February 2017.
http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/docs/2017jan/uw_supplier_data010417.xlsx
- State Water Resources Control Board (State Water Board). *Storm Water Resource Plan Guidelines*. December 2015.
http://www.waterboards.ca.gov/water_issues/programs/grants_loans/swgp/docs/prop1/swrp_finalguidelines_dec2015.pdf

Appendix A: SWRP Checklist and Self-Certification

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
WATERSHED IDENTIFICATION (GUIDELINES SECTION VI.A)					
Yes	Yes	Plan identifies watershed and subwatershed(s) for storm water resource planning	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 2: Watershed Identification, 2.1 Watershed Description	This section of the SWRP defines the drainage area for this SWRP as a portion of the GMC IRWM region: the Gabilan watershed and portions of the lower Salinas River and Bolsa Nueva watershed, and Tembladero Slough Subwatershed and El Toro Creek – Salinas River Subwatershed.
No	Yes	Plan is developed on a watershed basis, using boundaries as delineated by USGS, CalWater, USGS Hydrologic Unit designations, or an applicable integrated regional water management group, and includes a description and boundary map of each watershed and sub-watershed applicable to the Plan.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 2: Watershed Identification, 2.1 Watershed Description, Figure 2.1 Planning Area Hydrology	Figure 2.1 shows the major rivers, streams, creeks, and USGS Hydrologic Unit Boundaries and Designations.
No	Yes	Plan includes an explanation of why the watershed(s) and sub-watershed(s) are appropriate for storm water management with a multiple-benefit watershed approach;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 2: Watershed Identification, 2.1 Watershed Description, 2.1.2 Hydrologic Boundary Type	Watersheds do not commonly follow corporate or municipal/county boundaries. Water that falls in one jurisdiction may flow through several more jurisdictions and numerous environmental ecosystems before it reaches its final destination. This is especially true in the Salinas area. The interrelatedness of upstream and downstream stakeholders is the main reason to address storm water and dry weather runoff concerns through projects submitted under this SWRP.
No	Yes	Plan describes the internal boundaries within the watershed (boundaries of municipalities; service areas of individual water, wastewater, and land use agencies, including those not involved in the Plan; groundwater basin boundaries, etc.; preferably provided in a geographic information system shape file);	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 2: Watershed Identification, 2.1.3 Groundwater Resources and Figure 2.2 and 2.2 Land Use, 2.2.1 Water and Wastewater Service Providers, Figure 2.6	Figure 2.2: Salinas Valley Groundwater Basin Figure 2.6: Cities of Salinas, Marina, and Seaside; towns of Prunedale, Boronda, Castroville, Moss Landing, and Spreckels; water suppliers summarized in Table 2.3 Figures were developed using GIS

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	Plan describes the water quality priorities within the watershed based on, at a minimum, applicable TMDLs and consideration of water body-pollutant combinations listed on the State's Clean Water Act Section 303(d) list of water quality limited segments (a.k.a impaired waters list);	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 3: Water Quality Compliance, 3.2 NPDES and TMDL Compliance, 3.2.1 TMDLs and Figure 3.1 and Table 3.1 Summary of 303(d) List of Impaired Water Bodies in the Greater Salinas Area, 3.2.2 NPDES Permits and Table 3.2 NPDES Permits Issued by the Central Coast RWQCB – Greater Salinas Area, 3.3 Other Permits	Figure 3.1 shows the impaired water bodies located within the Salinas Area Watersheds Table 3.1 summarizes 303(d) listed impaired water bodies in the Greater Salinas Area SWRP Planning Table 3.2 summarizes applicable, active NPDES permits issued for the Greater Salinas Area.
No	Yes	Plan describes the general quality and identification of surface and ground water resources within the watershed (preferably provided in a geographic information system shape file);	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 2: Watershed Identification, 2.1 Watershed Description and Section 3: Water Quality Compliance, 3.2 NPDES and TMDL Compliance, 3.2.1 TMDLs Figure 3.1 and Table 3.1	Section 2.1 and Figure 2.1 presents the major river watersheds and hydrologic features. Section 2.1.3 and Figure 2.2 present the areas groundwater basins and quality. Section 3 discusses activities associated with pollution of stormwater and Table 3.1 summarizes the 3030(d) List of Impaired Water Bodies. Figures were developed using GIS.
No	Yes	Plan describes the local entity or entities that provide potable water supplies and the estimated volume of potable water provided by the water suppliers;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 2: Watershed Identification, 2.2 Land Use, 2.2.1 Water and Wastewater Service Providers	Figure 2.6 shows the Planning Area's water suppliers. Table 2.3 and Section 2.2.1 summarizes the water suppliers, service areas, and estimated volume of potable water provided.
No	Yes	Plan includes map(s) showing location of native habitats, creeks, lakes, rivers, parks, and other natural or open space within the sub-watershed boundaries; and	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 2: Watershed Identification, 2.1 Watershed Description, Figure 2.1 Planning Area Hydrology and 2.2 Land Use, Figure 2.4 Greater Salinas Area Critical Habitat and Wildlife Corridors	Figure 2.1 presents the Planning Area hydrology and was generated through GIS. Figure 2.4 presents Critical habitat, designated areas, and wildlife corridors preserved as a part of local, state, or national parks and natural estuarine or coastal protected areas in the Greater Salinas Area.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	Plan identifies (quantitative, if possible) the natural watershed processes that occur within the sub-watershed and a description of how those natural watershed processes have been disrupted within the sub-watershed (e.g., high levels of imperviousness convert the watershed processes of infiltration and interflow to surface runoff increasing runoff volumes; development commonly covers natural surfaces and often introduces non-native vegetation, preventing the natural supply of sediment from reaching receiving waters).	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 2: Watershed Identification, 2.1 Watershed Description and 2.1.1 Watershed Management Issues	Section 2.1.1 summarizes the Planning Area's typical watershed management issues that are affecting the area's natural watershed processes: steelhead trout, erosion, invasive species, and fire management.
WATER QUALITY COMPLIANCE (GUIDELINES SECTION V)					
Yes	Yes	Plan identifies activities that generate or contribute to the pollution of storm water or dry weather runoff, or that impair the effective beneficial use of storm water or dry weather runoff.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 3: Water Quality Compliance, 3.1 Activities Associated with Pollution of Stormwater and/or Dry Weather Runoff	Section 3.1 identifies activities that can generate or contribute to the pollution of storm water or dry weather runoff, or impair beneficial use of storm water or dry weather runoff.
Yes	Yes	Plan describes how it is consistent with and assists in, compliance with total maximum daily load implementation plans and applicable national pollutant discharge elimination system permits.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 3: Water Quality Compliance, 3.2 NPDES and TMDL Compliance, 3.2.1 TMDLs and 3.2.2 NPDES Permits	Section 3.2 summarizes the participating agencies' activities related to compliance and monitoring for NPDES and TMDLs. Table 3.1 presents a summary of 303(d) listed impaired water bodies in the Greater Salinas Area SWRP Planning Area, the associated pollutant(s) of concern, the potential sources as reported by the Regional Water Boards, the completion date for the TMDL, and an assessment of whether the pollutant is applicable to storm water. Table 3.2 summarizes the applicable, active NPDES permits issued for the Greater Salinas Area.
Yes	Yes	Plan identifies applicable permits and describes how it meets all applicable waste discharge permit requirements.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 3: Water Quality Compliance, 3.2 NPDES and TMDL Compliance, 3.2.1 TMDLs and 3.2.2 NPDES Permits; 3.3 Other Permits, 3.3.1 WDRs	Some entities within the Greater Salinas Area have wastewater discharge permits, such as the Monterey Regional Water Pollution Control Agency. However, waste discharge permits do not typically apply to storm water discharges as storm water discharges are regulated under other permits. Table 3.2 summarizes the applicable, active NPDES permits issued for the Greater Salinas Area; a list of the applicable, active NPDES permits is included as Appendix C.
ORGANIZATION, COORDINATION, COLLABORATION (GUIDELINES SECTION VI.B)					
Yes	Yes	Local agencies and nongovernmental organizations were consulted in Plan development.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 4: Organization, Coordination, Collaboration, 4.1 Local Agencies and Non-Governmental Organizations	This plan was prepared in coordination with members of the GMC RWMG and more specifically in close coordination between those entities in the Salinas area. RWMG member entities include government agencies, nonprofit organizations, educational organizations, water service districts, private water companies, and organizations representing agricultural, environmental, and community interests. Table 4.1 lists the member organizations/stakeholders and their type.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
Yes	Yes	Community participation was provided for in Plan development.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 4: Organization, Coordination, Collaboration, 4.2 Community Participation	RWVG encouraged local community stakeholder participation during the development of this SWRP. During the development of this SWRP several RWVG meetings were held in which the SWRP was the focus of the meeting. Five RWVG meetings were held on July 20, August 17, September 21, October 19, November 16 and December 14, 2016 in which the SWRP was discussed. Community stakeholders were notified via the IRWM website (http://www.greatermontereyirwmp.org/) and via email. During these meetings stakeholder were given the opportunity to discuss and review the content of the SWRP and to review and comment on the draft versions.
No	Yes	Plan includes description of the existing integrated regional water management group(s) implementing an integrated regional water management plan.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 4: Organization, Coordination, Collaboration, 4.1 Local Agencies and Non-Governmental Organizations	This Greater Salinas Area SWRP serves as the foundation for development of the final SWRP for the GMC IRWM Area which will be integrated into the IRWM Plan upon its completion; therefore involvement from RWVG members was critical. Of the 19 RWVG member organizations, seven have statutory authority over water supply and/or water management within the GMC region. These members are charged with implementing the GMC IRWM Plan. Table 4.1 presents the RWVG Members.
No	Yes	Plan includes identification of and coordination with agencies and organizations (including, but not limited to public agencies, nonprofit organizations, and privately owned water utilities) that need to participate and implement their own authorities and mandates in order to address the storm water and dry weather runoff management objectives of the Plan for the targeted watershed.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 4: Organization, Coordination, Collaboration, 4.1 Local Agencies and Non-Governmental Organizations and Table 4.1 GMC RWVG Members	This plan was prepared in coordination with members of the GMC RWVG and more specifically in close coordination between those entities in the Salinas area. Table 4.1 lists the member organizations/stakeholders and their type. The SWRP includes the participation of Salinas and Monterey County who participate and implement their own authorities and mandates to address storm water and dry weather runoff management activities as part of their MS4 permit requirements. In addition, Salinas has been collaborating extensively with MRWPCA, another public agency, to divert and beneficially reuse storm water and dry weather runoff under the Pure Water Monterey program.
No	Yes	Plan includes identification of nonprofit organizations working on storm water and dry weather resource planning or management in the watershed.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 4: Organization, Coordination, Collaboration, 4.1 Local Agencies and Non-Governmental Organizations	Non-government organizations (NGOs) were also involved during the development of the plan content and submitted many of the projects under this plan. As an example, the Big Sur Land Trust and the non-profit organization Ecology. Other NGOs that were involved in the planning process included San Jerardo Cooperative, Inc., Central Coast Wetlands Group, Elkhorn Slough Estuarine Research Reserve, Environmental Justice Coalition for Water, and Monterey Bay National Marine Sanctuary whose representatives attend and participated in the meetings for this Greater Salinas Area SWRP.
No	Yes	Plan includes identification and discussion of public engagement efforts and community participation in Plan development.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 4: Organization, Coordination, Collaboration, 4.2 Community Participation	The RWVG encouraged local community stakeholder participation during the development of this SWRP. During the development of this SWRP several RWVG meetings were held in which the SWRP was the focus of the meeting. Five RWVG meetings were held on July 20, August 17, September 21, October 19, November 16 and December 14, 2016 in which the SWRP was discussed. Community stakeholders were notified via the IRWM website (http://www.greatermontereyirwmp.org/) and via email. During these meetings stakeholder were given the opportunity to discuss and review the content of the SWRP and to review and comment on the draft versions.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	Plan includes identification of required decisions that must be made by local, state or federal regulatory agencies for Plan implementation and coordinated watershed-based or regional monitoring and visualization	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 3: Water Quality Compliance, 3.3 Other Permits and Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.6 Federal, State, and Local Permits	All projects proposed and implemented as part of the Greater Salinas Area SWRP will comply with applicable town, city, and county storm water documents and ordinances, including the SWMP (City of Salinas 2013) and the Monterey County Public Works Department, Planning Department, and Redevelopment & Housing Office (RWMG 2014). All projects will also comply with applicable state and federal regulations, including the California Environmental Quality Act (Public Resources Code § 21000 et seq.), the Clean Water Act, the Safe Drinking Water Act, applicable water rights permits and licenses, State Water Board plans and policies, State and Regional Water Board water quality control plans and policies (Wat. Code, § 10562, subd. (b)(5)), NPDES permits, Areas of Special Biological Significance Compliance Plans (State Water Board Resolution 2012-0012), conditional waivers issued by State and/or Regional Water Boards (Wat. Code, § 10562, subds. (b)(5) & (6).), and the Mosquito Abatement and Vector Control District Law (Division 3, Chapter 1 of the Health and Safety Code beginning with Article 2000.) (State Water Board 2015).
No	Yes	Plan describes planning and coordination of existing local governmental agencies, including where necessary new or altered governance structures to support collaboration among two or more lead local agencies responsible for plan implementation.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 4: Organization, Coordination, Collaboration, 4.1 Local Agencies and Non-Governmental Organizations;	The RWMG works to build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects. The Permit Streamlining Task Force holds meetings between federal, state, and local regulatory agencies, other water agencies, and project proponents to facilitate the permitting, planning, and implementation of water-related projects. It is anticipated that these meetings will be held during project planning and construction phases. RWMG member entities include government agencies.
No	Yes	Plan describes the relationship of the Plan to other existing planning documents, ordinances, and programs established by local agencies.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 1: Introduction and SWRP Objectives, 1.1 Plan Development	This plan was created with assistance and input from key members of the GMC IRWM Regional Water Management Group (RWMG). Plans utilized to cover many of the required topics in the SWRP: Salinas' 2004 Storm Drain Master Plan, Salinas' National Pollutant Discharge Elimination System (NPDES) Phase 1 Municipal Separate Storm Sewer System (MS4) permit, GMC IRWM Plan, Salinas Urban Watershed Management Plan (2013), Salinas Storm Water Master Plan (2004).
No	Yes	(If applicable) Plan explains why individual agency participation in various isolated efforts is appropriate.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 4: Organization, Coordination, Collaboration, 4.2 Community Participation and Section 5: Identification and Prioritization of Projects, 5.1 Introduction of Projects	Community participation was important during SWRP development in that it fosters outreach, participation, and involvement of disadvantaged communities (DACs), local tribes, the general public, and specific audiences such as local ratepayers, developers, locally regulated commercial and industrial stakeholders, and nonprofit organizations. Input from stakeholders such as these was critical in development of this plan and during identification of projects. Projects selected for this SWRP were originally part of the 2011, 2014, and 2016 project submissions for the GMC IRWM Plan. An initial pre-screening of projects for inclusion and evaluation under this plan were based on the following criteria: (1) if the project had a storm water or flood management focus with clear water supply, water, quality, flood management, environmental, or community benefits; and (2) if the projects were located within the Greater Salinas Area planning area. Therefore, although some projects may be developed in isolation geographically, the projects share in the management of the same watershed.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
QUANTITATIVE METHODS (GUIDELINES SECTION VI.C)					
No	Yes	For all analyses: Plan includes an integrated metrics-based analysis to demonstrate that the Plan's proposed storm water and dry weather capture projects and programs will satisfy the Plan's identified water management objectives and multiple benefits.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 5: Identification and Prioritization of Projects, 5.3 Approach for Evaluation and Prioritization of Projects	Scoring Category 1: Two questions regarding project funding availability and project location and land access. Scoring Category 2: A multiple benefits analysis based upon the main and additional benefits provided in Table 4 of the SWRP Guidelines (SWRCB 2015). Scoring Category 3: A quantitative metrics-based benefit analysis based upon the quantitative metrics suggested in the SWRP Guidelines (SWRCB 2015) A total of 250 points are distributed between the three scoring categories with 80 points for Scoring Category 1; 50 points for Scoring Category 2 and 120 points for Scoring Category 3. The distribution of the total points to the three scoring categories reflects both the relative importance derived from the SWRP guidelines as well as a means of balancing the merits of each project. Points were assigned to a variety of elements within each scoring category and summed to give a total score per category. Each of the categories were then summed at the end to give a total project score. Projects were ranked based on their total scores.
No	Yes	For water quality project analysis (section VI.C.2.a) Plan includes an analysis of how each project and program complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describes how each project or program will contribute to the preservation, restoration, or enhancement of watershed processes (as described in Guidelines section VI.C.2.a)	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 3: Water Quality Compliance, 3.4 Monitoring and Section 4: Organization, Coordination, Collaboration, 4.1 Local Agencies and Non-Governmental Organization; Section 6: Implementation Strategy and Schedule, 6.4 Implementation Performance Measures, 6.4.2 Quantification of Storm Water Management	The following projects will assist in meeting NPDES permits held by the City of Salinas and/or co-permittees of the Monterey Regional Storm Water Management Program by either directly treating runoff or restoring watershed processes to naturally treat or reduce polluted runoff: • Projects 5.1.1 will restore wetland and sand dune ecosystem, remove invasive non-native plants in the Central Monterey Bay. • Project 5.1.2 will restore a subwatershed within the upper Gabilan watershed. • Project 5.1.3 Phase II will construct 6 projects that will utilize a variety of water quality management innovations including the treatment train approach (i.e. detention/sedimentation features, pollutant filtration/ biological degradation of pollutants and water polishing areas). • Project 5.1.4 is an effort to turn the agricultural area into a multi-use facility that will provide much needed open space and recreational facilities, as well as providing benefits such as improved peak flood control and water quality, and restoring wetland habitat areas. • Project 5.1.5 will improve the City of Salinas' Industrial Wastewater System (IWS) and increase the capacity to collect the City's storm water runoff and industrial wastewater and convey it to the City's Industrial Waste Treatment Facility (IWTF). All of the diversions (blanco drain example) diverting ag runoff into MRWPCA pipeline will get treated/injected and/or RW – everything permitted. NPDES not applicable b/c RW covered under WDR for RW reuse. Potential assists Salinas compliance with Phase 1 NPDES
No	Yes	For storm water capture and use project analysis (section VI.C.2.b): Plan includes an analysis of how collectively the projects and programs in the watershed will capture and use the proposed amount of storm water and dry weather runoff.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.4 Implementation Performance Measures, 6.4.2 Quantification of Storm Water Management	Projects 5, 6, 9, 10, and 11 all improve and/or construct infrastructure to divert and convey surface water runoff to the MRWPCA Regional Wastewater Treatment Plant for treatment and injection into the Seaside Groundwater Basin. Project 12 will divert storm water that would normally cause seasonal flooding of roadways to an upgraded water treatment plant that will produce recycled water for reuse as on-site irrigation. Collectively, implementation of these projects will results in 3,900 AFY captured for beneficial use.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	For water supply and flood management project analysis (section VI.C.2.c): Plan includes an analysis of how each project and program will maximize and/or augment water supply.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.4 Implementation Performance Measures, 6.4.2 Quantification of Storm Water Management	The following projects will maximize and/or augment water supply: • Project 5 will allow the City capture storm water and divert it for treatment, in addition to industrial wastewater, for beneficial reuse. The new gravity sewers will be sized prevent overflows. • Project 6 will divert and reclaim surface water that would normally have entered the City of Salinas' sanitary sewer system, therefore protecting against sewer overflows. • Project 10 will divert and reclaim surface water that would normally have entered the City of Salinas' sanitary sewer system, therefore protecting against sewer overflows. • Project 11 will divert storm water away from the City's sanitary sewer to the industrial wastewater pipeline, thus reducing the chances of overflow. • Project 12 will divert storm-related flows and prevent seasonal flooding of public roadways. Collectively, implementation of these projects will result in 3,900 AFY captured for beneficial use.
No	Yes	For environmental and community benefit analysis (section VI.C.2.d): Plan includes a narrative of how each project and program will benefit the environment and/or community, with some type of quantitative measurement.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.4 Implementation Performance Measures, 6.4.2 Quantification of Storm Water Management	The following projects will benefit the environment: • Project 1 will enhance and restore wetland and sand dune ecosystems in central Monterey Bay, and control erosion in salt marshes directly behind the dunes around Moss Landing. • Project 2 consists of three phases to restore a sub-watershed within the upper Gabilan watershed, and serve as a model for restoration of watersheds within the Central Coast. • Project 3 will implement a variety of water quality management innovations including the treatment train approach (i.e. detention/sedimentation features, pollutant filtration/ biological degradation of pollutants and water polishing areas) over twenty acres. • Project 4 will turn the Carr Lake agricultural area into a multi-use facility that will include restoring wetland habitat areas. • Project 7 provides long-term guidance and outlines maintenance procedures to maximize flood flow capacity and minimize bank erosion, while minimizing environmental effects, helping to protect against flooding during and after major storm events. • Project 13 will design integrated management strategies such as off-channel flood attenuation and storage areas (e.g., ponds, bypasses, compound channels), coordinated passive and active management of native vegetation for enhanced habitat, flood conveyance, and water quality treatment; and removal of Arundo. Collectively, implementation of these projects will results in over 359 acres of restored habitat. Project 12 will benefit about 350 residents of three DACs: communities of Alpine Court and San Vicente Road and the San Jerardo Cooperative. By replacing the drinking water system, install deeper wells, and upgrade wastewater systems and treatment plant to meet State guidelines and County code requirements. In addition, storm water improvements will be installed at the entrance to the Cooperative to divert storm related flows and prevent seasonal flooding of public roadways.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	Data management (section VI.C.3): Plan describes data collection and management, including: a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.4 Implementation Performance Measures, 6.4.3 Decision Support Tools, Monitoring, and Information Management and 6.4.5 Mechanisms to Share Performance Data	The implementation of projects, along with associated monitoring data, will be tracked using a Data Management System (DMS) that takes advantage of database systems developed by statewide efforts. The DMS for the GMC IRWM region includes data validation and quality assurance for the set of standardized key metadata fields. The RWMG and its designated Data Coordinator is responsible for ensuring that data gets uploaded to the appropriate State database. The data system provides a portal to data sets (measurements) hosted by the data generating organizations or those that have been integrated to regional, statewide, or national databases, including: Central Coast Action Tracker, GAMA, SWAMP, CEDEN, Wetland Tracker, CalEEMod. All project must address the following: 1. Clearly and concisely (in a table format) describe what is being monitored for each project. 2. Measures to remedy or react to problems encountered during monitoring. 3. Location of monitoring (with a map). 4. Monitoring frequency. 5. Monitoring protocols/methodologies, including who will perform the monitoring. 6. Procedures to ensure the monitoring schedule is maintained and that adequate resources (budget) are available to maintain monitoring of the project throughout the scheduled monitoring timeframe. The RWMG and its designated Data Coordinator is responsible for ensuring that data gets uploaded to the appropriate State database.
IDENTIFICATION AND PRIORITIZATION OF PROJECTS (GUIDELINES SECTION VI.D)					
Yes	Yes	Plan identifies opportunities to augment local water supply through groundwater recharge or storage for beneficial use of storm water and dry weather runoff.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 5: Identification and Prioritization of Projects, 5.1 Introduction of Projects, Table 5.1	A multiple benefit analysis was performed and is based on the main and secondary (i.e., additional) benefits list from SWRP Guidelines (SWRCB 2015 Table 4). As shown in Table 5.2, the following projects augment local water supply through beneficial use of storm water and dry weather runoff: Project 4, Project 5, Project 6, Project 10, Project 11, Project 12
Yes	Yes	Plan identifies opportunities for source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 1: Introduction and SWRP Objectives, 1.1 SWRP Plan Objectives, 1.1.2 Greater Salinas Area SWRP Objectives, 1.1.2.1 Water Quality Objectives; Section 6: Implementation Strategy and Schedule, 6.4 Implementation Performance Measures, 6.4.2 Quantification of Storm Water Management	A multiple benefit analysis was performed and is based on the main and secondary (i.e., additional) benefits list from SWRP Guidelines (SWRCB 2015 Table 4). As shown in Table 5.2, the following projects provide opportunities for source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff: Project 1, Project 2, Project 3, Project 4, Project 5, Project 6, Project 10, Project 11, Project 12
Yes	Yes	Plan identifies projects that reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 1: Introduction and SWRP Objectives, 1.1 SWRP Plan Objectives, 1.1.2 Greater Salinas Area SWRP Objectives, 1.1.2.3 Flood Management Objective	A multiple benefit analysis was performed and is based on the main and secondary (i.e., additional) benefits list from SWRP Guidelines (SWRCB 2015 Table 4). As shown in Table 5.2, the following projects reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible: Project 1, Project 2, Project 3, Project 4, Project 7, Project 9, Project 12, Project 13

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
Yes	Yes	Plan identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 1: Introduction and SWRP Objectives, 1.1 SWRP Plan Objectives, 1.1.2 Greater Salinas Area SWRP Objectives, 1.1.2.4 Environmental Objective	A multiple benefit analysis was performed and is based on the main and secondary (i.e., additional) benefits list from SWRP Guidelines (SWRCB 2015 Table 4). As shown in Table 5.2, the following projects develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks: Project 1, Project 2, Project 3, Project 4, Project 5, Project 6, Project 7, Project 8, Project 9, Project 10, Project 11, Project 12, Project 13
Yes	Yes	Plan identifies opportunities to use existing publicly owned lands and easements, including, but not limited to, parks, public open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 1: Introduction and SWRP Objectives, 1.1 SWRP Plan Objectives, 1.1.2 Greater Salinas Area SWRP Objectives, 1.1.2.5 Community Objective	A multiple benefit analysis was performed and is based on the main and secondary (i.e., additional) benefits list from SWRP Guidelines (SWRCB 2015 Table 4). As shown in Table 5.2, the following projects use existing publicly owned lands and easements (or the land has already been purchased): Project 1, Project 3, Project 5, Project 6, Project 8, Project 9, Project 11, Project 12
Yes	Yes	For new development and redevelopments (if applicable): Plan identifies design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 3: Water Quality Compliance, 3.2 NPDES and TMDL Compliance, 3.2.2 NPDES Permits; 3.3 Other Permits	The City of Salinas developed the SWMPU which describes control measures for protecting area water quality from storm water and non-storm water discharges, particularly for the urbanized portion of the watershed (City of Salinas 2013). All projects proposed and implemented as part of the Greater Salinas Area SWRP and GMC IRWM Plan will comply with applicable town, city, and county storm water documents and ordinances, including the SWMP (City of Salinas 2013) and the Monterey County Public Works Department, Planning Department, and Redevelopment & Housing Office, and NPDES permit requirements: effectiveness assessment measures, including water quality monitoring, detailed best management practices (BMP) assessment requirements, and water quality action levels, designed to provide information about the effectiveness of efforts to reduce pollutant discharges and protect water quality and beneficial uses.
Yes	Yes	Plan uses appropriate quantitative methods for prioritization of projects. (This should be accomplished by using a metrics-based and integrated evaluation and analysis of multiple benefits to maximize water supply, water quality, flood management, environmental, and other community benefits within the watershed.)	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 5: Identification and Prioritization of Projects, 5.3 Approach for Evaluation and Prioritization of Projects, 5.3.3 Scoring Category 3 Development and Analysis	This section outlines the approach taken in the evaluation and prioritization of projects. The method used in this SWRP is based upon the SWRP Guidelines (SWRCB 2015) which recommend a project prioritization and screening process that involves both tangible (i.e., quantitative) benefit and intangible benefit evaluations. As stated in Section 5.1, projects were initially pre-screened and resulted in the 13 projects selected for evaluation under this plan because the projects provide storm water or flood management focus with clear benefits and are located within the planning area. The purpose of Scoring Category 3 is to add a quantitative metrics-based approach to capture the tangible benefits provided by each project and to demonstrate the specific benefits each project will have on the Planning Area. The quantitative metrics evaluation was based on the criteria described and documented in Table 5.1.
No	Yes	Overall: Plan prioritizes projects and programs using a metric-driven approach and a geospatial analysis of multiple benefits to maximize water supply, water quality, flood management, environmental, and community benefits within the watershed.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 5: Identification and Prioritization of Projects, 5.3 Approach for Evaluation and Prioritization of Projects	Three scoring categories were developed for this plan and are presented below: Scoring Category 1: Two questions regarding project funding availability and project location and land access, as further described in Section 5.2.1. Scoring Category 2: A multiple benefits analysis based upon the main and additional benefits provided in Table 4 of the SWRP Guidelines (SWRCB 2015), as further described in Section 5.2.2. Scoring Category 3: A quantitative metrics-based benefit analysis based upon the quantitative metrics suggested in the SWRP Guidelines (SWRCB 2015), as further described in Section 5.2.3. The scoring process is summarized in Table 5.1.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	Multiple benefits: Each project in accordance with the Plan contributes to at least two or more Main Benefits and the maximum number of Additional Benefits as listed in Table 4 of the Guidelines. (Benefits are not counted twice if they apply to more than one category.)	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 5: Identification and Prioritization of Projects, 5.3 Approach for Evaluation and Prioritization of Projects, 5.3.2 Scoring Category 2 Development and Analysis	A multiple benefit analysis was performed and is based on the main and secondary (i.e., additional) benefits list from SWRP Guidelines (SWRCB 2015). There are 17 benefits total which fall under five broad categories: water quality, water supply, flood management, environmental, and community. In Table 5.1 a main benefit was shaded in gray to distinguish it apart from the secondary benefits. The number of main and secondary benefits were totaled in Table 5.1 and multiplied by the assigned point value. Points were totaled for each project, with a maximum of 50 points allowed for Scoring Category 2.
IMPLEMENTATION STRATEGY AND SCHEDULE (GUIDELINES SECTION VI.E)					
No	Yes	Plan identifies resources for Plan implementation, including: 1) projection of additional funding needs and sources for administration and implementation needs; and 2) schedule for arranging and securing Plan implementation financing.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.1 Resources for Implementation	As part of the RWMG, a “permanent” Funding Committee has been convened to identify sources of funding projects including: private foundation grants; State IRWM, storm water, grant funds, and state and federal water quality grant funds; monetary contributions from RWMG entities; and in-kind staff time contributed by members of the RWMG, and alternative, non-IRWM sources of grant funds and other means. The Funding Committee is also investigating other potential means of long-term support.
Yes	Yes	Plan projects and programs are identified to ensure the effective implementation of the storm water resource plan pursuant to this part and achieve multiple benefits.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.2 Implementation Projects and Programs	The following projects and programs submitted to the Greater Salinas Area SWRP achieve multiple benefits and will ensure effective implementation by achieving plan storm water objectives: Project 1, Project 2, Project 3, Project 4, Project 5, Project 6, Project 7, Project 8, Project 9, Project 10, Project 11, Project 12, Project 13
Yes	Yes	The Plan identifies the development of appropriate decision support tools and the data necessary to use the decision support tools.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.4 Implementation Performance Measures, 6.4.3 Decision Support Tools, Monitoring, and Information Management	The implementation of projects, along with associated monitoring data, will be tracked using a Data Management System (DMS) that takes advantage of database systems developed by statewide efforts: SWAMP, CEDEN, CRAM, GeoTracker, GAMA. DMS includes data validation and quality assurance for the set of standardized key metadata fields. The data system provides a portal to data sets (measurements) hosted by the data generating organizations or those that have been integrated to regional, statewide, or national databases, including Wetland Tracker, CalDUCs, and CEDEN.
No	Yes	Plan describes implementation strategy, including: a) Timeline for submitting Plan into existing plans, as applicable;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.1 Submittal to Applicable IRWM Plan	The Greater Salinas Area SWRP will be submitted to the Greater Monterey IRWM RWMG for incorporation into the GMC IRWM Plan. The Greater Salinas Area SWRP will serve as the foundation for the development of the GMC SWRP. The GMC SWRP is anticipated to be completed in 2018; therefore the content of this Greater Salinas Area SWRP will be incorporated into the future GMC SWRP.
No	Yes	Plan describes implementation strategy, including: b) Specific actions by which Plan will be implemented;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.1 Submittal to Applicable IRWM Plan	The Greater Salinas Area SWRP will serve as the foundation for the development of the GMC SWRP. The GMC SWRP is anticipated to be completed in 2018; therefore the content of this Greater Salinas Area SWRP will be incorporated into the future GMC SWRP. Upon completion of the GMC SWRP, the RWMG will approve and adopt the SWRP, and will incorporate it into the IRWM Plan (either by reference or as an appendix). Once the Greater Salinas Area SWRP is folded into the GMC SWRP, the GMC SWRP will be considered a living document that will contain clear procedures for the RWMG to update the plan, track plan performance, and evaluate future projects. The Greater Salinas Area SWRP content will be updated as part of the GMC SWRP.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	Plan describes implementation strategy, including: c) All entities responsible for project implementation;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.2 Responsibilities	The Greater Salinas Area SWRP will serve as the foundation for the development of the GMC SWRP. As part of the GMC IRWM, the RWMG will be responsible for the implementation of the future GMC SWRP. The RWMG consists of most of the SWRP project proponents, including: Big Sur Land Trust, Central Coast Wetlands Group, City of Salinas, MRWPCA, MCWRA, San Jerardo Cooperative, Inc.
No	Yes	Plan describes implementation strategy, including: d) Description of community participation strategy;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 7: Education, Outreach, Public Participation, 7.1 Community Participation in Plan Implementation	Outreach mechanisms and approaches established in the GMC IRWM Plan will be utilized for implementation of this SWRP. Likewise under the permits and programs established in the Salinas SWMP Update (City of Salinas 2013) a number of community outreach and participation measures were outlined and will be utilized for implementation of this SWRP.
No	Yes	Plan describes implementation strategy, including: e) Procedures to track status of each project;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.4 Implementation Status Tracking	Plan performance tracking of the GMC SWRP (which will incorporate the Greater Salinas Area SWRP) will be conducted every two years or as appropriate as part of the IRWM Plan Performance Review. The review will evaluate progress made toward achieving IRWM Plan and by extension, SWRP objectives. Progress toward meeting IRWM Plan and SWRP objectives is directly tied to the implementation of projects, which will be tracked using the Data Management System described in Section 6.4.
No	Yes	Plan describes implementation strategy, including: f) Timelines for all active or planned projects;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.5 Timeline, Table 6.1 SWRP Project Status and Completion Timeline	Implementation of specific projects identified in the SWRP is primarily dependent on funding, as well as project status. Table 6.1 below summarizes the funding status and when benefits are expected to be realized for each of the SWRP projects that were prioritized.
No	Yes	Plan describes implementation strategy, including: g) Procedures for ongoing review, updates, and adaptive management of the Plan;	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.1 Submittal to Applicable IRWM Plan, 6.3.1.1 Adaptive Management – Maintaining a Living Document	Once the Greater Salinas Area SWRP is folded into the GMC SWRP, the GMC SWRP will be considered a living document that will contain clear procedures for the RWMG to update the plan, track plan performance, and evaluate future projects. The Greater Salinas Area SWRP content will be updated as part of the GMC SWRP. Ongoing adaptations to the GMC SWRP may include: recharacterization of water quality priorities; source assessment re-evaluation; effectiveness assessment of projects; updated metrics-based, quantitative analysis; adding or removing projects; and identification of completed projects.
No	Yes	Plan describes implementation strategy, including: h) A strategy and timeline for obtaining necessary federal, state, and local permits.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.6 Federal, State, and Local Permits	The Permit Streamlining Task Force holds meetings between federal, state, and local regulatory agencies, other water agencies, and project proponents to facilitate the permitting, planning, and implementation of water-related projects. It is anticipated that these meetings will be held during project planning and construction phases.
Yes	Yes	Applicable IRWM plan: The Plan will be submitted, upon development, to the applicable integrated regional water management (IRWM) group for incorporation into the IRWM plan.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.1 Submittal to Applicable IRWM Plan	The Greater Salinas Area SWRP will be submitted to the Greater Monterey IRWM RWMG for incorporation into the GMC IRWM Plan. The Greater Salinas Area SWRP will serve as the foundation for the development of the GMC SWRP. The GMC SWRP is anticipated to be completed in 2018, therefore the content of this Greater Salinas Area SWRP will be incorporated into the future GMC SWRP.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	Plan describes how implementation performance measures will be tracked.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.4 Implementation Status Tracking	Progress toward meeting SWRP objectives is directly tied to the implementation of projects, which will be tracked using the Data Management System described in Section 6.4. Two tables will be generated with each Plan Performance Review to show: 1) that the RWMG is implementing projects listed in the IRWM Plan/SWRP, and 2) that the RWMG is efficiently making progress towards meeting the objectives of the IRWM Plan/SWRP. As appropriate, project implementation will be tracked using the "Conservation Action Tracker" database, which is a data system for tracking land-use management improvements in the Central Coast region.
EDUCATION, OUTREACH, PUBLIC PARTICIPATION (GUIDELINES SECTION VI.F)					
Yes	Yes	Outreach and Scoping: Community participation is provided for in Plan implementation.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 6: Implementation Strategy and Schedule, 6.3 Implementation Strategy, 6.3.3 Community Participation	MRWPCA and the City of Salinas held public meetings during the development of the SWRP and were active in public education and outreach. These public meetings presented updates and information to the MRWPCA Board, Salinas City Council and other members of the public regarding the project elements. Additional details provided in Section 6.3.3.
No	Yes	Plan describes public education and public participation opportunities to engage the public when considering major technical and policy issues related to the development and implementation.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 7: Education, Outreach, Public Participation, 7.1 Community Participation in Plan Implementation	There are existing mechanisms to support continued outreach: Salinas maintains a website identifying upcoming management activities and public engagement meetings and storm water education and outreach is provided by the Monterey Regional Stormwater and Education Alliance (SEA). Coastal communities are included in planning efforts through the participation of organizations such as Monterey Bay National Marine Sanctuary as well water purveyors within the SWRP Planning area. Additional details provided in Section 7.1
No	Yes	Plan describes mechanisms, processes, and milestones that have been or will be used to facilitate public participation and communication during development and implementation of the Plan.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 7: Education, Outreach, Public Participation, 7.1 Community Participation in Plan Implementation	There are existing mechanisms to support continued outreach GMC IRWM Plan and SWRP community outreach and participation measures. Section 7.1 provides additional detail.
No	Yes	Plan describes mechanisms to engage communities in project design and implementation.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 7: Education, Outreach, Public Participation, 7.1 Community Participation in Plan Implementation	Salinas maintains a website identifying upcoming management activities and public engagement meetings that allow opportunities for the public to engage in the following: comment on major technical and policy issues related to the development and implantation of plans and projects; participate in major decisions, processes, or milestones; and engage in project design and implementation (City of Salinas 2013). At a project specific level, as for those projects selected and implemented under this SWRP, the City will notify the public of upcoming activities via this website. Additional details provided in Section 7.1.
No	Yes	Plan identifies specific audiences including local ratepayers, developers, locally regulated commercial and industrial stakeholders, nonprofit organizations, and the general public.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 7: Education, Outreach, Public Participation, 7.1 Community Participation in Plan Implementation	Targeted audiences: school children, disadvantaged communities, public agencies and quasi-governmental organizations, development community, commercial and industrial, business community, residential community, non-English speaking community, the general public, and any other communities associated with high-priority storm water issues. Additional details provided in Section 7.1.

Mandatory?	Meets Requirement?	Guideline	Reference	Reference Chapter/ Section/ Page Number	Rationale
No	Yes	Plan describes strategies to engage disadvantaged and climate vulnerable communities within the Plan boundaries and ongoing tracking of their involvement in the planning process.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 7: Education, Outreach, Public Participation, 7.1 Community Participation in Plan Implementation	SWRP includes climate-vulnerable communities located near coastal regions affected by issues such as sea level rise and salt water intrusion in the groundwater through the participation of Monterey Bay National Marine Sanctuary and well water purveyors that serve areas overlying seawater intrusion. Involvement with DACs is critical in establishing multi-benefit projects. Projects are reviewed for potential impacts to DACs as part of the regular project review process. If impacts to DACs or potential for environmental concerns are found within a project the issue will be discussed with the project proponent, mitigating factors will be evaluated, and a decision will be made as to include the project in the plan. Additional details provided in Section 7.1.
No	Yes	Plan describes efforts to identify and address environmental injustice needs and issues within the watershed.	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 7: Education, Outreach, Public Participation, 7.1 Community Participation in Plan Implementation	Projects are reviewed for potential environmental justice concerns as part of the regular project review process. If potential for environmental concerns are found within a project the issue will be discussed with the project proponent, mitigating factors will be evaluated, and a decision will be made as to include the project in the plan. Additional details provided in Section 7.1.
No	Yes	Plan includes a schedule for initial public engagement and education	Title: Storm Water Resource Plan For the Greater Salinas Area Author: Regional Water Management Group Date: February 2017 URL: http://www.greatermontereyirwmp.org/current/planning/	Section 7: Education, Outreach, Public Participation, 7.1 Community Participation in Plan Implementation	Salinas maintains a website identifying upcoming management activities and public engagement meetings that allow opportunities for the public to engage in the following: comment on major technical and policy issues related to the development and implantation of plans and projects; participate in major decisions, processes, or milestones; and engage in project design and implementation. At a project specific level, as for those projects selected and implemented under this SWRP, the City will notify the public of upcoming activities via this website.
Checklist Instructions For each element listed below, review the applicable section in the Storm Water Resource Plan Guidelines and enter ALL of the following information. A. Mark the box if the Storm Water Resource Plan, or a functional equivalent Plan, meets the provision [Meets Requirement?] B. In the provided space labeled References, enter: 1. Title of document(s) that contain the information; [Reference Title] 2. The chapter/section, and page number(s) where the information is located within the document(s); [Reference Chapter/Section/Page Number] 3. The entity(ies) that prepared the document(s); [Reference Author] 4. The date the document(s) was prepared, and subsequent updates; and [Reference Date] 5. Where each document can be accessed (website address or attached). [Reference URL] C. Mandatory Required Elements per California Water Code [Mandatory?]					

Appendix B: Objectives Evaluation

Appendix B: Comparison of GMC IRWM Plan Objectives with SWRP Multi Benefit Categories

From Page 9 of the SWRP Guidelines, Multi-Benefit/Multiple Benefit Projects - storm water and dry weather runoff capture projects that provide more than one of the following benefits or meet more than one of the following objectives:

1. Creates and restores wetlands (Wat. Code, § 10561(g))
2. Riverside [riparian] habitats (Wat. Code, § 10561(g))
3. Instream flows (Wat. Code, § 10561(g))
4. Increase in park and recreation lands (Wat. Code, § 10561(g))
5. Urban green space (Wat. Code, § 10561(g))
6. Augments recreation opportunities for communities (Wat. Code, § 10561(h))
7. Increases tree canopy (Wat. Code, § 10561(h))
8. Reduces heat island effect (Wat. Code, § 10561(h))
9. Improves air quality (Wat. Code, § 10561(h))
10. Maximizes water quality (Wat. Code, § 10562(b)(2))
11. Maximizes water supply (Wat. Code, § 10562(b)(2))
12. Maximizes flood management (Wat. Code, § 10562(b)(2))
13. Maximizes environmental benefits (Wat. Code, § 10562(b)(2))
14. Maximizes other community benefits (Wat. Code, § 10562(b)(2))

IRWM Plan Objective	SWRP Benefit Category (Objectives)				
	Water Quality	Water Supply	Flood Management	Environmental	Community
IRWM Plan Goal: Improve water supply reliability and protect groundwater and surface water supplies.					
Optimize the use of groundwater storage with infrastructure enhancements and improved operational techniques.		11			
Increase and optimize water storage and conveyance capacity through construction, repair, replacement, and augmentation of infrastructure.		11			
Diversify water supply sources, including but not limited to the use of recycled water.		11			
Maximize water conservation programs.		11			
Capture and manage storm water runoff.	10	11			
Optimize conjunctive use where appropriate.		11			
Support research and monitoring to better understand identified water supply needs.		11			
Support the creation of water supply certainties for local production of agricultural products.					
Promote public education about water supply issues and needs.					14
Promote planning efforts to provide emergency drinking water to communities in the region in the event of a disaster.					
IRWM Plan Goal: Protect and improve surface, groundwater, estuarine, and coastal water quality, and ensure the provision of high-quality, potable, affordable drinking water for all communities in the region.					
Promote practices necessary to meet, or where practicable, exceed all applicable water quality regulatory standards (for drinking water, surface and groundwater quality).	10				
Promote projects to prevent seawater intrusion.				10	
Incorporate or promote principles of low impact development where feasible, appropriate, and cost effective.	10				
Protect surface waters and groundwater basins from contamination and the threat of contamination.	10	11			
Support research and pilot projects for the co-management of food safety and water quality protection.					
Improve septic systems, sewer system infrastructure, wastewater treatment systems, and manure management programs to prevent water quality contamination.			12		
Support research and other efforts on salinity management.					
Support monitoring to better understand major sources of erosion, and implement a comprehensive erosion control program.	10			1; 2	
Promote programs and projects to reduce the quantity and improve the quality of urban and agricultural runoff and/or mitigate their effects in surface waters, groundwater, and the marine environment.	10		12	1; 2; 13	
Promote regional monitoring and analysis to better understand water quality conditions.	10				

IRWM Plan Objective	SWRP Benefit Category (Objectives)				
	Water Quality	Water Supply	Flood Management	Environmental	Community
IRWM Plan Goal: Develop, fund, and implement integrated watershed approaches to flood management through collaborative and community supported processes.					
Promote projects and practices to protect infrastructure and property from flood damage.			12		
Improve flood management infrastructure and operational techniques/strategies.			12		
Implement flood management projects that provide multiple benefits such as public safety, habitat protection, recreation, agriculture, and economic development.			12	1; 2; 13	4; 6; 14
Develop and implement projects to protect, restore, and enhance the natural ecological and hydrological functions of rivers, creeks, streams, and their floodplains.			12	1; 2; 13	
Support research and monitoring efforts to understand the effects of flooding on transport and persistence of pathogens in food crop production areas.			12		
Support management of flood waters so that they do not contaminate fresh produce in the field.			12		
Promote public education about local flood management issues and needs.			12		14
IRWM Plan Goal: Protect, enhance, and restore the region's ecological resources while respecting the rights of private property owners.					
Support science-based projects to protect, improve, enhance, and/or restore the region's ecological resources, while providing opportunities for public access and recreation where appropriate.				1; 2; 13	4; 6; 14
Protect and enhance state and federally listed species and their habitats.				1; 2; 13	
Minimize adverse environmental impacts of water resource management projects.				13	
Support applied research and monitoring to better understand environmental conditions, environmental water needs, and the impacts of water-related projects on environmental resources.				1; 2; 13	
Implement fish-friendly stream and river corridor restoration projects.				1; 2; 3; 13	
Reduce adverse impacts of sedimentation into streams, particularly from roads and non-point sources.	10			2; 3; 13	
Promote efforts to prevent, control, reduce, and/or eradicate high priority invasive species.					
Promote native drought-tolerant plantings in municipal and residential landscaping.					
Consider opportunities to purchase fee title or conservation easements on lands from willing sellers that provide integrated water resource management benefits. Ensure adequate funding and infrastructure to manage properties and/or monitor easements.					14
Support research and monitoring efforts to understand the effects of wildfire events on water resources.					
IRWM Plan Goal: Promote regional communication, cooperation, and education regarding water resource management.					
Facilitate dialogue and reduce inconsistencies in water management strategies/regulations between local, regional, state, and federal entities.					14
Promote dialogue between federal and state regulators and small water system managers to facilitate water quality regulation compliance.	10				
Foster collaboration between regional entities to minimize and resolve potential conflicts and to obtain support for responsible water supply solutions and improved water quality.	10	11			14
Build relationships with federal, state, and local regulatory agencies and other water agencies to facilitate the permitting, planning, and implementation of water-related projects.					14
Increase stakeholder input and public education about the need, complexity, and cost of strategies, programs, plans, and projects to improve water supply, water quality, flood management, coastal conservation, and environmental protection.					14
IRWM Plan Goal: Ensure the provision of high-quality, potable, affordable water and healthy conditions for disadvantaged communities (DACs).					
Seek funding opportunities to ensure all communities have a water system with adequate, safe, high-quality drinking water	10	11			14
Seek funding opportunities to ensure all communities have adequate wastewater treatment.					14
Ensure that DACs are adequately protected from flooding and the impacts of poor surface and groundwater quality.	10		12		14
Provide support for the participation of DACs in the development, implementation, monitoring, and long-term maintenance of water resource management projects.					14
Promote public education in DACs about water resource protection, pollution prevention, conservation, water quality, and watershed health.	10			1; 2; 13	14

IRWM Plan Objective	SWRP Benefit Category (Objectives)				
	Water Quality	Water Supply	Flood Management	Environmental	Community
IRWM Plan Goal: Adapt the region's water management approach to deal with impacts of climate change using science-based approaches, and minimize the regional causal effects.					
Plan for potential impacts of future climate change.				13	
Support increased monitoring and research to obtain greater understanding of long-term impacts of climate change in the Greater Monterey County region.				13	
Support efforts to research alternative energy and to diversify energy sources appropriate for the region.				13	
Seek long-term solutions to reduce greenhouse gas (GHG) producing energy use.				9; 13	
Seek long-term solutions to maintain and protect existing pristine natural resources from the impacts of climate change.				13	
Support research and/or implementation of land-based efforts such as carbon-sequestration on working lands and wildlands in the Greater Monterey County region.				13	
Promote public education about impacts of climate change, particularly as it relates to water resource management in the Greater Monterey County region.				13	14

Appendix C: 303(d) List of Impaired Water Bodies

Appendix C: 303(d) List of Impaired Water Bodies in the Greater Salinas Area

303(d) Listed Waterbody (a)	Pollutant (a)	Potential Sources (a)	Regional Water Board TMDL Completion Year (a)	Applicable to Storm water? (b)
Espinosa Slough	Ammonia (Unionized)	Agriculture	2013	Yes
	Diazinon	Agriculture	2013	Yes
	Nitrate	Agriculture	2013	Yes
	Pesticides	Agriculture, Urban Runoff/Storm Sewers	2013	Yes
	Priority Organics	Nonpoint Source	2013	Yes
	Sediment Toxicity	Agriculture	2013	Yes
	Turbidity	Agriculture	2013	Yes
	Unknown Toxicity	Agriculture	2013	Yes
	pH	Agriculture	2013	Yes
Natividad Creek	Ammonia (Unionized)	Agriculture, Grazing- Related Sources, Other Urban Runoff	2013	Yes
	Escherichia coli (E. coli)	Agriculture, Grazing- Related Sources, Other Urban Runoff	2013	Yes
	Low Dissolved Oxygen	Agriculture, Grazing- Related Sources, Other Urban Runoff, Removal of Riparian Vegetation	2013	Yes
	Nitrate	Agriculture, Grazing- Related Sources, Other Urban Runoff, Removal of Riparian Vegetation	2013	Yes
	Sediment Toxicity	Agriculture, Grazing- Related Sources, Other Urban Runoff, Removal of Riparian Vegetation	2013	Yes
	Temperature, water	Agriculture, Grazing- Related Sources, Other Urban Runoff, Removal of Riparian Vegetation	2013	Yes
	Turbidity	Agriculture, Grazing- Related Sources, Other Urban Runoff, Removal of Riparian Vegetation	2013	Yes
	Unknown Toxicity	Agriculture, Grazing- Related Sources, Other Urban Runoff, Removal of Riparian Vegetation	2013	Yes
	pH	Agriculture, Grazing- Related Sources, Other Urban Runoff	2013	Yes
Merrit Ditch	Ammonia (Unionized)	Agriculture, Channelization, Removal of Riparian Vegetation, Source Unknown	2013	Yes

Appendix C: 303(d) List of Impaired Water Bodies in the Greater Salinas Area

303(d) Listed Waterbody (a)	Pollutant (a)	Potential Sources (a)	Regional Water Board TMDL Completion Year (a)	Applicable to Storm water? (b)
	Low Dissolved Oxygen	Agriculture, Channelization, Removal of Riparian Vegetaion	2013	Yes
	Nitrate	Agriculture, Channelization, Removal of Riparian Vegetaion	2013	Yes
	Sediment Toxicity	Agriculture, Channelization, Removal of Riparian Vegetation, Source Unknown	2013	Yes
	Turbidity	Agriculture, Channelization, Removal of Riparian Vegetaion	2013	Yes
	Unknown Toxicity	Agriculture	2013	Yes
Old Salinas River	Chlorophyll-a	Agriculture, Dredging, Other Urban Runoff, Removal of Riparian Vegetation	2013	Yes
	Chlorpyrifos	Agriculture, Other Urban Runoff	2013	Yes
	Diazinon	Agriculture, Other Urban Runoff	2013	Yes
	Escherichia coli (E. coli)	Agriculture, Marianas and Recreational Boating, Natural Sources, Other Urban Runoff	2013	Yes
	Fecal Coliform	Agriculture, Marianas and Recreational Boating, Natural Sources, Other Urban Runoff	2013	Yes
	Low Dissolved Oxygen	Agriculture, Marinas and Recreational Boating, Other Urban Runoff, Removal of Riparian Vegetaion	2013	Yes
	Nitrate	Agriculture, Other Urban Runoff	2013	Yes
	Sediment Toxicity	Agriculture, Other Urban Runoff	2013	Yes
	Turbidity	Agriculture, Other Urban Runoff	2013	Yes
	Unknown Toxicity	Agriculture, Other Urban Runoff	2013	Yes
	pH	Agriculture, Other Urban Runoff	2013	Yes
Salinas Reclamation Canal	Ammonia (Unionized)	Agriculture, Grazing- Related Sources, Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes
	Chlorpyrifos	Agriculture, Grazing- Related Sources, Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes

Appendix C: 303(d) List of Impaired Water Bodies in the Greater Salinas Area

303(d) Listed Waterbody (a)	Pollutant (a)	Potential Sources (a)	Regional Water Board TMDL Completion Year (a)	Applicable to Storm water? (b)
	Copper	Agriculture, Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2018	Yes
	Diazinon	Agriculture, Grazing- Related Sources, Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes
	Escherichia coli (E.coli)	Agriculture, Grazing- Related Sources, Natural Sources Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes
	Fecal Coliform	Agriculture, Grazing- Related Sources, Natural Sources Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes
	Low Dissolved Oxygen	Agriculture, Grazing- Related Sources, Removal of Riparian Vegetation, Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes
	Nitrate	Agriculture, Urban Runoff/ Storm Sewers	2013	Yes
	Pesticides	Agriculture Return Flows, Agriculture, Agriculture- Irrigation Tailwater, Agriculture- Storm Runoff, Irrigated Crop Production, Minor Industrial Point Source, Nonpoint Source	2013	Yes
	Priority Organics	Agricultural Return Flows, Agriculture, Agriculture- Irrigation Tailwater, Agriculture- Storm Runoff, Irrigated Crop Production, Minor Industrial Point Source, Nonpoint Source, Source Unknown, Urban Runoff/ Storm Sewers	2013	Yes
	Sediment Toxicity	Agriculture, Grazing-Related Sources, Removal of Riparian Vegetation, Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes

Appendix C: 303(d) List of Impaired Water Bodies in the Greater Salinas Area

303(d) Listed Waterbody (a)	Pollutant (a)	Potential Sources (a)	Regional Water Board TMDL Completion Year (a)	Applicable to Storm water? (b)
	Turbidity	Agriculture, Grazing-Related Sources, Removal of Riparian Vegetaion, Urban Runoff-Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes
	Unknown Toxicity	Agriculture, Grazing- Related Sources, Removal of Riparian Vegetation, Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes
	pH	Agriculture, Grazing-Related Sources, Removal of Riparian Vegetation, Urban Runoff- Industrial Permitted, Urban Runoff- Non-industrial Permitted, Urban Runoff/ Storm Sewers	2013	Yes
Tembladero Slough	Chlorophyll-a	Agriculture, Grazing- Related Sources, Removal of Riparian Vegetation, Urban Runoff/ Storm Sewers	2013	Yes
	Chlorpyrifos	Agriculture, Grazing- Related Sources, Urban Runoff/ Storm Sewers	2013	Yes
	Diazinon	Agriculture, Grazing-Related Sources, Urban Runoff/ Storm Sewers	2013	Yes
	Enterococcus	Agriculture, Natural Sources, Urban Runoff/ Storm Sewers	2013	Yes
	Escherichia coli (E. coli)	Agriculture, Grazing-Related Sources, Natural Runoff/ Storm Sewers	2013	Yes
	Fecal Coliform	Agriculture, Natural Sources, Pasture Grazing- Riparian and/or Upland, Urban Runoff/ Storm Sewers	2013	Yes
	Nitrate	Agriculture, Urban Runoff/ Storm Sewers	2013	Yes
	Nutrients	Agriculture Return Flows, Agriculture, Agriculture-Irrigation Tailwater, Agriculture- Storm Runoff, Irrigated Crop Production, Nonpoint Source	2013	Yes

Appendix C: 303(d) List of Impaired Water Bodies in the Greater Salinas Area

303(d) Listed Waterbody (a)	Pollutant (a)	Potential Sources (a)	Regional Water Board TMDL Completion Year (a)	Applicable to Storm water? (b)
	Pesticides	Agriculture Return Flows, Agriculture, Agriculture- Storm Runoff, Irrigated Crop Production, Nonpoint Source	2013	Yes
	Sediment Toxicity	Agriculture, Grazing-Related Sources, Urban Runoff/ Storm Sewers	2013	Yes
	Total Coliform	Agriculture, Grazing-Related Sources, Natural Sources, Urban Runoff/ Storm Sewers	2013	Yes
	Turbidity	Agriculture, Grazing-Related Sources, Urban Runoff/ Storm Sewers	2013	Yes
	Unknown Toxicity	Agriculture, Grazing-Related Sources, Urban Runoff/ Storm Sewers	2013	Yes
	pH	Agriculture, Grazing-Related Sources, Urban Runoff/ Storm Sewers	2013	Yes
Blanco Drain	Chlorpyrifos	Agriculture	2013	Yes
	Diazinon	Agriculture	2013	Yes
	Low Dissolved Oxygen	Agriculture, Groundwater Loadings	2013	Yes
	Nitrate	Agriculture, Groundwater Loadings	2013	Yes
	Pesticides	Agricultural Return Flows, Agriculture, Agriculture- Irrigation Tailwater, Agriculture- Storm Runoff, Irrigated Crop Production, Nonpoint Source	2013	Yes
	Turbidity	Agriculture, Removal of Riparian Vegetation	2013	Yes
Salinas River (lower, estuary to near Gonzales Rd crossing, watersheds 30910 and 30920)	Chlordane	Source Unknown	2013	Yes
	Chloride	Agriculture, Grazing-Related Sources, Natural Sources, Other Urban Runoff	2018	Yes
	Chlorpyrifos	Agriculture, Grazing-Related Sources, Other Urban Runoff	2013	Yes
	DDD (dichlorodiphenyldichloroethane)	Source Unknown	2013	Yes
	Diazinon	Agriculture, Grazing-Related Sources, Other Urban Runoff	2013	Yes
	Dieldrin	Source Unknown	2013	Yes

Appendix C: 303(d) List of Impaired Water Bodies in the Greater Salinas Area

303(d) Listed Waterbody (a)	Pollutant (a)	Potential Sources (a)	Regional Water Board TMDL Completion Year (a)	Applicable to Storm water? (b)
	Electrical Conductivity	Source Unknown	2013	Yes
	Enterococcus	Agriculture, Grazing-Related Sources, Illegal Dumping, Natural Sources, Pasture Grazing- Riparian and/or Upland, transient Encampments, Urban Runoff/ Storm Sewers	2013	Yes
	Escherichia coli (E. coli)	Agriculture, Grazing- Related Sources, Illegal Dumping, Natural Sources, Pasture Grazing- Riparian and/or Upland, Transient Encampments, Urban Runoff/ Storm Sewers	2013	Yes
	Fecal Coliform	Agriculture, Grazing-Related Sources, Illegal Dumping, Natural Sources, Pasture Grazing- Riparian and/or Upland, Transient Encampments, Urban Runoff/ Storm Sewers	2013	Yes
	Nitrate	Agriculture, Grazing-Related Sources, Urban Runoff/ Storm Sewers	2013	Yes
	PCBs (Polychlorinated Biphenyls)	Source Unknown	2013	Yes
	Pesticides	Agriculture, Construction/ Land Development, Point Source, Urban Runoff/ Storm Sewers	2013	Yes
	Sodium	Source Unknown	2018	Yes
	Total Dissolved Solids	Source Unknown	2018	Yes
	Toxaphene	Source Unknown	2013	Yes
	Turbidity	Agriculture, Grazing-Related Sources, Other Urban Runoff	2013	Yes
	Unknown Toxicity	Agriculture, Grazing-Related Sources, Other Urban Runoff	2013	Yes
	pH	Source Unknown	2013	Yes
Alisal Slough (Monterey County)	Low Dissolved Oxygen	Agriculture	2013	Yes
	Nitrate	Agriculture	2013	Yes
	Sediment Toxicity	Agriculture	2013	Yes

Appendix C: 303(d) List of Impaired Water Bodies in the Greater Salinas Area

303(d) Listed Waterbody (a)	Pollutant (a)	Potential Sources (a)	Regional Water Board TMDL Completion Year (a)	Applicable to Storm water? (b)
	Unknown Toxicity	Agriculture	2013	Yes
Gabilan Creek	Ammonia (Unionized)	Agriculture, Grazing-Related Sources, Other Urban Runoff	2013	Yes
	Fecal Coliform	Agriculture, Grazing-Related Sources, Other Urban Runoff	2013	Yes
	Nitrate	Agriculture, Grazing-Related Sources, Other Urban Runoff	2013	Yes
	Sediment Toxicity	Agriculture, Grazing- Related Sources, Other Urban Runoff	2013	Yes
	Turbidity	Agriculture, Grazing- Related Sources, Other Urban Runoff	2013	Yes
	Unknown Toxicity	Agriculture, Grazing- Related Sources, Other Urban Runoff	2013	Yes
	pH	Agriculture, Grazing- Related Sources, Other Urban Runoff	2013	Yes
Santa Rita Creek (Monterey County)	Ammonia (Unionized)	Agriculture, Other Urban Runoff	2013	Yes
	Escherichia coli (E.coli)	Agriculture, Natural Sources, Other Urban Runoff	2013	Yes
	Fecal Coliform	Agriculture, Natural Sources, Other Urban Runoff	2013	Yes
	Low Dissolved Oxygen	Source Unknown	2013	Yes
	Nitrate	Agriculture, Urban Runoff/ Storm Sewers	2013	Yes
	Sodium	Agriculture, Other Urban Runoff	2018	Yes
	Turbidity	Agriculture, Other Urban Runoff	2013	Yes
Alisal Creek (Monterey County)	Chlorophyll-a	Agriculture	2013	Yes
	Fecal Coliform	Agriculture, Natural Sources, Nonpoint Sources, Urban Runoff/ Storm Sewers	2013	Yes
	Nitrate	Agriculture, Nonpoint Sources, Urban Runoff/ Storm Sewers	2013	Yes
	Sodium	Agriculture, Nonpoint Sources, Urban Runoff/ Storm Sewers	2018	Yes
(a) http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml , accessed October 26, 2016.				
(b) Natural sources and those not included in MS4 or general statewide storm water permits are assumed not to be applicable to storm water discharges.				

Appendix D: Applicable Active NPDES Permittees

Appendix D - NPDES Regulated Facilities

Agency	Facility Name	Facility Address	Place/Project Type	Regulatory Measure Type	Order No.	WDID	NPDES No.
1515 Constitution LLC	Creekbridge Aprtments 2	1511 Constitution Blvd Salinas, Salinas, CA 93905	Construction - Residential	Storm water construction	2009-0009-DWQ	3 27C375787	CAS000002
Accu Chem Conversion Inc	Accu Chem Conversion	1111 Abbott Street, Salinas, CA 93901	Industrial - Railroads, Line-haul Op	Storm water industrial	2014-0057-DWQ	3 27I024005	CAS000001
Alisal Union School District	Alisal Union School District Transportation	427 Bardin Rd, Salinas, CA 93905	Industrial - School Buses	Storm water industrial	2014-0057-DWQ	3 27I017971	CAS000001
Alisal Union School District	Frank Paul Elementary School	1300 Rider Avenue, Salinas, CA 93905	Construction - Other: Elementary S	Storm water construction	2009-0009-DWQ	3 27C375374	CAS000002
Alisal Union School District	Monte Bella Elementary School	Tuscany Blvd & Freedom Pkwy, Salinas, CA 93950	Construction	Storm water construction	2009-0009-DWQ	3 27C354422	CAS000002
Amercian Bottling Co	Amercian Bottling Co	11205 Commercial Parkway, Castroville, CA 95012	Industrial - General Warehousing a	Storm water industrial	2014-0057-DWQ	3 27I026401	CAS000001
American Medical Response West	AMR Marina	4548 A St, Marina, CA 93933	Industrial - Local Passenger Transp	Storm water industrial	2014-0057-DWQ	3 27I022196	CAS000001
Americold	Americold	950 S Sanborn Road PO Box 1548, Salinas, CA 93902	Industrial - Refrigerated Warehous	Storm water industrial	2014-0057-DWQ	3 27I020262	CAS000001
Associated Tagline	Associated Tagline	1504 Hwy 183, Salinas, CA 93907	Industrial - Fertilizers, Mixing Only	Storm water industrial	2014-0057-DWQ	3 27I016529	CAS000001
Assured Aggregates	Assured Aggregates	520 Crazy Horse Canyon Rd A, Salinas, CA 93907	Industrial - Trucking, Except Local	Storm water industrial	2014-0057-DWQ	3 27I013685	CAS000001
BBS Inc	Industrial Facilities	851 Work Street, Salinas, CA 93901	Construction - Industrial	Storm water construction	2009-0009-DWQ	3 27C375822	CAS000002
Bakker Construction Inc	Tatums Garden	East Bernal Drive at Maryal Drive, Salinas, CA 93906	Construction - Other: Recreational	Storm water construction	2009-0009-DWQ	3 27C367493	CAS000002
Bin Doctor	Bin Doctor	1057 Pellet Avenue, Salinas, CA 93901	Industrial - General Warehousing a	No Exposure Certification	2014-0057-DWQ	3 27NEC002636	UNKNOWN
Ca Dept of Transportation District 5 SLO Caltrans	0A400 SB/SLO 33 Roadway Reconstruction/Rehat	CA	Other	Enrollee	99-06-DWQ	3-05CTC0A400	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	Salinas Route 101 Planting & Irrigation System	101 Freeway, Salinas, CA	Other	Enrollee	99-06-DWQ	3-05CTC0R2004	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	Shoulder Widening and Rumble Strip Installation	101 Highway, CA	Other	Enrollee	99-06-DWQ	3-05CTC0R7604	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	Pajaro Median Barrier	Route 1 Highway, CA	Other	Enrollee	99-06-DWQ	3-05CTC0Q6704	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	Inside Shoulder Widening and Rumble Strip	Highway 101 Highway, N/A, CA	Other	Enrollee	99-06-DWQ	3-05CTC0Q2001	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	Salinas Road/Highway 1 New Interchange	Salinas Rd. at Hwy 1 Highway, N/A, CA	Other	Enrollee	99-06-DWQ	3-05CTC315921	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	Airport Blvd Interchange East	Route 101, Salinas, CA	Other	Enrollee	99-06-DWQ	3-05CTC349501	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	49501 Salinas 68	CA	Other	Enrollee	99-06-DWQ	3-05CTC49501	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	47490 Salinas North Barrier	CA	Other	Enrollee	99-06-DWQ	3-05CTC47490	CAS000003
Ca Dept of Transportation District 5 SLO Caltrans	0E2411 Salinas Rehab	CA	Other	Enrollee	99-06-DWQ	3-05CTC0E2411	CAS000003
California American Water	TMMPWSP Monterey Pipeline	Hilby Ave and Yosemite Street Seaside to Sinex Ave Pac G	Construction - Below Ground	Storm water construction	2009-0009-DWQ	3 27C377500	CAS000002
California Department of Veterans Affairs	CALIFORNIA CENTRAL COAST VETERANS CEMETE	2900 Parker Flats Road, Seaside, CA 93955	Construction - Other: Cemetery	Storm water construction	2009-0009-DWQ	3 27C372239	CAS000002
California State University Monterey Bay	CSUMB Demo Ph1	100 Campus Drive, Seaside, CA 93955	Construction	Storm water construction	2009-0009-DWQ	3 27C376911	CAS000002
California State University Monterey Bay	CSUMB Demo Ph2	100 Campus Center, Seaside, CA 93955	Construction	Storm water construction	2009-0009-DWQ	3 27C377890	CAS000002
California State University Monterey Bay	8th Ave/Inter-Garrison Roundabout	8th Avenue @ Inter-Garrison Road 100 Campus Center, Se	Construction - Transportation	Storm water construction	2009-0009-DWQ	3 27C376835	CAS000002
Carmel Marina Corp	Carmel Marina Corp	11260 Commercial Pkwy, Castroville, CA 95012	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I017456	CAS000001
Carmel Marina Corp	Salinas Disposal and Transfer Station	1120 Madison Lane, Salinas, CA 93907	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I014754	CAS000001
Cemex Construction Materials	Cemex	2 Miles N of Marina Hwy 1, Marina, CA 93933	Industrial - Industrial Sand	Storm water industrial	2014-0057-DWQ	3 27I022391	CAS000001
City of Marina	Reservation Road Improvements	Reservation Road, Marina, CA 93933	Construction - Transportation	Storm water construction	2009-0009-DWQ	3 27C366781	CAS000002
City of Marina	Del Monte Blvd. and Beach Rd.	Del Monte Blvd. and Beach Rd., Marina, CA 93933	Construction	Storm water construction	2009-0009-DWQ	3 27W002890	CAS000002
City of Marina	Imjin Parkway Bike Lanes	Imjin Parkway from Imjin Rd from Reservation Rd, Marina	Construction - Transportation	Storm water construction	2009-0009-DWQ	3 27C370235	CAS000002
City of Marina	City of Marina	211 Hillcrest Avenue, CA 93933	Facility	Phase II Small MS4	2013-0001-DWQ	3 27M2000160	CAS000004
City of Salinas	Sanborn Road Elvee Drive Route 101 Improvemen	908 Elvee Drive, Salinas, CA 93901	Construction - Transportation	Storm water construction	2009-0009-DWQ	3 27C374348	CAS000002
Coca Cola Bottling Company of LA	BCI Coca Cola Bottling Company of LA	715 Vandenberg St, Salinas, CA 93905	Industrial - Trucking, Except Local	Storm water industrial	2014-0057-DWQ	3 27I019256	CAS000001
Cool Pacific Land Co	Cool Pacific	1160 Teruen Ave, Salinas, CA 93901	Industrial - Pesticides and Agricultu	Storm water industrial	2014-0057-DWQ	3 27I021204	CAS000001
County of Monterey Municipal Stormwater Permitt	County of Monterey Municipal Stormwater Perm	168 West Alisal Street 2nd Floor, Salinas, CA 93901	Facility	Phase II Small MS4	2013-0001-DWQ	3 27M2000095	CAS000004
Cypress Marina Heights LP	Sea Haven	608 3rd Ave, Marina, CA 93933	Construction	Storm water construction	2009-0009-DWQ	3 27C331735	CAS000002
DArrigo Bros Co of California	DArrigo Bros Co of California	21777 Harris Rd, Salinas, CA 93908	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C371325	CAS000002
Dandy Cooling Co	Dandy Cooling Co	1252 Growers St, Salinas, CA 93901	Industrial - Local Trucking with Sto	No Exposure Certification	2014-0057-DWQ	3 27NEC002648	UNKNOWN
Discovery Charters	Discovery Charters	11020 Commercial Pkwy, Castroville, CA 95012	Industrial - Bus Charter Service, Exc	Storm water industrial	2014-0057-DWQ	3 27I010739	CAS000001
Don Chapin Co	Don Chapin Co	440 Crazy Horse Canyon Rd, Salinas, CA 93907	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I003610	CAS000001
Donald Chapin	Hidden Canyon Ranch Industrial Lot 2	560 Crazy Horse Canyon Road, Salinas, CA 93907	Construction - Industrial	Storm water construction	2009-0009-DWQ	3 27C369305	CAS000002
Drew Massa Cooling Inc	Drew Massa Cooling Inc	1370 Dayton Street, Salinas, CA 93901	Industrial - Refrigerated Warehous	No Exposure Certification	2014-0057-DWQ	3 27NEC002484	UNKNOWN
Excelligence Learning Corp	Excelligence Learning Corp	1353 Dayton Street Building B, Salinas, CA 93901	Industrial - Games, Toys, and Child	No Exposure Certification	2014-0057-DWQ	3 27NEC002486	UNKNOWN
Fed Ex Freight Salinas	FedEx Freight Salinas	670 Work St, Salinas, CA 93901	Industrial - Terminal and Joint Tern	Storm water industrial	2014-0057-DWQ	3 27I017541	CAS000001
Fort Ord Reuse Authority	General Jim Moore Phase 5 Eucalyptus Phase 2 P	General Jim Moore Blvd Eucalyptus Rd, Seaside, CA 93955	Construction	Storm water construction	2009-0009-DWQ	3 27C361618	CAS000002
Fresh Express Inc	Fresh Express Inc	900 E Blanco rd, Salinas, CA 93901	Industrial - Food Preparations, NEC	Storm water industrial	2014-0057-DWQ	3 27I026808	CAS000001
Georgia Pacific LLC	Georgia Pacific LLC	741 Vertin Ave, Salinas, CA 93901	Industrial - Packaging Paper and Pl	No Exposure Certification	2014-0057-DWQ	3 27NEC001505	UNKNOWN
Goodwill Central Coast	Moffett Street Warehouse	1566 Moffett Street, Salinas, CA 93906	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C377360	CAS000002
Granite Construction Coastal Region	Salinas Hot Mix Asphalt Plant	721 Work St, Salinas, CA 93901	Industrial - Asphalt Paving Mixture	Storm water industrial	2014-0057-DWQ	3 27I015659	CAS000001
Granite Rock Co	Castroville Reclaim Concrete	13570 Blackie Rd, Castroville, CA 95077	Industrial - Crushed and Broken St	Storm water industrial	2014-0057-DWQ	3 27I023913	CAS000001
Granite Rock Co	Granite Rock Co Salinas Concre	400 Work St, Salinas, CA 93901	Industrial - Ready-Mixed Concrete	Storm water industrial	2014-0057-DWQ	3 27I006078	CAS000001
GreenGate Fresh LLLP	GreenGate Fresh Salinas	1222 Merrill St, Salinas, CA 93901	Industrial - Food Preparations, NEC	Storm water industrial	2014-0057-DWQ	3 27I024447	CAS000001
Growers Ice Co	Growers Ice Co	1060 Growers St, Salinas, CA 93901	Industrial - Manufactured Ice	Storm water industrial	2014-0057-DWQ	3 27I003815	CAS000001
Haciendas 2 LP	The Haciendas Phase 2	44 Haciendas Place, Salinas, CA 93901	Construction - Below Ground, Wat	Storm water construction	2009-0009-DWQ	3 27C365826	CAS000002
Hamstra Builders Inc	VA DOD Outpatient Clinit	The Dunes on Monterey Bay Lots 23 33, Marina, CA 93933	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C369099	CAS000002
Hanbit Enterprises Inc dba Jack and the Beanstalk	Hanbit Enterprises Inc. dba Jack and the Beanstalk	401 Victor Way Ste. 16, Salinas, CA 93907	Industrial - Food Preparations, NEC	No Exposure Certification	2014-0057-DWQ	3 27NEC002306	UNKNOWN

Appendix D - NPDES Regulated Facilities

Agency	Facility Name	Facility Address	Place/Project Type	Regulatory Measure Type	Order No.	WDID	NPDES No.
Hartnell Community College	Hartnell Community College Science Center	411 Central Avenue 411 Central Avenue, Salinas, CA 93901	Construction - Other: Institutional,	Storm water construction	2009-0009-DWQ	3 27C370483	CAS000002
Hernando Calderon	Salinas Recycling Inc	316 Commission St, Salinas, CA 93901	Industrial - Scrap and Waste Mater	Storm water industrial	2014-0057-DWQ	3 27I024863	CAS000001
Housing Development Corp Monterey	Haciendas Phase IV	East Rossi Street and Bridge St, Salinas, CA 93901	Construction - Residential	Storm water construction	2009-0009-DWQ	3 27C372354	CAS000002
Imjin Office Park Partners	Imjin Office Park	NEC Imjin Pkwy & 2nd Ave, Marina, CA 93933	Construction - Commercial, Utility	Storm water construction	2009-0009-DWQ	3 27C350266	CAS000002
International Paper Salinas	International Paper Co	1345 Harkins Rd, Salinas, CA 93901	Industrial - Corrugated and Solid Fi	Storm water industrial	2014-0057-DWQ	3 27I021697	CAS000001
JR Simplot Company	JR Simplot Company	746 Vertin Avenue, Salinas, CA 93901	Industrial - Fertilizers, Mixing Only	No Exposure Certification	2014-0057-DWQ	3 27NEC002468	UNKNOWN
Johnson Johnson Edwards	Santa Clara Transfer Service	11080 Commercial Pkwy, Castroville, CA 95012	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I001788	CAS000001
Keith Day Company Inc	Gabilan Ag Services	14201 Del Monte Blvd, Marina, CA 93933	Industrial - Fertilizers, Mixing Only	Storm water industrial	2014-0057-DWQ	3 27I024217	CAS000001
Keith Day Company Inc	Keith Day Company Inc	1091 Madison Lane, Salinas, CA 93907	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I024222	CAS000001
Ken Slama	La Guardia	722 La Guardia St, Salinas, CA 93908	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C371883	CAS000002
Keurig Green Mountain	Keurig Green Mountain	14800 Commercial Parkway, Castroville, CA 95012	Industrial - Roasted Coffee	Storm water industrial	2014-0057-DWQ	3 27I025858	CAS000001
Lowe's Home Centers LLC	Lowe's Salinas	SEC San Juan Grade and E Boronda Rd, Salinas, CA 93906	Construction	Storm water construction	2009-0009-DWQ	3 27C377199	CAS000002
MV Transportation Inc	MV Transportation Div 86	1375 Burton Ave, Salinas, CA 93901	Industrial - Local Passenger Transp	Storm water industrial	2014-0057-DWQ	3 27I023642	CAS000001
Mann Packing Co	Mann Packing Co Inc	1250 Hansen St, Salinas, CA 93901	Industrial - Pesticides and Agricultu	Storm water industrial	2014-0057-DWQ	3 27I020414	CAS000001
Marina RV II, LLC	Marina Dunes RV Park Expansion	3330 Dunes Dr, Marina, CA 93933	Construction - Commercial, Utility	Storm water construction	2009-0009-DWQ	3 27C351434	CAS000002
Monterey Cnty	855 E Laurel Facility	855 E Laurel Dr 299 Carmel Avenue #28, Salinas, CA 93905	Industrial - Terminal and Service Fa	Storm water industrial	2014-0057-DWQ	3 27I017898	CAS000001
Monterey Cnty	Monterey Cnty Lake San Antonio	168 W Alisal St 2nd Fl, Salinas, CA 93901	Industrial - Refuse Systems	Storm water industrial	2014-0057-DWQ	3 27I005646	CAS000001
Monterey Farms Inc	Monterey Farms Inc	1354 Dayton Street Suite H, Salinas, CA 93901	Industrial - Food Preparations, NEC	No Exposure Certification	2014-0057-DWQ	3 27NEC002538	UNKNOWN
Monterey Peninsula Unified School District	Marina High School	298 Patton Parkway 540 Canyon del Rey Suite #4, Marina, CA 93933	Construction	Storm water construction	2009-0009-DWQ	3 27C368319	CAS000002
Monterey Regional Waste Management District	Monterey Reg Waste Mngt Dist	14201 Del Monte Blvd, Marina, CA 93933	Industrial - Refuse Systems	Storm water industrial	2014-0057-DWQ	3 27I005220	CAS000001
Monterey Salinas Transit	Monterey Salinas Transit	443 Victor Way, Salinas, CA 93907	Industrial - Local and Suburban Tra	Storm water industrial	2014-0057-DWQ	3 27I004247	CAS000001
Nielsen Trucking Co	Nielsen Trucking Co Union Pacific	242 W Lake St, Salinas, CA 93901	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I017167	CAS000001
North Monterey County Unified School District	North Monterey County Unified SD	17590 Pesante Rd 17590 Pesante Rd., Salinas, CA 93907	Industrial - School Buses	Storm water industrial	2014-0057-DWQ	3 27I017920	CAS000001
North Monterey County Unified School District	North Monterey County High School	13990 Castroville Blvd, Castroville, CA 95012	Construction	Storm water construction	2009-0009-DWQ	3 27C377413	CAS000002
Northridge Owner LP	JC Penny at Northridge Mall	100 Northridge Mall, Salinas, CA 93906	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C375551	CAS000002
Nunes Cooling Inc	Johnson Avenue Cooling Facility	930 Johnson Avenue, Salinas, CA 93901	Industrial - Refrigerated Warehous	Storm water industrial	2014-0057-DWQ	3 27I026730	CAS000001
Organic Girl LLC	Organic Girl LLC	900 Work St, Salinas, CA 93901	Industrial - Refrigerated Warehous	Storm water industrial	2014-0057-DWQ	3 27I026821	CAS000001
Pacific Gas and Electric Company	PG&E 2016 Gas Transmission Program Central Co	Old Stage Road to Natividad Road, Salinas, CA 93906	Construction	Storm water construction	2009-0009-DWQ	3 27C375911	CAS000002
Peninsula Auto Dismantlers Inc	Peninsula Auto Dismantlers	2590 El Camino Real N, Prunedale, CA 93907	Industrial - Motor Vehicle Parts, Us	Storm water industrial	2014-0057-DWQ	3 27I023275	CAS000001
Pick N Pull Auto Dismantlers	Pick-n-pull Salinas #45	20856 Spence Road, Salinas, CA 93908	Industrial - Motor Vehicle Parts, Us	Storm water industrial	2014-0057-DWQ	3 27I025199	CAS000001
Prunedale Ace Hardware	Prunedale Ace Hardware	8123 Prunedale North Road, Prunedale, CA 93907	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C377113	CAS000002
Quinn Co	Quinn Co	1300 Abbott St, Salinas, CA 93901	Industrial - Construction Machinery	Storm water industrial	2014-0057-DWQ	3 27I022742	CAS000001
Republic Services	Republic Services of Salinas	271 Rianda Street, Salinas, CA 93901	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I024621	CAS000001
Rolling Frito Lay Sales LP	Salinas Bin	1355 Burton Ave, Salinas, CA 93901	Industrial - Local Trucking with Sto	Storm water industrial	2014-0057-DWQ	3 27I023322	CAS000001
Ryder System Inc	Ryder Trucking Facility	1103 Terven Avenue, Salinas, CA 93901	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C377614	CAS000002
SALINAS VALLEY MEMORIAL HEALTHCARE SYSTEM	Salinas Valley Memorial Hospital	450 E Romie Ln, Salinas, CA 93901	Construction - Reconstruction, Util	Storm water construction	2009-0009-DWQ	3 27C355884	CAS000002
SGS Recycling Enterprises Inc	A S Metals	11340 Commercial Parkway, Castroville, CA 95012	Industrial - Scrap and Waste Mater	Storm water industrial	2014-0057-DWQ	3 27I024796	CAS000001
SKN Properties	Marina Office Building	2nd Avenue and General Stillwell, Marina, CA 93933	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C375471	CAS000002
SPRINGHILL SUITES BY MARRIOTT	Springhill Suites by Marriott	2nd Ave & 10th St, Marina, CA 93933	Construction - Commercial	Storm water construction	2009-0009-DWQ	3 27C371814	CAS000002
Salinas City	Salinas Municipal SW	200 Lincoln, Salinas, CA	MS4	NPDES Permit	R3-2012-0005	3 279906001	CA0049981
Salinas City	Salinas Municipal Airport	30 Mortensen Ave, Salinas, CA 93905	Industrial - Airports, Flying Fields, a	Storm water industrial	2014-0057-DWQ	3 27I004751	CAS000001
Salinas Real Property	Salinas Real Property	880 Airport Blvd, Salinas, CA 93901	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I001244	CAS000001
Salinas Tallow Co Inc	Salinas Tallow Co Inc	1 Work Cir, Salinas, CA 93901	Industrial - Animal and Marine Fats	Storm water industrial	2014-0057-DWQ	3 27I015984	CAS000001
Salinas Union High School District	Salinas Union High School District	13 Villa St, Salinas, CA 93901	Industrial - School Buses	Storm water industrial	2014-0057-DWQ	3 27I004493	CAS000001
Salinas Union High School District	New High School No 5	Rogge Road, Salinas, CA 93906	Construction - Other: School	Storm water construction	2009-0009-DWQ	3 27C376427	CAS000002
Salinas Valley Solid Waste Authotity	Sun Street Transfer Station	139 Sun St 131, Salinas, CA 93901	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I019152	CAS000001
Salinas Valley Solid Waste Authotity	Crazy Horse Sanitary Landfill Class III	350 Crazy Horse Canyon Rd, Salinas, CA 93907	Industrial - Local Trucking Without	Storm water industrial	2014-0057-DWQ	3 27I013453	CAS000001
Salinas Valley Wax Paper Co	Salinas Valley Wax Paper Co	111 Abbott St, Salinas, CA 93901	Industrial - Coated and Laminated	Storm water industrial	2014-0057-DWQ	3 27I013863	CAS000001
San Benito Supply	San Benito Supply	54 Summer St, Salinas, CA 95023	Industrial - Ready-Mixed Concrete	Storm water industrial	2014-0057-DWQ	3 27I024645	CAS000001
Shea Homes Limited Partnership	University Villages Phase 1B	2nd Ave Btw 9th & 10th St, Marina, CA 93933	Construction - Commercial, Reside	Storm water construction	2009-0009-DWQ	3 27C344659	CAS000002
Shea Homes Limited Partnership	University Village Phase 1C	Btwn Imjin Prkwy and 8th St Btwn 2nd Ave and 4th Ave, Marina, CA 93933	Construction - Reconstruction, Res	Storm water construction	2009-0009-DWQ	3 27C344980	CAS000002
Sinecure Wine LLC	Sinecure Wine LLC	3344 Paul Davis Dr #2, Marina, CA 93933	Industrial - Wines, Brandy, and Bra	No Exposure Certification	2014-0057-DWQ	3 27NEC001415	UNKNOWN
Soil Serv Inc John Pryor Co	Wilbur Ellis Company, LLC-Salinas	14271 1505 Abbott St 1427 Abbott St, Salinas, CA 93901	Industrial - Fertilizers, Mixing Only	Storm water industrial	2014-0057-DWQ	3 27I021213	CAS000001
Tanimura and Antle Fresh Foods Inc	Spreckels Industrial Park LLC	121 Spreckles Blvd 1 Harris Rd, Salinas, CA 93908	Industrial - Nonclassifiable Establis	Storm water industrial	2014-0057-DWQ	3 27I014263	CAS000001
Taylor Farms California Inc	Taylor Farms CA Inc	1207 Abbott St, Salinas, CA 93901	Industrial - Food Preparations, NEC	Storm water industrial	2014-0057-DWQ	3 27I017307	CAS000001
Taylor Farms California Inc	Taylor Farms California Inc	1400 Schilling Pl, Salinas, CA 93901	Industrial - Refrigerated Warehous	Storm water industrial	2014-0057-DWQ	3 27I021208	CAS000001
Thrust IV Services LLC	CreekBridge Apartments	Manchester Circle, Salinas, CA 93905	Construction - Residential	Storm water construction	2009-0009-DWQ	3 27C369847	CAS000002
UCP East Garrison LLC	East Garrison Fort Ord Tract Zero	Inter Garrison Rd and Reservation Rd, Fort Ord, CA 93933	Construction - Commercial, Utility:	Storm water construction	2009-0009-DWQ	3 27C356645	CAS000002

Appendix D - NPDES Regulated Facilities

Agency	Facility Name	Facility Address	Place/Project Type	Regulatory Measure Type	Order No.	WDID	NPDES No.
United Parcel Service Freight	UPS Salinas CASLA	20760 Spence Rd, Salinas, CA 93908	Industrial - Trucking, Except Local	No Exposure Certification	2014-0057-DWQ	3 27NEC000331	UNKNOWN
United Parcel Service Oakland Hub	UPS Salinas Center CASAL	1139 Madison Lane, Salinas, CA 93901	Industrial - Courier Services Except	Storm water industrial	2014-0057-DWQ	3 27I026259	CAS000001
University Village Associates	University Village Apartments	corner of 2nd Ave and 9th Street, Marina, CA 93933	Construction - Residential	Storm water construction	2009-0009-DWQ	3 27C364919	CAS000002
Valley Pacific Petroleum	Valley Pacific Petroleum	1083 Madison Lane, Salinas, CA 93907	Industrial - Petroleum Bulk Station	Storm water industrial	2014-0057-DWQ	3 27I024064	CAS000001
WC Marina LLC	WC Marina	608 Third Ave, Marina, CA 93933	Construction	Storm water construction	2009-0009-DWQ	3 27C377405	CAS000002
Wesley N Janice M Callahan Trust	Callahan Apartments	1112 Del Monte Avenue, Salinas, CA 93905	Construction - Residential, Utility: S	Storm water construction	2009-0009-DWQ	3 27C362155	CAS000002
caltrans district 5	0F7004 Mon 68 Salinas River Bridge	Highway 68, Salinas, CA 93908	Facility	Caltrans Construction	2012-0011-DWQ	3 27C376080	CAS000003
caltrans district 5	1F7304 MON 156	Highway 156, Castroville, CA 95012	Facility	Caltrans Construction	2012-0011-DWQ	3 27C376985	CAS000003
Dynegy Moss Landing LLC	Moss Landing Power Plant	Hwy 1 and Dolan Rd, Moss Landing, CA 95039	Industrial - Electric Services	Storm water industrial	2014-0057-DWQ	3 27I021991	CAS000001
EJ Gallo Winery	Robert Talbott Winery	1380 River Road, Salinas, CA 93906	Industrial - Wines, Brandy, and Bra	Storm water industrial	2014-0057-DWQ	3 27I026142	CAS000001
Helena Chemical Company	Helena Chemical Company Salinas	22250 Somavia Road, Salinas, CA 93908	Industrial - Fertilizers, Mixing Only	Storm water industrial	2014-0057-DWQ	3 27I025352	CAS000001
Lhoist North America	Lhoist North America	11771 Old Stage Road, Salinas, CA 93908	Industrial - Lime	Storm water industrial	2014-0057-DWQ	3 27I013875	CAS000001
Moss Landing Cement Co	Moss Landing Cement Co	7697 Hwy 1 7697 Highway 1, Moss Landing, CA 95039	Industrial - Cement, Hydraulic	Storm water industrial	2014-0057-DWQ	3 27I022057	CAS000001
Moss Landing Commercial Park	Moss Landing Commercial Park	7697 Hwy 1, Moss Landing, CA 95039	Industrial - Special Warehousing ar	Storm water industrial	2014-0057-DWQ	3 27I022035	CAS000001
Moss Landing Marine	Moss Landing Marine	7501 Sandholdt Rd, Moss Landing, CA 95039	Industrial - Boat Building and Repa	Storm water industrial	2014-0057-DWQ	3 27I025816	CAS000001
Nestle Waters North America	ReadyRefresh by Nestle	21875 Rosehart Way, Salinas, CA 93908	Industrial - Local Trucking with Sto	Storm water industrial	2014-0057-DWQ	3 27I025633	CAS000001
Pacific Gas and Electric Company	Moss Landing BAAH	State Highway 1 at Dolan Road, Moss Landing, CA 95039	Construction - Above Ground	Storm water construction	2009-0009-DWQ	3 27C362148	CAS000002
Pick N Pull Auto Dismantlers	Pick-n-pull Moss Landing Premier #48	516A Dolan Rd, Moss Landing, CA 95039	Industrial - Motor Vehicle Parts, Us	Storm water industrial	2014-0057-DWQ	3 27I023349	CAS000001
Pick N Pull San Jose Auto Dismantler General Partn	Pick-n-pull Moss Landing #42	516 Dolan Rd B, Moss Landing, CA 95039	Industrial - Motor Vehicle Parts, Us	Storm water industrial	2014-0057-DWQ	3 27I010373	CAS000001

Appendix E: Response to Comments on the December 2016 Draft Greater Salinas Area Storm Water Resource Plan

Appendix E: Response to Comments on the December 2016 Draft Greater Salinas Area Storm Water Resource Plan

On December 14, 2016, the draft Greater Salinas Area Storm Water Resource Plan (SWRP) was distributed for review to the Greater Monterey County Integrated Regional Water Management Program (GMC IRWMP) Regional Water Management Group (RWMG) Meeting. Comments received are attached as Appendix D.1 and addressed below:

1. Jon Rohrbough, P.E., Water Resource Control Engineer, CWA Section 401 Water Quality Certification Unit, January 13, 2017
 - a. Response 1: Many of the projects submitted have been awarded funding through the Proposition 1 Storm Water Grant Program (SWGP) Implementation Round 1. Those projects included in the Draft SWRP that have not received funding through the SWGP meet the definition for storm water projects according to the State Water Resources Control Board Storm Water Resource Plan Guidelines released December 15, 2015:

Page 9: Multi-Benefit / Multiple Benefit Projects – storm water and dry weather runoff capture projects that provide more than one of the following benefits or meet more than one of the following objectives:

- *Creates and restores wetlands (Wat. Code, § 10561(g))*
 - *Riverside [riparian] habitats (Wat. Code, § 10561(g))*
 - *Instream flows (Wat. Code, § 10561(g))*
 - *Increase in park and recreation lands (Wat. Code, § 10561(g))*
 - *Urban green space (Wat. Code, § 10561(g))*
 - *Augments recreation opportunities for communities (Wat. Code, § 10561(h))*
 - *Increases tree canopy (Wat. Code, § 10561(h))*
 - *Reduces heat island effect (Wat. Code, § 10561(h))*
 - *Improves air quality (Wat. Code, § 10561(h))*
 - *Maximizes water quality (Wat. Code, § 10562(b)(2))*
 - *Maximizes water supply (Wat. Code, § 10562(b)(2))*
 - *Maximizes flood management (Wat. Code, § 10562(b)(2))*
 - *Maximizes environmental benefits (Wat. Code, § 10562(b)(2))*
 - *Maximizes other community benefits (Wat. Code, § 10562(b)(2))*
- b. Response 2: This Greater Salinas Area SWRP will be used to develop the Greater Monterey County SWRP; at that time, the Greater Salinas Area SWRP projects will be refined, analyzed, and added to or removed from the Greater Monterey County SWRP depending on the “storm water projects” criteria used for the development of that SWRP. The comments received will be used in the discussion of Greater Monterey County SWRP storm water projects.

Central Coast Regional Water Quality Control Board

TO: Susan Robinson
Greater Monterey County Integrated Regional Water Management Program
Email: srobinsons@frontier.com

FROM: Jon Rohrbough, P.E.
Water Resource Control Engineer
CWA Section 401 Water Quality Certification Unit
Email: Jon.Rohrbough@waterboards.ca.gov
Phone: (805) 549-3458

DATE: January 13, 2017

SUBJECT: COMMENTS ON REVISED DRAFT STORM WATER RESOURCE PLAN FOR
THE GREATER SALINAS AREA

Thank you for the opportunity to comment on the December 9, 2016 Revised Draft Storm Water Resource Plan for the Greater Salinas Area (IRWM Plan). The IRWM Plan describes projects intended to manage stormwater to achieve multiple benefits, including water quality improvements, water supply reliability, flood management, and environmental benefits. The purpose of these comments is to provide feedback that could improve the IRWM Plan and help the Monterey Regional Water Pollution Control Agency develop a list of projects that address stormwater management objectives.

Please feel free to contact me if you would like to discuss any of these comments.

GENERAL COMMENTS

1. Many of the projects summarized in the IRWM Plan do not appear to be stormwater management projects. For instance, the Salinas River Flood Risk Reduction and Habitat Improvement Project involves vegetation and sediment management within the Salinas River and some of its tributaries. While nearly all flows in these waterbodies are the result of storm events, flow within waters of the State is not considered "stormwater." Rather, "stormwater" should be understood as runoff from storm events prior to discharge to waters of the State. How important is it that the projects in the IRWM Plan be stormwater management projects? Perhaps the goal and objectives of the IRWM Plan could be reframed to broaden the focus from stormwater management projects.
2. Many of the project summaries in the IRWM Plan do not include enough detail to show that that the proposed project is a stormwater management project, or how the proposed project would achieve multiple benefits involving water quality improvement, water supply reliability, flood management, and environmental benefits. Where these linkages exist, we recommend revising the IRWM Plan to demonstrate them more clearly.

SPECIFIC COMMENTS

1. Northern Gabilan Mountain Watershed Management Project. The IRWM Plan does not include enough detail to determine what is actually proposed. The summary states that the project will target watershed restoration by addressing impacts to watershed functions such as decreased infiltration to groundwater, emergence of invasive species, and degeneration of natural flows. Decreased infiltration and degeneration of natural flows may be related to stormwater management, but the linkage is unclear. Emergence of invasive species is even less likely to be related to stormwater management or to be improved through stormwater management activities. In addition, the nature of the proposed watershed restoration is unclear. If the project involves activities to treat, retain, and infiltrate stormwater runoff prior to discharge to waters of the State, we recommend stating this more clearly.
2. Water Quality Enhancement of Tembladero Slough Phase 2. The IRWM Plan does not include enough detail to determine what is actually proposed. The project summary states that the project involves construction of water quality/wetland management structures, but it is unclear whether these structures will be built within Tembladero Slough, or outside of Tembladero Slough to treat stormwater runoff before it enters the Slough. If the project involves activities to treat, retain, and infiltrate stormwater runoff prior to discharge to waters of the State, we recommend stating this more clearly.
3. Carr Lake Riparian Habitat Restoration Plan. It is unclear whether this is a stormwater management project or a riparian habitat restoration project. Stormwater management involves treating, retaining, and/or infiltrating stormwater runoff prior to discharge to waters of the State. Planting riparian vegetation can provide tremendous environmental and water quality benefits, but is not stormwater management. To the extent that the project involves activities to treat, retain, and infiltrate stormwater runoff prior to discharge to waters of the State, we recommend stating this more clearly.
4. Salinas River Flood Risk Reduction and Habitat Improvement Project. This project appears to be identical to the Salinas River Stream Maintenance Program that received Clean Water Act Section 401 Water Quality Certification from the Central Coast Regional Water Quality Control Board (Central Coast Water Board) in 2016. While the project provides reduced flood risk and achieves some environmental and water supply benefits, it is not a stormwater management project.
5. Salinas River Flood Risk Reduction Project. The nature of this project is unclear. It appears to involve preparation of NEPA/CEQA documents for the Salinas River Flood Risk Reduction Project, except that the Salinas River Flood Risk Reduction Project is identical to the Salinas River Stream Maintenance Program, and the EIR for the Salinas River Stream Maintenance Program was certified in 2014.
6. Water Supply Reliability Project. Based on the information provided in the IRWM Plan, this does not appear to be a stormwater management project.
7. Blanco Drain Diversion Project and Storm Water Return Facilities Project. Blanco Drain and the Reclamation Ditch are waters of the State, and are identified in the Water Quality Control Plan for the Central Coastal Basin (Basin Plan). Therefore diverting flows from them to an infiltration facility could be a violation of the California Water Code and the Basin Plan. Has the Monterey Regional Water Pollution Control Agency discussed this issue with Central Coast Water Board staff? In addition, summer flows in both waterbodies would

consist entirely of agricultural tailwater rather than stormwater runoff. Therefore, while the projects would address water quality, these projects do not appear consistent with applicable regulations or the stated purpose of the IRWM Plan.

8. Salinas Multi-Benefit Floodplain Management Project. How does this project differ from the Salinas River Flood Risk Reduction Project and the Salinas River Stream Maintenance Program? According to the project summary, the project could be related to the long-term Salinas River management plan that the Monterey County Water Resource Agency is required to develop prior to extending the Salinas River Stream Maintenance Program past the current 10-year permit term. Therefore it may be useful to revise the IRWM Plan to clarify the differences between these programs. In addition, the project summary mentions constructing off-channel flood attenuation and storage areas. Will these areas be constructed to retain stormwater before it enters waters of the State, or to divert flood flows from the river to off-channel floodplain/detention facilities? The first would be a stormwater management project, while the second would not.

Sachi Itagaki

From: Susan Robinson <srobinsons@frontier.com>
Sent: Tuesday, January 17, 2017 9:41 AM
To: Jon@Waterboards Rohrbough
Cc: Greater Monterey County RWMG; Sachi Itagaki; Michael J. Goymerac; Jennifer Lau; Mike Godwin
Subject: Re: Greater Monterey County IRWM Regional Water Management Group - Meeting Notice and Agenda

Hello Jon,

I'm sorry you won't be able to join us for our meeting tomorrow. At this point we are mostly looking ahead to the next Storm Water Resource Plan that is being developed for our region - namely, the Greater Monterey County SWRP. The Greater Salinas Area SWRP, the plan under discussion now, represents a smaller geographic portion of the larger (Greater Monterey County) planning area, and was developed for the express purpose of enabling the City of Salinas and Monterey Regional Water Pollution Control Agency to apply for Round 1 Storm Water Implementation Grant funds. Your comments regarding what constitutes a "storm water management project" will help us define projects for this next planning process; and will likely prompt us to remove some of the projects from the Salinas SWRP project list. No anxiety on this end — your comments are very helpful.

Regarding the Blanco Drain Diversion Project and Storm Water Return Facilities Project, this project has just been awarded Storm Water Implementation Grant funds. I assume the project has already been vetted with the Central Coast Regional Board, but if it hasn't, then that will need to be discussed (asap).

Thanks again for your comments. They will definitely help us to develop a stronger SWRP for the region.

Best,
Susan

Susan Robinson
Program Director
Greater Monterey County Integrated Regional Water Management Program
srobinsons@frontier.com
(802) 279-4615
www.greatermontereyirwmp.org

On Jan 17, 2017, at 12:06 PM, Rohrbough, Jon@Waterboards
<Jon.Rohrbough@waterboards.ca.gov> wrote:

Hi, Susan:

Thank you for the invitation to attend the RWMG's meeting tomorrow. I will not be able to attend the meeting, but perhaps I can help your discussion by providing a little more context for my comments.

First, you do not need my approval for the Storm Water Resources Plan for the Greater Salinas Area (Plan). I am not part of the grant approval team, nor am I currently part of the approval process for any of the projects identified in the draft Plan. (If any of the projects need permitting from the Central Coast Water Board because they involve construction in a water of the State, Central Coast Water Board staff will need to be involved.)

Second, I did not know that grant funding has already been awarded for many of the projects. I was under the impression that the RWMG is currently applying for stormwater grant funds, and therefore my only concern was to advise you that many of the projects do not appear to be stormwater projects, so that you could make any reasonable changes to improve the grant application's prospects. However, this concern is obviously moot. Therefore it may not matter any longer whether the projects are stormwater projects or not.

I hope this context serves to settle any anxiety my comments may have caused. If you would like further conversation about what constitutes a stormwater resource project, or any other comments in my letter, I am happy to speak with you. Michael Godwin, whom you know is an even better resource than I am for such conversations.

Sincerely,
-Jon

Jon Rohrbough, P.E.
Water Resource Control Engineer
Central Coast Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401
(805) 549-3458

From: Susan Robinson [<mailto:srobinsons@frontier.com>]
Sent: Sunday, January 15, 2017 7:14 AM
To: Greater Monterey County RWMG
Cc: Sachitagaki@kennedyjenks.com; Michael Goymerac; Jennifer Lau; Rohrbough, Jon@Waterboards; Godwin, Michael D.@Waterboards
Subject: Re: Greater Monterey County IRWM Regional Water Management Group - Meeting Notice and Agenda

Hi all,

We received just one comment letter on the draft Greater Salinas Area Storm Water Resource Plan, but the comments definitely warrant discussion. Please read the attached letter from Jon Rohrbough at the Central Coast Regional Board. Where Jon writes "IRWM Plan" he is referring to the draft Storm Water Resource Plan for the Greater Salinas Area. We should spend time discussing Jon's comments and determining if/how the SWRP project list should change as a result.

As we are about to begin development of the *Greater Monterey County SWRP*, I think a discussion regarding exactly what constitutes a "stormwater management project" is very timely, and a great way to launch the Greater Monterey County SWRP planning effort.

See meeting details below. Remember - this meeting will be a conference call.

Thanks,

Susan

On Jan 11, 2017, at 7:51 PM, Susan Robinson
<srobinsons@frontier.com> wrote:

Hello everyone,

The next RWMG meeting will be held next week on Wednesday, **January 18th**. We have so few agenda items that I think we can just have a conference call this month. See call-in information below. But - please do call in! We will be holding a vote on approving (or at least getting a verbal “thumbs up”) on the Prop 1 DAC Involvement scope of work, budget, and schedule. And please do send me your comments on the draft Storm Water Resource Plan for the Greater Salinas Area by Friday. Thank you!

Details and agenda are below.

DATE: Wednesday, January 18, 2017
TIME: 1:30PM - 3:30PM
CALL-IN NUMBER: (866) 667-4205
PASSCODE: 1231265#

1. Brief Introductions.

2. Greater Salinas Area Storm Water Resource Plan: Sachi Itagaki of Kennedy/Jenks will address comments received on the Storm Water Resource Plan for the Greater Salinas Area.

3. DAC Involvement Grant Application: The DAC Involvement Subcommittee will present the scope of work, budget, and schedule for the Prop 1 DAC Involvement application, which the Central Coast IRWM Funding Area regions will be submitting to DWR most likely in early February. (I will probably send you the scope of work, budget, and schedule for review on Monday, prior to the meeting.) We will hold a vote (or get general approval) on the workplan, budget, and schedule at Wednesday’s meeting.

4. Other Business.

I look forward to talking with you all next Wednesday!

My best,
Susan

Susan Robinson
Program Director
Greater Monterey County Integrated Regional Water Management
Program

srobinsons@frontier.com
(802) 279-4615

APPENDIX Q

Needs Assessment for Disadvantaged Communities in the Greater Monterey County IRWM Region

Prepared as part of the 2017-2018 IRWM Plan Update
for Compliance with 2016 IRWM Program Guidelines

With Funding Support from Proposition 1 IRWM Planning Grant Funds,
Department of Water Resources

Submitted by:
Heather Lukacs, Environmental Justice Coalition for Water
March 30, 2018

Goal: Develop a plan/budget needed to provide comprehensive outreach to all of the disadvantaged communities (DACs) with contaminated water, and identify data gaps and needs.

I. Proposed Approach

A. Focus on addressing key structural barriers identified in the *Integrated Plan to Address Drinking Water and Wastewater Needs of Disadvantaged Communities in the Salinas Valley and Greater Monterey County IRWM Region* (Salinas Valley Disadvantaged Community Plan).

- Clarify project costs for community members
- Identify funding for laterals
- Cultivate potential project sponsors, especially Monterey County. Specifically:
 - Board of Supervisors
 - Legislative Committee of the Board of Supervisors
 - Public Works Department staff

B. Be strategic in the timing and location of community engagement to address water quality. Community engagement in projects is extremely time consuming and challenging. Minimum, we recommend:

- Focus on known hot spots for regulated contaminants (e.g., nitrate) in places where 100% grant funding is available.
- Support Monterey County Environmental Health Bureau (EHB) in collecting comprehensive data for state/local small water systems for 1,2,3-TCP, a recently regulated contaminant. Analyze public water system data. Identify hot-spots.
- Postpone outreach in communities with known chromium-6 contamination until after the MCL is determined (~6-12 months).¹ Community members will be more interested in a project to address a regulated contaminant.

C. Partner with Monterey County EHB and the State Water Resources Control Board (SWRCB) to coordinate community outreach for project implementation with enforcement actions. This could include training for Monterey County Environmental Health Specialists in the specifics of long-term solution options available to state/local small water systems with water quality violations.

D. Address data gaps to better plan/budget for comprehensive outreach

¹ California State Water Resources Control Board. Frequently Asked Questions about Hexavalent Chromium in Public Water Systems. Dated September 18, 2017. Accessed March 16, 2018. https://pubapps.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/chromium6/chrome_6_faqs.pdf

II. Data Gaps

- A. Private domestic wells have very limited data
- Well construction information
 - Water quality data
- B. State (5-14 connections) and local small water systems (2-4 connections) data is limited to bacteria, nitrate, arsenic, and chromium-6
- No data currently collected on 1,2,3-TCP or perchlorate
 - Arsenic and chromium-6 data is only collected near public water systems with known contamination. State/local small water systems may be more shallow or of different well construction and therefore differently vulnerable to contamination.
- C. Public water systems with 1,2,3-TCP
- This data will be collected in 2018 per new SWRCB requirements. Table 1 shows past data collected between 2002 and 2013, which shows 1,2,3-TCP in Monterey County. Because this data is so limited, it is listed here as a data gap.

Table 1: Public Water Systems with 1,2,3-TCP (2002-2013), MCL=0.005 ug/L

SYSTEM NAME	SOURCE NAME	SAMPLE DATE	1,2,3-TCP (ug/L)
ALCO WATER SERVICE	KILBRETH WELL - RAW	20-Mar-07	0.21
CWSC LAS LOMAS	WELL 305-01 - RAW	23-Aug-06	0.006
CWSC SALINAS	WELL 013-01 - RAW	22-May-13	0.008
CWSC SALINAS	WELL 013-01 - RAW	04-Apr-12	0.007
CWSC SALINAS	WELL 013-01 - RAW	05-Apr-12	0.006
CWSC SALINAS	WELL 013-01 - RAW	07-Aug-13	0.006
CWSC SALINAS	WELL 013-01 - RAW	18-Sep-13	0.005
CWSC SALINAS	WELL 013-01 - RAW	26-Jan-12	0.005
CWSC SALINAS	WELL 020-01 - CHLORINATOR	22-May-03	0.005
CWSC SALINAS	WELL 020-01 - RAW	22-Jan-04	0.005
CWSC SALINAS	WELL 108-01 - RAW	14-Aug-03	0.005
SAN JERARDO COOP WS	WELL 03	01-Apr-03	0.085
SAN JERARDO COOP WS	WELL 03	04-Apr-06	0.082
SAN JERARDO COOP WS	WELL 03	18-Jun-03	0.067
SAN JERARDO COOP WS	WELL 03	25-Mar-03	0.064
SAN JERARDO COOP WS	WELL 03	22-Jan-03	0.046
VIERRA ESTATES WS	WELL 03 - MATTERHORN PLACE	10-Dec-02	0.012

III. DACs with contaminated water in Monterey County

In this section, we briefly overview the small water systems with chromium-6 and arsenic located in or near confirmed and suspected DACs. Nitrate will not be discussed in detail because it was the focus of the Salinas Valley Disadvantaged Community Plan. Appendix 2.1 of

that plan provides a list of 52 small water systems in Monterey County located in 2015 DACs with nitrate greater than the MCL. As part of the plan development, approximately 14 additional small water systems with nitrate greater than the MCL were identified as “suspected” DACs. Several of the 14 were confirmed by income surveys and a few of the 14 systems are now located in a 2016 DAC block group (60530102021) that was not a DAC in 2015.

We estimate that approximately 23 small water systems with chromium-6 above 10 ug/L and 2 small water systems with arsenic greater than the MCL are located in DAC block groups (See Table 2). The vast majority the chromium-6 contaminated water systems are located in north Monterey County where only 4 of the ~17 block groups met income limits defined as DAC in 2016 (See Figure 1 and Table 3). In Figures 2 and 3, we highlight recommended areas for future work in blue circles labeled A-D²:

- A) Block Group 60530101012 with 2 out-of-compliance small water systems
- This includes Struve Rd. WS #2, the mobile home park that will be part of the Springfield Rd. project.
- B) Block Group 60530102021 with 15 out-of-compliance small water systems
- This includes the Johnson Rd. and upper Live Oak Rd. communities.
- C) Block Group 60530147004 with 3 out-of-compliance small water systems
- This is a small block group north of Castroville.
- D) Block Group 60530146012 with 3 out-of-compliance small water systems
- This is the Hudson Landing Rd. community, a suspected DAC.

Almost all out-of-compliance small water systems with arsenic are located outside of DAC block groups near Prunedale and the Corral De Tierra areas (See Figure 4).

Table 2: Number of Local and State Small Systems that Exceed MCLs (or the former MCL for chromium-6)

	Arsenic	Nitrate	Chrom 6
Local Smalls	52	123	106
State Smalls	29	39	59
TOTAL	81	162	165
# in DACs (estimated)	~2	~66	~23

² The Greater Monterey County Community Water Tool developed as part of the DAC plan provides a good overview of the location of both DAC block groups and also of contaminated small water systems. Figures 2, 3, and 4 are snapshots of this online tool.

Figure 1: Census Block Group Numbers in North Monterey County (2010).

Source: <https://www.policymap.com/maps>



Table 3: Median Household Income of Census Block Groups in North Monterey County

	2016	2015	2014	2013
DAC	49454.4	49191.2	48875.2	51026.4
SDAC	37090.8	35149.2	36656.4	38269.8
Block Group				
60530101012	39628	38558	43369	44306
60530101011	40500	38913	37941	42083
60530102021	41842	49673	49375	54286
60530147004	46172	50000	50743	65431
60530146013	58239	69120	57986	62917
60530103051	60396	58859	62917	63750
60530102023	64750	63699	70556	68194
60530146012	66886	65018	64737	58889
60530147001	67308	60441	82679	66346
60530146011	68333	64718	71094	67917
60530103052	81477	74948	73636	80938
60530147003	82543	76625	79352	68750
60530102022	94844	92917	86875	88125
60530103053	102750	65781	65787	61154
60530101022	107554	96364	87292	80625
60530147002	110132	91852	86563	81429
60530101021	118333	85526	83194	72434

Figure 2: DAC 2015 boundaries for 2015 in green, and EDA boundaries for 2015 in yellow. Chrom-6 data is in ug/L or ppb w/ public health goal of 0.02 ug/L.

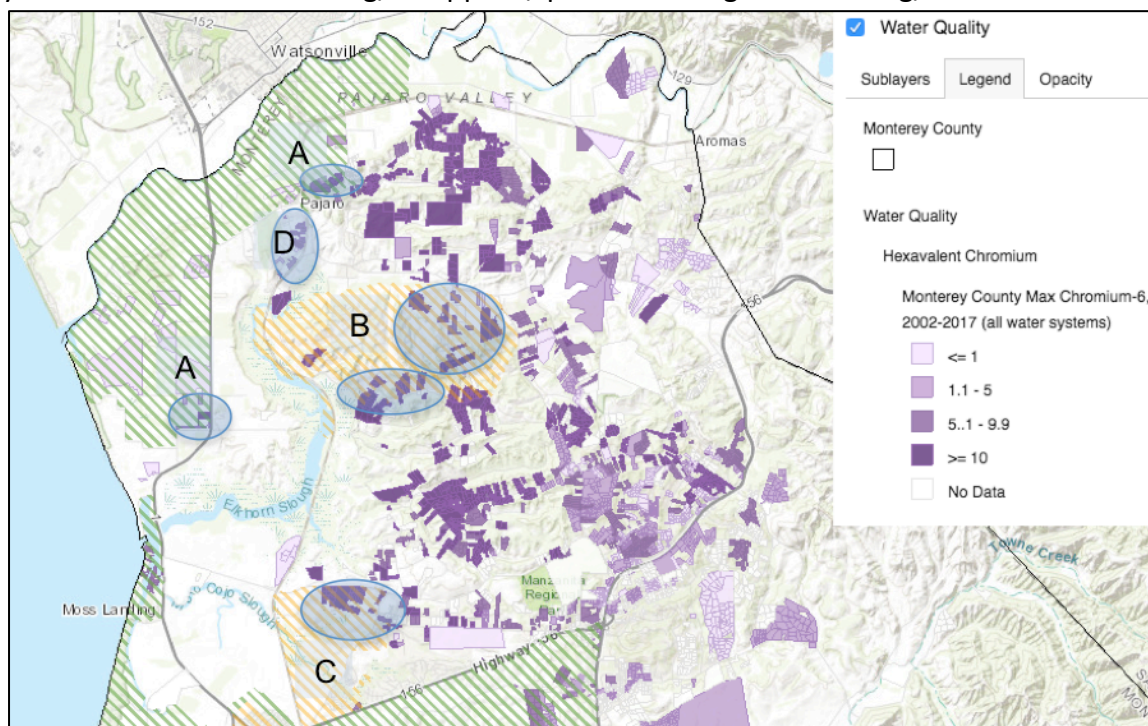


Figure 3: DAC block group with the most out-of compliance small water systems with chromium-6 (Block Group 60530102021)

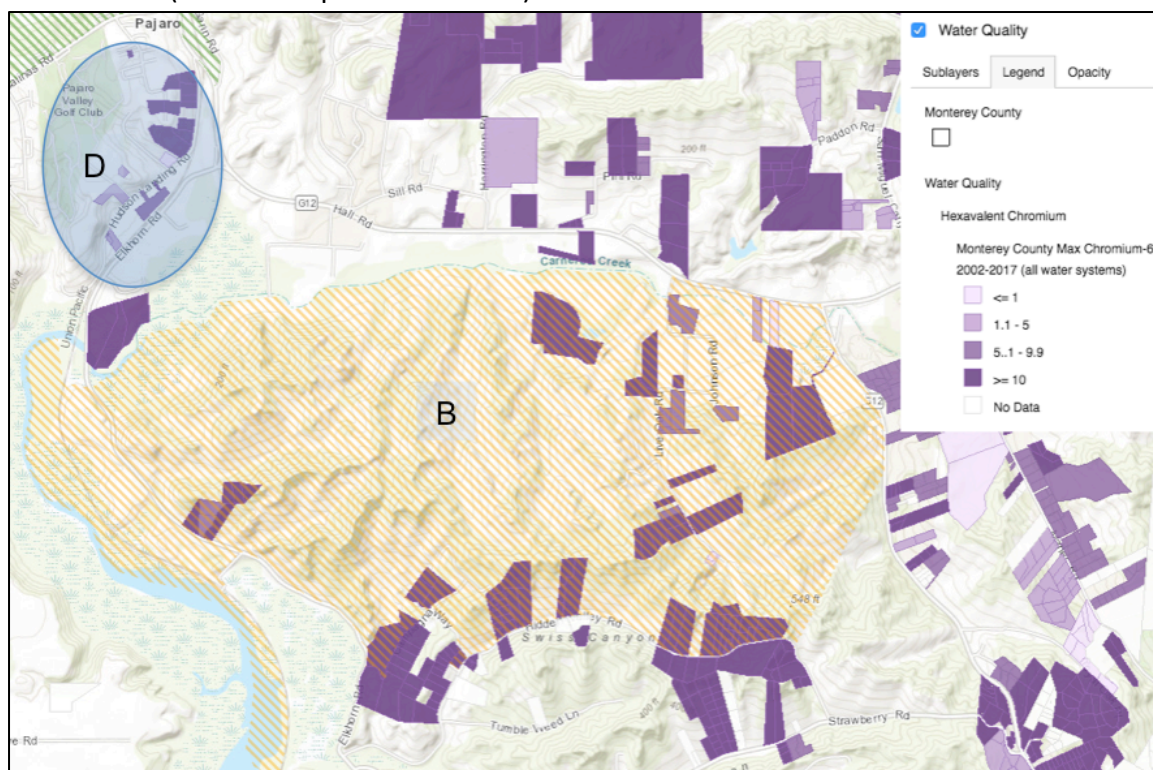
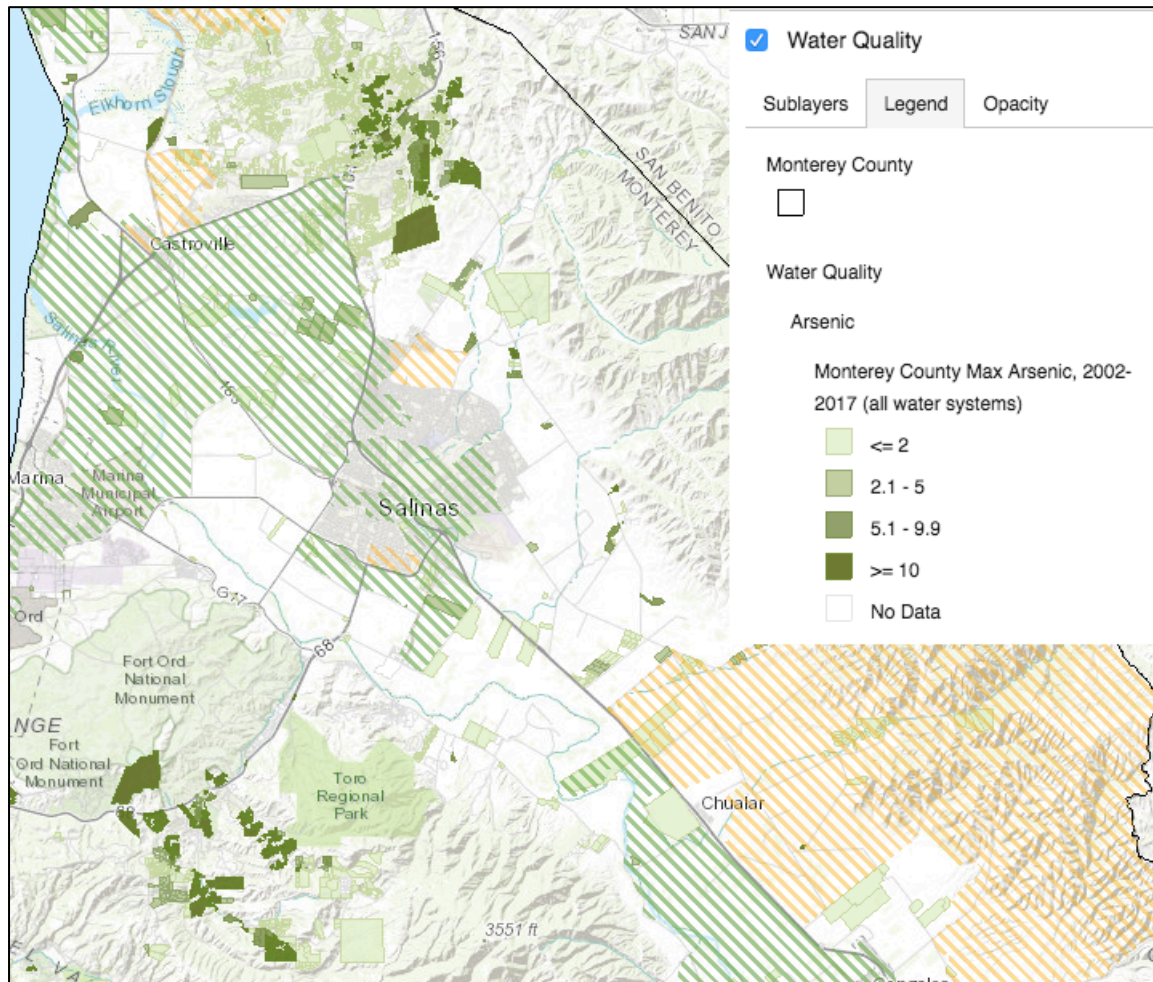


Figure 4: Almost all out-of-compliance small water systems with arsenic are located outside of DAC block groups near Prunedale and the Corral De Tierra areas



**DRAFT RESOLUTION 2012-08
OF THE BOARD OF TRUSTEES
OF THE BIG SUR LAND TRUST (BSLT)**

**TO ADOPT THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN
FOR THE GREATER MONTEREY COUNTY IRWM REGION**

Authorize the Executive Director of the Big Sur Land Trust to Adopt the Integrated Regional Water Management Plan for the Greater Monterey County Region as set forth in detail in the Project Abstract.

***Disclaimer:** This Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly adopt the Greater Monterey County IRWM Plan. It is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this document.*

WHEREAS, the proposed action is consistent with the goals and purposes of THE BIG SUR LAND TRUST as set forth in its Articles of Incorporation;

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve quality, quantity, and reliability;

WHEREAS, in November 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the Legislature to appropriate \$1 billion in general obligation funds (PRC §75001-75130) to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, in November 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the "Greater Monterey County" IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council

- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

WHEREAS, in February 2010, with amendments through September 2012, the 19 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

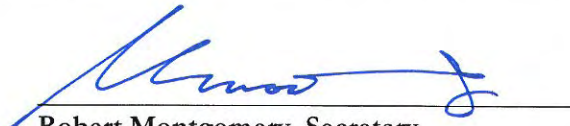
WHEREAS, the landowners and residents of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan; and

NOW, THEREFORE BE IT RESOLVED, that the Board of Trustees of THE BIG SUR LAND TRUST hereby formally adopts the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region.

CERTIFICATION

I hereby certify that the foregoing resolution was duly adopted by a majority of the Board of Trustees of THE BIG SUR LAND TRUST on December 12, 2012


 Robert Montgomery, Secretary
 THE BIG SUR LAND TRUST



CALIFORNIA WATER SERVICE COMPANY

1720 NORTH FIRST STREET • SAN JOSE, CA 95112-4598
(408) 367-8200

January 15, 2013

Bridget Hoover
Water Quality Protection Program Director
Monterey Bay National Marine Sanctuary
99 Pacific Street, Bldg 455
Monterey, CA 93940

Subject: Statement of Endorsement of the Integrated Regional Water Management Plan for the Greater Monterey County Region

California Water Service Company (Cal Water) hereby endorses the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region.

Cal Water recognizes that in 2002, the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability. In November 2006, California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84) and Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act. These propositions authorized the Legislature to appropriate general obligation funds to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water, the protection of water quality and the environment, which are consistent with an adopted IRWM Plan.

In May 2009, the California Department of Water Resources approved the "Greater Monterey County" IRWM region as a region acceptable for the purposes of IRWM planning and implementation. Cal Water has participated in the formation and proceedings of the Regional Water Management Group (RWMG) for the Greater Monterey County IRWM region, along with 18 other public, private, and non-profit entities. In February of 2010, with amendments in September 2011, the RWMG for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan and for the joint solicitation of external funding to implement the IRWM Plan.



CALIFORNIA WATER SERVICE COMPANY

The collaborative IRWM planning process that was undertaken by the RWMG, with significant input from stakeholders throughout the planning region, resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region. The Plan considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration. It evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment.

The IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan. As a result, the residents and landowners of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan.

Cal Water acknowledges that this endorsement does not impose any further commitments or obligations upon any signatory party, other than to willingly participate in this IRWM planning process, nor shall it be construed or deemed to create a fiscal relationship of partnership or joint venture among the parties. This endorsement of the Plan does not affect any powers granted to Cal Water or local agency by any other law, nor does it provide any added legal rights or regulatory powers to any of the signatory parties or to the Regional Water Management Group as a whole, nor does it give any party the power to adjudicate, define, or otherwise determine water rights of any person, or to regulate or otherwise control the private property of other parties. It is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this document.

Respectfully,

A handwritten signature in blue ink, appearing to read "Todd Peters", is written over a horizontal line.

Todd Peters, Chief Engineer

Cc. Mike Rossi, Vice-President Engineering & Water Quality

Mike Jones, Salinas District Manager

Thomas A. Salzano, Water Resource Planning Supervisor

RESOLUTION NO. 12-11
TO ADOPT THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN
FOR THE GREATER MONTEREY COUNTY IRWM REGION

***Disclaimer:** This Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly adopt the Greater Monterey County IRWM Plan. It is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this document.*

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability;

WHEREAS, in November of 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the Legislature to appropriate \$1 billion in general obligation funds (PRC §75001-75130) to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, in November of 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the "Greater Monterey County" IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County

- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

WHEREAS, in February of 2010, with amendments through September 2012, the 19 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

WHEREAS, the landowners and residents of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan; and

NOW, THEREFORE BE IT RESOLVED, upon the motion of Pecci, seconded by Stefani, and carried by those members present, the Regional Water Management Group for the Greater Monterey County IRWM Region formally adopts the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region. Formal adoption of the Integrated Regional Water Management Plan is evidenced by resolution or other written documentation by the governing bodies of each agency that is part of the Greater Monterey County Regional Water Management Group, signed by each entity and incorporated into this Resolution by reference.

PASSED AND ADOPTED on November 20, 2012, by the Board of Directors of the Castroville Community Services District by the following roll call vote:

Ayes: Directors Pecci, Lewis, Stefani, & McCready

Noes: Directors 0

Absent: Directors 0

Abstained: Directors 0

ATTEST:

Lidia Santos
Lidia Santos, Secretary to the Board

APPROVED:

Jerome McCready
Jerome McCready, President

**RESOLUTION ACCEPTING THE GREATER MONTEREY COUNTY INTEGRATED
WATER MANAGEMENT PLAN**

WHEREAS, water supply and quality have been on-going issues for over a century in Monterey County and the State of California; and

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability; and

WHEREAS, In 2006, Californians passed the Safe Drinking Water, Water Quality, and Supply, Flood Control, River and Coastal Protection Bond Act (Proposition 84) to fund safe drinking water, water quality and supply, flood control, waterway and natural resource protection, water pollution and contamination control, state and local park improvements, public access to natural resources, and water conservation efforts to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, the City of Salinas supports integrated and collaborative resource management, and desires to submit projects for consideration for Proposition 84 funding; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 20 public, private, and non-profit entities; and

WHEREAS, in February of 2010, with amendments in September 2011, the 20 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

WHEREAS, the landowners and residents of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan;

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF SALINAS, that in compliance with Proposition 84, the City of Salinas accepts the Greater Monterey County Integrated Regional Water Management Plan I(IRWMP), and understands that the GM-IRWMP does not involve any commitment to a specific project which may result in a potentially significant physical impact on the environment, as contemplated by Title 14, California Code of Regulations, Section 15378(b)(4)).

PASSED AND ADOPTED this 11th day of December 2012, by the following votes:

AYES: Councilmembers: Barrera, Craig, Lutes, Sanchez, and Mayor Pro Tem De La Rosa

NOES: None

ABSENT: Mayor Donohue



Dennis Donohue, Mayor

ATTEST: 

Patricia Barajas, City Clerk

RESOLUTION NO. 4834

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SOLEDAD ADOPTING THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN FOR THE GREATER MONTEREY COUNTY REGION AND AUTHORIZING THE CITY MANAGER TO SIGN THE REGIONAL WATER MANAGEMENT GROUP MEMORANDUM OF UNDERSTANDING.

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability; and

WHEREAS, in November of 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the Legislature to appropriate \$1 billion in general obligation funds (PRC §75001-75130) to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, in November of 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the "Greater Monterey County" IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve

- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

WHEREAS, in February of 2010, with amendments through September 2012, the 19 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

WHEREAS, the landowners and residents of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan; and

NOW, THEREFORE BE IT RESOLVED by the City of Soledad formally adopts the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region. Formal adoption of the Integrated Regional Water Management Plan is evidenced by

resolution or other written documentation by the governing bodies of each agency that is part of the Greater Monterey County Regional Water Management Group, signed by each entity and incorporated into this Resolution by reference.

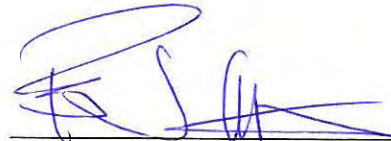
PASSED AND ADOPTED by the City Council of the City of Soledad at a meeting duly held on the 8th day of January in the year 2013.

AYES, and in favor thereof, Councilmembers: Christopher K. Bourke, Richard J. Perez, Patricia Stephens, Mayor Pro Tem Alejandro Chavez and Mayor Fred J. Ledesma.

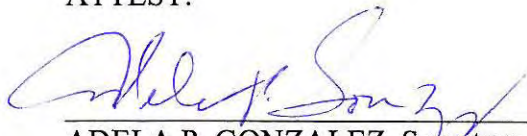
NOES, Councilmembers: None.

ABSTAIN, Councilmembers: None.

ABSENT, Councilmembers: None.


FRED J. LEDESMA, Mayor

ATTEST:


ADELA P. GONZALEZ, Secretary



Monterey County

Board Order

168 West Alisal Street,
1st Floor
Salinas, CA 93901
831.755.5066

Upon motion of Supervisor Salinas, seconded by Supervisor Calcagno, and carried by those members present, the Board of Supervisors hereby:

Adopted Resolution No. 13-059 to:

- a. Adopt the Greater Monterey County Integrated Regional Water Management Plan.
- b. Authorized staff to include the San Lucas Water District Public Water Supply Replacement Project in the Greater Monterey County Integrated Regional Water Management grant proposal.

PASSED AND ADOPTED on this 26th day of February 2013, by the following vote, to wit:

AYES: Supervisors Armenta, Calcagno, Salinas, Potter, and Parker

NOES: None

ABSENT: None

I, Gail T. Borkowski, Clerk of the Board of Supervisors of the County of Monterey, State of California, hereby certify that the foregoing is a true copy of an original order of said Board of Supervisors duly made and entered in the minutes thereof of Minute Book 76 for the meeting on February 26, 2013.

Dated: February 28, 2013
File Number: 13-0177

Gail T. Borkowski, Clerk of the Board of Supervisors
County of Monterey, State of California

By *Denise Hancock*
Deputy

**Before the Board of Supervisors
for the County of Monterey, State of California**

Resolution No.: 13-059

Adopt the Integrated Regional Water Management Plan)
(IRWMP) for the Greater Monterey County Integrated)
Regional Water Management (IRWM) Region.....)

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve water quality, quantity, and reliability; and

WHEREAS, in November of 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the Legislature to appropriate \$1 billion in general obligation funds (PRC §75001-75130) to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, in November of 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the “Greater Monterey County” IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner’s Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

WHEREAS, in February of 2010, with amendments through September 2012, the 19 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan. The Monterey County Water Resources Agency Board of Directors approved the MOU on January 28, 2013; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County IRWM Region identifies and includes projects within the planning region that are eligible for both Proposition 84 and Proposition 1E grant funding and are consistent with the goals and objectives of the IRWM Plan; and

WHEREAS, the landowners and residents of the Greater Monterey County IRWM Region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan, by resolution, and provide proof of adoption of the IRWM Plan; and

WHEREAS, this Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly adopt the Greater Monterey County Integrated Regional Water Management (IRWM) Plan. It is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this document.

NOW, THEREFORE BE IT RESOLVED, the Board of Supervisors hereby adopts the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region attached hereto as *Attachment 1* and incorporated herein by reference.

PASSED AND ADOPTED upon motion of Supervisor Salinas, seconded by Supervisor Calcagno, and carried this 26th day of February 2013, by the following vote, to wit:

AYES: Supervisors Armenta, Calcagno, Salinas, and Potter

NOES: Parker

ABSENT: None

I, Gail T. Borkowski, Clerk of the Board of Supervisors of the County of Monterey, State of California, hereby certify that the foregoing is a true copy of an original order of said Board of Supervisors duly made and entered in the minutes thereof of Minute Book 76 for the meeting on February 26, 2013.

Dated: February 28, 2013
File Number: 13-0177

Gail T. Borkowski, Clerk of the Board of Supervisors
County of Monterey, State of California

By *Danise Armenta*
Deputy

**Resolution of the Board of Directors of the
University Corporation at Monterey Bay
Adoption of the Integrated Regional Water Management
Plan for the Greater Monterey County Integrated
Regional Water Management Region**

Whereas, The University Corporation at Monterey Bay (the “Corporation”) has been formed for the purpose of furthering the educational programs of California State University, Monterey Bay (the “University”) as more fully described in the Articles of Incorporation of the Corporation (the “Articles”);

Whereas, the California Department of Water Resources (DWR) requires that the Regional Water Management Group and all entities that are to receive Integrated Regional Water Management (IRWM) grant funding must formally adopt the IRWM Plan and provide proof of adoption;

Whereas, in May 2009 the DWR approve the Greater Monterey County (GMC) IRWM region as a region acceptable for the purposes of IRWM planning and implementation, which includes the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region and the Monterey Peninsula, Carmel Bay, and South Monterey IRWM region;

Whereas, the University is part of the Regional Water Management Group (RWMG) for the GMC IRWM region, which consists of 19 public, private, and non-profit entities;

Whereas, in February 2010 the 19 entities of the RWMG entered into an MOU for the purpose of preparing a comprehensive IRWM Plan for the GMC IRWM region and for the joint solicitation of external funding to implement the IRWM Plan;

Whereas, the IRWM Plan for the GMC IRWM region identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition IE grant funding and are consistent with the goals and objectives of the IRWM Plan;

Whereas, the landowners and residents of the GMC IRWMR will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from the implementation of the IRWM Plan and the projects contained within the Plan;

Whereas, the Corporation represents the research and outreach efforts of faculty and administrators who view the IRWM Plan as an avenue to bring program planning, research and implementation opportunities to our institution; now, therefore, be it

Resolved, That the Corporation Board of Directors adopts the Integrated Regional Water Management Plan for the Greater Monterey County Integrated Regional Water Management Region; and

Resolved, That this Resolution shall take effect immediately upon its adoption.

ADOPTED AND PASSED this 28th day of January 2013 by the following vote:

Ayes: 8 Nays: 0 Abstentions: 0 Absent: 0

Secretary/Treasurer's Certificate

I, Kathryn Cruz-Urbe, Secretary/Treasurer of the Board of Directors of the Foundation of CSUMB, hereby certify as follows:

The foregoing is a full, true, and correct copy of a resolution duly adopted by the Board of Directors of the Corporation on 28 January 2013.

Said resolution has not been amended, modified, or rescinded since its adoption and the same is now in full force and effect.

Dated: 28 January 2013



Kathryn Cruz-Urbe, Secretary/Treasurer

**RESOLUTION OF THE BOARD OF DIRECTORS OF
THE ENVIRONMENTAL JUSTICE COALITION FOR WATER
TO ADOPT THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN
FOR THE GREATER MONTEREY COUNTY IRWM REGION**

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.; and

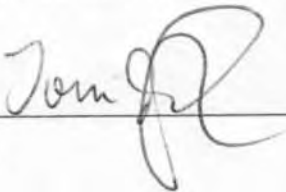
WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan; and

WHEREAS, this Resolution does not impose any further commitments or obligations upon the Environmental Justice Coalition for Water or any other signatory party other than demonstrating its willing adoption the Greater Monterey County IRWM Plan; and

WHEREAS, it is agreed and understood that the authority and power of the Environmental Justice Coalition for Water, as provided under its respective authorizing statutes and all other applicable laws and regulations, and each signatory's authority and power, as provided under same, shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this Resolution or the IRWM Plan; and

NOW, THEREFORE BE IT RESOLVED, upon the motion of Torr. Estrada, seconded by Cheney Pleguez, and carried by those members present, the Environmental Justice Coalition for Water formally adopts the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region. Formal adoption of the Integrated Regional Water Management Plan is evidenced by resolution or other written documentation by the governing bodies of each agency that is part of the Greater Monterey County Regional Water Management Group, signed by each entity and incorporated into this Resolution by reference.

PASSED AND ADOPTED on this 19th day of December in the year 2012.



**RESOLUTION OF THE GARRAPATA CREEK WATERSHED COUNCIL
TO ADOPT THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN
FOR THE GREATER MONTEREY COUNTY REGION**

Disclaimer: *This Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly adopt the Greater Monterey County IRWM Plan. It is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this document.*

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability;

WHEREAS, in November of 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the Legislature to appropriate \$1 billion in general obligation funds (PRC §75001-75130) to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, in November of 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the "Greater Monterey County" IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 18 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County

- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

WHEREAS, in February of 2010 (with subsequent amendments), the entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County is consistent with California Water Code (CWC) §10543 and identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

WHEREAS, the residents and landowners of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan.

NOW, THEREFORE BE IT RESOLVED, upon the motion of Director Diehl, seconded by Director Williams, and carried by those members present, the Garrapata Creek Watershed Council formally adopts the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region. Formal adoption of the Integrated Regional Water Management Plan is evidenced by resolution or other written documentation by the governing bodies of each agency that is part of the Greater Monterey County Regional Water Management Group, signed by each entity and incorporated into this Resolution by reference.

PASSED AND ADOPTED on this 13th day of January in the year 2013.



By: Kenneth Ekelund, President



ATTEST: Director



November 26, 2012

**Subject: ADOPTION OF THE INTEGRATED REGIONAL WATER
MANAGEMENT PLAN (IRWMP) FOR THE GREATER MONTEREY COUNTY
IRWM REGION (GMC IRWM)**

GMCIRWM Regional Water Management Group:

I understand that the California Department of Water Resources (DWR) requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding must formally adopt the IRWM Plan and provide proof of adoption. This letter is proof that the *Monterey Bay National Marine Sanctuary* formally adopted the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region.

In May 2009, DWR approved the Greater Monterey County IRWM region as a region acceptable for the purposes of IRWM planning and implementation. The region included the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region and the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region. The GMC region includes the entire Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County.

The Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency

- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

In February 2010, with amendments through September 2012, the 19 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan.

This collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region and considers a broad variety of resource management strategies. The plan identifies disadvantaged communities and takes the water-related needs of those communities into consideration. In addition, it evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protection of the environment.

The IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan. The landowners and residents of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan.

Congratulations on this significant accomplishment. We are happy to be a part of this collaborative effort that is sure to improve water quality conditions flowing in to the Monterey Bay National Marine Sanctuary.

Sincerely,



Paul Michel
Superintendent
Monterey Bay National Marine Sanctuary

Cc: Susan Robinson, Program Manager



RESOLUTION
TO ADOPT THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN
FOR THE GREATER MONTEREY COUNTY IRWM REGION

Disclaimer: This Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly adopt the Greater Monterey County IRWM Plan. It is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this document.

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability;

WHEREAS, in November of 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the Legislature to appropriate \$1 billion in general obligation funds (PRC §75001-75130) to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, in November of 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the "Greater Monterey County" IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council

- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

WHEREAS, in February of 2010, with amendments through September 2012, the 19 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

WHEREAS, the landowners and residents of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan; and

NOW, THEREFORE BE IT RESOLVED, The *Monterey Bay Marine Sanctuary Foundation* formally adopts the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region.



Scott Hennessy, President
Monterey Bay Marine Sanctuary Foundation

12/7/2012

Date

December 11, 2012

Resolution No. 2012 - 92
Resolution of the Board of Directors
Marina Coast Water District
Adopting the Greater Monterey County
Integrated Regional Water Management Plan

RESOLVED by the Board of Directors (“Directors”) of the Marina Coast Water District (“District”), at a regular meeting duly called and held on December 11, 2012 at the business office of the District, 11 Reservation Road, Marina, California as follows:

WHEREAS, in 2002, the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve water quality, quantity, and reliability; and,

WHEREAS, in 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Proposition 84) authorizing the State Legislature to appropriate \$1 billion in general obligation bonds to fund Integrated Regional Water Management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and,

WHEREAS, in 2006 California voters passed the Disaster Preparedness and Flood Prevention Bond Act (Proposition 1E) authorizing the State Legislature to issue \$300,000 in general obligation bonds for storm-water flood management projects that are consistent with an adopted IRWM Plan; and,

WHEREAS, The MCWD Board of Directors adopted Resolution No. 2005-30 on May 25, 2005 to enter in to the Memorandum of Understanding that was the genesis of the Greater Monterey County Integrated Regional Water Management Group, and adopted Resolution No. 2005-46 on June 22, 2005 accepting the Salinas Valley Integrated Regional Water Management Functional Equivalent Plan on which this current Integrated Regional Water Management Plan (IRWMP) is an update and expansion; and,

WHEREAS, in May 2009, the California Department of Water Resources approved the “Greater Monterey County” Integrated Regional Water Management Region as a region acceptable for the purposed of integrated regional water management planning and implementation; and,

WHEREAS, the Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities and including Marina Coast Water District; and,

WHEREAS, in February 2010, and as amended through September 2012, the 19 entities of the Greater Monterey County Integrated Regional Water Management Region entered into a Memorandum of Understanding for the purpose of preparing a comprehensive IRWMP for the Region and for the joint solicitation of external funding to implement the IRWMP; and,

WHEREAS, the collaborative integrated regional water management planning process that has been undertaken by the Greater Monterey County Integrated Regional Water Management Group, with significant input from stakeholders throughout the Region, has resulted in the development of the IRWMP for the Greater Monterey County Region that: considers the water-related issues and conflicts in the Region, identifies goals and objectives for the planning Region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the Region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, to provide long-term, reliable, and high-quality water supplies, and to protect the environment; and,

WHEREAS, the Greater Monterey County IRWMP identifies and includes projects within the planning Region that both are eligible for both Proposition 84 and 1E grant funding and are consistent with goals and objectives of the IRWMP; and,

WHEREAS, the landowners and residents of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and,

WHEREAS, the State requires that all entities that are to receive Proposition 84 and 1E grant funding formally adopt the IRWMP and provide proof of adoption of the IRWMP; and,

WHEREAS, this Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly adopt the Greater Monterey County Integrated Regional Water Management Plan.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Marina Coast Water District does hereby adopt the Greater Monterey County Integrated Regional Water Management Plan as finalized in October 2012.

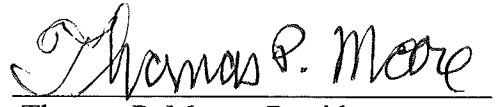
PASSED AND ADOPTED on December 11, 2012, by the Board of Directors of the Marina Coast Water District by the following roll call vote:

Ayes: Directors Lee, Gustafson, Le, Shriner, Moore

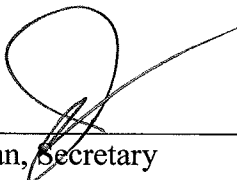
Noes: Directors None

Absent: Directors None

Abstained: Directors None


Thomas P. Moore, President

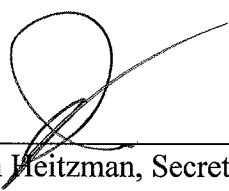
ATTEST:



Jim Heitzman, Secretary

CERTIFICATE OF SECRETARY

The undersigned Secretary of the Board of the Marina Coast Water District hereby certifies that the foregoing is a full, true and correct copy of Resolution No. 2012-92 adopted December 11, 2012.



Jim Heitzman, Secretary



***Before the Board of Directors of the Monterey County Water Resources Agency
County of Monterey, State of California***

RESOLUTION No. 13-R02

**RESOLUTION TO ADOPT THE INTEGRATED REGIONAL
WATER MANAGEMENT PLAN FOR THE GREATER MONTEREY
COUNTY REGION**)
)
)

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability;

WHEREAS, in November of 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the issuance of \$1 billion in general obligation funds (PRC §75001-75130) to fund competitive grants for integrated regional water management (IRWM) planning and for projects consistent with an adopted IRWM Plan; and

WHEREAS, in November of 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the “Greater Monterey County” IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary

- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

WHEREAS, in February of 2010, with amendments in September 2011, the entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

WHEREAS, the residents and landowners of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan; and

WHEREAS, this Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly participate in this IRWM planning process, nor shall it be construed or deemed to create a fiscal relationship of partnership or joint venture among the parties; and

WHEREAS, this Resolution does not affect any powers granted to a local agency by any other law, nor does it provide any added legal rights or regulatory powers to any of the signatory parties or to the Regional Water Management Group as a whole, nor does it give any party the power to adjudicate, define, or otherwise determine water rights of any person, or to regulate or otherwise control the private property of other parties; and

WHEREAS, it is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this document.

THE REMAINDER OF THIS PAGE IS LEFT INTENTIONALLY BLANK

NOW, THEREFORE, BE IT RESOLVED THAT THE MONTEREY COUNTY WATER RESOURCES AGENCY BOARD OF DIRECTORS HEREBY:

1. Adopts the Greater Monterey County Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region

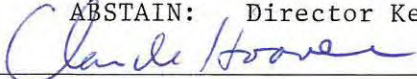
Upon motion of Director Ledesma, seconded by Director Bernardi, the foregoing is a Resolution passed and adopted this 28th day of January 2013, by the following vote, to wit:

AYES: Directors Claude Hoover, Silvio Bernardi, David Hart, Fred Ledesma, Richard Ortiz, Mike Scattini and Deidre Sullivan

NOES: None

ABSENT: None

ABSTAIN: Director Ken Ekelund



BY: - Chair

Vice Board of Directors



ATTEST:

David E. Chardavoyne
Interim General Manager

**SIGNATORIES TO THE RESOLUTION TO ADOPT THE INTEGRATED REGIONAL WATER
MANAGEMENT PLAN FOR THE GREATER MONTEREY COUNTY REGION**

We, the duly authorized undersigned representatives of our respective entities, hereby adopt the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region.

REGIONAL WATER MANAGEMENT GROUP

William H. Leahy, Executive Director
Big Sur Land Trust

Deborah Davis, Legislative Analyst
Environmental Justice Coalition for Water

Kathryn Cruz-Urbe, Provost and Vice President for
Academic Affairs
California State University Monterey Bay

Ken Ekelund, President
Garrapata Creek Watershed Council

Todd Peters, Chief Engineer
California Water Service Company

Jim Heitzman, General Manager
Marina Coast Water District

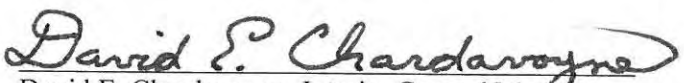
Eric Tynan, General Manager
Castroville Community Services District

Paul Michel, Superintendent
Monterey Bay National Marine Sanctuary

Artie Fields, City Manager
City of Salinas

Eric Lauritzen, Agricultural Commissioner
**Monterey County Agricultural Commissioner's
Office**

Adela P. Gonzalez, City Manager
City of Soledad


David E. Chardavoyne, Interim General Manager
Monterey County Water Resources Agency

Everett Kronlund, President
Coastlands Mutual Water Company

Keith Israel, General Manager
**Monterey Regional Water Pollution Control
Agency**

Mark Silberstein, Executive Director of Elkhorn
Slough Foundation
**Elkhorn Slough National Estuarine Research
Reserve**

Jerri Carmo, Deputy Chief Operating Officer and
Director of Sponsored Programs, San Jose State
University Research Foundation
Moss Landing Marine Laboratories

Paul Binsacca, Board President
**Resource Conservation District of Monterey
County**

Brian Phillips, Regional Manager, Environmental
N.CA/NV
Rural Community Assistance Corporation

Horacio Amezquita, Manager
San Jerardo Cooperative, Inc.

RESOLUTION NO. 2013-04

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY ADOPTING THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN FOR THE GREATER MONTEREY COUNTY REGION

Disclaimer: This Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly adopt the Greater Monterey County IRWM Plan. It is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, alter or modified by the language or any intention expressed within this document.

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability; and

WHEREAS, in November of 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the Legislature to appropriate \$1 billion in general obligation funds (PRC §75001-75130) to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, in November of 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the "Greater Monterey County" IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas

- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories
- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.; and

WHEREAS, in February of 2010, with amendments in September 2011, the 19 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

WHEREAS, the residents and landowners of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan; and

WHEREAS, this Resolution does not impose any further commitments or obligations upon any signatory party other than to willingly participate in this IRWM planning process, nor shall it be construed or deemed to create a fiscal relationship of partnership or joint venture among the parties; and

WHEREAS, this Resolution does not affect any powers granted to a local agency by any other law, nor does it provide any added legal rights or regulatory powers to any of the signatory parties or to the Regional Water Management Group as a whole, nor does it give any party the power to adjudicate, define, or otherwise determine water rights of any person, or to regulate or otherwise control the private property of other parties; and

WHEREAS, it is agreed and understood that each signatory's authority and power as provided under their respective authorizing statutes and all other applicable laws and regulations shall be retained and not be lessened, altered, or modified by the language or any intention expressed within this document; and

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Monterey Regional Water Pollution Control Agency does hereby adopt the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region.

PASSED, APPROVED AND ADOPTED by the Board of Directors of the Monterey Regional Water Pollution Control Agency at a regular meeting on the 28 of January, 2013 by the following vote:

AYES: **Stefani, Allion, Calcagno, Moore, Downey, Orman, Fischer, Pendergrass, and Rubio**

NOES: **None**

ABSENT: **De La Rosa**



Ron Stefani, Chair
MRWPCA Board of Director

ATTEST:



Keith E. Israel, General Manager
MRWPCA Board Secretary

Serving rural
communities in:

Alaska

Arizona

California

Colorado

Hawaii

Idaho

Montana

Nevada

New Mexico

North Dakota

Oregon

South Dakota

Utah

Washington

Wyoming

February 28, 2013

Susan Robinson
IRWM Plan Coordinator
srobinsons@frontier.com
(828) 649-9742

Re: RCAC signed agreement for the Greater Monterey County Regional Water Plan.

Rural Community Assistance Corporation (RCAC) provides technical assistance, training and financing so rural communities achieve their goals and visions. As a nonprofit organization established in 1978, RCAC provides services to low-income residents of rural, Native American and Native Hawaiian communities in 15 western states, United States Virgin Islands and the Western Pacific. RCAC program areas include affordable housing, community development finance, environmental infrastructure (water, wastewater, solid waste), and economic and leadership development. RCAC is a certified Community Development Financial Institution (CDFI) and finances affordable housing, community facilities, and water, wastewater and solid waste systems. With more than 105 employees and 40 field offices throughout the West, RCAC is a major resource for rural communities. RCAC is a U.S. General Services Administration (GSA) environmental consulting and training services contract holder, Contract number GS-10F-0255X.

RCAC has signed a memorandum of understanding and is a member of the Greater Monterey County Regional Water Management Group (RWMG). RCAC has reviewed the goals and objectives for the Integrated Regional Water Management Plan for the Greater Monterey County Region. RCAC agrees to promote the strategies to meet the water quality standards outlined in the Central Coast Basin Plan, and the planning goals promulgated by the Central Coast RWQCB.

It is acknowledged, a notice of intention to prepare the Plan, and then a notice of intention to adopt the Plan, was published in accordance with §6066 of the Government Code. Each of the RWMG members have accepted, approved, or adopted the Greater Monterey County IRWM Plan through resolution by their governing boards or by other means according to organizational protocol. The Greater Monterey County IRWM Plan is scheduled to be formally approved on March 20, 2013 by the RWMG at a regularly scheduled RWMG meeting open to the public. In addition, each project proponent named in an IRWM grant application is also required to adopt the IRWM Plan in order to be eligible to receive IRWM grant funds. Each project proponent will be required to submit a formal, signed agreement adopting the IRWM Plan prior to submission of an IRWM grant.

Therefore, let this be notice that RCAC agrees to the plan, goals and strategies as outlined in the Integrated Regional Water Management Plan for the Greater Monterey County Region.

Sincerely,



Brian Phillips
Environmental Programs, Regional Manager | California-Nevada
(707) 489-6994
bphillips@rcac.org

**RESOLUTION 2012-02
TO ADOPT THE INTEGRATED REGIONAL WATER MANAGEMENT PLAN
FOR THE GREATER MONTEREY COUNTY IRWM REGION**

WHEREAS, in 2002 the California State Senate passed Senate Bill 1672, creating the Integrated Regional Water Management Act to encourage local agencies to work cooperatively to manage local and imported water supplies to improve the quality, quantity, and reliability;

WHEREAS, in November of 2006 California voters passed the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (also known as Proposition 84), authorizing the Legislature to appropriate \$1 billion in general obligation funds (PRC §75001-75130) to fund integrated regional water management (IRWM) projects that assist local public agencies to meet the long-term water needs of the State including the delivery of safe drinking water and the protection of water quality and the environment, and that are consistent with an adopted IRWM Plan; and

WHEREAS, in November of 2006 California voters also passed Proposition 1E, the Disaster Preparedness and Flood Prevention Bond Act, authorizing the issuance of \$300,000,000 (PRC §5096.800-5096.967) for stormwater flood management projects that are consistent with an adopted IRWM Plan; and

WHEREAS, in May 2009, the California Department of Water Resources approved the "Greater Monterey County" IRWM region as a region acceptable for the purposes of IRWM planning and implementation, and defined as comprising the entirety of Monterey County exclusive of the Pajaro River Watershed IRWM region (including the Pajaro River watershed) and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region (including all of the Monterey Peninsula Water Management District jurisdiction, plus all of the Carmel River and San Jose Creek watersheds, plus all of the Seaside Groundwater Basin) established under Proposition 50, as well as including all of the Salinas River watershed north of the San Luis Obispo County line which encompasses a small portion of San Benito County where the Salinas River watershed extends outside of Monterey County; and

WHEREAS, a Regional Water Management Group for the Greater Monterey County IRWM region has been formed, consisting of 19 public, private, and non-profit entities as follows:

- Big Sur Land Trust
- California State University Monterey Bay
- California Water Service Company
- Castroville Community Services District
- City of Salinas
- City of Soledad
- Coastlands Mutual Water Company
- Elkhorn Slough National Estuarine Research Reserve
- Environmental Justice Coalition for Water
- Garrapata Creek Watershed Council
- Marina Coast Water District
- Monterey Bay National Marine Sanctuary
- Monterey County Agricultural Commissioner's Office
- Monterey County Water Resources Agency
- Monterey Regional Water Pollution Control Agency
- Moss Landing Marine Laboratories

- Resource Conservation District of Monterey County
- Rural Community Assistance Corporation
- San Jerardo Cooperative, Inc.

WHEREAS, in February of 2010, with amendments through September 2012, the 19 entities of the Regional Water Management Group for the Greater Monterey County IRWM region entered into a Memorandum of Understanding (MOU) for the purpose of preparing a comprehensive IRWM Plan for the Greater Monterey County IRWM Region and for the joint solicitation of external funding to implement the IRWM Plan; and

WHEREAS, the collaborative IRWM planning process that has been undertaken by the Regional Water Management Group, with significant input from stakeholders throughout the planning region, has resulted in the development of the Integrated Regional Water Management Plan for the Greater Monterey County Region that: considers the water-related issues and conflicts in the region, identifies goals and objectives for the IRWM planning region, considers a broad variety of resource management strategies, identifies disadvantaged communities and takes the water-related needs of those communities into consideration, evaluates the adaptability to climate change of water management systems in the region, and identifies an appropriate mix of water management strategies, water quality protections, and environmental stewardship actions in order to achieve multiple benefits, provide long-term, reliable, and high quality water supply, and protect the environment; and

WHEREAS, the IRWM Plan for the Greater Monterey County identifies and includes projects within the planning region that are both eligible for Proposition 84 and Proposition 1E grant funding and are consistent with goals and objectives of the IRWM Plan; and

WHEREAS, the landowners and residents of the Greater Monterey County IRWM region will derive water supply, water quality, flood protection, natural resource enhancement, and/or recreational benefits from implementation of the IRWM Plan and the projects contained within the Plan; and

WHEREAS, the State requires that the Regional Water Management Group and all entities that are to receive IRWM grant funding formally adopt the IRWM Plan and provide proof of adoption of the IRWM Plan; and

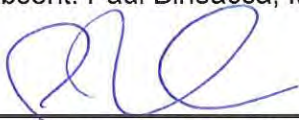
NOW, THEREFORE BE IT RESOLVED that the Resource Conservation District of Monterey County formally adopts the Integrated Regional Water Management Plan for the Greater Monterey County IRWM Region.

PASSED AND ADOPTED, by the following vote on November 12, 2012:

YES VOTES 4 NO VOTES 0 ABSENT 3

Directors present: Benny Jefferson, Steve Cobb, Rebecca King, Linda Ferrasci

Directors absent: Paul Binsacca, Melissa Duflock, Joanna Devers

ATTEST:  PAUL ROBINS, EXECUTIVE DIR
November 12, 2012

**San Jerardo Cooperative, Inc.
Board of Directors**

**Resolution
R-13-1**

January 10 2013

The Board of Directors, at its duly called meeting of January 10, 2013 and with Majority of members present, passed the following Resolution R-13-1:

Be it resolved that the Board of Directors hereby:

- 1) Accepts formal adoption of the Integrated Regional Water Management Plan for the Greater Monterey County Integrated Regional Water Management Region.

The above Resolution R-12-1 was voted on and passed unanimously.

Yes: 5

No: 0

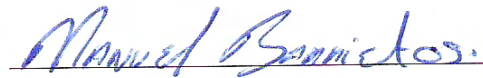
Board members present: Manuel Barrientos, Abel Alvarez, Marcela Alcalá,
Javier Acosta, Marcos Zavala.

Board members absent: Yolanda Galvan, Jorge Gomez.

Certification

I Manuel Barrientos, duly appointed as President of the Board of Directors, do hereby certify that the above is a true and correct copy of a resolution passed and approved by the Board of Directors of the San Jerardo Cooperative, Inc. on the 10th day of January, 2013.

Date: February 21, 2013



Manuel Barrientos, President

President, San Jerardo Cooperative, Inc.

Attest:



Marcela Alcalá

Secretary, San Jerardo Cooperative, Inc.



**SAN JOSÉ STATE
UNIVERSITY**

RESEARCH FOUNDATION

RESOLUTION 199

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SAN JOSE STATE UNIVERSITY RESEARCH FOUNDATION

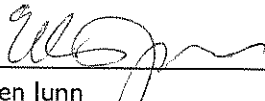
*Formal adoption of the Integrated Regional Water Management Plan for the
Greater Monterey County Integrated Regional Water Management Region.*

Passed and approved this 8th day of November, 2012.

CERTIFICATION

I, Ellen Junn, duly appointed as President of the Board of Directors, do hereby certify that the above is a true and correct copy of a resolution passed and approved by the Board of Directors of the San Jose State University Research Foundation on the 8th day of November, 2012.

Date: November 8, 2012



Ellen Junn
President, SJSU Research Foundation

Attest:



Jerri Carmo
Interim Secretary, SJSU Research Foundation