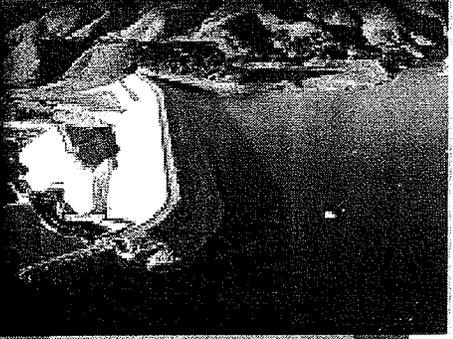
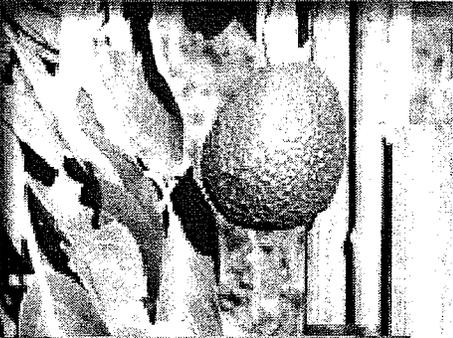


**Attachment 2
Proof of Formal Adoption**

The Santa Barbara County Region IRWM Plan was adopted by Santa Barbara County on June 19, 2007. By July 30, 2007, the IRWM Plan had been adopted by the agencies listed below.

- Santa Barbara County
- Cachuma Conservation and Release Board
- Cachuma Operation and Maintenance Board
- Carpinteria Sanitary District
- Carpinteria Valley Water District
- Casmalia Community Services District
- Central Coast Water Authority
- City of Carpinteria
- City of Guadalupe
- City of Lompoc
- City of Santa Barbara
- City of Santa Maria
- City of Solvang
- Cuyama Community Services District
- Goleta Sanitary District
- Goleta Water District
- Goleta West Sanitary
- La Cumbre Mutual
- Montecito Water District
- Santa Ynez River Water Conservation District
- Santa Ynez River Water Conservation District Improvement District No. 1
- Vandenberg Village Community Services District

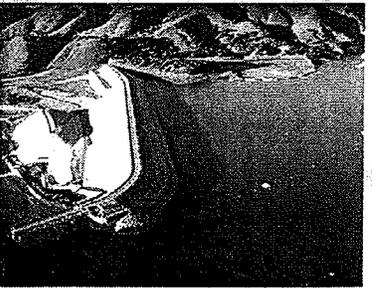
This attachment includes the 2007 IRWM Plan, the County of Santa Barbara Board of Supervisors Minute Order and Resolution No. 07-191, adopted June 19, 2007, and the resolutions of all cooperating partners adopting the Santa Barbara County IRWM Plan of 2007. Additionally, the City of Carpinteria signed a Memorandum of Understanding (MOU) agreeing to Participation of the State-wide Proposition 84 Process and Related Integrated Regional Water Management Activities in Santa Barbara County. The City of Carpinteria's City Council authorized signing this MOU on August 27th, 2012, and the MOU was signed by the City Manager on August 29th, 2012. The meeting minutes and signed MOU are part of this attachment.



Santa Barbara Countywide Integrated Regional Water Management Plan

MAY 2007

AN ELECTRONIC COPY OF THIS DOCUMENT AND PROJECT INFORMATION ARE AVAILABLE AT:
WWW.COUNTYOF SB.ORG/PWD/WATER/IRWMP.HTM
FOR FURTHER INFORMATION, CONTACT THE SANTA BARBARA COUNTY WATER AGENCY AT
805-568-3545



Cooperating Partners for the Santa Barbara Countywide IRWMP

**Cachuma Conservation and Release Board
Cachuma Operation and Maintenance Board
Carpinteria Sanitary District
Carpinteria Valley Water District
Casmalia Community Services District
Central Coast Water Authority
City of Buellton
City of Carpinteria
City of Guadalupe
City of Lompoc
City of Santa Barbara
City of Santa Maria
City of Solvang
Cuyama Community Services District
Golden State Water Company
Goleta Sanitary District
Goleta Water District
Goleta West Sanitary District
La Cumbre Mutual Water Company
Los Alamos Community Services District
Mission Hills Community Services District
Montecito Sanitary District
Montecito Water District
Santa Barbara County
Santa Maria Valley Water Conservation District
Santa Ynez River Water Conservation District
Santa Ynez River Water Conservation District
Improvement District No. 1
Summerland Sanitary District
Vandenberg Village Community Services District**

Acknowledgements

Santa Barbara Countywide Integrated Regional Water Management Plan

The Santa Barbara Countywide IRWMP is a result of the combined efforts of many agencies, organizations, and individuals. The Cooperating Partners spent numerous hours developing the information that is included in the Plan, as well reviewing its contents. The following individuals prepared or reviewed sections of the IRWMP:

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Acronyms

AF	acre-feet
AFY	acre-feet per year
ASR	Aquifer Storage and Recovery
CCA	Critical Coastal Area
CEQA	California Environmental Quality Act
DAC	disadvantaged community
DAU	designated analysis unit
DWR	State of California Department of Water Resources
ERP	Emergency Response Plan
FISH	Tri-Counties Funding for Improved Salmonid Habitat
GIS	geographic information system
gpd	gallons per day
IRWMP	Integrated Regional Water Management Plan
µg/L	micrograms per liter
MCL	maximum contaminant level
mg/L	milligrams per liter
mgd	million gallons per day
MS4	municipal separate storm sewer systems
MTBE	methyl tertiary butyl ether
NEPA	National Environmental Policy Act of 1969
NPDES	National Pollutant Discharge Elimination System
Reclamation	U.S. Bureau of Reclamation
RWEP	Regional Water Efficiency Program
RWQCB	Regional Water Quality Control Board
SBCWA	Santa Barbara County Water Agency
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
TSS	total suspended solids
UCSB	University of California, Santa Barbara
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan

Executive Summary

Development of the IRWMP

Purpose of the IRWMP

The Santa Barbara Countywide Integrated Regional Water Management Plan (IRWMP) increases coordination among agencies and districts responsible for water resources, along with nongovernmental organizations and the public. It facilitates optimal management of water resources, a key challenge facing Santa Barbara County.

Funding Opportunities

The IRWMP provides the foundation for grant applications needed to augment limited local financial resources. Proposition 50, passed by voters in 2002, authorized \$500 million for integrated regional water management projects. In November 2006, Proposition 84 was passed, providing an additional \$1 billion in funding for integrated regional water management. Proposition 1E was also passed at that time, authorizing the state to sell \$4.09 billion in bonds to rebuild and repair California's most vulnerable flood control structures. *An IRWMP is a prerequisite for seeking funds from all of these programs.*

Cooperating Partners

In Santa Barbara County, a range of local agencies, special districts, private companies, and regional joint powers authorities are responsible for managing water and wastewater. All but one of these entities came together in a collaborative process to prepare this IRWMP, as indicated by the following list of "Cooperating Partners":

Cachuma Conservation and Release Board	Goleta Sanitary District
Cachuma Operation and Maintenance Board	Goleta Water District
Carpinteria Sanitary District	Goleta West Sanitary District
Carpinteria Valley Water District	La Cumbre Mutual Water Company
Casmalia Community Services District	Los Alamos Community Services District
Central Coast Water Authority	Mission Hills Community Services District
City of Buellton	Montecito Sanitary District
City of Carpinteria	Montecito Water District
City of Guadalupe	Santa Barbara County
City of Lompoc	Santa Maria Valley Water Conservation District
City of Santa Barbara	Santa Ynez River Water Conservation District
City of Santa Maria	Santa Ynez River Water Conservation District
City of Solvang	Improvement District No. 1
Cuyama Community Services District	Summerland Sanitary District
Golden State Water Company	Vandenberg Village Community Services District

Public Participation

In conformance with the Brown Act, public stakeholders participated in development of the IRWMP and influenced decisions by attending stakeholder workshops and Cooperating Partner meetings. Public stakeholders represent the general public, agricultural and business interests, disadvantaged communities (DACs), environmental groups, academic institutions, and the media. Four sets of public workshops were held between October 2006 and April 2007 to advise the public of progress on the IRWMP and obtain input at strategic points in its development; each set of workshops was held in both a South Coast and a North County location, for a total of eight workshops. A public review period was held from mid-March through April 27th in order to obtain comments on the Draft IRWMP. These comments were considered in the completion of the Final IRWMP. In addition, the County of Santa Barbara established a Web site to facilitate IRWMP communications with all stakeholders in the region (www.countyofsb.org/pwd/water/irwmp.htm).

Water Resources: Description and History

Regional Description

The planning region for this IRWMP encompasses all of Santa Barbara County. The large land area north of the Santa Ynez Mountains is primarily drained by streams that comprise only a few large watersheds for three relatively long waterways: the Santa Ynez River, San Antonio Creek, and the Santa Maria River, which is formed by the Cuyama and Sisquoc rivers. In contrast, the land area south of the Santa Ynez Mountains is composed of approximately 50 short, steep watersheds. Segments of some of these waterways, along with some coastal areas, have been identified by the State Water Resources Control Board (SWRCB) as being "impaired" for particular contaminants.

Given the county's low annual rainfall and the fact that nearly all rivers and creeks are dry in summer, many areas have historically been dependent on groundwater from four basins along the South Coast and seven basins in the north. Groundwater quality varies considerably between basins.

The county also contains areas of notable freshwater habitat, coastal salt marshes and sloughs, marine protected areas, critical coastal areas and coastal dunes, and areas with sensitive aquatic species.

In spite of low average annual rainfall, Santa Barbara County experiences periods of high intensity rains, which can cause flooding in virtually any watershed. At the other extreme, drought periods of several years or more occur with some regularity.

History of Water Development in Santa Barbara County

Santa Barbara County has a long water development history. Some of that history has been contentious, especially regarding the diversion of Santa Ynez River water to South Coast communities beginning in the early 1900s. Ultimately, through various court decisions, state permit conditions, operation agreements, and settlement agreements, the long contentious arguments over Santa Ynez River water now seem largely settled, providing for both diversions of water to the South Coast and releases for certain downstream needs. In the

South Coast, disagreements also arose over rights to groundwater in the Goleta area, but these were resolved through the 1989 Wright Settlement Agreement.

The history of water management in the Santa Maria watershed has focused primarily on groundwater and on reducing the risk of occasional flooding of the Santa Maria River. In the late 1950s, construction of Twitchell Dam and Reservoir greatly helped to protect against floods, as well as to provide water for recharge of groundwater. However, in 1997, the Santa Maria Valley Water Conservation District filed suit to adjudicate water rights in the Santa Maria Valley Groundwater Basin. Since 2001, the adjudication has proceeded through various court orders, a "partial statement of decision," and a settlement agreement. Although the court has approved an agreement among those parties who have signed it, not all parties to the adjudication have agreed to it. The court's final judgment is pending.

Although water management issues in the Santa Maria area seem far removed from water issues of the Santa Ynez Valley and South Coast, they are now linked through the arrival of imported water from the State Water Project. Since 1997, the Central Coast Water Authority has been delivering State Water Project water to Santa Maria, Guadalupe, Orcutt, Vandenberg Air Force Base, Buellton, Solvang, and Santa Ynez; and then to Lake Cachuma, where State Water Project water is available to the Central Coast Water Authority's member units on the South Coast (Carpinteria, Montecito Water District, Santa Barbara, La Cumbre Mutual Water Company, Goleta Water District, Raytheon Research Center, and the Morehart Land Company). The Central Coast Water Authority's extensive water distribution system now links most of the communities within Santa Barbara County, and is therefore a key component of the overall countywide "system" for managing water distribution, which includes the various agreements for managing Lake Cachuma and the Santa Ynez River, as well as the groundwater adjudications and conjunctive use decisions made by local water managers.

History of Wastewater Management

Efforts to manage wastewater within the county have been underway for more than a century, but have been less visible and less contentious. As communities have grown, septic systems historically have been replaced by sewers, but at first, coastal communities simply discharged the collected and untreated wastewater directly into the ocean. Wastewater treatment plants, providing at least a basic level of treatment, began to be built in South Coast communities in the mid-1900s. These plants have been upgraded a number of times to meet increasingly strict federal standards and state permit requirements.

In the northern part of the county, the City of Santa Maria has treated and disposed of wastewater since 1910. After a major study in 1977 and subsequent plant expansion, the treated effluent was applied to percolation ponds and irrigated lands. Lompoc completed its fourth wastewater treatment plant, the Lompoc Regional Wastewater Reclamation Plant in 1977, with discharge to the Santa Ynez River. It serves Lompoc, Vandenberg Village Community Service District, and Vandenberg Air Force Base.

In some unincorporated areas of the county, wastewater services are currently provided by four community services districts formed between 1956 and 1983. Three of these districts provide both water and wastewater services.

Existing Infrastructure and Management

Water resources management requires extensive physical infrastructure. Through shared water supplies and connected infrastructure, water resources can be managed as an interconnected system within the county boundaries, although no one entity is vested with overarching countywide responsibility.

Water Supply and Distribution

Major infrastructure for water supply in Santa Barbara County includes four major reservoirs. The three surface storage reservoirs on the Santa Ynez River (Cachuma, Gibraltar, and Jameson) provide water to South Coast communities through an extensive system of pipes, conduits, and tunnels. Twitchell Reservoir, on the Santa Maria River, provides for both flood control and groundwater recharge. Other smaller reservoirs are located in cities and districts.

With the advent of State Water Project water in the 1990s, the Central Coast Water Authority constructed a 42-mile extension of the State Water Project pipeline, which ends at Lake Cachuma, as well as pumping stations and related facilities. The Water Authority operates the Polonio Pass Water Treatment Plant and all of the State Water Project Coastal Branch facilities downstream of that plant.

Because communities rely on different types of water supplies, a variety of facilities and processes are in place to treat water before it is provided to customers. Additionally, the City of Santa Barbara owns a desalination plant to be used as an emergency water supply. The plant is currently decommissioned but could be brought into operation within 6 to 12 months if needed.

Water purveyors and the County Water Agency also support a cloud seeding program as a weather modification activity. This program is only conducted in the upper Santa Ynez and Twitchell Reservoir watersheds.

Wastewater Treatment

Wastewater service providers must address increasingly strict discharge limits for wastewater treatment plants under federal requirements and SWRCB's "General Waste Discharge Requirement for Sanitary Sewer Systems." Within the county, there are 14 principal wastewater treatment plants. One of these plants provides only a primary level of treatment; ten provide secondary treatment; and three plants provide tertiary treatment, which is the highest level of treatment. Some wastewater service providers produce treated water that is directly reused in the community (for example, for irrigating landscaped areas). Such recycled water must meet water quality standards before it can be reused. Wastewater service providers may also produce treated water that flows into ponds where the water percolates into the ground to recharge aquifers.

Flood Control

Infrastructure for flood control is most evident with the Santa Maria River levee, which protects residential, commercial, and agricultural areas in and around the city. Various levels of flood control are also offered by the dams that form the reservoirs noted above.

Finally, there are many other less-visible flood control structures countywide, including approximately 42 miles of closed conduits; 22 miles of lined channels; 50 miles of improved earth channels; 34 retarding and recharge basins; and 31 debris basins.

Water Resources Management Framework

All projects included in the IRWMP are expected to be consistent with current general plans and land use plans. Any IRWMP project that will be included in a future Proposition 50 grant application will have to be formally evaluated for consistency with the relevant plans prior to submittal to the state as part of a grant request.

Both the IRWMP and the individual projects are consistent with the Urban Water Management Plans (UWMPs), which are required in California for all water purveyors with 3,000 or more customers. Several cities and districts in the region also have adopted or are preparing groundwater management plans, or have adjudicated basins. Unlike UWMPs, development of groundwater management plans is entirely voluntary.

Storm Water Management Plans (SWMPs) are required under federal and state law for local municipalities. Santa Barbara County government is responsible for implementing the SWMP program in unincorporated urbanized areas of the South Coast, Santa Ynez Valley, and Santa Maria Valley. The cities of Carpinteria, Santa Barbara, Goleta, Solvang, Buellton, Lompoc, and Santa Maria have their own SWMPs. The IRWMP includes projects that will help implement some SWMPs.

Water monitoring (for water supply and/or water quality) is occurring through a network of programs at different levels of government, through nonprofits, and through public-private cooperation.

Water conservation programs are implemented at both a local level by individual water purveyors and as a Regional Water Efficiency Program (RWEF) coordinated by the Santa Barbara County Water Agency. Through water efficiency programs, additional water supplies become available for use, reducing pressures on other water sources. The RWEF's scope includes school education; public information; commercial, industrial, and institutional; landscapes and outdoor; and residential/indoor.

Key Elements of the IRWMP

Objectives

Objectives and regional priorities were established to address regional needs. The Cooperating Partners adopted six objectives. Four of these are required by the state: water supply, groundwater management, ecosystem restoration, and water quality. The four mandatory objectives were augmented to reflect regional needs for emergency preparedness and infrastructure efficiency and reliability.

Strategic Approach

In order to attain the IRWMP objectives, the Cooperating Partners adopted a strategic approach with a straightforward, linear path relating place-specific problems to regional objectives, priorities, and strategies in order to identify appropriate projects. In this way, a

list of substantial issues that challenge agencies and special districts in one or more parts of the region is narrowed to specific projects to address key problems.

Key Issues

The Santa Barbara County region faces both regionwide and watershed-specific water issues and problems. The regionwide issues are consistent with the State of California Department of Water Resources (DWR)'s California Water Plan Update 2005, which emphasized two "initiatives" for ensuring reliable water supplies: implementing integrated regional water management and improving areawide water management systems. These key issues reflect short-term (5 years) and long-term (5 to 20 years) regional priorities.

On a watershed-specific basis, water issues evident in one location may be similar or even identical to issues in another area, but **the most pressing water-related problems vary considerably from watershed to watershed** within the region. Nevertheless, the Cooperating Partners noted the following key water issues and actual or potential problems (which are not listed in order of priority):

- The need to replace, rehabilitate, or upgrade **aging infrastructure** serving the general population and especially DACs
- Risk of illness from **inadequate drinking water and pollution from wastewater**, especially in DACs
- Water supply reliability, stemming from multiple factors, including the **variable reliability of State Water Project water**, the **loss of storage capacity** in the four major reservoirs, and the need for water supplies to serve a **growing population**
- The need to operate and maintain water and wastewater systems in a manner that **minimizes impacts to sensitive habitats and species** and complies with federal, state, and local regulatory requirements
- **Overdrafted groundwater basins** in North County
- **Water quality impairments** in both groundwater and surface water bodies, including pollution of creeks and ocean water, especially from sediment runoff
- Potential harm to people and property from **flooding**
- The need for **emergency planning** to address potential impacts to water and wastewater facilities from floods, earthquakes, and fires, as well as planning for (and responding to) periodic droughts

In the short-term, for the purpose of seeking integrated regional water management funding from the state, the Cooperating Partners have determined that Proposition 50 grant requests should focus on two overarching needs: (1) more efficient water use in the northern and central portions of the county through improved water and wastewater treatment to meet standards; and to allow effluent reuse and improved quality of surface discharges and returns to groundwater; and (2) increased reliability and efficiency through conjunctive use and system flexibility in the southern portion of the county.

Regional Priorities: Short-term (5 years)

These priorities focus on the need for “new” projects/initiatives. They do not focus on the substantial existing efforts being made to meet ongoing public needs and protect the local environment. The short-term and long-term priorities described below are not listed in order of importance.

- Protect public safety by reducing the potential for flooding in strategic areas through infrastructure improvements such as levee reinforcement, channel modifications, floodplain restoration, and increasing reservoir storage capacity.
- Increase water supply reliability by developing new water sources; maximizing the efficient use of existing sources, including recycled water used for landscaping, irrigation, industrial and commercial purposes, desalinated water, conservation, and groundwater treatment; and strategically restoring or replacing water infrastructure.
- Strategically restore and replace infrastructure to improve wastewater quality, limit the potential for adverse impacts to water quality and sensitive environmental areas, increase wastewater management efficiency, and meet regulatory requirements.
- Ensure the adequacy of water and wastewater facilities in DACs (Guadalupe, Cuyama, and Casmalia).
- Improve surface and ocean water quality and reduce beach closures by replacing septic systems with sanitary sewers, ensuring the integrity of wastewater collection systems near the ocean and surface water bodies, improving the quality of urban runoff, reducing runoff that enters the ocean and surface waters, and developing education programs to increase awareness of measures to improve water quality.
- Further define sources of groundwater contamination, and develop strategies to prevent contamination and improve quality in areas with known contamination.
- Protect, restore, and enhance ecological processes in aquatic areas through water quality improvements; public education; restoration efforts, including removal of invasive species; and improved steelhead passage on strategic creeks.
- Ensure the adequacy of water supplies during droughts and emergencies such as fires, floods, and earthquakes through strategic replacement and rehabilitation of critical infrastructure.
- Develop programs and policies to increase groundwater recharge or decrease groundwater use, especially in overdrafted groundwater basins.
- Encourage cooperation in beginning to develop groundwater banking programs.

Regional Priorities: Long-term (5 to 20 years)

The preceding short-term priorities will continue to be important in the more distant future, as well; thus, there is overlap between short-term and long-term priorities.

- Provide adequate water and wastewater services to meet projected growth.
- Implement regional and/or interagency conjunctive use and groundwater banking programs where supported by water cases and landowners.
- Promote programs, policies, and infrastructures to increase water supply sustainability through artificial recharge of local groundwater basins.
- Maximize storage capacity of existing surface reservoirs.
- Optimize the use of seawater desalination to increase water supply reliability and offset groundwater use.
- Expand distribution systems to provide recycled water to new users.
- Expand voluntary water conservation programs for residential, commercial, industrial, and agricultural uses.
- Continue interagency coordination to develop opportunities to further integrate the management of water and wastewater projects and programs.
- Continue to coordinate with adjacent counties to develop strategies and programs that improve the management of regional water resources.

Water Management Strategies

The state's IRWMP Guidelines identify 20 water management strategies as potential methods to meet objectives. These strategies were considered by the Cooperating Partners and were part of the evaluation process, as were the resource management strategies identified in the DWR's California Water Plan Update 2005. Many of the strategies in the IRWMP have multiple benefits, and many are already being implemented through local plans and programs. The three "foundational actions" outlined in the California Water Plan (i.e., using water efficiently, protecting water quality, and supporting environmental stewardship) are evident in our priorities and strategies.

Project Solicitation and Prioritization

In determining which projects to include in the IRWMP, the Cooperating Partners evaluated potential projects using the following criteria:

1. Readiness to proceed:
 - a. California Environmental Quality Act (CEQA) process has been initiated or completed.
 - b. Costs have been adequately estimated.
 - c. Schedule, including project timeframe and milestones, has been prepared.
2. One or more regional objectives are addressed.

3. One or more water management strategies are utilized.
4. One or more regional priorities are addressed.
5. One or more statewide priorities are addressed.
6. The project is likely consistent with applicable general plan.
7. The project will not cause long-term significant adverse impacts, including long-term adverse impacts to agriculture.
8. The project serves a DAC.

The highest scoring projects were grouped as Tier I projects, with all other projects being Tier II. This preliminary sorting of projects into two tiers does not presume that any project is more likely, or less likely, to be included in a future application for a Proposition 50 grant. The complete IRWMP contains brief project descriptions for the Tier I projects. Appendices to the IRWMP include a complete listing of all projects, as well as information on how each project was evaluated relative to regional objectives, regional priorities, water management strategies, and statewide priorities.

Compliance with Statewide Priorities

As required by the state's Proposition 50 Guidelines, the IRWMP addresses the state's 11 water-related priorities, which cover a broad range of water supply and water quality issues. DWR and SWRCB also put a heavy emphasis on *integration* through the following program preferences, each of which is discussed in the IRWMP:

- Integration through use of multiple water management strategies
- Integration through multiple projects using the same water strategy; Integration resulting from projects with multiple benefits
- Integration with other projects not in the IRWMP
- Integration with other management plans and programs
- Geographic integration of multiple projects in a single location
- System integration, when new projects complete or complement existing ones
- Integration through interagency cooperation

In addition to these program preferences, the IRWMP has already served as a catalyst for discussions between the Cooperating Partners and other stakeholders regarding ways to increase integrated water resource management planning within Santa Barbara County.

Plan and Project Implementation

The Cooperating Partners will evaluate projects and plan performance, and will use adaptive management strategies to modify the current list of projects and overall plan as needed. The Cooperating Partners will conduct a biennial review and produce a 5-year report summarizing progress made in achieving IRWMP goals, including the tracking of funded and unfunded projects. Likewise, IRWMP objectives, priorities, water management

strategies, and project lists will be evaluated during the biennial review and modified appropriately.

Management of data is an integral component of the IRWMP process. Information from the IRWMP will be available to stakeholders through the use of a Web site, which will be supported by the Santa Barbara County Water Agency. Other venues for information sharing will include project progress meetings, agency coordination meetings, public workshops, e-mail subscription lists, and e-mail newsletters. These forums will serve to continue to facilitate the ongoing data sharing between stakeholders.

Santa Barbara County will maintain existing data and will make it available to the public on the Santa Barbara County Water Agency Web site located at: <http://www.countyofsb.org/pwd/water/index.htm>. This site will also provide the forum for sharing of reports, public meeting dates, agendas, meeting minutes, and annual reports.

1 Introduction

1.1 Background and Purpose of the Santa Barbara Countywide Integrated Regional Water Management Plan

The effective management of water resources is one of the key challenges facing Santa Barbara County. Water resource planning within the county must address multiple factors, including limited local water supplies, variability of imported supplies, water quality issues, population changes and impacts from development, increasing regulatory requirements, aging infrastructure, the need to protect sensitive species and habitats, the loss of capacity in key reservoirs, existing and changing climatic conditions, and ongoing threats from droughts, floods, fires, and earthquakes.

Water resource managers in the Santa Barbara County region have a long history of working cooperatively to resolve multiple issues related to water and wastewater, including ensuring the adequacy of supplies and services, protecting and improving surface and groundwater quality, and protecting and enhancing ecosystems. Together they have planned and implemented significant water resources projects; developed integrated supplies and delivery systems; managed resources to meet the needs of urban users, agriculture, and ecosystems; and developed adaptive management strategies to respond to changing circumstances. Nonetheless, challenges remain, and the Santa Barbara Countywide Integrated Regional Water Management Plan (IRWMP) is intended to increase the level of coordination among all the agencies and districts responsible for water resources planning, nongovernmental organizations, and interested members of the public to facilitate the optimal management of water resources within the county over the next 20 years. The IRWMP also provides the foundation for grant applications needed to augment limited local financial resources.

The planning framework established by the IRWMP will be modified as needed to respond to changing conditions, including regulatory requirements, and will increase flexibility and efficiency by integrating multiple aspects of water resources management, such as water quality, local and imported water supplies, watershed protection, wastewater treatment and recycling, and protection of local ecosystems.

1.1.1 Consistency with State of California Planning Efforts

The IRWMP will allow regional needs to be met in a manner that is consistent with state of California planning efforts, including the California Department of Water Resources (DWR) Bulletin 160 (California Water Plan Update 2005), the State Water Resources Control Board (SWRCB) Strategic Plan, Watershed Management Initiative, basin planning process, and the Central Coast Regional Water Quality Control Board's (RWQCB) draft "Vision, Goals, and

Objectives.” The Santa Barbara Countywide IRWMP will help implement these planning efforts by developing an appropriate mix of resource management strategies and projects based on water management objectives and priorities that are specific to Santa Barbara County.

California Water Plan Update 2005

The California Water Plan Update 2005, a roadmap for meeting the state’s water demands through the year 2030, indicates that to attain reliable water supplies, water management must pursue two initiatives that incorporate the following actions:

- Promote and practice integrated regional water management
 - Foster regional partnerships
 - Develop integrated regional water management plans
 - Diversify regional water portfolios
- Maintain and improve statewide water management systems, which are the backbone of water management in California
 - Improve aging facilities
 - Improve flood management
 - Implement the CALFED program and sustain the Sacramento-San Joaquin Delta (which will help ensure that State Water Project water flows to Santa Barbara County)

The California Water Plan Update 2005 further indicates that California water management must be based on the following three foundational actions in order to achieve sustainable water uses and reliable water supplies.

- Use water efficiently
 - Increase levels of urban and agricultural water use efficiency
 - Increase recycled municipal water, and expand its uses
 - Change the way water facilities are operated to improve their operation and efficiency
 - Facilitate environmentally, economically, and socially sound transfers to avoid regional shortages
 - Reduce and eliminate groundwater overdraft
- Protect water quality
 - Protect surface waters and aquifers from contamination
 - Explore new treatment technologies for drinking water and groundwater remediation
 - Match water quality to its intended uses
 - Improve management of urban and agricultural runoff

- Improve watershed management
- Support environmental stewardship
 - Integrate ecosystem restoration with water planning and land use planning
 - Restore and maintain the structure and function of aquatic ecosystems
 - Minimize the alteration of ecosystems through water management actions
 - Improve watershed management
 - Protect public trust resources
 - Integrate flood management with water supply management

SWRCB Strategic Plan

In 2001, the SWRCB and RWQCBs developed a Strategic Plan that highlights new priorities to be addressed, along with specific objectives, key strategies, and strategic projects to be implemented. It identifies nonpoint source pollution from urban and agricultural runoff and other sources as the most significant water quality challenge facing California today; and the plan emphasizes the importance of (1) developing and implementing Total Maximum Daily Loads (TMDLs); (2) reducing storm water pollution; (3) addressing groundwater pollution; (4) permitting point source discharges; (5) increasing compliance assurance and enforcement; and (6) monitoring and assessing water quality (SWRCB and RWQCB, 2001). The SWRCB and RWQCBs have recently begun a process to revise the Strategic Plan.

SWRCB Watershed Management Initiative

The SWRCB and RWQCBs developed the Watershed Management Initiative to meet the goal of providing water resource protection, enhancement, and restoration, while balancing economic and environmental impacts. Potential water quality issues include impacts from agriculture, TMDLs, urban runoff, point source regulatory programs, basin planning, monitoring, and cleanup. Three targeted watersheds are located in Santa Barbara County, and the corresponding state agency concerns are (Central Coast RWQCB, 2002):

- Santa Maria River – Priority concerns include nitrate contamination of groundwater, sedimentation build up in Twitchell Reservoir, and habitat loss.
- Santa Ynez River – Priority concerns include effects of water rights decisions, erosion, sedimentation, flood control, and habitat loss (especially for steelhead); water quality impacts from urban development are another concern.
- South Coast – Priority concerns include creek and near shore water quality and beach closures.

Water Quality Control Plan for the Central Coastal Basin (Basin Plan)

The Central Coast RWQCB developed the Basin Plan in 1994 to show how the quality of the surface- and groundwaters in the Central Coast Region (which includes Santa Barbara County) should be managed to provide the highest water quality reasonably possible. The Basin Plan lists the various water uses in the region, describes the water quality that must be maintained to allow those uses, and describes the programs, projects, and other actions that

are necessary to achieve the standards established in the plan. The Regional Board 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 (1) State Waste Discharge Requirements for discharges to land, or (2) federally delegated National Pollutant Discharge Elimination System (NPDES) permits for discharges to surface water. The Regional Board also establishes prohibitions on types and locations of discharges through the Basin Plan. The Basin Plan is also implemented by encouraging water users to improve the quality of their water supplies, particularly where discharged wastewater is likely to be reused.

Central Coast RWQCB "Vision, Goals, and Objectives"

The Regional Board (2006) is in the process of developing measurable goals for its region. The proposed goals currently include:

- By 2025, 80 percent of the Aquatic Habitat is healthy, and the remaining 20 percent exhibits positive trends in key parameters.
- By 2025, 80 percent of lands within any watershed will be managed to maintain healthy watershed functions, and the remaining 20 percent will exhibit positive trends in key watershed parameters.
- By 2025, 80 percent of the groundwater will be clean, and the remaining 20 percent will exhibit positive trends in key parameters.

The staff is currently working on organizational objectives.

1.1.2 Related Legislation

Integrated regional planning is facilitated in California by the passage of several legislative acts. The IRWMP is intended to be a dynamic document and will be updated as needed to meet the requirements of changing legislative standards.

Proposition 50, the "Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002," amended the California Water Code to authorize the Legislature to appropriate \$500 million for integrated regional water management projects. The purpose of the integrated regional water management grant 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." This IRWMP meets all requirements established by Proposition 50, Chapter 8, as specified in the November 2004 Integrated Regional Water Management Grant Program Guidelines prepared by DWR and SWRCB, who jointly administer the program. The guidelines specify that an adopted IRWMP is a prerequisite to obtaining project implementation grant funding through Proposition 50.

In November 2006, voters passed Proposition 84, the "California Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006." This act includes \$1 billion in funding for integrated regional water management, including

\$52 million for the Central Coast hydrologic region¹, of which Santa Barbara is a part. These funds will provide grants on a regional level to increase water supply, reduce demand, and protect water quality.

Proposition 1E, the “Disaster Preparedness and Flood Prevention Bond Act” also was passed in 2006. This act authorizes the state to sell \$4.09 billion in bonds to rebuild and repair California's most vulnerable flood control structures to protect homes and prevent loss of life from flood-related disasters, including levee failures, flash floods, and mudslides; the sale of bonds also is intended to protect California's drinking water supply system by rebuilding delta levees that are vulnerable to earthquakes and storms.

The IRWMP may serve as the basis for obtaining grant funding from these sources to facilitate the implementation of certain projects, and it may be used to obtain funding from other sources as well, such as the federal Clean Water Act Section 319 Nonpoint Source Implementation Program and the U.S. Bureau of Reclamation’s (Reclamation) Title XVI Program.

1.2 Group Responsible for Developing the IRWMP

The IRWMP has been prepared by a broadly based group, referred to as the “Cooperating Partners,” comprising all but one of the entities responsible for managing water and wastewater in Santa Barbara County. The Cooperating Partners include the following 29 water districts, sanitary districts, community service districts, water conservation districts, private water companies, cities (large, medium, and small), Santa Barbara County, and joint powers agencies.

Cachuma Conservation and Release Board	Goleta Sanitary District
Cachuma Operation and Maintenance Board	Goleta Water District
Carpinteria Sanitary District	Goleta West Sanitary District
Carpinteria Valley Water District	La Cumbre Mutual Water Company
Casmalia Community Services District	Los Alamos Community Services District
Central Coast Water Authority	Mission Hills Community Services District
City of Buellton	Montecito Sanitary District
City of Carpinteria	Montecito Water District
City of Guadalupe	Santa Barbara County
City of Lompoc	Santa Maria Valley Water Conservation District
City of Santa Barbara	Santa Ynez River Water Conservation District
City of Santa Maria	Santa Ynez River Water Conservation District
City of Solvang	Improvement District No. 1
Cuyama Community Services District	Summerland Sanitary District
Golden State Water Company	Vandenberg Village Community Services District

¹ This region corresponds with the area under the jurisdiction of the Central Coast Regional Water Quality Control Board, comprising all of Santa Barbara, Santa Cruz, San Benito, Monterey, San Luis Obispo, Monterey, and Santa Cruz counties, as well as the southern one-third of Santa Clara County and small portions of San Mateo, Kern, and Ventura counties.

Many of the Cooperating Partners have worked together since 2002 to develop the regional objectives, strategies, and priorities in the IRWMP, as well as projects to meet regional water needs.

Additionally, as described in detail in Section 4, a broad range of stakeholders participated in the development of the IRWMP, including agricultural, environmental, and academic interests, as well as members of the general public.

1.3 Governance Structure

For the purposes of developing the IRWMP, a Memorandum of Understanding was created and signed by the Cooperating Partners. During the Implementation Grant process, the Cooperating Partners and interested stakeholders will consider a variety of governance models that will lead to establishment of a long-term governance structure. A number of grant application and grant implementation tasks will be conducted as part of this ongoing process. Those tasks are listed at the end of this section.

Agreement will be reached on the steps to be taken to identify a long-term governance structure that will work best for the region. Those steps could include the following: (1) identify the objectives for the long-term governance structure; (2) set a schedule for the process; (3) find examples of governance structures that have led to successful implementation of major projects both within Santa Barbara County (Section 3.3 refers to the many successful interagency planning and integrated management agreements in place within the County) and around the country; (4) lay out the options for governance structures that exist within current state and local legislation; (5) make recommendations for legislation that may be required to enable implementation of governance structures; and (6) develop briefings and workshops to lead to agreement upon and implementation of a permanent governance structure. Examples of governance structures will include a narrative discussion of what has worked, either here in California or elsewhere, along with an appendix of legislation that enables such entities in this state. In addition, sample agreements, which can be a starting point for discussion among departments and agencies, will be included. The County of Santa Barbara will assume a leadership role in the coordination of this task.

Viable governance models should meet the following minimum needs: promote partnerships within the region; facilitate ongoing stakeholder involvement and decision-making; serve as a planning body charged with periodically updating the IRWMP; oversee IRWMP projects and manage data collection and data coordination with state systems.

There are a number of models that could meet the needs of the region. Models to be considered include:

- Memorandums of Understanding/Cooperative Agreements
- Commissions
- Joint Powers Authority

1.3.1 Memorandums of Understanding/Cooperative Agreements

At the simplest level, Memorandums of Understanding and Cooperative Agreements are contracts between and among organizations that specify how work will be performed. They can be of indefinite length and general as to the nature performed or specific to projects. Typical language includes the purpose of the agreement and provisions for financing, indemnification, settlement of disputes, and length and termination of the agreement. They require only the signatures of the authorized representatives of the organizations; although depending on the organization, the agreements may have to go to the governing boards for approval.

1.3.2 Commissions

Commissions exist at every level of government and are often created for purposes of advice and oversight. Commissions can issue plans, award or receive funds, and enter into contracts.

A local example of a commission is the Santa Monica Bay Restoration Commission, formerly the Santa Monica Bay Restoration Project. According to the California Public Resources Code, "It is the intent of the Legislature that the Santa Monica Bay Restoration Commission be a non-regulatory, locally based state government entity that will monitor, assess, coordinate and advise all state programs, and oversee funding that affects the beneficial uses, restoration, and enhancement of Santa Monica Bay and its watershed." The governance structure of the Commission is delineated through a Memorandum of Understanding among the Secretaries for Environmental Protection, Resources Agency, and Chair of the Commission. The Memorandum of Understanding further prescribes the membership by federal, state, and local public agency officials and employees, as well as representatives of other stakeholder interests.

The enabling legislation allows the Commission to request and receive federal, state, local, and private funds, award and administer grants, and enter into and carry out joint powers authority agreements. A separate account was established in the state treasury for receipt and expenditure of funds.

1.3.3 Joint Powers Authority

Joint Powers Authorities are separate public entities created when two or more public agencies come together for a particular mission or purpose. In the pooling of powers, the new entity may have greater power than the parties to the agreement alone. For example, the ability to issue bonds may come from one agency, while eminent domain may come from another. The Joint Powers Authority may be able to act more quickly and efficiently in the hiring and management of staff, making land acquisitions, or carrying out projects.

Section 6500 et seq. of the California Government Code allows for the formation of joint powers authorities. As stated, "If authorized by their legislative or other governing bodies, two or more public agencies by agreement may jointly exercise any power common to the contracting parties, even though one or more of the contracting agencies may be located outside this state. The agreements shall state the purpose of the agreement or the power to be exercised. They shall provide for the method by which the purpose will be accomplished or the manner in which the power will be exercised."

1.3.4 Future Proposition 50 Tasks

Potential future Proposition 50 Grant Application tasks for the Cooperating Partners include:

1. Develop a new Memorandum of Understanding among Cooperating Partners for a Proposition 50 grant application and implementation process covering items such as schedule, process, funding, and key roles.
2. Develop a grant application by:
 - a. Managing a process for project evaluation and selection;
 - b. Preparing application and related materials, per state requirements; and
 - c. Coordinating Partners' and public review and revisions.
3. Submit single application on behalf of Partners with selected projects.
4. Negotiate with state, respond to comments, and revise application.

Potential Proposition 50 Grant Implementation tasks for the Cooperating Partners include:

1. Carry out fiduciary tasks such as tracking expenditures, compiling Cooperating Partners' invoices, preparing billing for submittal to state, and keeping appropriate records.
2. Carry out grant management tasks such as, tracking project status, compiling data, and preparing reports to state on performance and results.
3. Submit invoices, progress reports, and data to state.
4. Manage contracts and subcontracts with Cooperating Partners and consultants.

2 Region Description

The IRWMP encompasses all of Santa Barbara County (Figure 2-1). The county is an appropriate region for integrated planning for a number of reasons:

- Different subregions within the county share water supplies and infrastructure, and water is managed as an interconnected system within the county boundaries (refer to Section 3).
- Water and wastewater management entities must address issues and challenges that are specific to the region and that would benefit from an integrated management approach (refer to Sections 2 and 3).
- From an institutional perspective, many of the Cooperating Partners have a long history of working together to resolve water issues, and a framework already exists for addressing key issues related to water resource management (refer to Section 3). The IRWMP builds on this framework, expanding existing programs and identifying further opportunities for integration.
- The county is largely geographically separate from neighboring counties. Santa Barbara County abuts Kern County only along its sparsely populated northeast corner. The portions of the Rincon Creek watershed shared by Ventura County and the Cuyama River watershed shared by Ventura and San Luis Obispo counties have very low population densities, are subordinate in size, and have no shared water infrastructure. The Santa Maria Groundwater Basin, shared with San Luis Obispo County, is the subject of nearly complete adjudication (refer to Section 3); the court has imposed a mandatory management structure, and thus, any integrated management must accommodate the court's directives.

2.1 Overview

Santa Barbara County is located approximately 100 miles northwest of Los Angeles and 300 miles south of San Francisco. The county occupies approximately 2,739 square miles. Bordered on the west and south by the Pacific Ocean, the county has 110 miles of coastline. Four of the Channel Islands—Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara—are in Santa Barbara County. These islands are not addressed in this IRWMP, because they are largely owned and managed by the federal government as a national park and marine sanctuary. The county has a population of approximately 421,656 (State of California, 2007a), which is projected to increase to 562,700 by 2030 and to 605,600 by 2040 (SBCWA, 2003). The county is highly diverse in terms of climate, topography, economic activities, recreational opportunities, and social/economic structure. Additionally, there are five major ecological zones and numerous subareas ranging from arid high desert regions in the interior; mountains and foothills; and coastal plains.

About 65 percent of the terrain of Santa Barbara County is hilly or mountainous, and most of the remaining 35 percent is composed of valleys and plains. The steep Santa Ynez Mountains bound the coastal plain on the north; farther north, the San Rafael Mountains rise to the highest elevations in the county; and the Sierra Madre Mountains occupy the northeast portion of the county. Approximately one-third of the land area within the county is located within the Los Padres National Forest, which includes two wilderness areas, the San Rafael Wilderness and the Dick Smith Wilderness. The national forest includes portions of watersheds that provide an important water source for coastal populations, as well as important habitat for several threatened, endangered, proposed, candidate, and sensitive species.

Most of the county population lives in the coastal valleys and in the cities of Santa Barbara and Santa Maria. Other population centers on the South Coast include the cities of Goleta and Carpinteria, along with unincorporated areas such as Isla Vista, Hope Ranch, Mission Canyon, Montecito, and Summerland. The cities of Solvang and Buellton, the unincorporated communities of Los Olivos, Ballard, and Santa Ynez, and the Chumash Indian Santa Ynez Reservation are located in the Santa Ynez Valley, north of the Santa Ynez Mountains. The City of Lompoc, the unincorporated communities of Vandenberg Village and Mission Hills, Vandenberg Air Force Base, and the Lompoc Federal Correctional Complex are in the Lompoc Valley, where the Santa Ynez River flows out to the sea. Los Alamos is the only community in the San Antonio watershed. The cities of Santa Maria and Guadalupe, and the unincorporated towns of Orcutt, Casmalia, Betteravia, Garey, and Sisquoc are located in the northern portion of the county. The City of Santa Maria is the largest city in Santa Barbara County. Northeast of the San Rafael mountains is the dry and sparsely populated Cuyama Valley, where the community of Cuyama is located.

Major land use categories are shown in Figure 2-2, along with a breakdown of land ownership and the amount of land dedicated to generalized land uses. The federal government is the largest land owner in the county; the United States Forest Service and Air Force have jurisdiction over nearly 46 percent of the land area. Los Padres National Forest and Vandenberg Air Force Base comprise approximately 748,000 acres combined. The national forest provides a scenic backdrop to many communities within both north and south Santa Barbara County and is managed for multiple purposes, including recreation, oil development, and grazing. Vandenberg Air Force Base is headquarters for the 30th Space Wing, which manages Department of Defense space and missile testing and places satellites into polar orbit from the West Coast.

The state of California owns approximately 1 percent of county lands, or 18,000 acres. Most of this land comprises the University of California at Santa Barbara (UCSB), near the City of Goleta; the Sedgwick Reserve, which is operated by the University as part of its Natural Reserve System and located east of Los Olivos in the Santa Ynez Valley; La Purisima Mission State Park, located near Lompoc; and several state parks located along the coast, within the city of Santa Barbara, and in the Santa Ynez Mountains. Less than 1 percent of the county is owned by the county or other local agencies, and the remainder is privately owned.

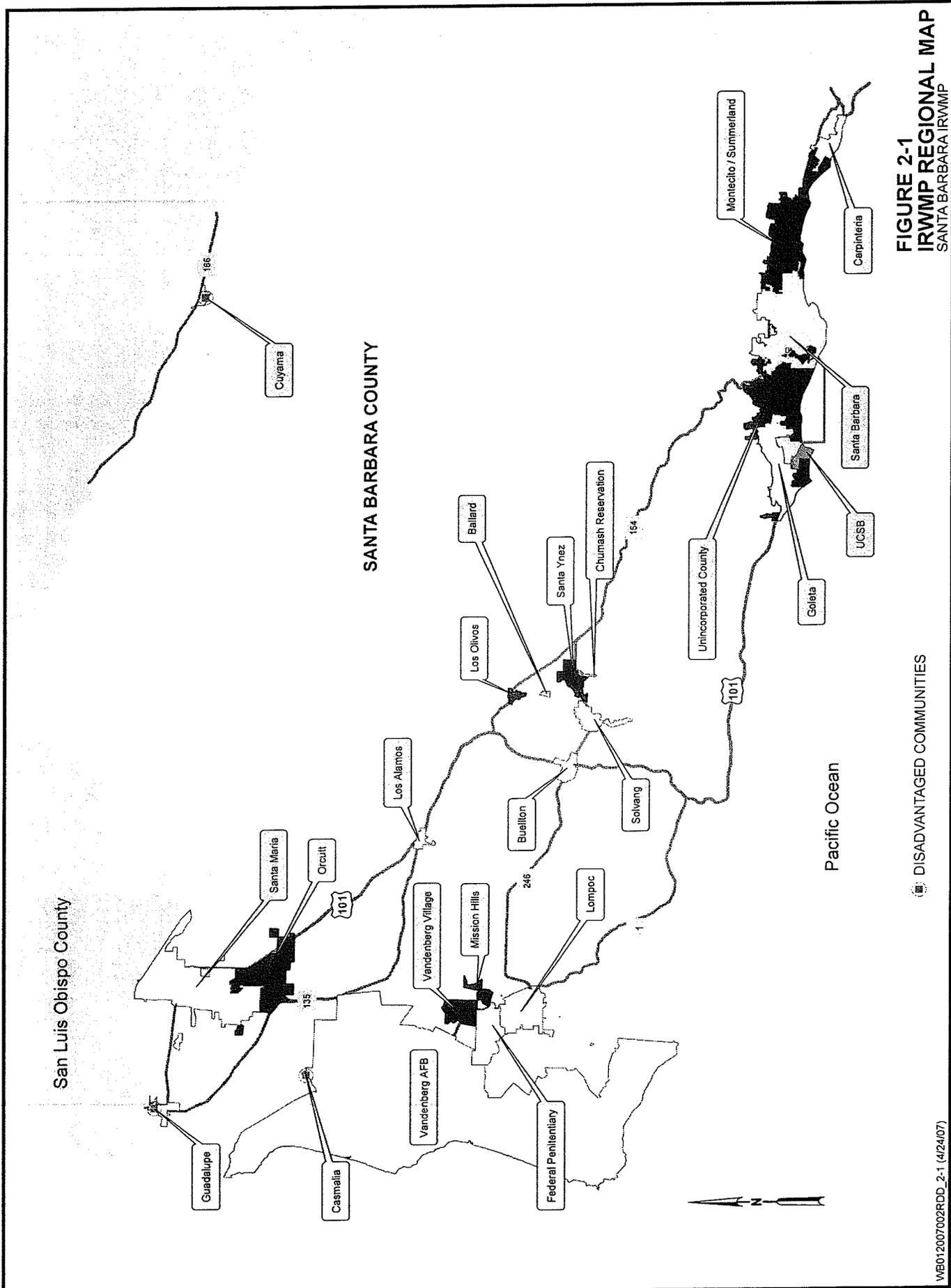
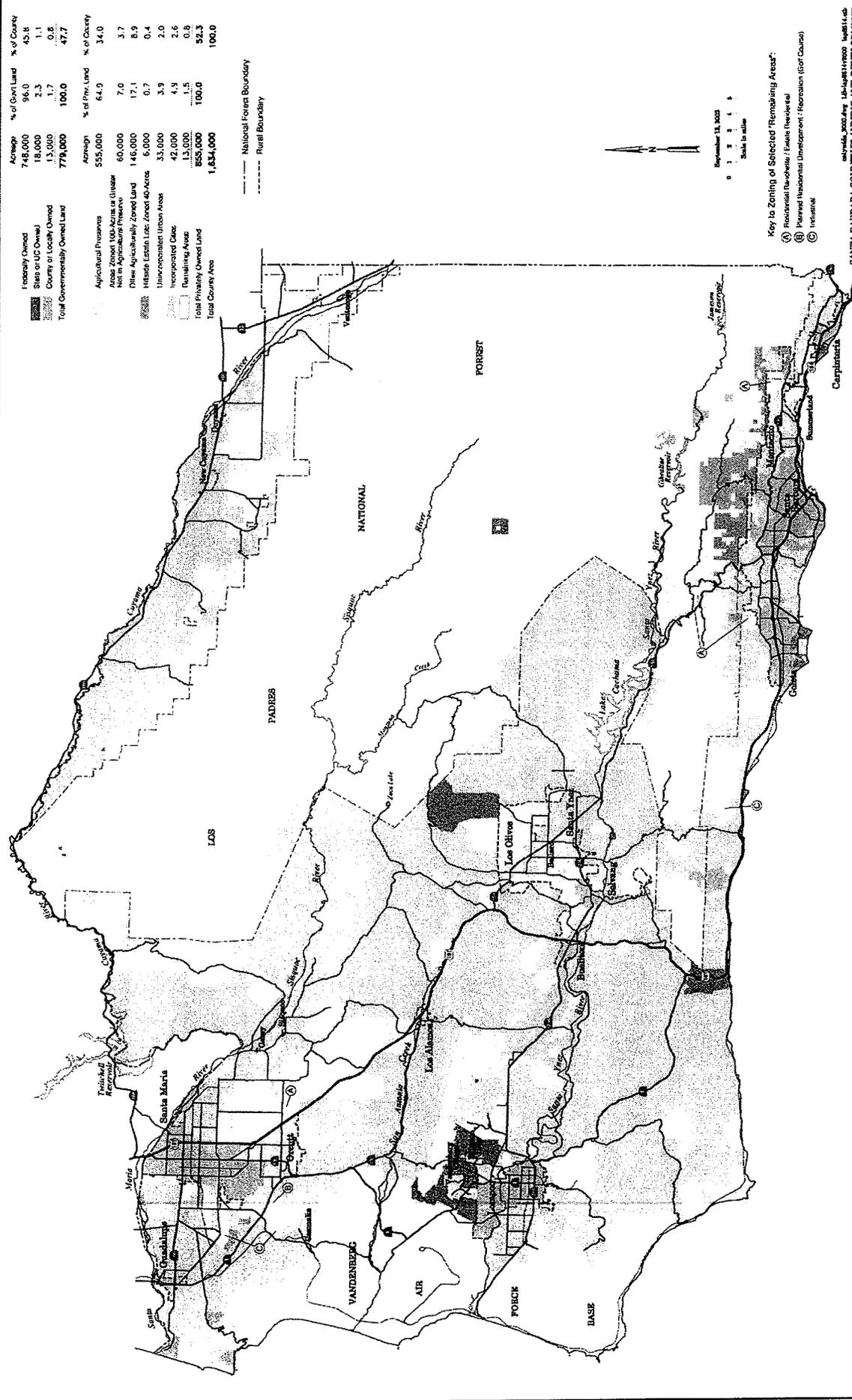


FIGURE 2-1
IRWMP REGIONAL MAP
 SANTA BARBARA IRWMP

DISADVANTAGED COMMUNITIES



Category	Acreage	% of County
Federally Owned	748,000	96.0
State or UC Owned	18,000	2.3
County or Locally Owned	13,000	1.7
Total Governmentally Owned Land	779,000	100.0
Private Land	555,000	64.0
County	60,000	7.0
Other Agriculturally Zoned Land	146,000	17.1
Other Agriculturally Preserved	6,000	0.7
Historic Estate Land Zoned 40-Acres	33,000	3.9
Unincorporated Urban Areas	42,000	4.9
Incorporated Cities	13,000	1.5
Residential Areas	855,000	100.0
Total Privately Owned Land	1,634,000	100.0

Agricultural Preserves
 Areas Zoned 100-Acres or Greater
 Not in Agricultural Preserves
 Other Agriculturally Zoned Land
 Historic Estate Land Zoned 40-Acres
 Unincorporated Urban Areas
 Incorporated Cities
 Residential Areas
 Total Privately Owned Land
 Total County Area

- - - - - National Forest Boundary
 - - - - - Rural Boundary

September 13, 2005
 Scale in miles
 0 1 2 3 4 5

Key to Zoning of Selected "Remaining Areas":
 (A) Residential Development / Future Residential
 (B) Planned Recreational Development / Recreation (Golf Course)
 (C) Industrial

SANTA BARBARA COUNTY PLANNING AND DEVELOPMENT
FIGURE 2-2
SANTA BARBARA COUNTY
LAND STATUS
 SANTA BARBARA R/WMP

Thirty-four percent of the county (555,000 acres) is in agricultural preserves, and an additional 13 percent (206,000 acres) is zoned for 100-acre or greater lot size, or is in other agriculturally zoned land. Less than 3 percent of the county is within incorporated cities, 2 percent is within unincorporated urban areas, and less than 1 percent is zoned for hillside estate lots of 40 acres or more.

2.2 Climate

Santa Barbara County has a Mediterranean climate with several microclimatic regions. Summers are warm and dry; the winters are cool and often wet. Annual precipitation typically ranges from 7 to 9 inches near Cuyama to a maximum of about 36 inches at the uppermost elevations of the San Rafael Mountains. Average rainfall throughout the county is approximately 15 to 18 inches per year. The county topography has a unique physical orientation compared to the rest of California with a series of east-west transverse mountain ranges. This topography causes an orographic effect when a storm approaches from the Pacific Ocean. Storms from the south can cause heavy precipitation on south-facing slopes, while storms from the north or west can concentrate precipitation on west or north-facing slopes. Annual average rainfall at the highest elevation is twice that of the lowest elevation. Most precipitation occurs between November and March with the exception of some far inland mountain areas that may receive sporadic late summer thundershowers. Moist air from the Pacific Ocean moderates temperatures in the coastal areas; lower winter minimums and higher summer maximums prevail in the inland valleys.

Santa Barbara County weather is mainly controlled by the Pacific high pressure system. In the dry season, from about May through September, the Pacific high pressure system usually occupies the area northeast of Hawaii. During the winter months, it is weaker and positioned further south. At times, the persistence of the Pacific high pressure system at a latitude farther north than normal keeps the Pacific storm track farther to the north. This "blocking high" results in either no precipitation for part or all of California, or, at most, only light amounts of rainfall. This climatological scenario is the reason for most of California's droughts, including those occurring in 1976 to 1977 and 1986 to 1991.

2.3 Economic Conditions and Trends in the Region

Santa Barbara County is economically diverse with pronounced differences between the north and the south. Agricultural activities and oil development traditionally have been the dominant economic forces north of the Santa Ynez Mountains; although in recent years, tourism has increased, oil leases have been decommissioned, and more white-collar workers have been moving in to the area because of the high housing prices in the south. Agriculture continues to be the county's major producing industry, despite reductions in the amount of farmland.

The South Coast's economy is largely based on tourism, software or other high-tech pursuits, and education-related activities; although the area continues to support oil development offshore, and agricultural activities continue to occur in the Goleta and Carpinteria valleys, particularly in the foothills. The South Coast has experienced slow economic growth in recent years, while the North County has undergone considerable

economic growth. This is due in large part to the extremely high cost of housing in the South Coast, where the median price of a single family home exceeds \$1 million. As a result, the North County is undergoing significant population growth, which in turn, is driving construction and service industry growth in the area. Economists predict that the North County region will be the main driving force in the economy for the foreseeable future because of relatively affordable housing, available work force, and a perceived business-friendly environment (UCSB, 2006).

2.4 Santa Barbara's Social and Cultural Makeup

Santa Barbara County is socially and culturally diverse. The county is predominantly composed of White/Caucasians (approximately 56 percent) and Hispanics (approximately 34 percent), with Asians and African Americans comprising most of the remaining population (State of California, 2007c). The county includes three Disadvantaged Communities (DAC)—Cuyama, the City of Guadalupe, and Casmalia—all of which are located in North County¹. All three communities are fairly isolated from other populated areas within the county, especially Cuyama and Casmalia. These communities face financial hardships and serious health risks related to the condition of their respective water supply systems and potential threats to the quality of their drinking water, as described in greater detail in Section 6.

Due in part to the high cost of housing, the population in the South County is becoming increasingly stratified. The number of middle class residents is decreasing, leaving a concentration of younger and poorer residents, as well as older and wealthier retirees. School enrollments have been declining in the South County because working families can not afford housing and choose to move to less expensive areas. The North County, on the other hand, is experiencing an influx of younger families because housing is more affordable. North County school enrollments are on the rise (UCSB, 2006).

Santa Barbara residents appreciate its mild climate, scenic beauty, beaches, mountains, recreational resources, and cultural opportunities. Those qualities that make the county a desirable destination for tourists also make it an appealing place to live. The county is home to a long-standing environmental movement, stemming in part from the large oil spill that affected 35 miles of coastline in 1969. Environmental activists are, however, sometimes at odds with other interests regarding the most appropriate way to manage Santa Barbara County resources.

2.5 Major Watersheds and Rivers

The county contains four principal watersheds (Table 2-1): Santa Maria, which includes the Cuyama and Sisquoc watersheds; San Antonio Creek; Santa Ynez; and South Coast, which is composed of approximately 50 short, steep watersheds (Figures 2-3 and 2-4). The headwaters of the principal watersheds are generally undeveloped, and the middle and

¹ DACs were identified by reviewing median household income (MHI) data from the 2000 US Census for all zip codes within Santa Barbara County and identifying those that were 80 percent or less of the statewide MHI based on the 2000 Census (\$37,994). MHIs are as follows: Guadalupe, \$30,864; Casmalia, \$37,574; and New Cuyama, \$36,500. In comparison, the MHI for all Santa Barbara County zip codes is \$49,027.

lower sections are often developed with urban or agricultural uses. The four major rivers draining these watersheds are the Santa Maria, Sisquoc, Cuyama, and Santa Ynez. Rainfall is variable, and streamflow is flashy. Streamflow is generated directly from rainfall with little base flow contribution from headwaters. Most rivers and the lower reaches of streams are dry in the summer.

TABLE 2-1
Santa Barbara County Watersheds

Watershed	Square Miles
Santa Maria (including Cuyama and Sisquoc watersheds)	1,845
San Antonio Creek	165
Santa Ynez River	900
South Coast (composed of numerous smaller watersheds)	416

2.5.1 Santa Maria Watershed

The Santa Maria Watershed (Figure 2-5) is drained by the Santa Maria River, which is formed by the confluence of the Cuyama and Sisquoc rivers at Fugler Point, 20 miles inland from the coast. Elevations range from sea level to 6,828 feet at Big Pine Mountain, which is at the headwaters of the Sisquoc River. The Santa Maria River Valley covers the 260-square-mile watershed area downstream of the Cuyama-Sisquoc River confluence. Much of the valley consists of a broad alluvial area known as the Santa Maria Plain. The Cuyama River drains a 1,140-square-mile watershed area that includes southeastern San Luis Obispo County, northeastern Santa Barbara County, and relatively small portions of Ventura and Kern counties. Major tributaries to the Cuyama River are Huasna River and Alamos Creek. Most of the river and its tributaries have intermittent flows, although some reaches of the river have surface water most of the year. Some of the major tributaries also have perennial flows in some reaches. Since 1959, flow in the Cuyama River has been regulated by Twitchell Reservoir, which retards a portion of intercepted storm flow for later release. The Sisquoc River receives runoff from a watershed area of approximately 470 square miles. The watershed of the Sisquoc River is defined by the northwestward-trending Sierra Madre Mountains on the north and the westward trending San Rafael Mountains on the south. Most of the Sisquoc River drainage lies within the boundaries of the Los Padres National Forest. The Sisquoc River is designated as a Wild and Scenic River. Except for wilderness areas in the National Forest, all of the land is used for some form of agriculture. Other industries of significance include oil and gravel mining, recreation, light manufacturing, and research and development mostly related to the aerospace business (CARCD, 2002).

2.5.2 San Antonio Creek Watershed

The drainage system of the San Antonio Creek Watershed starts at a point approximately 10 miles east of Los Alamos. It traverses generally to the west through Los Alamos and Vandenberg Air Force Base to the ocean. The basin is rather confined, averaging about 8 miles in width. The lower reaches throughout Vandenberg Air Force Base have a perennial

flow, in part because of irrigation tailwater, but primarily because of a geologic rift at Barca Slough, which causes an upwelling. The principal crops grown are vegetables in the flat areas, and winegrapes in the transitional uplands. All are irrigated from groundwater resources (CARCD, 2002).

2.5.3 Santa Ynez River Basin

The Santa Ynez River originates in the San Rafael Mountains in the Los Padres National Forest near the eastern border of the county. A small portion of the Santa Ynez River watershed lies in Ventura County. The river flows westerly about 90 miles to the ocean, passing through Jameson Lake, Gibraltar Reservoir, and Lake Cachuma. The Santa Ynez River basin is the largest drainage system that is wholly located in Santa Barbara County. The 621,577 acres that it drains is about 40 percent of the mainland part of the county. It is the primary source of water for about two-thirds of the Santa Barbara County residents, including the heavily populated south coastal region around Santa Barbara. Three dams have been constructed on the river to store and divert water to the South County. These are described in detail in Sections 3 and 4. None of the reservoirs on the Santa Ynez River has a prescriptive requirement for a flood control storage area. All of the water diversions from the dams are by tunnels cut through the Santa Ynez Mountains to terminal reservoirs near urban areas.

Approximately 260,000 acres in the watershed are public land, 215,000 of which is within the Las Padres National Forest. The remaining public lands are, for the most part, on Vandenberg Air Force Base. In the Santa Ynez Valley there is an extensive thoroughbred racehorse industry. Crops grown in this area include wine grapes and irrigated forage crops for the horses. Most of the relatively flat lands between Buellton and Lompoc are used for growing a variety of irrigated crops including flowers, vegetables, wine grapes, beans, and walnuts. Most of the irrigated land is located in Lompoc Valley west of Lompoc. That area is similar to Santa Maria Valley in that the marine influences allow year round crop production. All irrigation water is pumped from underground resources. Almost all of the upland areas are used as range to raise beef cattle. Other important industries are oil production, diatomaceous earth mining, and human resources support for Vandenberg Air Force Base (CARCD, 2002).

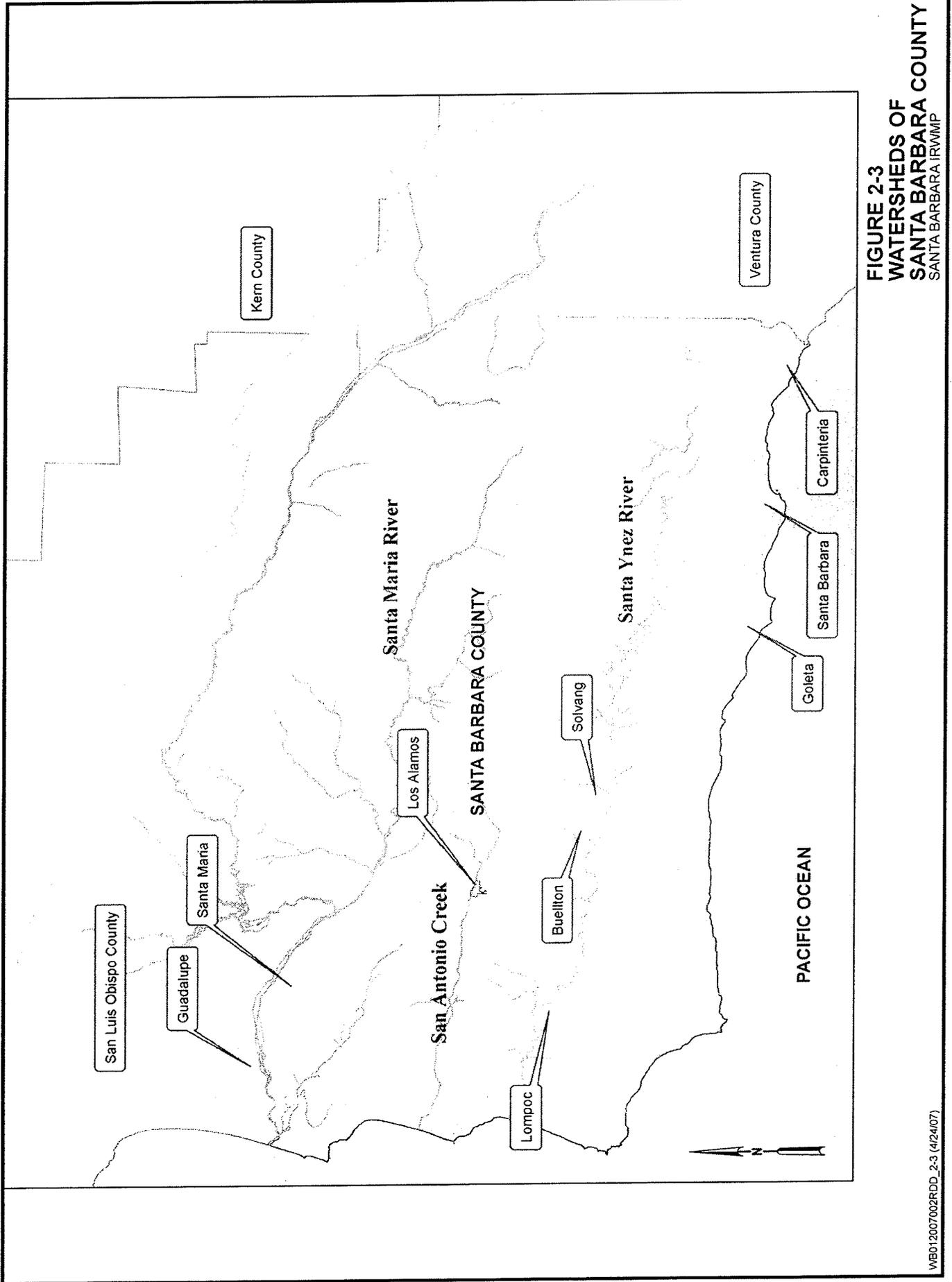


FIGURE 2-3
WATERSHEDS OF
SANTA BARBARA COUNTY
 SANTA BARBARA IRWMP

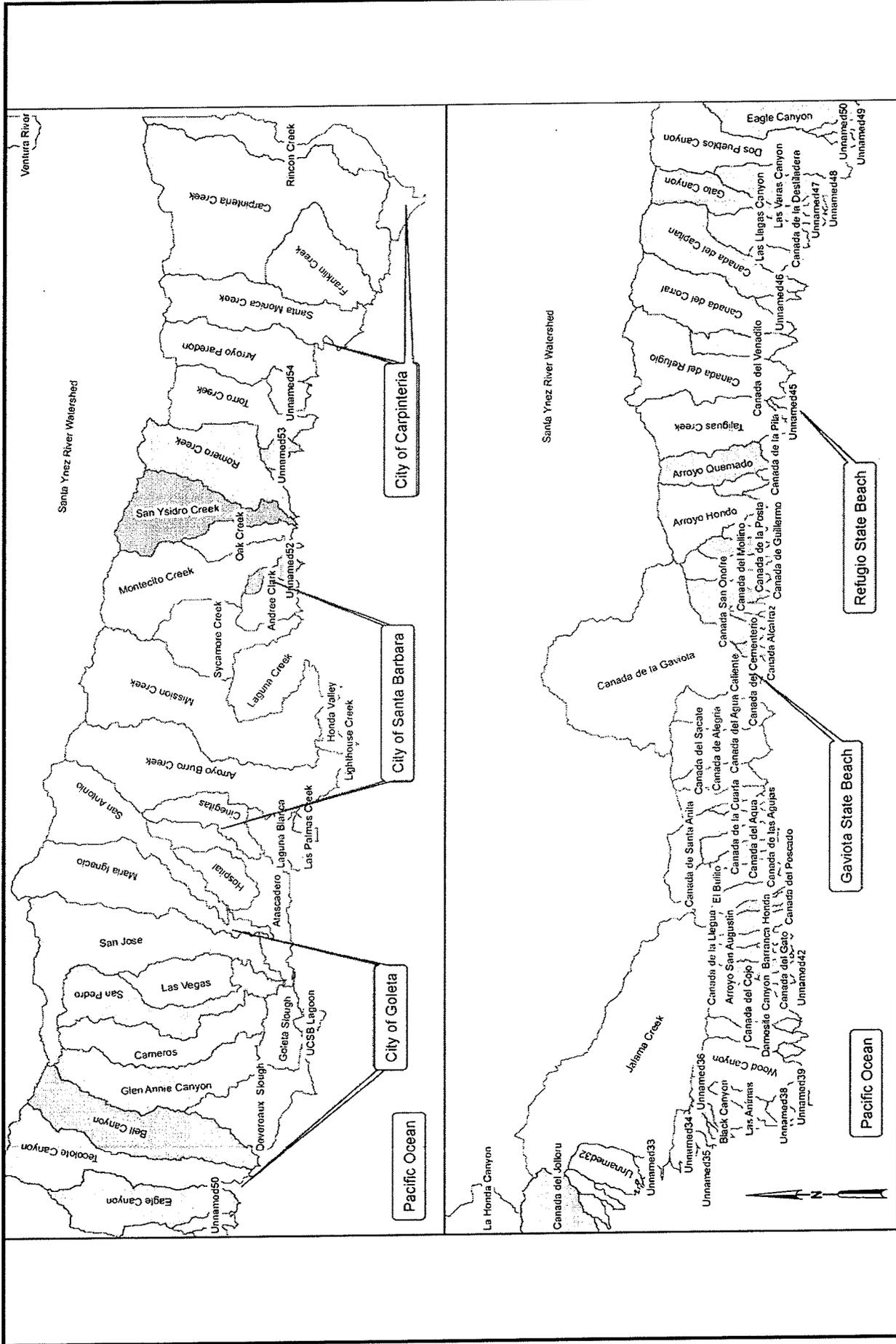


FIGURE 2-4
COASTAL WATERSHEDS IN
SOUTHERN SANTA BARBARA COUNTY
 SANTA BARBARA IRWMP

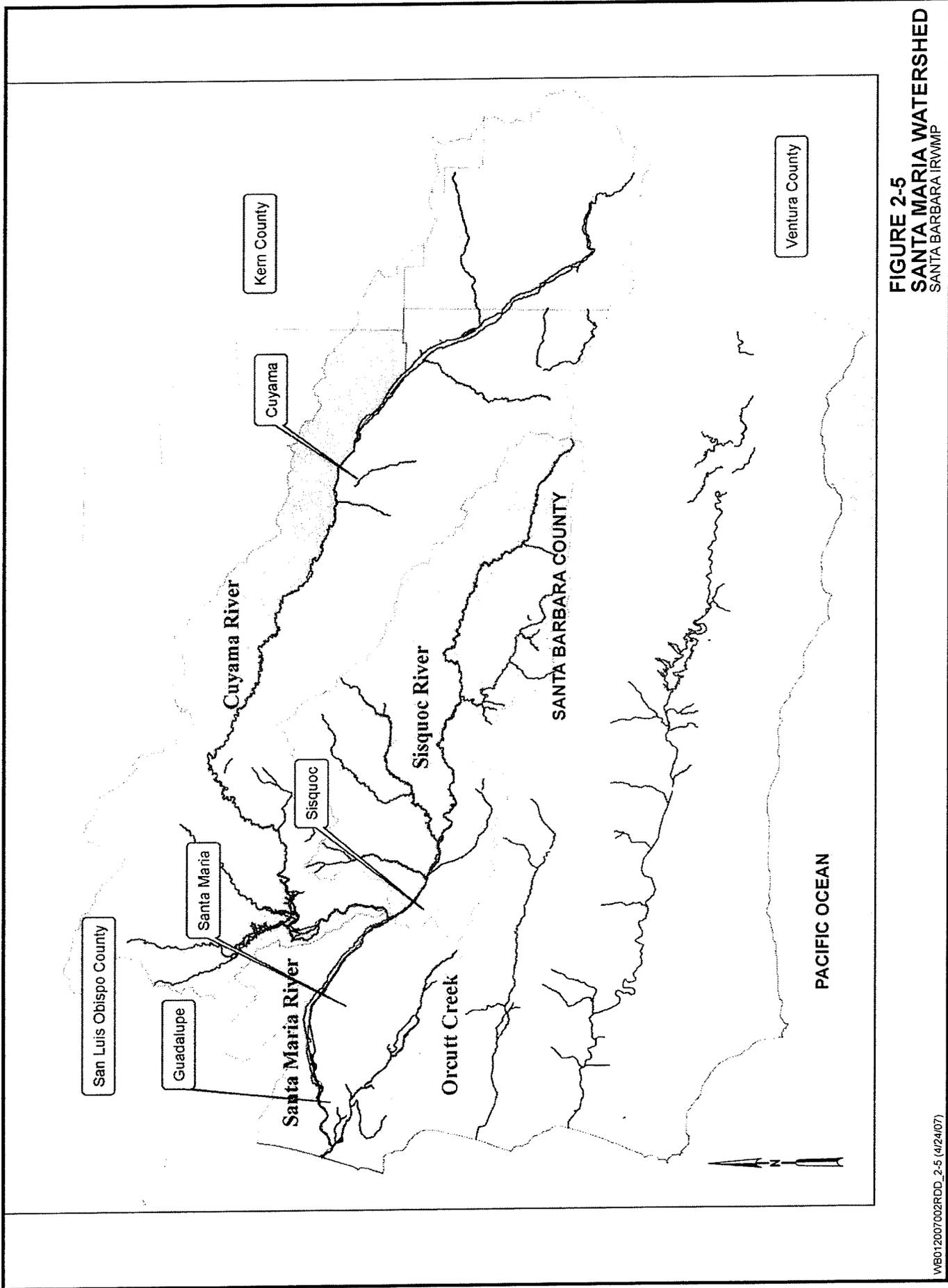


FIGURE 2-5
SANTA MARIA WATERSHED
 SANTA BARBARA IRWMP

2.5.4 South Coast Watersheds

The south coastal region generally includes all of the southerly drainages from Point Conception to the Ventura County line. Its approximately 50 watersheds range from 162 acres to 30,572 acres, with an average size of 3,209 acres. This area is heavily influenced by the ocean because of the southerly aspect, and the ocean current which is usually about 10 degrees higher than the current north of Point Conception during the winter months. This south to north current is from South American waters as opposed to the north to south Humboldt Current north of Point Conception. The currents merge near the point and then trend seaward. The topography is precipitous, rising abruptly from sea level to about 4,300 feet. Annual rainfall varies from about 16 inches on the coast to about 30 inches at the summits. Virtually all the subtropical fruit (principally avocados) and about 75 percent of the nursery and hot-house products of the county are raised in the South Coast, most of which are in the vicinity of the urban complex between Goleta and Carpinteria. Irrigation water is provided from a variety of sources, including pumped groundwater; diversions from Cachuma, Gibraltar, and Juncal Dams; and to a lesser degree from on-farm surface entrapments. The southeastern part is heavily urbanized, and includes the contiguous communities of Goleta, Santa Barbara, Montecito, Summerland, and Carpinteria. Other than agriculture, important industries include tourism, electronic products manufacturing, city and county government, and University of California, Santa Barbara (CARCD, 2002).

2.6 Groundwater Basins

Santa Barbara County groundwater basins are shown in Figure 2-6; their sizes and land uses served are summarized in Table 2-2.

TABLE 2-2
 Santa Barbara County Groundwater Basins

Basin	Size (Acres)	Land Use Summary
<i>North County Groundwater Basins</i>		
Santa Maria	110,000 with 80,000 within Santa Barbara County	Two cities; extensive unincorporated urban area (Santa Barbara County); extensive irrigated agriculture; petroleum
San Antonio Creek	70,400	One town; extensive agriculture; some petroleum; Vandenberg Air Force Base
Cuyama	441,600 with 81,280 within Santa Barbara County	Extensive agriculture; some petroleum; very low population density
<i>Santa Ynez River Groundwater Basins</i>		
Santa Ynez Uplands	83,200	Three towns, one city and other medium-density residential; varied high-value agriculture
Buellton Uplands	16,400	Agriculture; one city
Lompoc ^a	48,600	One city, 2 areas of unincorporated urban development; Vandenberg Air Force Base; varied agriculture; petroleum; Federal Penitentiary Complex
Santa Ynez River Riparian Basins	12,000 (3 subunits)	Two cities; 7,300 acres of irrigated cropland
<i>South Coast Groundwater Basins</i>		
Carpinteria	6,700	One city; unincorporated urban development; orchards, irrigated crops, and greenhouses
Montecito	4,300	Primarily low-density residential use; unincorporated
Santa Barbara	4,500	Primarily residential, industrial and commercial
Foothill	3,000	Primarily residential and commercial
Goleta North/Central	5,700	Primarily residential, industrial, and commercial
Goleta West	3,500	Primarily residential, industrial, and commercial
More Ranch	502	Primarily open space; limited residential/agriculture
Ellwood to Gaviota Coastal Basins	67,200	Agriculture, primarily orchards and grazing; limited municipal/industrial
Gaviota to Pt. Conception Coastal Basins	23,040	Agriculture, primarily grazing

Sources: Santa Barbara County, 2000; Santa Barbara County, 2003

^aConsists of three hydrologically connected subbasins: Lompoc Plain, Lompoc Terrace, and Lompoc Upland

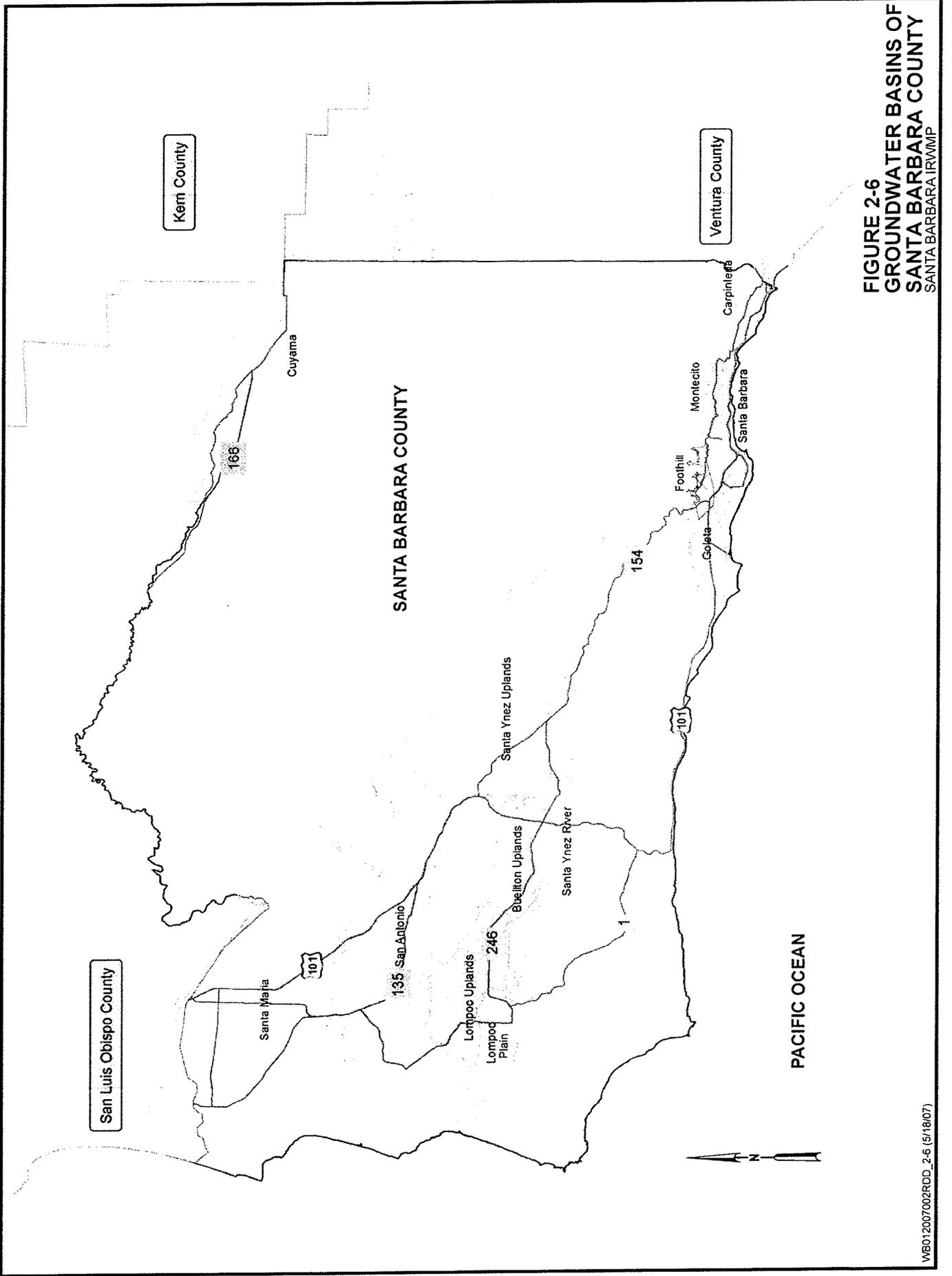


FIGURE 2-6
GROUNDWATER BASINS OF
SANTA BARBARA COUNTY
 SANTA BARBARA IRWMP

The following conclusions regarding groundwater basins are taken from the 2005 Santa Barbara County Groundwater Report (Santa Barbara County, 2006). References to overdraft pertain to safe yield and not perennial yield. Safe yield is defined in the 2005 report as the maximum amount of water which can be withdrawn from a basin (or aquifer) on an average annual basis without inducing a long-term progressive drop in water level. Perennial yield is defined as the amount of water that can be withdrawn from a basin (or aquifer) on an average annual basis without inducing economic or water quality consequences.

The 2005 Santa Barbara County Groundwater Report (Santa Barbara County, 2006) summarizes the status of groundwater basins as follows:

- The Cuyama Groundwater Basin is in a state of overdraft of approximately 28,525 acre-feet per year (AFY) based on a 1992 study. Water levels have fallen significantly, but no regional economic or water quality problem has yet been documented.
- In the recent litigation, *Santa Maria Valley Water Conservation District versus the City of Santa Maria et al.*, the court ruled that, based on a preponderance of evidence, the Santa Maria Groundwater Basin is not currently in a state of overdraft. Management of this groundwater basin will be subject to the adjudication, which is expected to be completed in 2007. (Refer to Section 3 for additional discussion).
- The San Antonio Groundwater Basin is in a state of overdraft of approximately 9,540 AFY based on a 2003 study. Water levels have fallen significantly, but no regional economic or groundwater quality problem has yet materialized.
- The Lompoc Plain Groundwater Basin is in equilibrium under the State Water Resources Control Board (SWRCB) Decision WR 89-18 and management by the Santa Ynez River Water Conservation District, because natural recharge is augmented with periodic water releases that are made from Cachuma Reservoir to maintain groundwater levels in the basin.
- The Lompoc Uplands Groundwater Basin has apparently reached equilibrium since, over time, water levels have been lowered to approach the elevation of the Lompoc Plain and Santa Ynez River, which now regulate the water levels in the Uplands Basin.
- The Santa Rita subarea of the Lompoc Basin is in a state of overdraft of approximately 800 AFY based on a 2001 study. However, water levels in some parts of this area have declined significantly in the past few years, and thus, in the future some economic effects may be realized as the balance between energy costs and commodity prices fluctuate.
- The Buellton Uplands Basin is in a state of surplus of approximately 800 AFY based on a 1995 study.
- The condition of the Santa Ynez Uplands Groundwater Basin has varied over time, and a 2001 study reported the basin as being in a state of overdraft of approximately 2,028 AFY at that time. The decline in water levels in this basin appears to have bottomed out in the 1987 to 1991 drought, however, and the basin may currently be in equilibrium. Under current extraction practices, part of the basin is used conjunctively

with local and imported surface water supplies. No regional economic or water quality impacts associated with pumping have materialized.

- The South Coast Basins are in equilibrium through management by local water districts and the Wright Suit Settlement². The City of Santa Barbara practices conjunctive use of groundwater resources in the Foothill Basin and Storage Unit No. 1 of the Santa Barbara Groundwater Basin. Relatively minor amounts of pumping occur during average and wet years. More pumping is used during droughts to replace supplies lost to diminished surface water. Between pumping by the City and various private pumpers, the basins are in long term balance.

2.7 Ecological Processes and Environmental Resources

Santa Barbara County is located at a point of transition between the Southern California and Northern California ecozones and is characterized by rare plant assemblages. The county has a range of climatic zones, ranging from Mediterranean climate (South Coast) to Alpine (Big Pine Mountain) to high desert (Cuyama area), resulting in considerable ecological diversity. Over 1,400 plant and animal species are found in the county. Of these, 54 are federally or state-listed threatened or endangered species (22 plant and 32 animal species), and another 60 species are considered rare or of special concern (including proposed endangered, threatened, candidate, and sensitive species).

2.7.1 Aquatic Sensitive Species

The listed species found in Santa Barbara County include five aquatic/stream dependent species (tidewater goby [*Eucycloglobius newberryi*], tiger salamander [*Ambystoma californiense*], red-legged frog [*Rana aurora draytonii*], arroyo toad [*Bufo californicus*], and southern California steelhead trout [*Oncorhynchus mykiss*]). The county's watersheds provide critical habitat for the anadromous steelhead trout, which are found primarily in the Santa Ynez River and its tributaries and the South Coast creeks, including Mission Creek. Steelhead populations have declined due to human activity impacts, such as loss of native vegetation, influx of aggressive exotic species, increased creek/stream scouring, streamflow and groundwater diversion, increases in impervious surfaces and runoff, and degraded water quality because of thermal pollution and potential nutrient, sediment, and other polluted runoff from urban development. Dams, culverts, concrete channels, low-flow crossings, or other structures have created fish passage barriers to important upstream habitat. The southwestern pond turtle (*Clemmys marmorata pallida*), a California Species of Special Concern, also is found in the county.

² The 1989 Wright Suit Settlement served to adjudicate the water resources of Goleta North/Central Basin and assigned quantities of the basin's safe yield to various parties, including the Goleta Water District and the La Cumbre Mutual Water Company. The judgment also ordered the Goleta Water District to bring the North/Central Basin into a state of hydrologic balance by 1998. The district has achieved compliance with this order through the importation of State Water Project water and the development of other supplemental supplies. These supplemental supplies have offset the court mandated reduction in pumpage from the basin. Given that the basin has been adjudicated and pumpage is controlled by the court, overdraft is not foreseeable in the North-Central Basin.

2.7.2 Freshwater Habitats

Zaca Lake, located in the San Rafael Mountains north of Lake Cachuma, is the only natural lake in Santa Barbara County. It is less than 1 mile in circumference and tends to become anaerobic seasonally; therefore, the waters do not support a large or diversified biota.

Lake Los Carneros is located on the grounds of Stow House in Goleta and is not a natural body of water; it does, however, support a large and stable ecological community. It is surrounded by typical aquatic vegetation and supports diverse bird species.

Lake Cachuma is the largest reservoir in the county. It attracts numerous migratory birds and has a rookery of great blue herons. The endangered southern bald eagle (*Haliaeetus leucocephalus*) may be observed at the lake. The lake supports large populations of large mouth and small mouth bass, crappie, bluegill, redear, sunfish, channel catfish, and rainbow trout.

The county's four major rivers (Santa Ynez, Santa Maria, Cuyama, and Sisquoc) and its many creeks and streams are characterized by riparian vegetation along their banks. This habitat can also occur along arroyos, barrancas, and other types of drainages throughout the county. Riparian vegetation supports a great diversity of aquatic and terrestrial wildlife species. Streams and pools provide habitat for aquatic and semiaquatic species such as Pacific chorus frog, western toad, Pacific treefrog, and the introduced bullfrog. Common reptiles include the ensatina, western fence lizard, common kingsnake, gopher snake, and common garter snake. Riparian vegetation is also used by small mammals for cover, movement corridors, and foraging. Small populations of the southwestern willow flycatcher (*Empidonax trailii extimus*), least Bell's vireo (*Vireo bellii pusillus*), federally and state-listed species, are present in the riparian areas along the Santa Ynez River, portions of which are designated as critical habitat for these species.

A number of invasive weeds are present in the county's riparian areas, including arundo, tamarisk, Pampas grass, myoporum, cape ivy, and castor bean. Such weeds are detrimental to habitat and water conservation, and they increase the risk of flooding and erosion in riparian systems. South Coast creeks discharge to the Santa Barbara Channel, and impaired creek water quality affects the water quality of the ocean in the vicinity of public beaches. Common to all urban south coastal watersheds, the natural function of local creeks has been affected over time by human activities and land alteration, which ultimately has altered natural hydrologic and geomorphologic processes, degraded water quality, and diminished native biological communities.

2.7.3 Sloughs/Coastal Salt Marshes

Several salt marshes occur in the county and provide habitat for a number of estuarine invertebrates and fish, migratory birds, and rare and endangered animal species, such as Belding's Savannah sparrow (*Passerculus sandwichensis beldingi*), California brown pelican (*Pelicanus occidentalis californicus*), western snowy plover (*Charadrius alexandrinus*), light-footed clapper rail (*Rallus longirostris levipes*), and tidewater goby; and plant species such as salt marsh bird's beak (*Cordylanthus maritimus*).

Carpinteria Salt Marsh

Carpinteria Salt Marsh is a 230-acre estuary adjacent to the City of Carpinteria and is owned by the City of Carpinteria, the University of California (as part of its Natural Reserve System), and the Land Trust for Santa Barbara County. The marsh was one of the original California Critical Coastal Areas identified in 1995 as an impaired estuary. It is also a 303(d) listed waterbody (for nutrients, organic enrichment, low dissolved oxygen, and priority organics). Nurseries, greenhouses, orchards, row crops, and residential areas may contribute to nutrients in the watershed. Sedimentation is likely coming from construction, storm drains, and agriculture. The marsh and its tributaries (Santa Monica Creek, Franklin Creek, and Arroyo Paredon) contain levels of nitrates that exceed Basin Plan objectives for municipal and domestic supply. Flood control, sediment management, and ecosystem enhancement measures recently have been implemented.

Goleta Slough

Goleta Slough is located near UCSB and includes portions of the Santa Barbara Airport, which is under the jurisdiction of the City of Santa Barbara. Large volumes of sediment and debris contained in runoff from the mountains have entered the Goleta Slough ecosystem and profoundly affected the ecosystem by raising ground surface elevations and affecting patterns of flooding and the development of wetland versus upland habitats. High inputs of sediment and debris, funneled into relatively narrow areas as a result of creek channelization and development of the Goleta Valley, have diminished the capacity of creek channels to convey floodwaters through developed areas, which require regular maintenance by the Santa Barbara County Flood Control District. Goleta Slough is a 303(d) impaired water body for pathogens, and priority organics and is considered a Critical Coastal Area (CCA). The slough is managed by the Santa Barbara Airport and the Goleta Slough Management Committee, which is composed of a variety of federal, state, and local agencies, organizations, and individuals, through the Goleta Slough Ecosystem Management Plan. The importance of the slough is recognized and reflected in its designation as an Environmentally Sensitive Habitat in the Local Coastal Plans of both the City and County of Santa Barbara.

Greater Devereux Slough

The Greater Devereux Slough ecosystem is located on the West Campus of UCSB, and a large portion of the area is a designated Environmentally Sensitive Habitat. The upland drainage areas, commonly referred to as Santa Barbara Shores and Ellwood, are important because they are home to one of the largest monarch butterfly overwintering sites on the West Coast. As a part of the University of California's Natural Reserve System, the area is reserved for habitat and wildlife preservation, public education, and academic research. The slough is not listed on the 303(d) list, but sediment loading is reducing the total size of the slough. Continued residential development in the watershed may increase contamination of runoff entering the slough, and exotic plant species are displacing native plants and altering the habitats. The Santa Barbara Audubon Society began a new habitat restoration project on the north shore of Devereux Slough in September 2002 intended to restore a 1.42-acre portion of Devereux Slough seasonal wetland and upland margin, improve foraging habitat for the state-listed Belding's Savannah sparrow and two species of marsh-dependent butterflies, pygmy blue and wandering skipper.

Surf/Ocean Beach Park

The Surf area, including Ocean Beach Park, is located about 13 miles west of Lompoc at the mouth of the Santa Ynez River. The area contains a salt marsh, a small freshwater marsh, and dune habitat. Access to certain parts of the beach is restricted at times because the western snowy plover nests there. Like the other marshes, this area is a stopover for birds using the Pacific Flyway, and it contains habitat suitable for a number of sensitive species, including Belding's Savannah sparrow and the black rail. Endangered plant species, such as salt marsh bird's beak also may be found here. The Santa Ynez River Lagoon also is found here and generally forms when flows decrease after the winter runoff period when the mouth of the river fills with sand deposited by both the river and by the strong longitudinal drift of sand from north to south along the shoreline. Low summer flows generally are unable to keep the outlet open, although inflow from the Lompoc treatment facility and wave action can breach this barrier (COMB and USBR, 2004). The lagoon represents a unique habitat characterized by saltwater/freshwater mixing.

2.7.4 Coastal Dunes

This community occurs in several places along the coast, including on the southwestern edge of the University of California, Santa Barbara, campus (Devereux Dunes), at Vandenberg Air Force Base, north of Point Sal, between Point Sal and Purisima Point, south of Purisima point, and around Surf. Of particular note is the Guadalupe-Nipomo Dunes Complex, located near the mouth of the Santa Maria River. The Dunes Complex is a National Natural Landmark comprising 18 miles and more than 22,000 acres of one of the largest coastal dune ecosystems on earth. The Dunes Complex is located in a transition zone between Northern and Southern California plant and animal communities, resulting in a high degree of habitat diversity, a large number native plants and animals, and susceptibility to disturbing delicate ecosystem balances. With more than 1,000 known species of birds, plants and animals and some of the highest dunes on the West Coast, it is a place of rare beauty and significance. Established in 2000 and encompassing 2,533 acres, the Guadalupe-Nipomo National Wildlife Refuge is located in the heart of the Dune Complex. The habitat includes coastal dune scrub, dune swales, wetlands, fore and active dune areas and coastal strand. Sensitive species found in the refuge include the western snowy plover, California red-legged frog, California least tern and over 16 species of rare plants. The Oso Flaco Lake Natural Area, a California State Park, also is located within the Dune Complex.

2.7.5 Areas of Special Biological Significance

The SWRCB designates Areas of Special Biological Significance (ASBS) throughout the State of California, defined as "a nonterrestrial marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration in natural water quality, including, but not limited to, areas of special biological significance that have been designated by the SWRCB through its water quality control planning process (PRC Section 36700[f]). In these areas, non-point source pollution is to be controlled as much as possible, and point source and thermal discharges are generally not permitted. The only ASBS within Santa Barbara County is the Channel Islands National Marine Sanctuary, which is managed by the National Park Service out to 6 miles from shore.

2.7.6 Marine Protected Areas

California Assembly Bill (AB 993) the Marine Life Protection Act was passed into law on October 10, 1999. A "marine protected area" is a named, discrete geographic marine or estuarine area seaward of the high tide line or the mouth of a coastal river, including any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna that has been designated by law, administrative action, or voter initiative to protect or conserve marine life and habitat. Marine protected areas include marine life reserves and other areas that allow for specified commercial and recreational activities, including fishing for certain species but not others, fishing with certain practices but not others, and kelp harvesting, provided that these activities are consistent with the objectives of the area and the goals and guidelines of the law. Marine protected areas are primarily intended to protect or conserve marine life and habitat, and are therefore a subset of marine managed areas, which are broader groups of named, discrete geographic areas along the coast that protect, conserve, or otherwise manage a variety of resources and uses, including living marine resources, cultural and historical resources, and recreational opportunities. A number of marine protected areas are present within Santa Barbara County, primarily at the Channel Islands, although the Goleta Slough has this designation, as do the Refugio State Marine Conservation Area and Vandenberg State Marine Reserve.

2.8 Water Quality

Water quality is a concern because of its potential effect on human health, enterprise, aquatic organisms, and ecosystem conditions. Quality is determined by factors such as native condition of groundwater and surface water, sources of contamination (natural and human induced), and extent of seawater intrusion.

2.8.1 Critical Coastal Areas (CCA)

The CCA Program is part of the state's Nonpoint Source Pollution Plan and a nonregulatory planning tool to coordinate the efforts of multiple agencies and stakeholders, and direct resources to CCAs. The program's goal is to ensure that effective nonpoint source pollution management measures are implemented to protect or restore coastal water quality in CCAs. CCAs in Santa Barbara County include the Santa Ynez River, Goleta Slough, and Carpinteria Marsh. Criteria for identifying CCAs reflect the dual goals of improving degraded water quality and providing extra protection from non-point source pollution to marine areas with recognized high resource value. The CCA program relies on existing designations of degraded water quality (i.e., the Clean Water Act 303(d) list of impaired and threatened water bodies), and marine or estuarine areas with high resource value (i.e., California Marine Managed Areas, including State Water Quality Protection Areas, and equivalent areas specified in the San Francisco Bay Plan).

2.8.2 Section 303(d) Impaired Water Bodies

Water quality is assessed by comparing measured levels of contaminants to standards that have been established for each beneficial use. The state of California has established "beneficial uses" for all surface water bodies within its jurisdiction. Water quality standards have been established for each beneficial use. The standards are the basis for identifying which water bodies are "impaired," or restricted in their beneficial uses. These impaired

water bodies are formally identified under Section 303(d) of the Clean Water Act, which requires states, territories, and authorized tribes to develop a list of water quality limited segments. The list of these water bodies and their pollutants of concern is the basis for setting priorities for the improvement of water quality. The county contains a number of water bodies that are listed as impaired under Section 303(d). The current list, shown in Appendix A, was approved by the SWRCB on October 25, 2006 (Resolution No. 2006 - 0079); the water segments and their impairments are listed in Table 2-3. Sources of pollution include both urban and agricultural uses, as well as natural sources. The waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that priority rankings be established for the development of action plans, called Total Maximum Daily Loads (TMDLs), to improve the water quality for waters on the list.

2.8.3 Groundwater Quality

The importation of State Water Project water, with lower salt content than the local sources, provides for higher quality "return flows," and thus, helps the basin water quality. In the Santa Maria basin, in addition to improvements provided by the recharge operations of Twitchell Reservoir and state water importation, the Laguna County Sanitation District helps improve water quality in the basin by utilizing a reverse osmosis process to remove and a deep injection well to dispose of approximately 8,000 pounds per day of salts, which would otherwise accumulate in the basin system. In the Santa Ynez River watershed, under the Cachuma Project Settlement Agreement, State Water Project water is mixed with water rights releases from Bradbury Dam to lower the salt content of flows downstream. Since 1997, discharge of State Water Project water has tended to lower the total dissolved solids (TDS) of groundwater in the vicinity of these sources.

Increases in TDS have been recorded in many basins in the county. Efforts to increase recharge and improve irrigation efficiency have been implemented to address this problem.

Several areas in the county (Santa Barbara and near Santa Maria) have experienced signs of seawater intrusion. As of yet, these initial signs of intrusion do not pose a threat to drinking water supplies.

The county contains a number of non-sewered, fairly densely populated areas that remain on septic tanks, requiring integrated action by the Local Agency Formation Commission, cities, and special districts to provide for extensions of sewer systems to serve these areas or other measures to address potential groundwater contamination. State maximum contaminant levels (MCLs) for nitrates already have been exceeded in some areas, and methyl tertiary butyl ether (MTBE) and chlorinated solvents pose problems for some wells. Additionally, the recently constructed Chumash wastewater treatment plant in the Santa Ynez Valley is a new source of wastewater discharge into Sanja de Cota Creek, which is a tributary to the Santa Ynez River. As would occur with any wastewater treatment plant upstream of potable water wells, there is a potential risk of contamination of the potable wells in the Santa Ynez River alluvium. Because of the federal nexus, the U.S. Environmental Protection Agency has regulatory jurisdiction over this discharge. A water quality control plan is being developed to determine potential sources of contamination, designate beneficial uses, and assign water quality objectives.

The following describes groundwater quality in the major basins (Santa Barbara County, 2000; Santa Barbara County, 2005).

Carpinteria Groundwater Basin

Water quality has been monitored sporadically over most of the 20th century. Since the initial U.S. Geological Survey (USGS) study, TDS concentrations within the basin have increased, with recent concentrations ranging from 436 to 980 milligrams per liter (mg/L). Groundwater analyses conducted in 1985 revealed nitrate levels below the state MCL of 45 mg/L for public water systems.

Montecito Groundwater Basin

Water quality in the basin is generally suitable for agricultural and domestic use. Some wells near fault zones or coastal areas yield groundwater with elevated levels of TDS and other constituents. Studies indicate that seawater intrusion is not a significant problem in the basin. It is thought that deeper aquifers of the basin are protected from seawater intrusion by an impermeable offshore fault. However, some encroachment of seawater might occur in shallower aquifers during periods of heavy pumping such as during the early 1960s.

Santa Barbara Groundwater Basin

TDS concentrations within the two basins range from about 400 mg/L to about 1,000 mg/L. Isolated wells have exhibited much higher TDS concentrations. Seawater intrusion occurred in some areas of the south basin (Storage Unit No. 1) where heavy pumping from municipal wells caused groundwater levels to drop as much as 100 feet in the late 1970s. More recently, samples taken from coastal wells have confirmed the presence of seawater intrusion with chloride concentrations greater than 1,000 mg/L. Groundwater pumping within the Santa Barbara Groundwater Basin has been drastically reduced since 1991. Effective pumping practices, together with groundwater injection programs, have restored the previously existing gradient thereby reversing the trend of seawater intrusion.

Foothill Groundwater Basin

TDS concentrations range from 610 to 1,000 mg/L in seven wells sampled in the basin. Chloride concentrations in this basin are relatively low (44 to 130 mg/L) in the seven wells. An eighth well was sampled in the USGS study from which poor quality water (TDS 1,900 mg/L, chloride 360 mg/L) was recovered. This well, however, is known to produce water from bedrock aquifers below the sediments that comprise the Foothill Basin.

TABLE 2-3
List Of Water Quality Limited Segments in Santa Barbara County

Segment Name	Pollutant/Stressor
Alamo Creek	Fecal Coliform
Arroyo Burro Creek	Pathogens
Arroyo Paredon	Boron; Nitrate as Nitrate (NO3); Toxicity
Bell Creek	Nitrate as Nitrate (NO3)
Bradley Canyon Creek	Ammonia (Unionized); Fecal Coliform; Nitrate as Nitrate (NO3)
Bradley Channel	Fecal Coliform; Nitrate as Nitrate (NO3)
Canada de Gaviota	Boron
Carneros Creek	Ammonia (Unionized)
Carpinteria Creek	Pathogens
Carpinteria Marsh (El Estero Marsh)	Nutrients; Organic Enrichment/Low Dissolved Oxygen; Priority Organics
Casmalia Canyon Creek	Sedimentation/Siltation
Cuyama River	Boron
Franklin Creek	Nitrate as Nitrate (NO3)
Glen Annie Canyon	Nitrate as Nitrate (NO3)
Goleta Slough/Estuary	Pathogens; Priority Organics
Main Street Canal	Ammonia (Unionized); Nitrate
Mission Creek	Pathogens; Unknown Toxicity
Orcutt Creek	Ammonia (Unionized); Boron; Chlorpyrifos; DDT; Dieldrin; Fecal Coliform; Nitrate
Rincon Creek	Boron; Toxicity
San Antonio Creek (San Antonio Watershed, Rancho del las Flores Bridge at Hwy 135 to downstream at Railroad Bridge)	Ammonia as Nitrogen; Boron; Nitrogen; Nitrate
Santa Maria River	Ammonia (Unionized); Chlorpyrifos; DDT; Dieldrin; Endrin; Fecal Coliform; Nitrate
Santa Ynez River (below City of Lompoc to Ocean)	Nitrate as Nitrate (NO3); Salinity/TDS/Chlorides; Sedimentation/Siltation
Santa Ynez River (Cachuma Lake to below City of Lompoc)	Salinity/TDS/Chlorides; Sedimentation/Siltation
Shuman Canyon Creek	Sedimentation/Siltation
Pacific Ocean at Arroyo Burro Beach	Total Coliform
Pacific Ocean at Carpinteria State Beach (Carpinteria Creek mouth)	Fecal Coliform; Total Coliform
Pacific Ocean at East Beach (mouth of Mission Creek)	Fecal Coliform; Total Coliform

TABLE 2-3
List Of Water Quality Limited Segments in Santa Barbara County

Segment Name	Pollutant/Stressor
Pacific Ocean at East Beach (mouth of Sycamore Creek)	Total Coliform
Pacific Ocean at Gaviota Beach (mouth of Canada de la Gaviota Creek)	Total Coliform
Pacific Ocean at Hammonds Beach	Fecal Coliform
Pacific Ocean at Hope Ranch Beach	Fecal Coliform
Pacific Ocean at Jalama Beach	Fecal Coliform; Total Coliform
Pacific Ocean at Ocean Beach	Fecal Coliform; Total Coliform
Pacific Ocean at Point Rincon (mouth of Rincon Creek)	Fecal Coliform; Total Coliform
Pacific Ocean at Refugio Beach	Total Coliform

Note: Adopted by Resolution of the SWRCB on October 25, 2006

Goleta Groundwater Basin

The USGS compiled water quality data for these basins in the early 1940s. Groundwater analyses completed at that time indicated that chloride concentrations throughout most of the North-Central and West basins were less than the Department of Health Services secondary standard of 250 mg/L. TDS ranged from about 170 mg/L to 1,400 mg/L in the North-Central Basin, and was approximately 800 mg/L in the West Subbasin. More recent studies yielded similar TDS ranges as the USGS study with the exception of high concentrations in some wells of the West Basin. The recent study yielded no evidence of seawater intrusion. In addition, seawater intrusion is not likely to have occurred at any time due to the rock formations and the More Ranch Fault along the coast that act as barriers to groundwater migration. Near-surface low permeability sediments cause the southern portion of the North-Central and West basins to be under confined conditions and provide a barrier to contamination from potential surface sources of water quality degradation such as agricultural return flow or infiltration of brackish water in the overlying Goleta Slough. High TDS perched water is present in shallow aquifers above the confining layers. This water is not in general use. Water quality in the North-Central Basin is sufficient for many agricultural uses but might require treatment for domestic uses. Water in the West Basin requires treatment for domestic use and can be used for irrigation of a limited variety of crops. The Goleta Water District has extracted water from a bedrock well on a test basis. The well pumped water from the fractures in consolidated bedrock in the foothills north of the basin and was of very poor quality. The District has no plans to utilize water from this source.

Santa Ynez Uplands

Water quality within the basin is generally adequate for most agricultural and domestic purposes. Studies completed in 1970 indicate TDS concentrations ranging from 400 to 700 mg/L. Although recent water quality data are limited, samples analyzed by the USGS in 1992 exhibited a TDS concentration of 507 mg/L.

Buellton Uplands Groundwater Basin

Current water quality data for the basin is limited. However, data from late 1950s and early 1960s indicate TDS concentrations between 300 and 700 mg/L for several wells within the basin.

Lompoc Groundwater Basin

Water quality in the shallow zone of the Lompoc Plain tends to be poorest near the coast and in heavily irrigated areas of the subbasin. TDS concentrations of up to 8,000 mg/L near the coast were measured in the late 1980s. The poor quality water in this area is attributed to upwelling of poor quality connate waters, reduction in fresh water recharge from the Santa Ynez River beginning in the early 1960s, agricultural return flows, and downward leakage of seawater from an overlying estuary in the western portion of the basin. The presence of elevated boron and nitrates (constituents common in seawater and agricultural return flow, respectively) supports this conclusion. In the middle zone, water samples taken from below agricultural areas of the northeastern plain contained TDS concentrations averaging over 2,000 mg/L. However, some middle zone groundwater from the western

plain exhibited TDS levels below 700 mg/L. Areas of recharge, adjacent to the Santa Ynez River, contained TDS concentrations of less than 1,000 mg/L in the eastern plain. It is believed that leakage from the shallow zone is responsible for elevated TDS levels in the middle zone in the northeastern plain. Groundwater from the main zone exhibited TDS concentrations as high as 4,500 mg/L near the coast. It is thought that contamination of the main zone (mainly near the coast) is due to percolation of seawater through estuary lands and upward migration of poor quality connate waters from the underlying rock. Groundwater of the Lompoc Terrace and Lompoc Upland Subbasin is generally of better quality than that of the Lompoc Plain, averaging less than 700 mg/L TDS. Some of the natural seepage from these subbasins is of excellent quality. Groundwater users and public agencies within the basin are working to clarify and resolve water quality concerns.

San Antonio Groundwater Basin

Water quality studies conducted by the USGS in the late 1970s indicated an average TDS concentration within the basin of 710 mg/L, with concentrations generally increasing westward. The cause of the westward water quality degradation is thought to be the accumulation of lower quality water from agricultural return flow and the dissolution of soluble minerals. The highest TDS concentration (3,780 mg/L) was found in the extreme western end; the lowest concentration (263 mg/L) was found at the extreme eastern end. Analyses compiled for samples taken between 1958 and 1978 indicate that groundwater quality remained fairly stable during that period. Analyses of water sampled in 1993 for several wells show only slight increases in TDS since the previous study. There is evidence that poor quality connate waters exist within fracture zones of the bedrock and that this water might be induced into overlying strata through excessive pumping. There is no evidence of seawater intrusion in the basin, nor is the basin considered susceptible to seawater intrusion due to the consolidated rock that separates the basin from the ocean.

Santa Maria Valley Groundwater Basin

Water quality data indicates that TDS concentrations generally increase from east to west, with the most significant degradation occurring in the western part of the basin. TDS concentrations for shallower wells also tend to increase southward, away from the recharge area of the Santa Maria River. TDS concentrations east of Guadalupe have increased to over 3,000 mg/L in 1975 from less than 1,000 mg/L in the 1930s. In addition, TDS levels have increased significantly in Orcutt wells since the 1930s, but have remained relatively stable since 1987. The importation and domestic use of State Water Project water now results in better quality discharge water from the treatment facilities. A recent study conducted by the SWRCB indicates that the basin is subject to nitrate contamination, particularly in the vicinity of the City of Santa Maria and in Guadalupe. The study shows that nitrate concentrations have increased from less than 30 mg/L in the 1950s to over 100 mg/L in the 1990s in some parts of the basin. Coastal monitoring wells are measured biannually for any indication of seawater intrusion, although there has been no evidence that it has occurred. The concern of seawater intrusion is based on evidence that the Careaga Sand crops out on the ocean floor several miles west and there are no known barriers to prevent intrusion. Although it is likely that the seawater-freshwater interface has migrated toward land during the 20th century, the slope of groundwater has remained positive toward the ocean in the western-most part of the basin.

The Central Coast Regional Water Quality Control Board (RWQCB) has begun initial reports on bacteria and nitrates in the Santa Maria River Basin. Based on these reports, they have served notice of the intention to initiate a process to establish TMDLs for these two pollutants of concern. Part of the TMDL process focuses on identification of pollution sources.

Cuyama Groundwater Basin

Agricultural water use began in 1938 and has since progressively increased. The constant cycling and evaporation of irrigation water has resulted in decreasing water quality. Groundwater within the basin makes up 100 percent of the water supply for Cuyama Valley agriculture, petroleum operations, businesses and homes. Agriculture accounts for over 95 percent of the water use within the valley.

2.8.4 Surface Water Quality

Urban Water Quality

Various entities in the IRWMP planning region are focusing their efforts on poor surface water quality in creeks, rivers, and oceans due to polluted storm water and urban runoff discharges. Runoff pollutants can include pesticides, fertilizers, green waste, animal waste, human waste, petroleum hydrocarbons (gasoline, motor oil), trash, and other constituents.

Section 402 of the Clean Water Act established the National Pollutant Discharge Elimination System (NPDES) to regulate the discharge of waste from a point source to a receiving water body. Phase II of the NPDES program, enacted in 1999, requires preparation of Storm Water Management Plans (SWMP) to manage discharge of urban runoff to receiving waters (refer to Section 3 for a discussion of regional SWMPs. These plans summarize the management plans and strategies to maintain compliance in all applicable discharge and effluent prohibitions, including control measures such as public education and outreach on storm water impacts, public involvement/participation, illicit discharge detection and elimination, construction site storm water runoff control, post-construction storm water management in new development or redevelopment, and pollution prevention/"good housekeeping."

There are a number of potential urban storm water constituents of concern that the NPDES Phase II Storm Water Management Program aims to control on a national level and that are found in low levels in many areas throughout the county. (Water bodies that are sufficiently polluted to warrant clean up are listed in Table 2-3). These urban pollutants may include sediment, nutrients, bacteria and viruses, oil and grease, metals, organic compounds, pesticides, and gross pollutants such as trash. Storm water and incidental urban runoff are two of the primary carriers of pollutants that enter the county storm drain systems and creeks. Non-storm urban runoff from commercial and residential areas, streets and parking lots, city and commercial facilities, and building construction sites, among others, can all contribute as non-point sources of water pollution.

2.8.5 Ocean Water Quality

Ocean water quality is of concern in Santa Barbara County, as it is in many places along the California coast. Scientific evidence has linked storm water runoff with high levels of indicator bacteria in creeks and ocean water. Exposure to indicator bacteria correlates with

an increased health risk to humans, requiring beach warnings. Sources of these indicator bacteria may include human and domestic and wild animal excrement, decomposing plant matter, and septic and sanitary sewer overflow. Investigations of the City of Santa Barbara sewer system, for example, have indicated that local sewer pipe leaks likely occur in some areas of the city, contributing untreated wastewater to the shallow groundwater zone that can eventually make its way to creeks and to the beaches. In addition, damaged and broken sewer lines may also allow inflow of percolating rainwater into the city sewer system, overwhelming the capacity of the Estero treatment plant to effectively treat sewage during large storm events and resulting in discharge of only partially treated wastewater (City of Santa Barbara Creeks Restoration/Water Quality Improvement Division, 2005).

Table 2-4 summarizes the exceedance percentages (the number of samples exceeding one or more standards/total number of samples taken from the site) for the beaches monitored by the Santa Barbara County Environmental Health Services Department from 1998 to 2006.

2.8.6 Agricultural Water Quality

Agricultural sources may contribute to water quality impairments through irrigation return flow, flows from tile drains, and storm water runoff. 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. Some surface water bodies are classified as impaired, at least in part, because of pollutants from agricultural sources.

To control and assess the effects of these discharges, the Central Coast RWQCB has adopted a comprehensive conditional waiver, using proactive solutions to control agricultural discharges, including an extensive public outreach and education approach, resulting in the enrollment of 400,000 acres in the program (State of California, 2007b). All farmers are expected to complete 15 hours of farm water quality education within 3 years of adoption of the waiver, develop farm water quality management plans that address, at a minimum, irrigation management, nutrient management, pesticide management and erosion control, and begin implementing management practices identified in their plans. Those who have completed the above requirements by the deadline qualify for a waiver with reduced reporting requirements.

2.8.7 Drinking Water Quality

Imported water from the State Water Project is of high quality, ranging from 222 to 510 mg/L TDS. In parts of the North County, State Water Project water is blended with other lower quality water, which results in a higher overall quality of the water distributed to customers. For the South Coast water purveyors, State Water Project water is conveyed through Lake Cachuma, where it mixes with local surface water. The water is then directed to local water treatment plants, after which it is distributed to customers. According to the U.S. Geological Survey figures for 1998 (Agajanian et al., 1998) the TDS for the rivers in Santa Barbara County range from 518 mg/L to 1,130 mg/L. Water treatment facilities are discussed in Section 4, and specific drinking water quality issues, including those facing DACs are addressed in Section 8.

TABLE 2-4
Percentage Exceedances for Indicator Bacteria (1998 to 2006)*

Beaches	Exceedance Percentage								
	1998	1999	2000	2001	2002	2003	2004	2005	2006
Arroyo Burro	44	33	36	27	21	17	13	26	46
Butterfly Beach	-	-	11	10	7	12	4	6	12
Carpinteria City Beach	7	10	4	13	9	4	2	10	8
Carpinteria State Beach	36	37	13	31	9	6	4	18	16
East Beach at Mission Creek	55	27	19	39	28	15	25	38	40
East Beach at Sycamore Creek	24	20	20	17	25	13	10	12	16
El Capitan State Beach	15	5	11	9	7	6	2	8	8
Gaviota State Beach	17	13	31	30	4	12	10	4	14
Goleta Beach	13	11	19	27	12	13	6	18	10
Guadalupe Dunes State Beach	3	2	4	12	12	2	4	2	4
Hammond's Beach	15	18	23	20	12	10	6	14	10
Haskell's Beach	-	-	-	21	4	13	6	16	16
Hope Ranch Beach	37	18	30	16	8	10	6	8	18
Jalama Beach	42	36	31	22	6	10	6	22	12
Leadbetter Beach	25	11	16	28	11	12	6	14	16
Ocean/Surf Beach	27	25	11	12	4	2	6	8	4
Refugio State Beach	28	24	32	25	22	6	4	18	18
Rincon at Bates Beach	54	27	17	7	2	2	0	6	4
Sands at Coal Oil Point	12	6	7	12	4	4	4	4	2
Summerland Beach	-	-	-	-	-	-	-	-	9
Average Percentage	30	22	21	23	12	9	6	14	14

Source: County of Santa Barbara Public Health Department, 2007.

*Based on AB 411 year-round sampling data.

2.9 Water Demand

Current agricultural and urban demands are discussed below, as are projected demands.

2.9.1 Agricultural Demand

Agricultural development increased dramatically after World War II due to advances in refrigerated-transport technology, which allowed crops grown in the county to be transported by train in refrigerated rail cars for sale in distant locations. Agricultural water use now accounts for approximately 75 percent of all water demand in the county;

calculating an exact amount would require accounting for the fact that some of the water used for agricultural returns as groundwater recharge. Most agricultural water supplies are obtained from private groundwater wells, although some water purveyors provide agricultural water, as well. Table 2-5 summarizes the amount of water currently provided to agricultural users by source. In recent years, improvements in agricultural technology have allowed increases in crop yield and intensification of agricultural development on an acre-by-acre basis. In some cases, water demand per acre has increased to allow for double and triple cropping and for higher water-using (and income-producing) crops, such as strawberries, to be grown. Irrigation technologies have also improved, reducing the amount of water used by some crops. These improvements include drip irrigation, seedling propagation in controlled greenhouse environments, laser leveling of fields, and use of tailwater recovery systems in furrow-irrigated fields.

TABLE 2-5
 Estimated Agricultural Water Demand

Source	Demand (AFY)
Carpinteria Valley Water District	1,840 ^a
Goleta Water District	2537 ^b
La Cumbre Mutual Water Company	103 ^c
Montecito Water District	550 ^d
Santa Ynez River Water Conservation District Improvement District No. 1	2,404 ^e
Private Wells, Cuyama Valley	15,300 ^c
Private Wells, San Antonio Valley	17,020 ^c
Private Wells, Santa Maria Valley	117,852 ^c
Private Wells, Santa Ynez Valley	59,980 ^c
TOTAL	218,115

Sources:

^aCarpinteria Valley Water District, 2005b, Table 12

^bGoleta Water District, 2005a, Table 16

^cSanta Barbara County Water Agency, 2000

^dMontecito Water District, 2005, Table 5D

^eSanta Ynez River Water Conservation District Improvement District No. 1, 2006

2.9.2 Urban Demand

Urban water use accounts for approximately 25 percent of all water demand in Santa Barbara County. Current supplies provided by each water purveyor are shown in Table 2-6.

Per capita water use is shown in Table 2-7. Variances in water usage are due in part to the amount of industry and subregional climate, as well as variation in lot sizes and soil types.

TABLE 2-6
Urban Water Use Summary for Santa Barbara County

Water Purveyor	Typical Demand (AFY)
Carpinteria Valley Water District	2,122 ^a
City of Buellton	806 ^b
City of Guadalupe	574 ^b
City of Lompoc	5,212 ^c
City of Santa Barbara	12,960 ^d
City of Santa Maria	13,243 ^e
City of Solvang	1,277 ^b
Cuyama Community Services District	166 ^b
Golden State Water Company (Orcutt)	7,394 ^b
Goleta Water District	11,781 ^f
La Cumbre Mutual Water Company	1,258 ^b
Los Alamos Community Services District	238 ^b
Mission Hills Community Services District	540 ^b
Montecito Water District	5,655 ^g
Santa Ynez River Water Conservation District Improvement District No. 1	2,405 ^h
Vandenberg Air Force Base	4,500 ^b
Vandenberg Village Community Services District	1,311 ^f
TOTAL	71,239

Sources:

- ^aCarpinteria Valley Water District, 2005b, Table 12
- ^bSanta Barbara County Water Agency, 2000
- ^cCity of Lompoc, 2005, Table 15
- ^dCity of Santa Barbara, 2005, Figure 7
- ^eCity of Santa Maria, 2005, Table 4-2
- ^fGoleta Water District, 2005a, Table 16
- ^gMontecito Water District, 2005, Table 5D
- ^hSanta Ynez River Water Conservation District Improvement District No. 1, 2006, Table 6; service area includes the Santa Ynez Reservation
- ⁱSanta Barbara County Water Agency, 2007

TABLE 2-7
 Municipal and Industrial Water Use: Per Capita in 2006

Agency	Per-Capita Water Use (Gallons/Person/ Day)
City of Buellton	281
Carpinteria Valley Water District	102
Casmalia Community Services District	52
Cuyama Community Services District	183
Golden State Water Company	178 ^a
Goleta Water District	108
City of Guadalupe	116
La Cumbre Mutual Water District	295
City of Lompoc	104
Los Alamos Community Services District	195
Mission Hills Community Services District	189
Montecito Water District	345
City of Santa Barbara	121
City of Santa Maria	123
Santa Ynez River Water Conservation District Improvement District No. 1	273
City of Solvang	227
Vandenberg Village Community Services District	202

Source: Santa Barbara County Water Agency, unpublished data

^aSource: Santa Barbara County Water Agency, 2007

2.9.3 Projected Water Demand and Supply

By 2040, the Santa Barbara County population is expected to increase by almost 52 percent over 2000 levels (from about 399,000 to 606,000) (Santa Barbara County, 2003). Total water demand for this same 40-year period is projected to increase by only 9 percent, from 314,000 AFY to 345,000 AFY (Santa Barbara County, 2003). Agricultural water demand, which accounts for about 75 percent of total demand, is expected to remain nearly the same. At present, with careful and strategic planning, water supplies are sufficient to meet demand countywide during normal water years, but water purveyors will need to develop an additional 10,800 AFY by 2030; this number is projected to increase to 12,400 AFY by 2040, or they will have to rely on mining groundwater in certain areas in order to meet future demand (Santa Barbara County, 2003).

Only one of the five Designated Analysis Units (DAU) in Santa Barbara County (as defined by State of California Department of Water Resources [DWR]), DAU 75 South Coast, has a

water supply that meets the current demand in normal rainfall years. The other basins have existing shortfalls in water supply that will increase in the future (Santa Barbara County, 2003).

- DAU 71 Santa Maria – The current 4,200 AFY water supply shortfall will increase to 7,700 AFY by 2040, although water conservation efforts are expected to continue.
- DAU 73 San Antonio – The current 3,900 AFY shortfall will decrease slightly to 3,800 AFY by 2040, primarily due to limited population growth and increased conservation.
- DAU 74 Santa Ynez – Although this DAU has a slight overall current water supply deficit of only 300 AFY, the water supply shortfall is expected to reach 1,600 AFY by 2040.
- DAU 75 South Coast – The DAU as a whole has sufficient water supplies through the year 2040 on a normal year basis. However, periodic severe droughts reduce supplies by as much as 25 percent, requiring water purveyors to reserve available water supply during normal years for later drought use to partially offset shortages.
- DAU 76 Cuyama Valley – This DAU is already experiencing a water supply shortfall of about 7,900 AFY of its total average water demand of 20,700 AFY. This water shortfall is expected to decline slightly to about 6,600 AFY in 2040; however, significant new water supplies will be required to balance average annual water supply and demand.

2.10 Natural Hazards Requiring Emergency Planning

Water resources planning in Santa Barbara County must consider the potential for service disruptions due to natural hazards such as earthquakes, fires, and floods, which can damage water and wastewater infrastructure. Additionally, the area experiences periodic droughts, which requires planning for periodic shortages.

2.10.1 Severe Storms and Flooding

Santa Barbara County experiences periods of high intensity rainfall, which cause flooding and landslides. For example, widespread problems resulted from the December 2004/January 2005 storms including facilities damage, road and railroad closures, mudslides, flooding, power outages, fallen trees, and beach erosion. Some areas, such as the eastern end of Santa Maria, experience chronic flooding in modest storm events because existing floodwater conveyances are not adequate to meet the increased runoff due to both agricultural and urban growth. The Cuyama Valley agricultural area in the proximity of the Cuyama River is another region that is highly susceptible to flooding because the river banks are low (less than 4 feet) and highly erodable, so the natural ability to contain the river is limited. In the city of Santa Barbara, Mission Creek and Sycamore Creek are prone to flooding when significant rainfall occurs. Periodic flooding also occurs on the Santa Ynez River, particularly in the City of Lompoc and on agricultural fields west of Lompoc, associated with the limited ability to maintain channel capacity because of sensitive habitat considerations.

2.10.2 Earthquakes

The county, like the rest of California, is seismically active and has experienced multiple large-scale (magnitude 6.0 or greater) earthquakes over the last two centuries. The December 21, 1812, earthquake was estimated to be magnitude 7.2 (Harp, 1980). Much of Santa Barbara was damaged by the magnitude 6.3 earthquake of June 29, 1925. Another strong earthquake of magnitude 6.0, which also caused damage in Santa Barbara, occurred June 30, 1941. The county contains numerous active and potentially active faults and is also susceptible to ground shaking from regional faults, such as the San Andreas Fault, which is located approximately 7 miles from the northeast corner of the county. Earthquakes present the potential to damage water storage facilities and levees, cause landslides, and disrupt water supply and treatment capabilities in the region for weeks or possibly months.

2.10.3 Fire

During the summer and early fall, much of Santa Barbara County is at risk from wildfires stemming from a combination of dry, windy conditions and woodlands, brushlands, chaparral, and grasslands that burn readily. The county contains a number of high fire hazard areas, particularly in undeveloped and mountainous locations, although fires may occur in urban areas, as well. Fires pose a number of challenges to water resources planners, because adequate water must be supplied at correct pressure to meet fire department requirements, particularly during major incidents, and portions of the county have deficient fire flows. Fires also can result in erosion and runoff from burned areas, which can affect surface water quality and increase sedimentation of local creeks, and reservoirs.

2.10.4 Drought

Historical records show that local drought periods of several years or more are cyclical. Tree ring studies covering time periods of several centuries reveal apparent droughts lasting as long as 16 years or more. The most recent drought occurred from 1986 until 1991 and included some of the driest years on record. Evidence from tree ring analysis indicates that severe droughts occurred as far back as 1544. Droughts in Santa Barbara County have lasted an average of 5 years with a maximum of 9 years. Local water purveyors implement water conservation programs to extend local surface water and conserve groundwater. They also import supplemental water supplies to cope with drought.

3 History of Water and Wastewater Management

This section provides an overview of the history of key water and wastewater milestones, as well as integrated regional water management efforts.

3.1 Key Water Management Milestones

Santa Barbara County has a long water development history, dating back to the founding of the Santa Barbara, La Purisima, and Santa Inés missions between 1786 and 1804. Extensive water supply systems, including aqueducts, cisterns, and gravity-fed fountains, were developed to serve the earliest non-native settlements. As the county's population increased, water supplies and treatment and delivery systems were expanded to meet the growing needs in a manner that was accounted for by the County's limited water supply. This section focuses on the development of the major regional water infrastructure, which led to the agreements and management practices that are in place today, as well as the importation of water from the State Water Project.

3.1.1 South Coast, Santa Ynez Valley, and Lompoc Valley

The history of Santa Ynez River water use is a contentious one, and issues raised by water rights holders downstream of the three Santa Ynez River dams have been addressed over the years by litigation, decisions by the State Water Resources Control Board (SWRCB), and by agreements reached between the parties involved. As described below, years of dissent culminated in the Cachuma Project Settlement Agreement, which uses the Bradbury Dam and the Santa Ynez Extension of the State Water Project to integrate surface and groundwater management strategies including surface storage, conjunctive use, groundwater recharge, groundwater quality improvement, flood protection, and habitat improvements. Existing infrastructure is managed cooperatively, creatively, and efficiently to maximize the use and improve the reliability of available water resources, as well as to provide environmental enhancements.

Early Need for Water in the South Coast

The Santa Barbara Mission was founded in 1786 and supported surrounding ranching and fruit-growing efforts. When water supplies became limited due to higher concentrations of people in more populated areas, plans were made to construct the South Coast's first large dam and reservoir, which was completed in 1807. After incorporation as a city in 1850, the population of Santa Barbara expanded, and the city continued to experience the pressures of limited water supplies. A report written in 1889 by the City Engineer concluded that the only feasible long-term source of water for Santa Barbara would have to come from the Santa Ynez River. He recommended land purchases for two possible dam and reservoir sites on the Santa Ynez River, but the city's initial bond proposal was defeated. Droughts in 1894 and from 1898 through 1900 re-emphasized the report's conclusions. While the Cold Spring

Tunnel (constructed in 1896) initially provided essentially a horizontal well producing approximately 290 acre-feet of water per year (AFY), its yield steadily decreased to about 100 AFY, and attention again turned to potential dam and reservoir sites on the Santa Ynez River.

Mission Tunnel

A 1905 report by the United States Geological Survey recommended the construction of a tunnel (the Mission Tunnel) from the Santa Ynez River to the coast side of the mountains, in conjunction with building a dam and reservoir at the Gibraltar site on the river (SBCWA, 2000). The main obstacle to this plan was that the tunnel would have to pass through lands held by the Santa Barbara Water Company, a private firm that owned extensive tracts of land encompassing all practicable reservoir sites on the headwaters of the Santa Ynez River. The City negotiated a contract with the Santa Barbara Water Company to allow construction of the tunnel in exchange for maintenance of flows in Mission Creek. The 3.7-mile-long Mission Tunnel was completed in 1912, the same year that the City purchased the holdings of the Santa Barbara Water Company. Mission Tunnel was designed to intercept groundwater flow and to later convey water from Gibraltar Reservoir to the City of Santa Barbara. Infiltration into Mission Tunnel varies with rainfall, but averages approximately 1,100 AFY.

Gibraltar Dam and Reservoir

The presence of major reservoirs in Santa Barbara County began in 1920 with the completion of Gibraltar Dam and Reservoir on the Santa Ynez River. By 1945, sedimentation had reduced storage in Gibraltar Reservoir from 14,500 acre-feet (AF) to approximately 7,800 AF. In 1948, the dam was raised 23 feet, and storage capacity was restored to approximately the original volume.

Juncal Dam, Jameson Lake, and Doulton Tunnel

The Montecito Water District completed construction of Juncal Dam and Jameson Lake in 1930. Water is diverted from the Santa Ynez River to the Montecito area through the Doulton Tunnel. Construction of Doulton Tunnel began in 1924 and initially penetrated only the first mile of the Santa Ynez Mountains due to substantial groundwater inflow. The tunnel was finally completed in 1928.

Gin Chow Judgment and Upper Santa Ynez River Operations Agreement

The storage and diversion of Santa Ynez River water by the City of Santa Barbara and Montecito Water District at Gibraltar and Juncal dams, respectively, was challenged in court by downstream interests in 1928. Gin Chow, a Lompoc farmer and local prophet, and over 30 others filed suit against Santa Barbara and Montecito, claiming that they were unlawfully diverting water from the Santa Ynez River. In 1933, the California Supreme Court upheld the rights of Santa Barbara and Montecito, setting limits on their ability to store and divert water, and decreeing that the City must release up to 616 AF of water per year from Gibraltar Reservoir for downstream water rights.

In the 1980s, when the City of Santa Barbara initiated a seismic retrofit project at Gibraltar Dam, concern by downstream interests that this could lead to a second enlargement of the

dam (see "Gibraltar" above) led to the "Upper Santa Ynez River Operations Agreement." This Agreement provides for diversions of water to the City of Santa Barbara (including a pass-through provision to protect against loss of capacity) and for downstream releases consistent with the Gin Chow judgment.

Cachuma Project

The Cachuma Project had its beginnings in 1939 when a study referred to as the Hill Report was submitted to the County Board of Supervisors recommending further development of the Santa Ynez River. This resulted in the formation of the Santa Ynez River Water Conservation District by people who felt that the interests of the residents of the Santa Ynez River watershed were not being adequately protected by individual water users, as evidenced by the Gin Chow litigation. The District called for a more extensive study by an impartial government agency. The County contracted with the U.S. Geological Survey (USGS) in 1940 to obtain basic data and with the U.S. Bureau of Reclamation (Reclamation) in 1941 to prepare a countywide water resources development plan. The Cachuma Project, among others, was recommended by Reclamation in 1944.

The Santa Barbara County Water Agency was formed in 1945 to act as a go-between, contracting with both the federal government and local water purveyors (the Cachuma Member Units). The Cachuma Member Units were to be the City of Santa Barbara, Montecito, Carpinteria, Goleta, and Summerland County Water Districts, and the Santa Ynez River Water Conservation District. The Cachuma Project was approved by these entities in 1947 and by the Secretary of the Interior in 1948. Contract negotiations resulted in a master contract, and Member Unit contracts were approved by all parties except for the Santa Ynez River Water Conservation District, which withheld approval pending the negotiation of a separate agreement with Reclamation to protect downstream water rights. The so-called "Live Stream Agreement" was subsequently agreed to, allowing elections to occur in 1949. The elections were successful, federal funding was ultimately forthcoming, and the Cachuma Project facilities were completed by 1956.

The Cachuma Project consists of the Bradbury Dam, which impounds Lake Cachuma; the Tecolote Tunnel, which diverts 90 percent of the Project's yield to the South Coast; and the South Coast Conduit conveyance facilities, which consists of a pipeline and four regulating reservoirs to transport water from Goleta to Carpinteria along the South Coast. In 1957, the Cachuma Operation and Maintenance Board, then consisting of the South Coast Member Units and the Santa Ynez River Water Conservation District, was formed to operate and maintain Tecolote Tunnel and the South Coast Conduit system. Today, the South Coast Member Units consist of the City of Santa Barbara and the Goleta, Montecito, and Carpinteria Valley Water Districts. These entities serve both urban and agricultural users, and in 1973, they formed the Cachuma Conservation Release Board to represent their Cachuma Project water rights interests.

In 1963, the Santa Ynez River Water Conservation District formed Improvement District No. 1 to serve 10 percent of the Cachuma Project yield to urban and agricultural users in the more urbanized areas of the Santa Ynez Valley. In 1968, a separate Improvement District No. 1 Board of Trustees was established, and in 1993, the Santa Ynez River Water Conservation District assigned its interests in the Cachuma Project to Improvement

District No. 1. Today, Improvement District No. 1 and the four South Coast entities comprise the Cachuma Member Units.

Because, under federal law, Reclamation is required to comply with state water rights law, Reclamation filed application with the State Water Rights Board (precursor to the SWRCB) to appropriate Santa Ynez River water in 1946. Hearings did not occur until 1957, a year after the project was in operation. After a contested hearing in 1958, the State Water Rights Board issued the Cachuma Permits subject to the rights of downstream water users. The Board retained continuing jurisdiction for 15 years to ensure that the prescribed releases were adequate.

After prolonged and sometimes contentious negotiations between the South Coast Member Units (now represented by the Cachuma Conservation Release Board) and the Santa Ynez River Water Conservation District, the latter and Reclamation reached agreement on a stipulated modification of the 1958 permit conditions, with the concurrence of the Cachuma Conservation Release Board. These modifications resulted in establishing the Above and Below Narrows Accounts, and the credit water in these accounts is stored in Cachuma Reservoir. The credit water is released for the benefit of downstream water users for the area above the Lompoc Narrows and the Lompoc Plain. The SWRCB adopted these concepts in WR Order 73-37 in 1973. It again retained jurisdiction for 15 years.

Prior to 1989, negotiations between the parties led to agreement on stipulated modifications to WR 73-37. Experience indicated that adjustments were needed because the Lompoc Valley was not receiving the recharge water to which it was entitled. These modifications were adopted by the SWRCB in WR 89-18 in 1989. The Board extended its jurisdiction for another 5 years (1994), which was subsequently extended to 2000.

An SWRCB hearing in 2000 was adjourned and reconvened in 2003. In 2002, the Santa Ynez River Water Conservation District and other downstream interests settled many long outstanding issues with the South Coast interests in the Cachuma Project Settlement Agreement. Although operative for the most part, portions of that Agreement, which are under the jurisdiction of the SWRCB, are pending a Decision of the Board.

Lower Santa Ynez River Fish Management Plan and the Cachuma Project Biological Opinion

During the Cachuma Project authorization process before Congress in the 1940s, the U.S. Fish and Wildlife Service and others suggested that instream flow should be considered for fish and wildlife needs; however, the Division of Water Resources recommended to the Secretary of the Interior that no water from Lake Cachuma be dedicated to the protection of fish because of the limited water supply available to provide for present and future needs of people. The U.S. Congress relied on this recommendation in its funding appropriation; Reclamation and the Member Units relied on it in the construction of the Cachuma Project; and the SWRCB relied on it to issue the Cachuma Project water rights permits. The permits eventually were challenged by fisheries interests, and in 1990, the SWRCB held hearings on fisheries and other issues relating to the Santa Ynez River system.

As a result of the 1990 hearings, beginning in 1993, Reclamation and the Member Units formed a working group seeking consensus on fisheries issues and began to make water

releases from Lake Cachuma to maintain fish habitat and to carry out various studies downstream of Bradbury Dam. The releases were made mandatory by the SWRCB in 1994. Additional studies led to the development of the Cachuma Project Biological Opinion issued by the National Marine Fisheries Service and the Lower Santa Ynez River Fish Management Plan issued by the Santa Ynez River Technical Advisory Committee (to comply with SWRCB Order WR 94-5) in 2000. These two documents contain essentially the same operations, which include enhanced habitat flows, passage flows, and various other actions to benefit the steelhead fishery.

Cachuma Project Settlement Agreement

The 2002 "Cachuma Project Settlement Agreement" resolves various differences between the South Coast Member Units and downstream interests pertaining to the operation of the Cachuma Project that existed for over 50 years. It provides the vehicle to manage Cachuma releases conjunctively downstream of the dam. The background and provisions of the Cachuma Project Settlement Agreement are summarized below.

- The parties support WR 89-18 and agree that releases pursuant to WR 89-18, as modified by the Agreement, will protect downstream water rights holders and will improve quality of water released for downstream uses. The parties agree to mutually support the National Marine Fisheries Service Biological Opinion and the Fish Management Plan for the Cachuma Project to address public trust (steelhead) issues. The parties further agree that WR 89-18 releases will operate conjunctively with fish water releases required to meet target flows in the Biological Opinion.
- In order to lower the salt (total dissolved solids) content of water rights releases for the lower Santa Ynez River downstream of Bradbury Dam, the parties agree to comingle State Water Project water with water from Cachuma in the outlet works of Bradbury Dam by maximizing deliveries of State Water Project water (consistent with the Biological Opinion) when water rights releases are made.
- Santa Ynez River flooding issues are addressed in the Agreement through winter storm operations of Bradbury Dam, including precautionary drawdowns and temporary surcharging, in order to reduce peak flows and provide some measure of flood control. Project water supply is protected by achieving a full reservoir following the peak flow events.
- The parties have requested the SWRCB to incorporate into WR 89-18 a provision involving conjunctive operation of the Below Narrows Account (water stored in Lake Cachuma) with the Lompoc Groundwater Basin. More water would be available for the Lompoc (Below Narrows) area in most years, although some Below Narrows Account water stored in Cachuma Reservoir would be made available to Cachuma contractors during shortage years.

Most of the provisions of the Cachuma Project Settlement Agreement were implemented in 2002. Some others are pending before the SWRCB. Approval of the remaining provisions and full implementation of the Agreement would provide the basis for further water management planning by individual water purveyors downstream of the dams in accordance with the objectives, water management strategies, and regional priorities in the IRWMP.

Wright Suit Settlement

The 1989 Wright Suit Settlement served to adjudicate the water resources of Goleta North/Central Basin and assigned quantities of the basin's safe yield to various parties, including the Goleta Water District and the La Cumbre Mutual Water Company. The judgment also ordered the Goleta Water District to bring the North/Central Basin into a state of hydrologic balance by 1998. The district has achieved compliance with this order through the importation of State Water Project water and the development of other supplemental supplies. These supplemental supplies have offset the court mandated reduction in pumpage from the basin. Given that the basin has been adjudicated and pumpage is controlled by the Court, overdraft is not foreseeable in the North/Central Basin.

3.1.2 Santa Maria Valley

Santa Maria Project

Prior to the construction of Twitchell Reservoir, large portions of the Santa Maria Valley were subject to periodic flooding. In an effort to provide relief from flooding disasters, the Santa Maria Valley Water Conservation District, the Santa Barbara County Water Agency, and Reclamation evaluated a number of potential dam sites on the Santa Maria River in the 1940s and 1950s. In the late 1950s, Reclamation constructed the Twitchell Dam as part of the Santa Maria Project. The dam was intended to provide water for beneficial uses within the District that otherwise would rely on the groundwater supplies underlying the Santa Maria Valley, as well as to protect urbanized and agricultural areas from flood damage. The project provides recharge to the groundwater basin underlying the Santa Maria Valley and provides for flood protection. Twitchell Reservoir is operated and maintained by the Santa Maria Valley Water Conservation District. Twitchell Reservoir is important to both the water supply and the flood protection of the Santa Maria Valley. The reservoir supplies about 20,000 AF of recharge to the Santa Maria Groundwater Basin annually.

Santa Maria Groundwater Adjudication

In 1997, the Santa Maria Valley Water Conservation District filed a lawsuit to adjudicate water rights in the Santa Maria Valley Groundwater Basin (*Santa Maria Valley Water Conservation District vs. City of Santa Maria, et al.*, commonly known as the "Santa Maria Groundwater Adjudication." The court divided the trial of the case into phases. In January 2001, the Court issued the Phase 1 Order, which established the Outermost Boundaries of the Basin. In December 2001, the Court issued the Phase 2 Order, which established the area constituting the Basin for purposes of the adjudication. In May 2004, the Court issued a Partial Statement of Decision on Phase 3 issue regarding the hydrologic conditions in the Basin. As part of its Phase 3 Partial Statement of Decision, the court reserved jurisdiction over remaining water rights issues and management of the Basin.

Subsequent to the Phase 3 trial, the majority of the parties to the lawsuit, including the original plaintiff, the Santa Maria Valley Water Conservation District, negotiated a Settlement Agreement ("Stipulation") that set forth terms and conditions for a physical solution concerning the overall management of Basin water resources, including rights to use groundwater, State Water Project water and associated return flows, the developed groundwater yield resulting from the operation of Twitchell and Lopez reservoirs (located

in San Luis Obispo County), use of Basin storage space, and the ongoing monitoring and management of these resources, consistent with common law water rights priorities and Article X, Section 2 of the California Constitution. The majority of the parties actively participating in the litigation have signed the stipulation.

The Stipulation also subdivides the Basin into three Management Areas: the Northern Cities Management Area, Nipomo Mesa Management Area, and the Santa Maria Valley Management Area. The delineation of these areas was based on historical development and use of Basin water resources, as further delineated in the Stipulation and the court record. As noted above, the Stipulation provides the City of Santa Maria certain rights to water in the Basin. These rights include: a recognition of the City's highest historical use of groundwater from the Basin; the right to recapture a preset portion of the return flows from the City's use of State Water Project in the Basin; and a 14,300 AFY share of the developed groundwater yield resulting from Twitchell Reservoir operations. In addition, the City may access additional supplies through the transfer of Twitchell Yield. Also, return flows from State Water Project water are assignable in whole or part, subject to accounting. The Stipulation also establishes certain preset water shortage response measures in anticipation of reduced availability of groundwater.

Although the court has approved the Stipulation as between those who have signed it, not all parties to the adjudication have agreed to it. Phase 4 proceeded to trial in early 2006 as between the public water suppliers, including the City, and a small number of landowners who opposed the Stipulation. The Phase 4 tentative decision issued by the Court stated that the City and Golden State Water Company met the burden of showing a prescriptive right during various time periods prior to the time the Twitchell Project began recharging the Basin. Phase 5 occurred in July of 2006. The scope of the Phase 5 trial was to allow the remaining landowners to show that they had engaged in self-help during the applicable prescriptive periods and to determine whether, and in what form, the Court should impose a physical solution on the parties' collective future use of the Basin. The Phase 5 tentative decision reaffirms the prescriptive rights obtained by the City and Golden State Water Company, states that those rights are correlative to the rights of the overlying landowners, and provides that the City and Golden State Water Company are entitled to those specific quantities of water in the Basin, the same as any overlying landowner, so long as there is a surplus of water in the Basin. The tentative decision also states that the physical solution contained in the Stipulation will be incorporated into the Court's final judgment and will be binding on all parties to the litigation. Further, the Phase 5 tentative decision provides that the Court will retain jurisdiction to enforce the judgment and to implement the physical solution as necessary. The Phase 5 tentative decision further confirms the ability of the Santa Maria Valley Water Conservation District to allocate Twitchell Yield in the manner provided in the Stipulation. The Court will hold a hearing on the Phases 4 and 5 tentative decisions in January 2007. It is anticipated that a final judgment and physical solution will be entered in early 2007.

The Santa Maria Groundwater Adjudication will determine the manner by which Twitchell Reservoir and the groundwater basin are managed; any projects included in the IRWMP that could affect the Santa Maria Valley Groundwater Basin or Twitchell Reservoir will need to be consistent with the terms of the adjudication.

3.1.3 State Water Project

The increasing population of Santa Barbara (mainly in the county's South Coast), as well as problems associated with rapid siltation of reservoirs, which led to diminished storage capacities, required the development of additional water supplies, including State Water Project water. In 1963, the Santa Barbara County Flood Control and Water Conservation District contracted with the State of California Department of Water Resources (DWR) to deliver State Water Project water to Santa Barbara County. At that time, the County began payments to DWR to retain a share of the State Water Project yield ("Table A Amount"¹) for 57,700 AFY, but funds were not allocated to construct the necessary local facilities to deliver water within the county. In 1981, the original contract was amended to reduce the County's State Water Table A Amount to 45,486 AFY. In 1994, this amount was further modified by the project participants of the Central Coast Water Authority to include 39,078 AFY of Table A Amount; 3,908 AFY of drought buffer; and 2,500 AFY of a special drought buffer for the Goleta Water District.

In 1991, after 4 years of extremely dry conditions, voters in several service areas in Santa Barbara County voted to import State Water Project water. This included the communities of Carpinteria, Summerland, Montecito, Santa Barbara, Hope Ranch, Goleta, Buellton, Solvang, Santa Ynez, Orcutt, and Guadalupe. The Santa Maria City Council and Vandenberg Air Force Base also decided to participate in the State Water Project. The communities of Lompoc, Vandenberg Village, and Mission Hills voted not to participate in the State Water Project. Beginning in 1997, the Central Coast Water Authority began to deliver State Water Project water to Lake Cachuma, where it is mixed with Cachuma Project water and delivered through Tecolote Tunnel to the contractors on the South Coast. South Coast Member Units also receive Cachuma water that was exchanged for State Water Project water with Santa Ynez River Water Conservation District Improvement District No. 1. The Santa Ynez Pipeline, which delivered water to Improvement District No. 1 from Lake Cachuma, was owned by the District until 1996, when it was sold to the Central Coast Water Authority in anticipation of State Water Project deliveries.

3.2 History of Wastewater Management

Efforts to manage wastewater within the county have been underway for more than a century. This section describes the history of the larger wastewater providers in order to give an overview of how systems have evolved over time in responding to population growth and regulatory requirements.

¹ "Table A" is a term used in SWP Water Supply Contracts. The "Table A Amount" is the annual maximum amount of water to which an SWP Contractor has a contract right to request delivery, and is specified in Table A of each Contractor's Water Supply Contract. (Prior to the Settlement Agreement arising out of a legal challenge to the Monterey Amendment to the State Water Project contracts, the Table A Amount was referred to as "entitlement.") The amount of water actually available for delivery in any year may be an amount less than the Contractor's Table A Amount due to a number of factors, including hydrologic conditions.

3.2.1 South Coast

City of Santa Barbara

The City of Santa Barbara's first sewers were installed in the 1870s. In 1925, the City constructed a "screening plant" and ocean discharge outfall. The City's growing population and increasing environmental awareness led to the construction of the first treatment plant in 1951. The El Estero Treatment Plant as it exists today was built to comply with the 1972 Federal Water Pollution Control Act. The City continues to update and upgrade the treatment facility each year. Investment in the treatment plant ensures it remains a state-of-the-art, modern facility.

Carpinteria Sanitary District

The Carpinteria Sanitary District was formed in 1928. During the 1930s and 1940s, wastewater was collected and discharged to the ocean without the benefit of treatment. It was during this period that the bulk of the sewer system serving the downtown area was constructed. The District's first wastewater treatment plant, designed to treat 500,000 gallons per day (gpd), was completed and put into operation in 1951. Treated effluent was discharged directly into the Pacific Ocean via an 18-inch outfall pipe that ran along the eastern bank of Carpinteria Creek. As the community grew, so did the sewer collection system and the treatment plant. In 1961, the treatment plant was expanded and upgraded to a capacity of 2.0 million gallons per day (mgd) which included a new, longer outfall pipe, primary clarification, trickling filters, final clarification, and anaerobic sludge digestion. This facility served the community for over 30 years. In 1993, the District completed another major upgrade to its wastewater treatment plant that involved replacement of the majority of the process infrastructure. The current treatment plant includes preliminary screening and grit removal, primary clarification, extended aeration biological treatment, final clarification, chemical disinfection, aerobic digestion, and odor control systems.

Goleta Sanitary District

The Goleta Sanitary District was formed in 1942 to serve the rural agricultural area called Goleta. Only 1,500 people lived within the District. In those years, sewage wastes were disposed of through individual cesspools and septic tanks. With the ending of World War II, the fledgling District applied to the Navy Department to connect its sewer lines to the Marine Air Base, located on the site of today's Municipal Airport. Plans were drawn to build a sewer system and treatment plant. In 1988, Goleta Sanitary District enlarged and improved its treatment system to meet the discharge requirements of a 301(h) National Pollutant Discharge Elimination System (NPDES) permit, whereby primary and secondary effluent is blended, disinfected, and discharged into the Pacific Ocean. The Goleta Sanitary District owns and operates the treatment facility and serves under contract four public agencies: Goleta West Sanitary District, City of Santa Barbara Municipal Airport, University of California at Santa Barbara (UCSB), and certain facilities of Santa Barbara County. In 1991, in cooperation with the Goleta Water District, a water reclamation facility was constructed. The reclaimed water produced at the sanitary district is distributed throughout the community and used as landscape irrigation. The Goleta Sanitary District is required to upgrade its treatment facilities to achieve full secondary effluent treatment by 2014.

Goleta West Sanitary District

The Goleta West Sanitary District was formed as the Isla Vista Sanitary District in 1954 to serve the needs of the growing area of Isla Vista. The organization established a five member Board of Directors and hired a General Manager. The District changed its name to Goleta West Sanitary District in January 1990 to reflect the areawide aspects of the District's service area. In the late 1950s, over 5 miles of sewer lines were installed in the Isla Vista area using assessment bonds. The balance of the system, force main, pump station, and trunk sewers, was financed by issuing general obligation bonds. Through a joint use agreement the District connected to the Goleta Sanitary District treatment plant for treatment and disposal. The District owned only 5 percent of the plant capacity in the 1950s, but has expanded its ownership to over 40 percent to meet District needs.

3.2.2 North County

City of Santa Maria

The City of Santa Maria has treated and disposed of wastewater at the present site off of Black Road since 1910. The original facilities were expanded in several phases beginning in the mid-1930s through 1962. The 1962 expansion resulted in a capacity to handle 5 mgd of wastewater. During peak months of 1975, flows to the treatment plant reached its capacity of 5 mgd. An expansion to treat present and future flow was needed. Also, much of the original plant was 40 years old and had reached its useful life. The City completed a study in 1977 evaluating alternative means of increasing wastewater treatment and disposal capacity. The recommended plan consisted of expanding the existing plant with similar types of processes and equipment. Many of the existing structures were to be rehabilitated and incorporated into the treatment scheme to reduce construction costs. The treated effluent was to be applied to percolation ponds and irrigated pasture. This land application achieves additional treatment at a low cost. Construction of the recommended expansion began early in 1980 and was completed by mid-1982.

Laguna County Sanitation District

Laguna County Sanitation District was formed by the Santa Barbara County Board of Supervisors on December 29, 1958, pursuant to the provision of the County Sanitation District Act (Health & Safety Code Section 5700 et seq.). At that time Lompoc and Santa Maria were experiencing tremendous growth as a result of activities at Camp Cook (renamed Vandenberg Air Force Base in 1958). Housing development occurred in the areas south of the Santa Maria Public Airport District. Septic systems were proposed initially, but the soil was found to be incompatible. The original plant had a capacity of 1.6 mgd. Effluent was recycled for use in growing sugar beets that were processed at the Union Sugar (later Holly Sugar) processing plant constructed in 1898. The district absorbed the Orcutt Sanitary District (formed in 1926) in 1961, as well as two county collection system districts in 1975. The wastewater treatment plant capacity was increased to 2.4 mgd in 1975, to 3.2 mgd in 1987, and to 3.7 mgd in 2003. The most recent upgrade modified the plant to Class IV due to full tertiary treatment using membranes including reverse osmosis for the portion of flow containing high salt levels from water softener discharge.

Santa Ynez Community Services District

The Santa Ynez Community Services District provides wastewater collection for urban uses in the Santa Ynez Township and was formed in 1971. The District owns 0.29 mgd capacity in the City of Solvang 1.5-mgd wastewater treatment plant, and the main trunk line carries an average of 175,000 gpd to Solvang's treatment plant.

The Chumash Indians have a contract for 88,000 gpd of the District's capacity and constructed a wastewater treatment plant with a capacity of 200,000 gpd that was brought online in May 2004. This plant serves the Chumash Casino, hotel, administration buildings, and approximately 350 residents on the reservation. Treatment includes head works, extended aeration, filtration, and ultraviolet disinfection prior to discharge to Zanja de Cota Creek. The discharge meets California Title 22, tertiary 2.2 standards. Some of this tertiary water is being utilized in the irrigation throughout the reservation and for water to flush the toilets. The Santa Ynez Community Services District is under contract to maintain the Chumash wastewater plant and collection system.

Los Alamos Community Services District

The Los Alamos Community Services District was formed on October 29, 1956. Phase I of the Los Alamos Wastewater Collection and Treatment Plant was built in 1988, and Phase II was completed in 1994, increasing the capacity of the treatment facilities to allow a maximum discharge of 176,000 gpd, averaged over each month. In 2005, the Central Coast RWQCB established new waste discharge requirements for the Phase III expansion, allowing the District to discharge a maximum of 225,000 gpd, averaged over each month and to allow for build out of the town as defined in the Community Plan. Phase III was completed in 2006.

City of Lompoc

The City of Lompoc owns the Lompoc Regional Wastewater Treatment Plant. In 1974, the City of Lompoc entered into long-term agreements with Vandenberg Air Force Base and Park Water Company (a private water company that served Vandenberg Village) to construct the Lompoc Regional Wastewater Reclamation Plant. This plant, built in 1975 to 1977, utilizes secondary treatment technology and is the City of Lompoc's fourth plant in its 87-year commitment to protect the environment. The plant has a design capacity of just over 5 mgd and an instantaneous wet weather flow of 16 mgd. The City of Lompoc, Vandenberg Village Community Services District, and Vandenberg Air Force Base contribute flows to the plant. Vandenberg Village Community Services District has contractual rights to 0.89 mgd of the plant capacity. Vandenberg Air Force Base is a contract customer for wastewater treatment. The base's contract is not to exceed an average of 1.3 mgd during the dry weather flow and not to exceed 3.4 mgd for the wet-weather flow. The treatment process incorporates systems to reduce oxygen-demanding organics by at least 85 percent. This keeps the water discharged to the Santa Ynez River from creating a nuisance. Ammonia (nitrogen), which is toxic to fish, is converted to nontoxic nitrate (nitrification). Methane gas is a by-product of the natural digestion of wastewater solids; this gas is burned in internal combustion engines to provide the energy for nitrification and biosolids stabilization. Anaerobically digested, stabilized biosolids are utilized as a soil amendment. Each year, 1.5 billion gallons of water and 1,000 dry weight tons of biosolids are made safe

for return to the environment. The plant will be upgraded in 2007 through 2010 to improve reliability, meet more stringent discharge requirements, and increase treatment level from secondary to tertiary.

Mission Hills Community Services District

Mission Hills Community Services District was formed in 1979 and provides water and wastewater services through 1,200 service connections to the community of Mission Hills. The District operates a primary wastewater treatment plant.

Vandenberg Village Community Services District

Vandenberg Village Community Services District was established in 1983 and provides water and wastewater services through 2,400 service connections to the community of Vandenberg Village. The District acquired wastewater infrastructure and a 17.8 percent capacity right in the Lompoc Regional Wastewater Reclamation Plant from Park Water Company.

3.3 History of Integrated Regional Water Resource Management

Countywide integrated water resource planning has occurred over the past several decades through interagency planning, development of shared water supplies, joint management of resources and operational systems for multiple purposes, and interagency adaptive management responses to changing circumstances.

3.3.1 Interagency Planning and Integrated Water Supply Development

Significant water resources projects have been developed within the Santa Barbara County region. Each new project in the last half century has been characterized by close cooperation among the communities in need and their local agencies. These projects include:

- Cachuma Project (five Cachuma Member Units, Cachuma Operation and Maintenance Board, Cachuma Conservation Release Board, Reclamation, and the Santa Barbara County Water Agency)
- Twitchell Project (Reclamation, Santa Maria Valley Water Conservation District, and Santa Barbara County Water Agency)
- State Water Project (12 local agencies, four private parties, Santa Barbara County Flood Control District, Central Coast Water Authority, and DWR)
- Goleta Valley water recycling project (Goleta Water District and Goleta Sanitary District)
- City of Santa Barbara desalination project (City of Santa Barbara, Goleta Water District, Montecito Water District)
- Interconnections between South County water districts (Goleta Water District, City of Santa Barbara, Montecito Water District, Carpinteria Valley Water District)

- Interconnections between Central County water districts (City of Solvang, Santa Ynez River Water Conservation District Improvement District No. 1)
- Interconnections between North County water districts (City of Santa Maria, Golden State Water Company)

In each case, local agencies evaluated their service area needs, identified opportunities for addressing those needs and, with community support and cross-agency integration and coordination, successfully implemented the above projects.

3.3.2 Integrated Management of Resources and Operational Systems

Several noteworthy examples of integrated management of water resources and operational systems exist in Santa Barbara County. The delivery of Cachuma water to the South Coast area is provided through close cooperation with Reclamation and an interagency agreement that established the Cachuma Operation and Maintenance Board, which operates a key distribution system. The South Coast Conduit's functionality and flexibility are essential to meeting both the day-to-day needs and future demand of the South Coast. The nature and operation of the South Coast Conduit allows the South Coast Cachuma Member Units to integrate their various sources of water allowing conjunctive use of several groundwater basins and water exchanges among water users along its length. The South Coast Conduit is also integrated with water treatment plant operations at the City of Santa Barbara Cater Water Treatment Plant, which provides treated water to the city, the Montecito Water District, the Carpinteria Valley Water District, and the Goleta Water District Corona Del Mar Water Treatment Plant, which provides treated water to the Goleta Valley. A series of integrated projects to protect the South Coast Conduit's integrity and increase its utility, reliability, and flexibility are an important part of this IRWMP.

The City of Santa Barbara and public agencies with interest in the operation of Gibraltar Dam have cooperated to establish the "Upper Santa Ynez River Operations Agreement." The members of the Cachuma Conservation Release Board, the Santa Ynez River Water Conservation District Improvement District No. 1, the Santa Ynez River Water Conservation District, and the City of Lompoc established the "Cachuma Project Settlement Agreement." These documents establish cooperative operation of two of the three reservoirs on the Santa Ynez River to account for:

- Loss of capacity due to siltation (Gibraltar Reservoir)
- Downstream releases consistent with the Gin Chow Judgment (Gibraltar)
- Reservoir operations to moderate peak storm flows (Cachuma)
- Reservoir releases for downstream water rights under SWRCB orders (Cachuma)
- Reservoir releases for downstream steelhead in accordance with the Cachuma Project Biological Opinion
- Conjunctive use of water rights releases and releases for the steelhead fishery
- Downstream water quality improvement based on mixing State Water Project water with Cachuma water at Bradbury Dam

- Conjunctive use of Below Narrows Account water in Cachuma Reservoir with the Lompoc Plain groundwater basin (pending approval to modified WR 89-18 by the SWRCB)

These agreements establish a high degree of integration of facilities planning and Cachuma Project operations affecting the Santa Ynez River, and minimize legal processes that could otherwise frustrate effective regional water management.

The Santa Ynez River/State Water Exchange Agreement was executed in 1993 between Santa Ynez River Water Conservation District Improvement District No. 1, Central Coast Water Authority, Carpinteria Valley Water District, Goleta Water District, La Cumbre Mutual Water Company, Montecito Water District, Summerland County Water District (merged with Montecito Water District in 1995), and the City of Santa Barbara for the purpose of the long-term exchange of all or a portion of Cachuma Project water available to Improvement District No. 1 for an equal amount of State Water Project water available to the South Coast Cachuma Project/ State Water Project contractors. Through this mechanism, Improvement District No. 1 avoids construction, operation, and maintenance of a water treatment facility, and the South Coast Cachuma Project/ State Water Project contractors avoid certain costs of pumping and retreating the State Water Project water and construction of a separate pipeline to Cachuma through the Central Coast Water Authority's acquisition of the Santa Ynez pipeline.

The Coastal Branch of the State Water Project is operated by the Central Coast Water Authority on behalf of 12 public agencies, the U.S. Air Force, three private interests, and San Luis Obispo County. This project and its operation integrate treated water supply operations along its 110-mile length, delivering water to 23 separate entities. In addition to its direct delivery function, the Coastal Branch is the vehicle for intra- and interregional water exchanges and sales. This integration of supply and delivery capacity is an essential part of meeting the region's long-term supply needs and allowing effective response in emergency circumstances, including prolonged drought. The Coastal Branch is also integrated with the Cachuma Project and relies upon Cachuma Project facilities, such as the South Coast Conduit, Tecolote Tunnel, and Lake Cachuma, for deliveries to the South Coast. The coordinated use of these facilities eliminated the need to construct a costly separate delivery system for State Water Project water.

3.3.3 Integrated Management of Emergency Operations

Agencies preparing Urban Water Management Plans (UWMPs) include a section describing a "Water Shortage Contingency Plan" with elements such as water shortage emergency response, supplemental water supplies, long-term additional water supply options and irrigation and/or urban water shortage policies.

Emergency Response Plans include provisions for interruptions to water and wastewater services.

3.3.4 Interagency Adaptive Management Response to Changing Circumstances

Water related projects now incorporate an adaptive management approach. Southern California steelhead management issues were addressed beginning in the early 1990s through an interagency "consensus group" focusing on the Santa Ynez River, which

resulted in a comprehensive Fish Management Plan for the lower river and a federal Biological Opinion for Cachuma operations. Fisheries management is addressed in the Santa Barbara, San Luis Obispo, and Ventura counties region through the "Tri-Counties Funding for Improved Salmonid Habitat (FISH) Team." Despite explicit Congressional acknowledgement of the loss of fish resources when Congress approved the Cachuma Project in the mid-20th century, local water agencies understood the need to address protection of public trust resources and changing community values in a proactive, constructive manner decades later.

Storm water and other nonpoint source pollution issues continue to be addressed through a regional "interagency committee" begun several years before the adoption of the state's Phase II regulations. Communities throughout the region developed a template for addressing the state's "General Permit."

4 Responsible Entities, Major Infrastructure, and Water Supplies

In Santa Barbara County, a range of local agencies are responsible for various elements of water resource management. The discussion below provides an overview of current operations and responsibilities, as well as major infrastructure and water supplies.

4.1 Water Service Providers

Santa Barbara County water service providers, service areas, and sources of water are shown in Table 4-1; service areas also are shown on Figure 4-1.

TABLE 4-1
Water Service Providers in Santa Barbara County

Provider	Service Area and Water Source
Carpinteria Valley Water District	Service Area: City of Carpinteria and unincorporated areas in the Carpinteria Valley Source: Carpinteria Valley Groundwater Basin, Cachuma Project, and State Water Project
Casmalia Community Services District ^a	Service Area: Casmalia Source: Santa Maria Groundwater Basin
City of Buellton	Service Area: City of Buellton Source: Buellton Uplands and Santa Ynez Riparian groundwater basins and State Water Project
City of Guadalupe ^a	Service Area: City of Guadalupe Source: Santa Maria Valley Groundwater Basin and State Water Project
City of Lompoc	Service Area: City of Lompoc Source: Lompoc Groundwater Basin
City of Santa Barbara	Service Area: City of Santa Barbara Source: Cachuma Project, Gibraltar Reservoir, Devil's Canyon Creek, Mission Tunnel, Foothill Groundwater Basin, Santa Barbara Groundwater Basin, State Water Project, recycled wastewater, and desalination (during droughts and emergencies)
City of Santa Maria	Service Area: City of Santa Maria Source: Santa Maria Groundwater Basin, State Water Project, and Twitchell Reservoir recharge
City of Solvang	Service Area: City of Solvang and adjacent unincorporated areas Source: Santa Ynez Uplands Groundwater Basin, Santa Ynez River Riparian Basin, State Water Project (acquired through contract with Santa Ynez River Water Conservation District Improvement District No. 1)

TABLE 4-1
Water Service Providers in Santa Barbara County

Provider	Service Area and Water Source
Cuyama Community Services District ^a	Service Area: Cuyama Valley Source: Cuyama Groundwater Basin.
Golden State Water Company	Service Area: Orcutt, Sisquoc, Lake Marie, and Tanglewood areas Source: Santa Maria Groundwater Basin and State Water Project water
Goleta Water District	Service Area: West of the Santa Barbara city limits to El Capitan State Beach Source: Goleta North/Central Groundwater Basin, Cachuma Project, and State Water Project. The Goleta Water District also treats and distributes reclaimed water to various golf courses, UCSB, and other sites for irrigation and agricultural purposes.
La Cumbre Mutual Water Company	Service Area: Hope Ranch and Hope Ranch Annex Source: Goleta North/Central Groundwater Basin, Foothill Groundwater Basin, and State Water Project.
Los Alamos Community Services District	Service Area: Los Alamos Source: San Antonio Groundwater Basin
Mission Hills Community Services District	Service Area: Mission Hills Source: Lompoc Groundwater Basin
Montecito Water District	Service Area: Montecito and Summerland Source: Montecito Groundwater Basin, the Cachuma Project, State Water Project, Jameson Lake, Fox and Alder creeks, and Doulton Tunnel
Santa Ynez River Water Conservation District Improvement District No. 1	Service Area: Santa Ynez, Chumash Indians' Santa Ynez Reservation, Los Olivos, and Ballard; also supplies domestic water to the City of Solvang Source: Cachuma Project, State Water Project, Santa Ynez Upland and Santa Ynez River Riparian Basins
Vandenberg Air Force Base	Service Area: Air Force Base and Lompoc Federal Correctional Complex Source: San Antonio Groundwater Basin and State Water Project
Vandenberg Village Community Services District	Service Area: Vandenberg Village Source: Lompoc Groundwater Basin

^aServes a disadvantaged community (DAC)

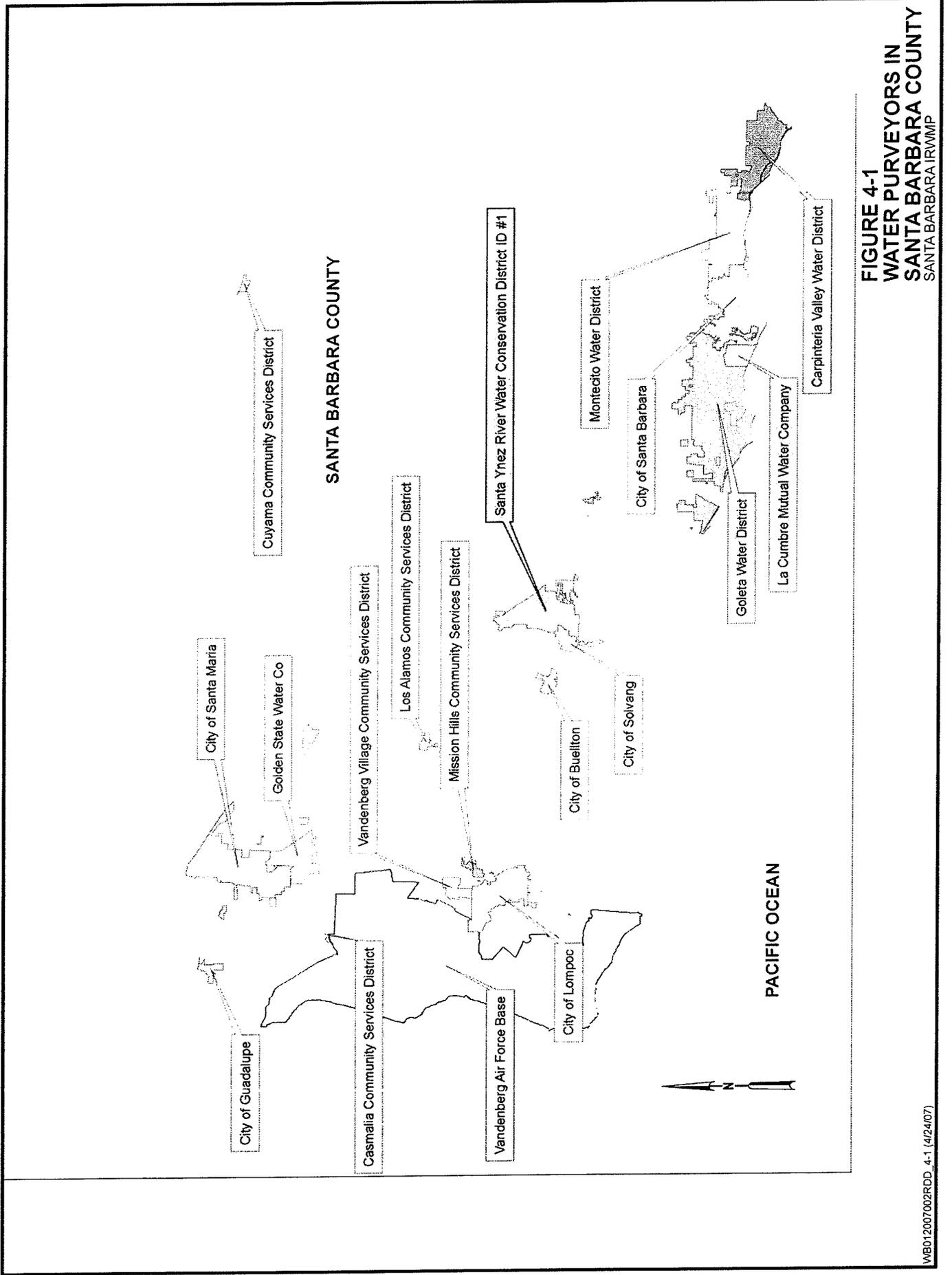


FIGURE 4-1
WATER PURVEYORS IN
SANTA BARBARA COUNTY
 SANTA BARBARA IRWMP

4.2 Other Water Management Agencies

This section describes other agencies that play key roles in managing water resources within Santa Barbara County, all of which are Cooperating Partners.

4.2.1 Cachuma Conservation Release Board

The Cachuma Conservation Release Board is a joint powers agency formed in January 1973 between the Carpinteria Valley Water District, Goleta Water District, the City of Santa Barbara, and Montecito Water District. The Board was established to jointly represent the respective parties in protecting the Cachuma water rights interests of the four South Coast entities and maximizing the amounts of water that they can obtain from the Cachuma Project or other sources that may be available to them. The Cachuma Conservation Release Board, partnering with the Santa Ynez River Water Conservation District Improvement District No. 1, conducts the long-term steelhead fishery program in the Lower Santa Ynez River in accordance with a Memorandum of Understanding with the U.S. Bureau of Reclamation (Reclamation) and other parties.

4.2.2 Cachuma Operation and Maintenance Board

The Cachuma Operation and Maintenance Board is a joint powers agency that includes the five Cachuma Project Member Units. Although Reclamation owns Bradbury Dam, the Tecolote Tunnel, and the South Coast Conduit and its four regulating reservoirs, the Board has operated and maintained the Cachuma Project facilities, other than Bradbury Dam, since 1957 when it was formed to take over these responsibilities from Reclamation.

4.2.3 Central Coast Water Authority

The Central Coast Water Authority was formed in 1991 to construct, manage, and operate Santa Barbara County's 42-mile portion of the State Water Project and a regional water treatment plant. It later secured agreements with the State of California Department of Water Resources (DWR) to operate and maintain an additional 101-mile portion of pipeline and associated facilities in Santa Barbara and San Luis Obispo counties. It is presently composed of eight public agencies: the cities of Buellton, Guadalupe, Santa Barbara, and Santa Maria, Carpinteria Valley Water District, Goleta Water District, Montecito Water District, and Santa Ynez River Water Conservation District Improvement District No. 1.

4.2.4 Santa Barbara County Water Agency

The Santa Barbara County Water Agency manages a number of regional programs, which include: (1) implementation and partial funding of operational programs such as the cloud seeding program, (2) implementation of the Regional Water Efficiency Program, (3) development of countywide hydrologic data and development of hydrologic models, and (4) development of a program to identify and implement solutions to creek and ocean water pollution on the South Coast of Santa Barbara County. Included in these programs are the compilation and publication of an annual report on groundwater conditions, sediment management studies, technical support to other public agencies, and public information. Major water projects involving the Water Agency include the State Water Project (Coastal Branch Extension), Cachuma Project, and the Twitchell Project. The Water Agency

administers development of the IRWMP supported by a number of local governments. The County Board of Supervisors adopted a Memorandum of Understanding with 28 local agencies in September 2006.

4.2.5 Santa Maria Valley Water Conservation District

The Santa Maria Valley Water Conservation District operates Twitchell Dam and Reservoir and supports water conservation projects within the Santa Maria Valley.

4.2.6 Santa Ynez River Water Conservation District

The Santa Ynez River Water Conservation District was formed in 1939 to protect the water rights and supplies of its constituents in the Santa Ynez River watershed with respect to diversions by South Coast agencies. It also manages releases of water from Bradbury Dam to replenish the Santa Ynez River Riparian Basin and the Lompoc Groundwater Basin and provides groundwater management planning and related activities on the uplands adjacent to the river throughout the watershed.

4.3 Wastewater Service Providers

Santa Barbara County's wastewater providers locations are shown in Figure 4-2; providers and their service areas described in Table 4-2. All are Cooperating Partners with the exception of the Santa Ynez Community Services District.

4.4 Major Infrastructure

This section describes major surface reservoirs, water distribution systems, desalination, and water and wastewater treatment facilities. Much of the county's infrastructure is more than 40 years old and needs to be upgraded or replaced in order to meet increasingly stringent regulatory requirements, including drinking water quality standards for disinfection by-products that require expensive new treatment components. As an example, increasing the reliability of wells in the Santa Ynez River alluvium requires development of a regional water treatment plant to comply with the Surface Water Treatment Rule. Infrastructure also must meet the needs of a growing population, and upgrades are needed to reduce water loss, prevent increased inflow and infiltration during storms, and improve performance.

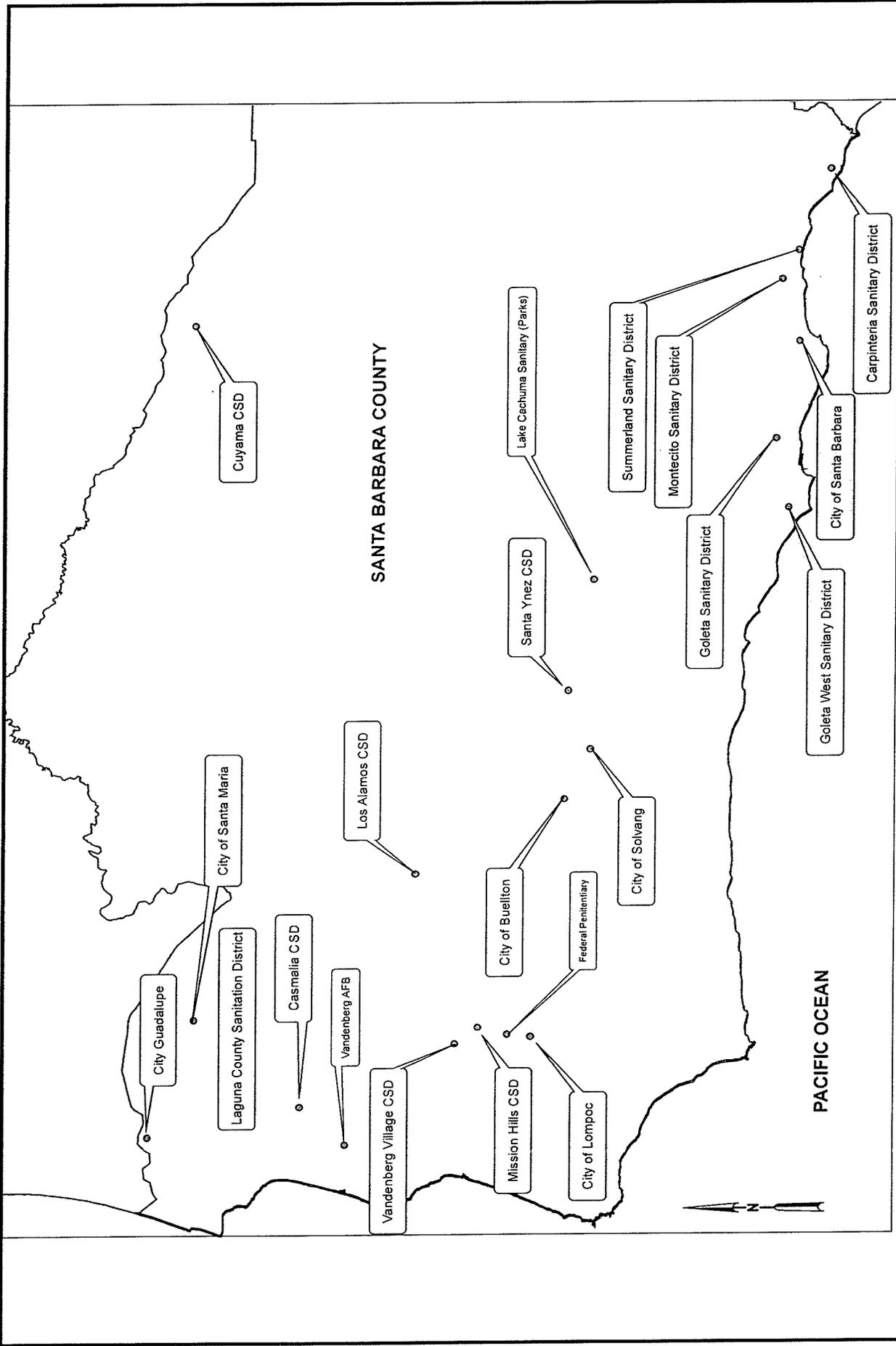


FIGURE 4-2
WASTEWATER SERVICE PROVIDERS
IN SANTA BARBARA COUNTY
 SANTA BARBARA IRWMP

TABLE 4-2
Wastewater Service Providers in Santa Barbara County

Wastewater Service Provider	Service Area
Carpinteria Sanitary District	City of Carpinteria and unincorporated areas in the Carpinteria Valley
Casmalia Community Services District ^a	Casmalia
City of Lompoc	City of Lompoc, Vandenberg Air Force Base, Vandenberg Village Community Services District
City of Buellton	City of Buellton
City of Guadalupe ^a	City of Guadalupe
City of Santa Barbara	City of Santa Barbara
City of Santa Maria	City of Santa Maria
City of Solvang	City of Solvang and portions of the Santa Ynez Valley
Cuyama Community Services District ^a	Cuyama Valley
Goleta Sanitary District	Goleta Valley (excluding the western portion)
Goleta West Sanitary District	Western portion of Goleta Valley
Laguna County Sanitation District	Orcutt and portions of unincorporated southern Santa Maria
Federal Bureau of Prisons	Lompoc Federal Correctional Complex
Los Alamos Community Services District	Los Alamos
Mission Hills Community Services District	Mission Hills
Montecito Sanitary District	Montecito
Santa Barbara County Parks Department	Cachuma Lake Recreation Area
Summerland Sanitary District	Summerland
Santa Ynez Community Services District	Portions of Santa Ynez (collection and conveyance to Solvang Wastewater Treatment Plant); also manages, operates, and maintains the Chumash Wastewater Treatment Plant
Vandenberg Village Community Services District	Vandenberg Village
Vandenberg Air Force Base	Vandenberg Air Force Base

^aServes a disadvantaged community (DAC)

4.4.1 Surface Storage Reservoirs and Associated Distribution Systems

The county's four major reservoirs, discussed above, are managed for various uses, including water supply, groundwater recharge, flood control, recreation, and ecological benefits. Lake Cachuma is owned and operated by the federal government. Twitchell Reservoir is owned by the federal government and operated by the Santa Maria Water Conservation District. Gibraltar Reservoir is owned and operated by the City of Santa Barbara. Jameson Lake is owned and operated by the Montecito Water District. Lake Cachuma, Gibraltar Reservoir, and Jameson Lake are all located in the Santa Ynez River Watershed. The three reservoirs that were constructed on the Santa Ynez River supply most of the water used in the South Coast area of Santa Barbara County. The largest of these is Lake Cachuma, followed by Gibraltar and Jameson reservoirs, which are located upstream. Twitchell Reservoir is located on the Cuyama River 6 miles above its junction with the Sisquoc River and lies within the Santa Maria River Watershed. Twitchell, Jameson, and Gibraltar reservoirs, and to a lesser extent Lake Cachuma, are being filled with sediment, reducing their storage capacity and making it increasingly important to enhance local water supply reliability through conservation and other methods.

The storage capacity of Gibraltar Reservoir is now approximately 7,000 acre-feet (AF); sedimentation has continued to decrease the storage capacity of the reservoir by an average of 150 acre-feet per year (AFY). This reservoir is the source of about one-third of the City of Santa Barbara's water supply. Loss of storage capacity is mitigated by the pass-through provision of the Upper Santa Ynez River Operations Agreement.

The storage capacity of Jameson Lake was originally 7,500 AF and is now approximately 5,290 AF. The unincorporated community of Montecito receives 45 percent of its water supply from Jameson Lake, Fox and Alder creeks via the Doulton Tunnel, so loss of storage capacity is an issue of concern.

Lake Cachuma was created with a storage capacity of about 205,000 AF, but its capacity has been reduced to about 189,000 AF due to sedimentation. The principal features of the Cachuma Project are Bradbury Dam, Lake Cachuma, Tecolote Tunnel and the South Coast Conduit distribution systems. Included in the main conduit system are four regulating reservoirs and Sheffield Tunnel. The South Coast Conduit is constricted between Tecolote Tunnel and Cater Treatment Plant due to decreased pipeline capacity since other facilities were added to that reach of the conduit. Additionally, the aging conduit now requires significant levels of maintenance, which could require that sections of the South Coast Conduit be taken out of service for days or weeks at a time and affect the reliability of the South Coast water supply.

Since its completion, Twitchell Reservoir has been trapping sediments from the 1,140-square mile Cuyama River watershed. Original studies estimated that 40,000 AF of sediment would accumulate in the reservoir during the first 100 years of operation. In 1981, a study found that the rate of sedimentation was about 70 percent greater than the original estimate. As of 1998, the accumulated sediment had reached an estimated 44,000 AF. The reservoir capacity is approximately 198,339 AF. Because of this, the Santa Barbara County Water Agency and the Santa Maria Valley Water Conservation District are preparing a sediment management plan that will help to ensure the continued safe operation of the reservoir's water release works and also extend the usable life of the reservoir.

4.4.2 Flood Control Infrastructure

Santa Barbara County dams are discussed in the preceding section. Other flood control infrastructure in the IRWMP planning area includes:

- 24 miles of levees along the Santa Maria River
- 42 miles of closed conduits
- 22 miles of lined channels
- 50 miles of improved earth channels
- 150 miles of unimproved earth channels
- 34 retarding and recharge basins
- 31 debris basins

4.4.3 State Water Project Facilities

The Central Coast Water Authority was formed to finance, construct, manage, and operate Santa Barbara's State Water Project facilities. Construction of the facilities to import State Water Project water to the county began in 1994, including a 42-mile extension of the State Water Project water pipeline, pumping plants, and a regional treatment plant to treat the water for both San Luis Obispo and Santa Barbara counties (Figure 4-3). The Coastal Branch portion of the State Water Project brings water 117 miles from the California Aqueduct in Kern County, through San Luis Obispo County and the Santa Maria Valley, continuing to the northerly portion of Vandenberg Air Force Base. At Vandenberg Air Force Base, the Coastal Branch connects to the 42-mile pipeline comprising the Mission Hills and the Santa Ynez Extensions. The Santa Ynez section ends at Lake Cachuma. Water is then delivered through existing facilities to the South Coast of Santa Barbara County. The Authority also constructed and operates the Polonio Pass Water Treatment Plant, located in northern San Luis Obispo County and described below. In addition, under a joint powers agreement with DWR, the Authority operates all of the Coastal Branch facilities downstream of the treatment plant.

4.4.4 Desalination Plant

The City of Santa Barbara owns a reverse osmosis desalination plant, which is adjacent to the El Estero Wastewater Treatment Plant. This plant was constructed in 1991 to 1992 by the City of Santa Barbara, Goleta Water District, and Montecito Water District as an emergency water supply in response to the severe drought lasting from 1986 to 1991. The latter two agencies are no longer participants in the desalination plant, which is currently decommissioned due to ample quantities of less expensive supplies. The desalination facility can, however, be brought into operation within 6 to 12 months if needed during drought or water shortage conditions. Just over half of the prefiltration capacity and reverse osmosis treatment modules were sold, leaving sufficient capacity to meet the City's anticipated need for approximately 3,000 AFY of production in future droughts.

4.4.5 Water Treatment Facilities

Communities in Santa Barbara County rely on different types of water supplies. As a result, a wide variety of treatment processes are in use. The following provides a description of selected treatment facilities and processes used in several communities within the county and used in San Luis Obispo County to treat State Water Project water that is delivered to Santa Barbara County. Purveyors routinely monitor water supplies for constituents in accordance with federal and state laws. The Safe Drinking Water Act is the main federal law that ensures the quality of drinking water. Under the Safe Drinking Water Act, the U.S. Environmental Protection Agency sets standards for drinking water quality and oversees the states, localities, and water suppliers that implement those standards. Maximum Contaminant Levels (MCLs) are enforceable regulatory standards under this Act and must be met by all public drinking water systems to which they apply. The California Safe Drinking Water Act was passed to build on and strengthen its federal counterpart. It authorizes the state's Department of Health Services to protect the public from contaminants in drinking water by establishing MCLs that are at least as stringent as those developed by the U.S. Environmental Protection Agency.

Montecito Water District

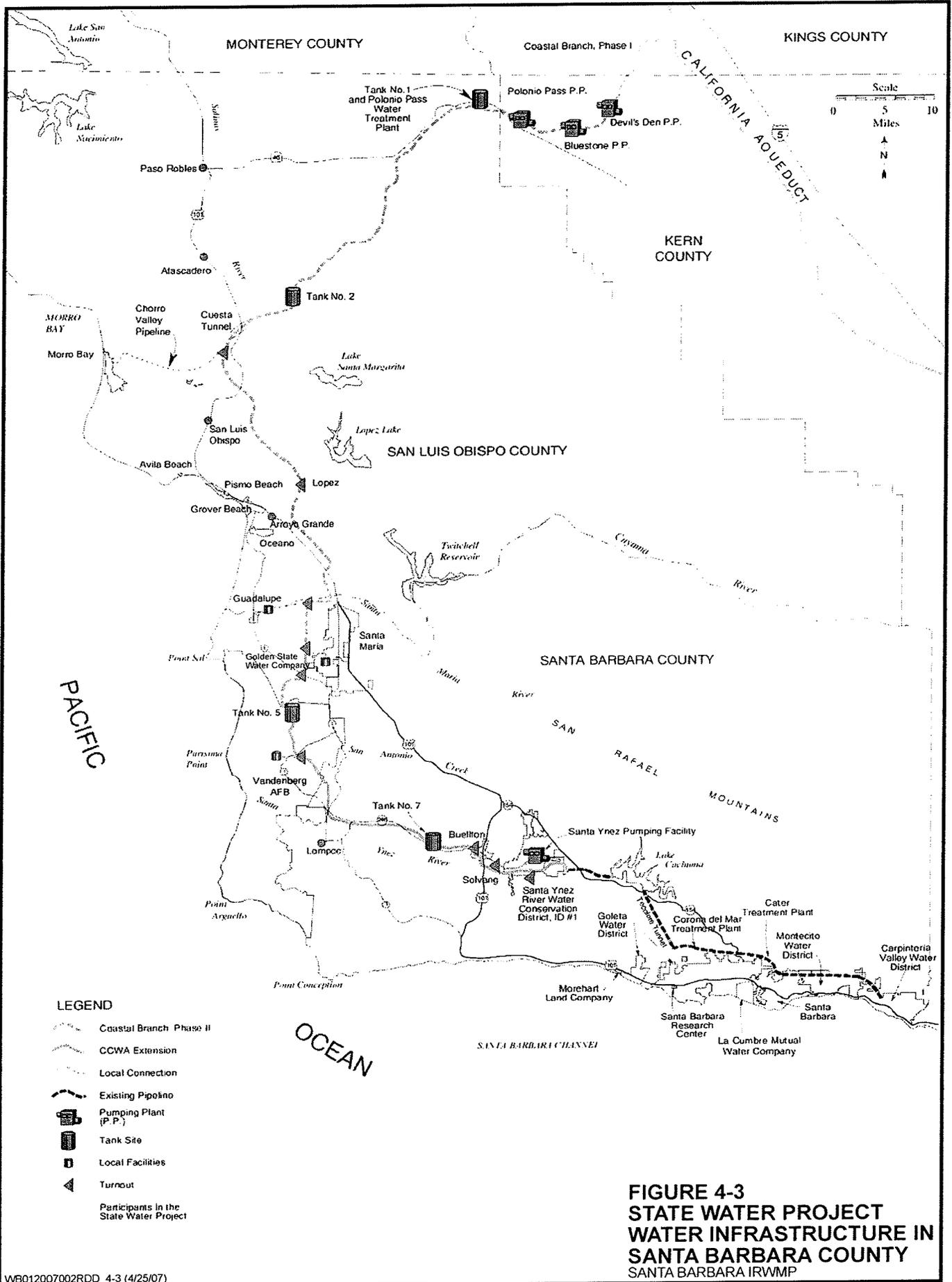
The Montecito Water District's Lake Cachuma water supply is treated by the City of Santa Barbara at the City's Cater Water Treatment Plant. Its Jameson Lake water supply is treated at the District's Bella Vista and Doulton water treatment plants. Jameson Lake is an open reservoir situated high in the Santa Ynez Mountains. With the completion of the new 2.2-million-gallons-per-day (mgd) Bella Vista Treatment Plant in 1993, and its smaller 150,000-gallons-per-day (gpd) companion, Doulton Treatment Plant, the District has come into full compliance with the 1993 government-mandated standards.

William B. Cater Water Treatment Plant

The City of Santa Barbara constructed the William B. Cater Filtration Plant in 1964. The 1978 Joint Exercise of Powers Agreement provided for the expansion and operation of the Cater Water Treatment Plant to also treat all Cachuma water delivered to the Montecito and Carpinteria Valley water districts. The plant was expanded to its current 37-mgd capacity in 1982. The water treated at the plant may be drawn directly from the South Coast Conduit or from Lauro Reservoir. The water in the South Coast Conduit comes directly from Lake Cachuma (via the Tecolote Tunnel). The water in Lauro Reservoir is a combination of water from Gibraltar Reservoir (via the Mission Tunnel into the Penstock pipeline) and water from the South Coast Conduit. Normal operation is for Cater to draw the water from Lauro Reservoir.

Corona Del Mar Water Treatment Plant

The Goleta Water District began operating the Corona Del Mar Water Treatment Plant in 1974. Due to the plant elevation of 615 feet, water can move through the plant by gravity flow and be delivered to the vast majority of district customers without pumping. The rated nominal capacity of the plant is about 24 mgd) with a peak capacity of 36 mgd. The "raw water" received from Lake Cachuma is directed to the plant for removal of suspended matter, such as clay particles and algae, in order to meet state health standards.



**FIGURE 4-3
STATE WATER PROJECT
WATER INFRASTRUCTURE IN
SANTA BARBARA COUNTY
SANTA BARBARA IRWMP**

City of Lompoc Water Treatment Plant

The City of Lompoc operates nine wells of varying capacities between 250 and 2,500 gallons per minute. Groundwater is pumped from the wells to the water treatment plant for demineralization and softening. The City of Lompoc Water Treatment Plant has a peak capacity of 10 mgd with a reservoir capacity of approximately 12 million gallons of usable storage.

Polonio Pass Water Treatment Plant

State Water Project water provided to Santa Barbara County is treated at the 43-mgd Polonio Pass Water Treatment Plant in San Luis Obispo County. This treatment plant disinfects water through chloramination. Chloramines are removed from the water before it is discharged to Lake Cachuma. The detreated State Water Project water is mixed with Cachuma Project water and delivered through Tecolote Tunnel to the contractors on the South Coast. Water treated at Polonio Pass is provided directly to Santa Maria, Guadalupe, Buellton, Solvang, Santa Ynez River Water Conservation District Improvement District No. 1, and Vandenberg Air Force Base.

4.4.6 Wastewater Treatment

Wastewater service providers must address increasingly strict discharge limits for wastewater treatment plants requiring increasing costs for wastewater agencies. SWRCB General Waste Discharge Requirement for Sanitary Sewer Systems (SWRCB Order No. 2006-0003) also requires wastewater agencies to evaluate and rehabilitate sewer systems with a target of zero sewer overflows.

There are several steps to the wastewater treatment process. Wastewater enters sewers and is then transported to the wastewater treatment plant, where it receives "primary treatment." This involves removing solids that settle to the bottom, as well as floating materials.

Next the water undergoes "secondary treatment," which removes solids that are suspended or dissolved in the water. During this treatment process, chemicals are added to disinfect the water before it is released into the ocean, adjacent river, or stream, either directly or indirectly by percolation ponds or upland spreading areas. Most wastewater in Santa Barbara County is treated to this secondary level.

Finally, some treatment plants use "tertiary treatment," which filters and disinfects the water. If treated to this advanced level, wastewater (or "effluent") can be reused for such purposes as irrigation of pasture grasses, landscaping, and even some crops. Such reclaimed water is used for several purposes within the County of Santa Barbara.

The county's primary wastewater treatment plants, their capacities, level of treatment, and uses for recycled water are shown in Table 4-3. The Lompoc Federal Correctional Complex also provides its own wastewater service. Wastewater collected from the Main Cantonment Area at Vandenberg Air Force Base is conveyed to the Lompoc Wastewater Treatment Plant. Other areas in the North Base and South Base are served by leach fields, septic tanks, and package treatment plants.

TABLE 4-3
Wastewater Treatment Facilities within Santa Barbara County

Treatment Plant	Permitted Capacity (MGD)	Level of Treatment	Recycled Water Uses
Buellton	0.65	secondary	groundwater recharge
Carpinteria Sanitary District	2.0	secondary	treatment plant landscape irrigation
City of Santa Maria	9.0	secondary	groundwater recharge
El Estero (City of Santa Barbara)	11.0	secondary/ tertiary	landscape irrigation; toilet flushing
Goleta Sanitary District and Goleta West Sanitary District	10.64	primary/blended secondary	landscape irrigation; toilet flushing
Laguna County Sanitation District	3.7	tertiary	agricultural; landscaping; industrial
Lake Cachuma County Park	0.22	secondary	none
La Purisima ^a	0.40	primary	groundwater recharge; pasture/crop irrigation
Lompoc Regional Wastewater Reclamation Plant	5.0	advanced secondary	sewer line cleaning; dust control & compaction; city street tree irrigation
Mission Hills	0.57	secondary	groundwater recharge
Montecito Sanitary District	1.5	secondary	none
Santa Ynez Band of Chumash Indians	0.2	tertiary	none
Solvang Wastewater Treatment Plant	1.0	secondary	groundwater recharge
Summerland Sanitary District	0.30	tertiary	none

Source: Family of Santa Barbara Water Providers, 2006; Cooperating Partners, 2007.

^aLocated at La Purisima State Park

4.5 Water Supplies

Water supplies include groundwater, surface water, imported State Water Project water, and recycled water; water supplies also are enhanced by the conjunctive use of surface and groundwater supplies and cloud seeding. The current average annual water supplies for Santa Barbara County total about 223,000 AFY, plus about 90,000 AFY in return flows to useable groundwater basins.

4.5.1 Groundwater

Groundwater basins are the major source of water in the county, supplying about 77 percent of Santa Barbara County's domestic, commercial, industrial, and agricultural water. The

regional groundwater basins are described in Section 2. In the South County, water purveyors use groundwater as a secondary source of potable water. However, the North County is largely supported by groundwater and/or shallow, riparian basin water, both of which are recharged by surface flows.

4.5.2 Surface Water

Surface water refers to water resources that flow or are stored in surface channels (streams and rivers or lakes and reservoirs). Surface water reservoirs are an important part of the regional water supply so the loss of storage capacity is of significant concern. Gibraltar Reservoir is the source of about one-third of the City of Santa Barbara's water supply. The unincorporated community of Montecito receives 45 percent of its water supply from Jameson Lake, Fox and Alder creeks via the Doulton Tunnel. On an average annual basis, Lake Cachuma provides approximately 65 percent of the South Coast's water supply. Twitchell Reservoir is important to both the water supply and the flood protection of the Santa Maria Valley. The reservoir supplies about 20,000 AF of recharge to the Santa Maria Groundwater Basin on an average annual basis.

4.5.3 Imported Water (State Water Project)

Table 4-4 shows the amount of water to which each Santa Barbara County participant in the State Water Project has a contractual right, referred to as Table A Amount. Actual deliveries may be less than shown in Table 4-4. The primary factors affecting the amount of Table A deliveries are the availability of State Water Project supplies and the State Water Project Contractors' demands for this water. Climatic conditions and other factors can significantly alter the availability of State Water Project water in any year; a topic of growing concern for water planners and managers is global warming and the potential impacts it could have on California's future water supplies, including State Water Project supplies. The amount of water DWR determines is available and allocates for delivery in a given year is based on that year's hydrologic conditions, the amount of water in storage in the State Water Project system, current regulatory and operational constraints, and Contractors' requests for State Water Project supplies. Even in years when additional Table A supplies are available, the amount of water DWR allocates is limited to Contractors' requests.

State Water Project water has helped reduce the use of groundwater in all major basins, except the Cuyama Basin, which does not have a water purveyor that receives State Water Project water. It also has improved water quality in areas that directly receive State Water Project water and has increased the overall water supply in Santa Barbara County.

4.5.4 Water Conservation

Water conservation addresses the "demand side" of water management, and thereby constitutes an important part of stretching the county's water supplies. Through water conservation programs implemented at the regional and water purveyor level, additional water supplies become available for use within the county, reducing pressures on other water resources. Water conservation activities occur countywide through the Regional Water Efficiency Program (RWEP), in which water purveyors work cooperatively to implement conservation in the areas of residential, commercial, agricultural, and landscape programs. Additionally, regional education and public information programs help change

behavior to decrease water use. Regional programs have been in place since 1990 and are staffed and funded by a multiagency team of conservation staff from the Santa Barbara County Water Agency and local water purveyors. Water purveyors also implement individual programs of particular interest within their service areas. Programs are discussed in greater detail in Section 5. Water savings through conservation programs are calculated on an annual basis by those agencies who are members of the California Urban Water Conservation Council. Council Signatories, who have committed to best management practices for water conservation by signing the Council Memorandum of Understanding, plus the conservation activities of nonmembers in the County, have resulted in the conservation of 86,660 AF during the period from 1991 to 2006. Not all water purveyors report their savings and therefore, savings may be significantly higher.

TABLE 4-4
 State Water Project Table A Amounts in Santa Barbara County

State Water Project Participant	Drought Buffer (AFY) ^a	Table A Amount (AFY)
Carpinteria Valley Water District (includes Summerland)	200	2,000
City of Buellton	58	578
City of Guadalupe	55	550
City of Santa Barbara	300	3,000
City of Santa Maria	1,620	16,200
Golden State Water Company (Orcutt area)	50	500
Goleta Water District	450	4,500
La Cumbre Mutual Water Company	100	1,000
Montecito Water District	300	3,000
Morehart Land Company	20	200
Santa Barbara Research Center	5	50
Santa Ynez River Water Conservation District Improvement District No. 1	200	500
City of Solvang	0	1,550
Vandenberg Air Force Base	550	5,500
Total	3,908	39,078
Goleta Water District Additional Drought Buffer ^b	2,500	

Source: SBCWA, 2000

^aThe drought buffer entitlement of 3,908 AF increases the reliability of each project participant's Table A Amount. This can be stored for future use and/or requested in dry years when cutbacks are expected to State Water Project allocations. By storing this water and/or increasing the Central Coast Water Authority's water request in dry years, even after a percentage cutback by DWR, the project participants can reduce shortages in their entitlement deliveries.

^bGoleta has 2,500 AFY of drought buffer, in addition to its 450 AFY, that does not have pipeline or treatment plant capacity (i.e., it is for increased reliability only).

4.5.5 Recycled Water

Recycled water must meet rigorous water quality standards before it can be reused. The type of reuse varies depending upon the level of treatment. In addition, other constituents, such as total dissolved solids (TDS), in the treated wastewater sometimes limit the use for landscape irrigation and groundwater recharge. Presently, there are two agencies in the county that treat all of their effluent to full tertiary levels. These are the Laguna County Sanitation District and the Summerland Sanitary District. The Laguna County Sanitation District produces approximately 2,400 AFY, which is used for agricultural, landscaping, and industrial purposes with recycling as its only discharge mechanism. Reverse osmosis is used to reduce TDS to improve water quality. The Summerland Sanitary District treats approximately 168 AFY, which is discharged to the Pacific Ocean.

Two other agencies treat some of their flow to tertiary levels for reuse landscape irrigation. These include the City of Santa Barbara and the Goleta Sanitary District. The City of Santa Barbara El Estero Wastewater Treatment Plant has the capacity to treat up to 1,200 AFY of tertiary effluent and currently treats 800 AFY. The Goleta Sanitary District recycled water system is operated jointly with the Goleta Water District as the purveyor and can treat up to 1,500 AFY of tertiary effluent and currently has a demand of 1,000 AFY. The City of Lompoc utilizes approximately 5 AFY of its secondary treated effluent for reuse and discharges to the Santa Ynez River. The Los Alamos Community Services District discharges all of its approximately 130 AFY of secondary effluent for pasture irrigation. Many of these agencies, as well as others not discussed, discharge to percolation ponds, the Pacific Ocean, or other water bodies.

4.5.6 Desalted Water

The City of Santa Barbara's desalination plant is discussed in Section 4.4.4.

4.5.7 Conjunctive Use

Santa Barbara's water purveyors practice the conjunctive use of surface and groundwater supplies when excess water is available to recharge groundwater basins for later withdrawal when supplies are short. Some purveyors use State Water Project water, when available, and rely on groundwater to supplement when demand is higher. Purveyors may also purchase a "drought buffer" of additional State Water Project water or bank water in a groundwater basin. Similarly, some purveyors may manage, possibly in accordance with an AB 3030 Groundwater Management Plan, the groundwater pumped and stored in groundwater basins in order to optimize the basin's overall long-term working yield. The City of Santa Barbara maintains a water well system capable of extracting up to 4,500 AFY. Most of this potential supply is kept in reserve in case of drought, since a majority of its water supply is from surface water sources outside of the watershed area. During normal years, the City's groundwater basins are allowed to recharge, with groundwater extraction generally reserved for periods of drought or other supply shortages. Pumping occurs in Storage Unit No. 1 (downtown area) and the Foothill Basin (outer State Street area). The City of Santa Barbara conducts conjunctive use water supply management activities by injecting and storing surface water in the basins.

4.5.8 Cloud Seeding

Since as early as 1948, Santa Barbara County has participated in weather modification activities in order to augment local water supplies. The County cloud seeding program is only conducted in the upper Santa Ynez and Twitchell Reservoir watersheds. The effectiveness of cloud seeding has been evaluated to demonstrate its benefits. Recent statistical studies suggest that seeding results in a maximum increase in precipitation of about 15 percent over one rain season. This translates to thousands of acre-feet of additional water captured for storage in local reservoirs. For example, in a wet year such as 1992 to 1993, approximately 20,000 AF of water was generated through cloud seeding, and this figure does not include infiltration into groundwater basins (SBCWA, 2000). The local cloud seeding program is operated between December 1 and March 30 of most years. The cost of the annual cloud seeding program is shared among the County and the water districts that receive a benefit from it.

5 Water Resources Management Framework

Santa Barbara County has an extensive array of plans and programs that provide an effective framework for the management of water resources. This section highlights the key elements of this framework and describes the relationship between these elements and the IRWMP. The IRWMP builds on this existing framework, identifying objectives, strategies, regional priorities, and projects that are consistent with the existing plans.

5.1 Planning Framework

5.1.1 County and City General Plans

In accordance with state law, Santa Barbara County and each of the incorporated cities have adopted General Plans that contain land use maps, goals, objectives, policies, and standards to guide development. Development can affect water resources through a variety of means, such as increasing the demand for water and wastewater services; changing rates of groundwater infiltration and recharge through the creation of impervious surfaces; increasing the amount of storm water runoff; and increasing erosion and use of chemicals that enter surface and groundwater and affect water quality. Development also can result in changes to ecosystems through mechanisms such as loss of habitat and direct impacts to species through construction. The locally adopted General Plans contain policies that are intended to protect water and ecological resources within the county and ensure that water supplies and sewage treatment are adequate. These General Plans also reflect regulatory requirements relating to nonpoint source pollution control, conservation, and other water resource regulations. Decision makers must consider a project's consistency with these policies before approving new development. A preliminary evaluation of consistency was performed on all projects in the list, recognizing that some types of projects are not subject to General Plan policies. The results are reflected in Section 8. Projects included in the IRWMP will be formally evaluated for consistency with the relevant plans by decision makers prior to their approval.

5.1.2 Los Padres National Forest Land Management Plan

The U.S. Forest Service has developed a Land Management Plan for the Los Padres National Forest (USFS, 2005), which identifies a strategic direction and program emphasis objectives that are expected to result in the sustainability (social, economic, and ecological) of the national forest and, over the long-term, the maintenance of a healthy forest. The legislative mandate for the management of national forests requires that public lands be conservatively used and managed in order to ensure their sustainability and to guarantee that future generations will continue to benefit from their many values. Forest plans are founded on the concept of sustainable use of the national forests. The plan consists of three parts. Part 1 describes the national forest in the future, the niche it occupies in the community framework, the desired conditions the Forest Service is trying to realize, and the challenges

that will be faced. Part 2 includes the “tools” that resource staff will use to accomplish the plan’s objectives. Part 2 also defines and describes each of the land use zones and includes a prospectus describing the past performance history of the national forest and the anticipated performance in 3- to 5-year increments over the life of the forest plan. Part 2 also describes what types of management is expected in specific areas of the national forest and addresses the monitoring to be done to assess the effective implementation of the strategies used. Part 3 of the forest plan is the design criteria and constitutes the “rules” that the Forest Service will follow as the national forest implements projects and activities over time. Some of the IRWMP planning area is within the Los Padres National Forest, as are key major water infrastructure and waterbodies (for example, Tecolote Tunnel, Jameson Lake, Gibraltar Reservoir, South Coast Conduit, portions of the Santa Ynez River, and numerous creeks). Projects on these lands will require coordination with the U.S. Forest Service to ensure consistency with the forest plan.

5.1.3 Vandenberg Air Force Base General Plan

The Vandenberg Air Force Base General Plan guides the installation’s comprehensive planning process. It identifies essential characteristics and capabilities of the installation and assesses the potential for development. The Utility Systems component of the General Plan contains information about the existing utility infrastructure and presents a general framework for future development. It illustrates existing and planned services, including water and wastewater systems. Utility system capacities, both existing and potential, are noted to determine Vandenberg Air Force Base’s ability to support existing and future missions. The General Plan indicates that comprehensively planned and maintained utility systems are able to support mission requirements and should be developed in conjunction with the Capital Improvements Program and future land-use plans. Although the General Plan focuses specifically on development at the installation, planning efforts are related to those of the Cooperating Partners through shared water supplies (State Water Project and San Antonio Groundwater Basin) and wastewater treatment facilities (Lompoc Wastewater Treatment Plant), as well as through participation in programs such as Santa Barbara County’s Regional Water Efficiency Program (RWEF), described below.

5.1.4 Urban Water Management Plans

In 1985, statewide legislation (AB 797) was passed requiring all water purveyors with 3,000 customers or serving over 3,000 acre-feet (AF) of water for urban uses, to prepare an urban water management plan. These plans must be updated every 5 years. An urban water management plan is a comprehensive plan that addresses past, current, and future water supplies for each affected district. These plans must include a water shortage contingency plan for droughts and other water shortage emergencies, a plan for using recycled wastewater if feasible, a comprehensive assessment of all water supplies within the district, a plan for meeting future water needs, and a water efficiency plan, which includes a description of how best management practices will be implemented.

In Santa Barbara County, the Carpinteria Valley Water District, Central Coast Water Authority, City of Lompoc, City of Santa Barbara, City of Santa Maria, Goleta Water District, Montecito Water District, and the Golden State Water Company (Orcutt) have prepared Urban Water Management Plans to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

The Santa Ynez River Water Conservation District Improvement District No. 1 also has prepared a Water Management Plan with a similar intent. Projects included in the IRWMP that increase water supplies and supply reliability will help meet the water demands identified in these plans.

5.1.5 Groundwater Management

Enacted in 1992, AB 3030 allows local agencies, with public involvement, to prepare, adopt, and enforce groundwater management plans for the protection of groundwater. These plans are in various stages of completion. Groundwater levels and quality are already monitored in most of the county, and thus, are not a primary focus of this IRWMP. Several cities and water districts in the region have adopted or are preparing groundwater management plans in accordance with local ordinances and agreements, as well as AB 3030. Those that are adopted are listed in Table 5-1, along with those that are subject to court actions.

TABLE 5-1
Groundwater Plans

Basin	Public Agency Participants ^a	Status
Carpinteria	Carpinteria Valley Water District	Plan Adopted
Montecito	Montecito Water District	Plan Adopted
Santa Barbara	City of Santa Barbara	Plan Adopted
Foothill	City of Santa Barbara	Plan Adopted
Goleta	Goleta Water District	Court Action ^b
Buellton Uplands	Santa Ynez River Water Conservation District City of Buellton	Plan Adopted
Santa Maria Valley	City of Santa Maria Santa Maria Valley Water Conservation District Golden State Water Company	Court Action (Pending)

^aOther participants include private water companies and overlying property owners.

^bThe "Wright Suit" Settlement stipulates management actions in the North and Central subbasins.

5.1.6 Water Shortage Contingency Plans

Water conservation is an integral part of water resource planning in Santa Barbara County. Most local water purveyors have prepared water shortage contingency plans that identify how they will reduce demand during a shortage. These plans address water savings over and above ongoing water efficiency practices that are now an integral part of customer demand management. Ongoing (long-term) efficiency measures include best management practices (pricing, education, efficient landscapes and irrigation, efficient plumbing fixtures and appliances). Short-term water shortage contingency measures include steeply tiered (penalty) water rates, prohibitions against certain unnecessary uses of water (i.e., car washing), water rationing programs, restricted landscape irrigation (i.e., designated days for watering) and public information campaigns. Typical contingency plans are based on scenarios of shortages, such as 10 percent, 20 percent, and 30 percent reductions in supply.

The demand reduction contingencies are planned according to the severity of the water supply reduction, with the most severe restrictions being carried out during the most severe shortage. In the last local drought water demand was actually reduced by over 50 percent during the peak of the shortage.

Local plans are complemented and augmented by the Water Agency's 2004 Santa Barbara County Regional Water Shortage/Drought Management Plan. To ensure that the County's plan complements the purveyor's plans, the Water Agency created a Water Shortage/Drought Preparedness Planning Technical Advisory Committee comprising staff from the Water Agency and local water purveyors. This group helped shape the regional plan, particularly those actions to be implemented by the Water Agency in conjunction with the individual efforts of the water purveyors. More recently, under a grant from the U.S. Bureau of Reclamation (Reclamation), the County Water Agency prepared a "Water Shortage Contingency/Drought Planning Handbook" (January 18, 2006) as a guide to assist local water districts in preparing their own contingency plans (SBCWA, 2006b).

5.1.7 Capital Improvement Plans/Master Plans

Virtually all of the Cooperating Partners have adopted Capital Improvement Plans or Facilities Master Plans, outlining the infrastructure improvements needed to correct deficiencies in their service areas and ensure the efficient functioning of their water and wastewater systems. Infrastructure projects included in the IRWMP are also included in these plans and can provide a mechanism to obtain grant funding for these much-needed projects.

5.2 Water Management and Monitoring Programs

5.2.1 Storm Water Management Programs

The Clean Water Act sets water quality standards for all contaminants in surface waters and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a National Pollutant Discharge Elimination System (NPDES) permit is obtained. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

The Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4s). MS4 permits were issued in two phases. Under Phase I, which started in 1990, the Regional Water Quality Control Boards (RWQCB) issued NPDES storm water permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. No Phase I communities are located in the Santa Barbara County region.

Phase II regulations expanded the scope of the NPDES program to include local municipalities serving populations of less than 100,000¹. These local governments must design a Storm Water Management Program to include the development and implementation of six specified measures that reduce storm water pollution to the maximum extent practicable. Evaluation and reporting measures are also required. In addition, the rule sets requirements for construction activity that disturbs between 1 and 5 acres and extends a previously set deadline for municipalities that operate industrial activities regulated under Phase I.

The Phase II NPDES Program is intended to reduce adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of storm water discharges that have the greatest likelihood of causing continued environmental degradation. Storm water discharges from urbanized areas are a concern because of the high concentration of pollutants found in these discharges. Concentrated development in urbanized areas substantially increases impervious surfaces, such as city streets, driveways, parking lots, and sidewalks, on which pollutants from human activities settle and remain until a storm event washes them into nearby storm drains. Common pollutants may include sediment, nutrients, bacteria and viruses, oil and grease, organic compounds, and gross pollutants such as trash. Storm water runoff picks up, transports, and discharges these pollutants, untreated, to waterways via storm drain systems. These discharges can result in the loss of wildlife habitat, reduced aesthetic value, and contamination of recreational waterways that can threaten public and aquatic health. Pollutants of concern in Santa Barbara County are sediment, oil and grease, phosphorous, copper, and bacteria.

Santa Barbara County is responsible for implementing the storm water management program in the unincorporated urbanized areas of the South Coast, Santa Ynez Valley, and Santa Maria Valley. The cities of Carpinteria, Santa Barbara, Goleta, Buellton, Solvang, Lompoc, and Santa Maria are responsible for implementing independent storm water management programs. The storm water management programs define strategies and guidelines for the protection of water quality and reduction of pollutant discharges to the maximum extent practicable. Through existing environmental programs and services as well as established land development policies, the local jurisdictions have a number of programs that meet the intent of the NPDES Phase II regulations and the state General Permit requirements.

Best management practices for each of the six minimum control measures being implemented in the IRWMP planning region include, but are not limited to, educational programs for children, informational materials, community events, storm drain markers, storm water hotline/creeks information numbers, neighborhood-based outreach, Web sites,

¹ In agricultural areas, runoff is being addressed through the state of California's Agricultural Waiver Program, which is a program adopted on the Central Coast in 2004 by the RWQCB to regulate wastewater discharges from irrigated land. It allows the RWQCB to waive waste discharge requirements for growers who enroll in the program and commit to certain steps, including attending 15 hours of approved education training, completing a Farm Water Quality Plan, implementing best management practices in the Farm Plan, and participating in an individual or cooperative monitoring program. In Santa Barbara County, the Agricultural Waiver Program is coordinated by the Southern San Luis Obispo and Santa Barbara Counties Agricultural Watershed Coalition. Additionally, the state's Agricultural Water Quality Grant Program provides funding for projects that reduce or eliminate nonpoint source pollution discharge to surface waters from irrigated agricultural lands. Funding is available from Propositions 40 and 50 (but through a section of Proposition 50 other than that which defines the IRWMP process). Grants for Nonpoint Source Pollution Control projects from Clean Water Act Section 319 funding is also available through this program. Thus, nonpoint source pollution from irrigated agriculture is not the focus of this IRWMP, because other programs and funding sources are available.

and business outreach programs. Additionally, post-construction best management design criteria, such as low impact development criteria are being studied and considered.

The IRWMP includes projects, described in Section 8, that are consistent with and will help implement the goals of the storm water management programs.

5.2.2 Water Monitoring Programs

Groundwater Well Monitoring and Data Collection

The Santa Barbara County Water Agency currently monitors 283 wells for depth to groundwater throughout the county in cooperation with the United States Geological Survey (USGS). Individual water districts monitor many more wells. The County and local water districts cooperate with the USGS to collect and publish groundwater data. There are historical records on many more sites than are currently being measured. These records were developed for a number of purposes, including USGS investigations, prior inclusion in the County monitoring network, or measurements to address specific issues. The current monitoring network is sufficient to accurately reflect groundwater conditions throughout the County while being measured with a reasonable amount of resources. Sufficient data/information to better understand shallow groundwater quality in certain areas (Western Santa Maria basin) are lacking. In other areas, such as the Santa Ynez River Riparian Corridor, significant data have been developed to support ongoing management.

Local water districts and municipalities currently monitor or fund monitoring of many sites in addition to those measured by Santa Barbara County. Agencies that currently have cooperative agreements with the USGS for groundwater monitoring besides the County Water Agency are: the Carpinteria Valley Water District, City of Santa Barbara, Goleta Water District, Santa Ynez River Water Conservation District, Reclamation, City of Lompoc, and the Santa Maria Valley Water Conservation District. Agencies that provide information for this report but are not participants in the USGS program are Montecito Water District, the City of Santa Maria, and Golden State Water Company. Monitoring frequencies vary among agencies and wells and reflect the data needs of the individual agency.

Of the 283 wells currently monitored by the Santa Barbara County Water Agency, 27 sites include water quality monitoring. Although partially funded through Water Agency programs, this groundwater quality data is collected directly by USGS. Other information is gathered by the RWQCB, or local water agencies. Additionally, through the Cachuma Resource Conservation District's mobile lab program, farmers are trained to monitor and record groundwater quality, allowing them to manage crop irrigation in a way that minimizes the amount of nutrients entering the groundwater.

Surface Water Monitoring

Surface water quality monitoring is performed by a number of federal, state, and local agencies, as well as interested educational institutions, organizations, and individuals. These monitoring efforts are performed to accomplish a wide variety of objectives, including serving as the basis of surface water quality improvements.

Project Clean Water

Project Clean Water was established in 1998 to identify and implement solutions to creek and ocean water pollution on the South Coast. The County of Santa Barbara and the cities of Santa Barbara and Carpinteria are joined in this effort by members of groups such as the Urban Creeks Council, the Audubon Society, the Surfrider Foundation, Heal the Ocean, CURE, Santa Barbara Channelkeeper, Coalition of Labor, Agriculture & Business, Environmental Defense Center, and the Community Environmental Council, as well as many community members. The County of Santa Barbara's Public Health Department monitors 20 beaches on a weekly basis, year-round. Water samples are tested for indicator bacteria (total coliform, fecal coliform, and enterococci) and compared to standards, as mandated by AB 411. Beaches with test results above the acceptable standards are placed under warning status and are resampled 2 days later. Data are available in the local newspapers and at <http://www.sbcphd.org/ehs/ocean.htm>, the Public Health Department Web site.

Annual Bioassessment Program

Beginning in 2000, the County of Santa Barbara began an annual bioassessment program, which involves collecting and analyzing physiochemical and biological (including benthic macroinvertebrates) data from local streams using standardized methods adapted from the U.S. Environmental Protection Agency's Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers. The study area includes approximately 35 miles of the southern Santa Barbara County coast from the Rincon Creek watershed at the Santa Barbara/Ventura County line west to Gaviota Creek.

Creek Walks

The County of Santa Barbara Public Works Department walks most creeks in the County on an annual basis. Flood Control staff walk the same creeks every year. Project Clean Water staff walk the unincorporated urbanized portions during the late summer/early fall in areas most likely to have water quality impacts. Local city staff and special interest groups also conduct organized creek walks and scheduled monitoring of the creeks, which contributes to the overall understanding of the region's watersheds and highlights the problem areas.

Santa Ynez River Monitoring

Surface- and groundwater monitoring in the Santa Ynez River watershed has occurred for decades. Surface flow, groundwater levels, and water quality are monitored by several local agencies and the USGS. Monitoring efforts include:

USGS Stream Gauging

The USGS operates several stream gages on the Santa Ynez River. Data collected is available from the USGS Web site and is used for several purposes. High flow data are used for public safety purposes including winter storm operations at Bradbury Dam. Low flow data are used for managing the river-flow to meet water right requirements and fish protection objectives. The program relies on both federal agencies and local cooperators for funding; County Flood Control District and Water Agency are both major participants.

USGS Water Quality Measurements

Water quality measurements are made by the USGS as part of stream gauging and groundwater monitoring. Data collected is available from the USGS Web site and is used for several purposes including monitoring suitability of water quality for beneficial uses,

monitoring the salt content of the water rights releases, and habitat suitability for fish habitat.

Flow and Water Quality Measurements as Part of Steelhead Trout Studies

Since 1994, federal, state and local agencies have monitored conditions in the Santa Ynez River to develop a plan for protecting and enhancing the local steelhead trout population. Water quality monitoring includes field measurements of temperature, specific conductance, and oxygen levels. These measurements are summarized in annual reports prepared by the Cachuma Conservation Release Board staff. The studies are conducted in accordance with the Cachuma Project Biological Opinion and the Lower Santa Ynez River Fish Management Plan under a Memorandum of Understanding among the Cachuma Conservation Release Board, Santa Ynez River Water Conservation District Improvement District No. 1, Reclamation, and other parties.

Stream and Groundwater Monitoring as Part of Water Rights Orders

Releases from Bradbury Dam, stream flow, and groundwater adjacent to the Santa Ynez River are monitored by Reclamation and the USGS in accordance with State Water Resources Control Board Order WR 89-18. Results are analyzed and reported in annual reports by Reclamation and the Santa Ynez River Water Conservation District, which are available from these agencies.

Monitoring by Operators of Public Water Supply Systems

Water quality monitoring is required of each operator of a public water supply system. The Cities of Lompoc, Buellton, and Solvang, and the Santa Ynez River Water Conservation District Improvement District No. 1 each may operate wells close to the Santa Ynez River such that their water quality is influenced by the river. The water quality monitoring results from these wells may be obtained from the respective entity owning the well.

Monitoring by Operators of Sewage Treatment Plants

Water quality monitoring of discharge is required of each sanitary treatment plant operator that discharges to surface water. Records of such discharges are submitted to the Central Coast RWQCB and may be obtained from that agency.

Central Coast Ambient Monitoring Program

The Central Coast Ambient Monitoring Program is the Central Coast RWQCB's regionally scaled water quality monitoring and assessment program. The purpose of the program is to provide scientific information to Regional Board staff and the public, to protect, restore, and enhance the quality of the waters of central California.

The Central Coast Ambient Monitoring Program monitoring strategy for watershed characterization calls for dividing the Central Coast Region into five watershed rotation areas and conducting synoptic, tributary based sampling each year in one of the areas. Over a 5-year period, all of the Hydrologic Units in the Region are monitored and evaluated. In addition to the synoptic site selection approach, additional monitoring sites are established in each area to provide focused attention on watersheds and water bodies of special concern.

The program uses a variety of monitoring approaches to characterize the status and trends of coastal watersheds, including:

- Rapid bioassessment using benthic invertebrates
- Conventional water quality parameter analysis
- Chemical analysis of tissue, water, and sediment
- Toxicity evaluations
- Habitat assessments
- Sedimentation evaluations

Data are available on the organization's Web site:
<http://www.ccamp.org/ccamp/ccamp.htm>.

Long-term Ecological Research Project

The Santa Barbara Coastal Long-term Ecological Research Project is focused on investigating the relative importance of land and ocean processes in structuring giant kelp forest ecosystems. As a component of this project, several researchers are focusing on characterizing nutrient loading and developing a model to predict future nutrient export from these watersheds resulting from projected changes in land use. Biweekly base flow and storm water are sampled from Gaviota, Refugio, Arroyo Hondo, Arroyo Burro, Mission, Santa Monica, Franklin and Carpinteria creeks (2003-04 program). Data are available through the Web site: <http://sbc.lternet.edu/catalog/style/skins/sbclter/index.jsp>.

Santa Barbara Channelkeeper

Santa Barbara Channelkeeper has established Stream Teams in both the Ventura and Santa Barbara area. The purpose of these teams is to monitor water quality and involve citizen volunteers in the protection of their local watershed while providing educational opportunities and fostering environmental stewardship. The Channelkeeper's Goleta Stream Team collects data at 11 sites throughout the Goleta Slough watershed on a monthly basis. Parameters measured by these teams of volunteers include dissolved oxygen, pH, conductivity, turbidity, temperature, flow, nitrate, orthophosphate, and indicator bacteria. Data and analysis are disseminated through the organization's Web site (www.stream-team.org), as well as a quarterly newsletter.

South Coast Watershed Characterization Study and Ongoing Monitoring

The County partnered with the City of Santa Barbara to evaluate water quality concerns through the South Coast Watershed Characterization Study in 1998. The four major creeks—Rincon, Sycamore, Mission, and Arroyo Burro—were sampled. The results identified indicator bacteria as the pollutant of concern in these watersheds. Since that time, the City has expanded its storm water monitoring program in order to better determine the sources and types of pollutants discharged to creeks and the ocean. Over the past 5 years, the City has sampled storm drains, creeks, lagoons, and ocean water. Dry weather efforts focus primarily on indicator bacterial pollution and physical parameters such as temperature, turbidity, and pH. To date, the City has identified specific storm drain outlets that are most likely to discharge urban runoff that contains indicators of certain contaminants.

As a result of sampling thus far, the City has identified known and suspected pollutants of concern. These pollutants are targeted with the implementation of best management practices identified in the City of Santa Barbara Storm Water Management Program. Indicator bacteria and total phosphorus have been identified as known pollutants of concern

based on storm samples containing levels that are consistently above appropriate water quality criteria. Oil and grease is identified as a known pollutant of concern based on the occasional visual observation of oil sheens in creeks during periods of runoff.

Although there is no clear indication that other potential storm water pollutants (such as sediment, nitrate, pesticides, and certain metals) are present in detectable amounts, the City continually revises and improves its monitoring efforts in order to determine the presence and sources of storm water pollutants. In addition to its dry weather and storm monitoring program, in 2004, the City funded research partnerships with USGS and the University of California, Santa Barbara to begin identifying the sources of indicator bacteria and to develop better methods of monitoring the presence of harmful bacterial pollutants in surface waters. The City's reports on progress and findings are shared with other local agencies, nongovernmental organizations, and the public, on an annual basis as well as periodically through newsletters and individual mailings.

Agricultural Cooperative Monitoring Program

The Cooperative Monitoring Program represents a watershed approach to meeting monitoring requirements as set forth in the Conditional Agricultural Waiver. Fifty (50) sites on the Central Coast, including 14 sites in Santa Barbara County, are monitored on a regular basis to see whether implementation of farm-level water quality and environmental management practices are improving water quality.

5.2.3 Other Water Quality Improvement Programs

Local jurisdictions have a system of regulations to protect their waterways and the ocean from pollution and degradation. Additional local agency programs include:

- **Microbial Source Tracking Research.** Microbial source tracking is used to develop DNA-based tools for tracking fecal pollution in creeks and to identify sources of indicator bacteria. The City of Santa Barbara contracts with University of California, Santa Barbara, to conduct microbial source tracking.
- **Bioassessment.** Bioassessment uses benthic macroinvertebrate surveys and an index of biological integrity to assess and track the health of creeks for aquatic organisms.
- **Restoration and Water Quality Project Assessment.** Local agencies use restoration and water quality treatment assessment to determine the success of projects in lowering microbial and chemical pollution levels and improving water quality for aquatic organisms. Local agencies are examining the effectiveness of several creek restoration and water quality improvement projects that should result in decreased pollution levels, improved water quality parameters, or both. Many projects are in development, and baseline data is being collected presently for pre- and post-project comparisons.
- **Creek Cleanups.** While the relationship between garbage in creeks and water quality is unclear, it is apparent that cleaning debris from creeks helps to keep debris off beaches and out of the ocean. Local jurisdictions contract with an outside vendor to clean creeks on a weekly basis. Trash, furniture, appliances, bicycles, mattresses, and grocery carts are collected as well as any other material that does not belong in the creek.
- **Storm Drain Filters.** In an effort to clean water before it enters the City of Santa Barbara's water systems, 100 special storm drain filters have been installed in key

locations including the City’s Yanonali Street Annex Yard and at the intersection of West Haley Street at Brinkerhoff. These filters capture debris, garbage, and sediment that otherwise would flow to the creeks.

- **Street Sweeping Program.** Several jurisdictions employ street sweeping programs to improve water quality by keeping trash, debris, and sediment out of storm drains and creeks.

5.2.4 Conservation Programs

Both regional and service area-specific programs that focus on water conservation activities occur in Santa Barbara County. Santa Barbara County’s RWEPP was established in December, 1990 to promote the efficient use of urban and agricultural water supplies in Santa Barbara County, and to provide information and assistance to the 18 local water purveyors within the County.

The RWEPP provides coordination for cooperative efforts among purveyors, acts as a clearinghouse for information on water efficiency technology, manages specific projects, and monitors local, state, and national legislation concerning efficient water use. The RWEPP is housed at the Santa Barbara County Water Agency, whose staff work cooperatively with water purveyor staff to implement conservation projects throughout the County. Individual water purveyors work with County staff on projects, as well as implement their own conservation programs within their service areas.

A multi-agency team of conservation staff meets regularly to ensure that water conservation goals are being met. In addition to the Santa Barbara County Water Agency, partnering water providers, who provide staff time or funding to regional programs include: City of Buellton, Carpinteria Valley Water District, Casmalia Community Services District, Cuyama Community Services District, Golden State Water Company, Goleta Water District, City of Guadalupe, La Cumbre Mutual Water Company, City of Lompoc, Los Alamos Community Services District, Mission Hills Community Services District, Montecito Water District, City of Santa Barbara, City of Santa Maria, Santa Ynez River Water Conservation District Improvement District No. 1, City of Solvang, Vandenberg Air Force Base, and Vandenberg Village Community Services District. Of these, the Carpinteria Valley Water District, City of Santa Barbara, City of Santa Maria, Goleta Water District, Montecito Water District, Santa Barbara County Water Agency, and Santa Ynez River Water Conservation District Improvement District No. 1 are also members of the California Urban Water Conservation Council, and are committed to implementing water conservation best management practices.

There are seven focus areas of conservation activities within Santa Barbara County:

- School Education
- Public Information
- Commercial, Industrial, and Institutional
- Landscape/Outdoor Water Use
- Residential/Indoor Water Use

- Agricultural
- Coordination/ Administration

School Education

Regional school education programs include participation in the State of California Department of Water Resources (DWR) statewide Water Education Committee, free educational materials and curricula distribution to teachers, the Water Awareness High School Video Contest, a Book Bag Lending Program, and classroom presentations for K-12 grades. Through these programs, students and teachers gain exposure to water conservation ideas. Additional programs for individual water purveyor districts include an elementary school art contest and after-school program in Lompoc, and extensive classroom programs by many water purveyor staff in the Cities of Santa Barbara, Lompoc, Santa Maria, and in the Goleta, Carpinteria Valley and Montecito water districts.

Public Information

The RWEP and individual water purveyors work towards an integrated, cohesive message about the importance of water conservation countywide. This is accomplished through an annual Summer Media Campaign, a cooperative Web site (www.sbwater.org), interpretative signage along the Santa Maria Bike Path and at water purveyor facilities, and production and distribution of informative brochures and a regional newsletter. The regional group of purveyors has created a logo to promote a shared message, and this is used on publications, in public service announcements, and on the Web site. Water Awareness Month in May includes tours of local demonstration gardens and the City of Santa Barbara Desalination facility. Staff from many purveyors attend public events including Earth Day, Boy and Girl Scout activities, Lompoc Environment Fair, and others. All purveyors as well as the County Water Agency are available to respond to information requests by citizens.

Commercial, Industrial, and Institutional

Water efficiency in local businesses is an important target area for Santa Barbara's RWEP and water purveyors. Programs include the Green Awards Consortium, which honors businesses that save water among other environmentally friendly activities; a Lodging Industry Program, which distributes water-saving tips on door hangars and table tents to local hotels; as well as the Save Water, Save a Buck Rebate Program, which offers rebates to commercial, industrial, and institutional water users who retrofit their businesses with water efficient toilets, urinals, and clothes washers. Other programs include the Rinse and Save Program, which retrofits restaurants with efficient pre-rinse spray nozzles; the Conductivity Controller Retrofit Program, which rebates controllers on commercial cooling towers; and the Waterless Urinal Installation Program, retrofitting County facilities with waterless urinals. Water district and County staff work on these programs in varying capacities to provide an integrated commercial water efficiency program throughout the County.

Landscape/Outdoor Water Use

Landscape programs are a major focus of the RWEP and purveyor activities, because as much as 50 percent of customer water use often goes to outdoor water use. A weather-based irrigation controller program that retrofits residential landscapes with weather-based irrigation controllers is underway. The Green Gardener Program in Santa Barbara and Santa Maria offers classes to landscape professionals on green practices with an emphasis on efficient irrigation. Other cooperative programs include the Garden Wise Guys TV show, a locally produced television show on sustainable landscaping; the Landscape Water Budget Program, which provides customers with customized water budgets for their landscapes; and large landscape irrigation evaluations, provided by staff of the Cachuma Resource Conservation District staff. Landscape facilities include the Santa Maria Valley Sustainable Garden, which demonstrates technology and plantings that reduce water use; several "water-wise" installations at water purveyor facilities throughout the County; and five California Irrigation Management Information System network weather stations throughout the County, providing localized evapotranspiration data used in landscape programs. The City of Santa Barbara also uses a landscape ordinance to regulate the installation of new landscapes and ensures they are making efforts to reduce water use.

Residential/Indoor Water Use

Many local water purveyors provide in-home water checkups (audits) that educate customers about water efficient appliances and leak detection. In some cases, residential landscape audits are also offered. The RWEP Web site promotes these services and offers County residents a clearinghouse for residential and indoor water saving information. The City of Lompoc offers rebates on water efficient toilets, clothes washers, and dishwashers. The City of Santa Barbara and the City of Santa Maria offer free 2-gallon-per-minute showerheads to all city residents upon request.

Agricultural

RWEP partners work closely with the Cachuma Resource Conservation District to promote the Irrigation Evaluation Program on agricultural lands within the County. The District's mobile lab visits farms to evaluate water use and make suggestions for increasing efficiency. Staff analyze the distribution uniformity of the sprinklers; provide an estimate of seasonal evapotranspiration, effective rainfall, leaching, and irrigation water requirements; test pumping plants for energy efficiency; and measure the water quality by testing pH, electrical conductivity, nitrates, hardness, and iron in the irrigation water.

Coordination/Administration

The RWEP acts as a clearinghouse for water conservation information and programs. Tasks include surveying water providers and collecting data on water production and rates, water planning coordination including integrated regional water management planning and drought planning activities, and information sharing. Information sharing includes attending state and national meetings on topics related to water conservation, working closely with the California Urban Water Conservation Council on implementing programs and reporting on conservation activities, as well as coordinating among all the water purveyors within Santa Barbara County on cooperative programs within the RWEP. The

RWEP also provides information and training to local water conservation staff. This includes legislative updates, information on new water conserving technologies, reporting to local agencies on regional programs, and workshops on various water efficiency topics. The RWEP also serves an oversight role for shared conservation projects including financial management of shared grants and project management activities such as budgeting, scheduling, and logistics.

Multiple benefits result from using water efficiently, including saving energy, reducing flow into wastewater treatment facilities, and minimizing the need to develop new supplies, which comes with associated costs. Individual water consumers can also benefit by saving money on their water and energy bills when using water efficiently. The IRWMP includes projects that enhance existing conservation programs and will help increase water supply reliability, which is essential to effective regional water management for years in which water is in short supply.

5.2.5 Clean Marina Program

Nonpoint source pollution in the City of Santa Barbara Harbor is addressed through the Clean Marina Program. The program goal is to achieve and maintain, via feasible means and alternatives, a clean harbor environment for people, aquatic life, and seabirds. The Clean Marina Program requires annual review by the Harbor Commission. Program Elements include (1) facilities for boaters, (2) water quality monitoring, (3) best management practices, (4) pollution prevention and abatement projects, (5) education, and (6) compliance and enforcement. In 2006, Santa Barbara Harbor earned the "Clean Marina" certification from the state, one of only a handful of public marinas to have earned this distinction. Santa Barbara Harbor received a score of 96 percent, far exceeding the minimum requirement for Clean Marina certification.

Since 1997, landside harbor activities have been regulated under an NPDES General Industrial Storm Water Permit. This permit requires a Storm Water Pollution Prevention Plan, a comprehensive plan document, the goal of which is to prevent discharge of pollutants into the harbor. Under the plan, the harbor area is inspected quarterly, with areas or operations needing improvement noted and addressed.

5.2.6 Weed Management Programs

The Santa Barbara County Weed Management Area is a multiagency coalition concerned with the invasion of farms, rangeland, and native plant and animal habitat by non-native weeds. The Santa Barbara County Weed Management Area conducts invasive weed control projects and coordinates and educates members towards the common goal of reducing the impact of harmful non-native weeds and enhancing the viability of agricultural, horticultural, and native ecosystems in Santa Barbara County. The program recently has been involved with pampas grass control projects in the Goleta Slough and in the vicinity of the Arroyo Burro; it currently is working with the Carpinteria Creek Watershed Coalition on the rehabilitation of Carpinteria Creek for steelhead habitat and will be leading an effort to control *Arundo donax* and *Tamarix spp.* on the Santa Ynez River. The latter project is included in the IRWMP, which also contains projects to improve steelhead habitat in the Santa Ynez watershed and on the South Coast and improve riparian and other sensitive habitats in the Carpinteria area, Goleta Slough, Arroyo Burro, and elsewhere in the county.

Thus, the IRWMP is consistent with and may be used to obtain funding for projects proposed by the Santa Barbara County Weed Management Area.

5.2.7 Vector Control Programs

The Mosquito and Vector Management District is a local governmental agency providing multifaceted health and safety protection to the residents of Santa Barbara County including mosquito breeding source monitoring and control. Some of the projects included in the IRWMP would increase wetlands and other areas where mosquitoes may breed; therefore, project proponents will coordinate closely with the district to ensure that mosquito abatement issues are appropriately addressed.

5.2.8 City of Santa Barbara Watershed Action Plans

In 2004, the City of Santa Barbara's Creeks Restoration and Water Quality Improvement Division initiated the development of watershed action plans for the Arroyo Burro, Mission Creek, Sycamore Creek, and Laguna Creek watersheds, as part of the City's Creeks Restoration/Water Quality Improvement Program. A watershed action plan will be multi-objective and may cross jurisdictional boundaries, as it covers all water-related issues and resources, including flooding, bank stability, groundwater, creek restoration, fisheries and stream habitat enhancement, and water quality. A watershed action plan comprehensively looks at contributing factors and cause-and-effect relationships on a watershed-wide scale. It identifies and coordinates program and individual project development needs, aimed at solving identified problems (stressors), with the agencies in the best position to implement them.

