Ventura County 2040 GENERAL PLAN

Chapter 10
Water Resources

10 WATER RESOURCES

INTRODUCTION

This chapter summarizes the various water resources and water resource issues in Ventura County. It is organized into the following sections:

- Major Findings (Section 10.1)
- Legal and Regulatory Framework for Water Management (Section 10.2)
- Integrated Regional Water Management (0)
- Existing Conditions (by watershed) (Section 10.4)
- Trends and Future Conditions (Section 10.5)
- Key Terms (Section 10.6)
- References (Section 10.7)

The organization of this chapter differs from others in the Background Report because of the nature of its subject matter. First, because the overall legal and regulatory framework affecting water resources is key to understanding how such resources are managed, the framework is the first substantive discussion in this chapter. Second, because water resources are so integrally tied to geography, the existing conditions discussions are organized according to the county's watersheds, with each aspect of the resource addressed as it relates uniquely to each watershed.

SECTION 10.1 MAJOR FINDINGS

Adequate water supply is a current and ongoing concern in Ventura County due to climate change and drought, the related declines in river flows and reservoir levels, historic overdraft of several local groundwater basins, curtailment of groundwater supplies in southern Ventura County, new groundwater well prohibitions, and reduced deliveries of imported water. More than 850,000 residents and 156 square miles (95,802 acres) of irrigated farmland in Ventura County experienced direct impacts from the drought that began in 2012.

- **The water supply challenges are great and could impact residents, businesses, agriculture, and the environmental resources of Ventura County without concerted action.**
    - **Climate change poses major challenges for water supply**. Climate change is causing warmer temperatures, altered patterns of precipitation, runoff, and rising sea levels. Climate change may compromise the ability to effectively manage water supplies, floods and other natural resources. It is anticipated that climate change will increase demand for water as temperatures rise, increase the need for water for firefighting purposes, change the timing and pattern of snowmelt and runoff, and sea level rise will threaten aging coastal water infrastructure. Planning for and adapting to these changes, particularly impacts to long-term water supply reliability, will be a significant challenge. Additional

details on climate change are found in Chapter 12 of the General Plan Background Report.

- **Declines in surface water flow and reservoir levels in Western Ventura County**. The water for more than 70,000 people in western Ventura County is at risk due to the drought that began in 2012. Imported water cannot currently be delivered to western Ventura County and groundwater is very limited. Water agencies that typically get all or part of their water from wells have had to start purchasing Lake Casitas water, as their wells have run dry. During the drought, purchases of Lake Casitas water increased by 1,000%. The lake is an important, but dwindling, resource threatened by both water quality and water supply concerns. For the first time since 1968, levels in Lake Casitas are expected to drop below 35% volume. Low water levels in 1968 resulted in significant thermal stratification and anoxic (without dissolved oxygen) conditions. The low oxygen levels created an environment where manganese and hydrogen sulfide, normally trapped in sediments, became soluble, causing the lake water to have a brown color and bitter metallic taste. There were also large blue-green algae blooms. Normally creek inflows provide supply and facilitate lake mixing (which helps maintain good water quality). Inflows have significantly decreased since 2012, causing the lake to stratify and stagnate. Casitas Municipal Water District has had to add aeration facilities to combat the water quality affects from the drought.

- ~~**Drought has significantly affected local water supplies.** More than 850,000 residents and 156 square miles (95,802 acres) of irrigated farmland in Ventura County experienced direct impacts from the drought that began in 2012.~~

- ~~**There are inadequate water supplies to meet future demands in some areas of the county.** Developing new water supplies is costly and requires a significant amount of time for planning, identifying and securing funding, environmental review, permitting, and construction. Some of the new supplies being considered include advanced treatment of wastewater for use as potable water, stormwater capture and reuse, treatment of brackish groundwater, and ocean desalination. Facilities to import and deliver locally-held, State Water Project entitlements are being considered. In addition, significant water conservation efforts have begun, mainly in municipal and industrial uses. Agricultural practices are also increasing in efficiency. These efforts will need to continue and be sustained.~~

- **Groundwater basins in the county are experiencing overdraft conditions**. Groundwater is estimated to provide 67 percent of the local water supply. The California Department of Water Resources (DWR) has identified the following groundwater basins in Ventura County as being in critical overdraft[1]: Cuyama Valley (the basin as a whole is considered to be in overdraft, however, the United States Geological Survey estimates the portion in Ventura County not to be in overdraft), Oxnard Plain, and Pleasant Valley. These basins serve both urban populations and agriculture. In April 2014, to protect groundwater supplies, the Fox Canyon Groundwater Management Agency, passed Emergency Ordinance E which mandated reduced extractions in many of the groundwater basins in southern Ventura County. In December 2014 the Ventura County Board of Supervisors approved and adopted Ordinance 4468 which prohibits new water

[1] As defined in the Sustainable Groundwater Management Act, a basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts such as persistent lowering of groundwater levels, drying of wells, reductions in groundwater storage, sea water intrusion, degradation of water quality, land subsidence, and reduction of water in streams and lakes.

wells in the unincorporated County in the majority of groundwater basins. These prohibitions will not be removed until Groundwater Sustainability Agencies are formed and have completed groundwater sustainability plans per the Sustainable Groundwater Management Act. Implementation of the Sustainable Groundwater Management Act will require an assessment of the condition of groundwater basins, managing groundwater demand, and undertaking groundwater recharge projects to achieve long-term sustainability.

- **Variability in deliveries of imported water.** Approximately three-quarters of Ventura County residents receive imported supply from Calleguas Municipal Water District. The amount of imported water varies depending on climatic conditions, regulatory conditions and regional demands. The California Department of Water Resources prepares a biennial report to evaluate the reliability of imported water from the State Water Project. The most recent update, the 2015 State Water Project Delivery Capability Report, anticipates greater extremes in the imported water system with lower than historic water availability in dry years and greater than historic water availability in wet years, with the long-term average deliveries decreasing.
- **Water resources dedicated to environmental purposes may change**. State and federal requirements dictate the amount of water that must be available for endangered species and this affects management of water resources. Potential requirements to provide increased instream flows could further reduce water available for municipal, agricultural, and other uses.
- **There are inadequate water supplies to meet future demands in some areas of the county.** Developing new water supplies is costly and requires a significant amount of time for planning, identifying and securing funding, environmental review, permitting, and construction. Some of the new supplies being considered include advanced treatment of wastewater for use as potable water, stormwater capture and reuse, treatment of brackish groundwater, and ocean desalination. Facilities to import and deliver locally-held, State Water Project entitlements are being considered. In addition, significant water conservation efforts have begun, mainly in municipal and industrial uses. Agricultural practices are also increasing in efficiency. These efforts will need to continue and be sustained.

- **Shift toward integrated watershed management.** In the past, different elements of the water system were managed separately from other elements, i.e., groundwater was managed as a separate resource from stormwater and separate from recycled water. There has been a shift in water resources management and regulation toward watershed based approaches. This approach integrates on a regional level the many facets of water resources management, including water supply, water quality, flood management, ecosystem health, and recreation through enhanced collaboration across geographic and political boundaries and diverse stakeholder groups.
- ~~**Water supplies dedicated to environmental purposes may change**. State and federal requirements dictate the amount of water that must be available for endangered species and this affects management of water resources. Potential requirements to provide increased instream flows could further reduce water available for municipal, agricultural, and other uses.~~
- **There is great diversity in the size, source, and organization of water suppliers in Ventura County.** Many properties are served by private wells and surface water diversions. Other properties are served by mutual water companies, irrigation companies, special districts, cities, private utilities, and wholesale water agencies. There are more than 162 water suppliers in the county.

- **Land development significantly affects demand and supply.** The type of land use greatly drives the demand and dictates the type of water needed. High-density residential development will require water treated to drinking water standards. Water sent to users with sewer systems is collected and can be used as a secondary recycled water supply. Agricultural users may be able to utilize raw or recycled water and application of water in agricultural fields may recharge groundwater.
- **Urban land development can impact water ~~quality~~resources**. Land development can impact water quality, but there are best management practices and other methods to avoid and lessen such impacts. Land development commonly creates an increase in impervious surfaces, which increases the amount of runoff and pollutants in stormwater. As stormwater runs over impervious surfaces such as rooftops, roadways, and parking lots, the runoff accumulates pollution and sediment, nutrients, bacteria, and other pollutants. Pollutants in stormwater are typically transported directly to local channels, rivers, and the ocean, without any treatment. Land development impacts floodplains, the risk of flooding, and the ability to manage storm waters naturally. Development in floodplains may impact the ability to recharge groundwater basins through infiltration and may remove potential sites with recharge capabilities. In addition to altering stormwater runoff, land development introduces other sources of pollution including discharges from sewage-treatment plants, septic tanks, and industrial facilities.
- **Agriculture land development can impact water ~~quality~~resources**. Tillage and irrigation of land changes the runoff and infiltration characteristics of the land, affecting recharge to groundwater, and increases erosion and resulting sediment deposit into surface-water bodies, while altering evapotranspiration. This in turn affects the interaction of groundwater and surface water.
- **Poor water quality limits beneficial uses of water**. Poor water quality can limit suitability of a water ~~body~~ resource for beneficial uses such as agriculture, recreation, fisheries, and riverine habitat. Poor water quality also can limit the use of the water for a water supply or drastically increase the treatment cost.
- **Development can affect natural hydrologic processes.** Some development can significantly alter land topography. Removal of natural vegetation and manmade structures such as levees, dams, and diversion structures disrupt natural hydrologic processes (i.e. sediment transport and deposition, groundwater recharge). These changes alter water velocity, river substrate, water shading, soil moisture, and other ecosystem characteristics needed by fish and wildlife.

SECTION 10.2 LEGAL AND REGULATORY FRAMEWORK FOR WATER MANAGEMENT

The framework for water management in Ventura County is complex and reflects the network of laws, policies, and regulations governing California water. Many laws and many institutions influence water planning; Table 10- provides a broad regulatory overview. Additional details on several of these laws, and a discussion of regulations with land use linkages, are further summarized on the following pages.

TABLE 10-1 FRAMEWORK FOR WATER MANAGEMENT	
Statute, Code, or Authority	**Relationship to Water Management**
State of California Constitution, Article X, Section 2	Requires that all entities in the State use water in a beneficial manner and prohibits unreasonable use and water waste.
State of California Riparian Water Rights	Allows owners of land on a stream to divert and use a portion of the flow.
State of California Appropriative Water Rights	The right to divert, store, and use water on any land, provided the use is reasonable and does not harm earlier appropriators. Appropriative rights are managed by the State Water Resources Control Board.
State of California Water Commission Act	Established a system of State-issued permits and licenses to appropriate water.
Federal Endangered Species Act	Designed to protect endangered and threatened species and promote species recovery. Requires that federal agencies consult with the US Fish and Wildlife Service and the National Marine Fisheries Service to ensure that federal actions do not jeopardize endangered or threatened species or their habitat.
National Environmental Policy Act	Requires federal agencies to conduct an environmental review for federal actions that may affect the environment; encourages implementation of mitigation measures to avoid impacts.
State of California Endangered Species Act	Designed to protect endangered and threatened species and promote species recovery. Requires that state and local agencies consult with the California Fish and Wildlife Service to ensure that their actions do not jeopardize endangered or threatened species or their habitat.
California Environmental Quality Act (CEQA)	Requires state and local governments to evaluate environmental effects and find ways to mitigate effects where feasible, prior to approving projects.
State of California Porter-Cologne Water Quality Control Act	This is a water quality control law and regulatory program to protect water quality and beneficial use of the State's water. This act allows regulation of discharges to water.
Federal Clean Water Act	Requires permits for the discharge of pollutants to waters of the United States from any point source. See additional detail below.
Federal and State Safe Drinking Water Act	Under this law, federal and state agencies set and enforce standards for drinking water quality.
State of California Regional and Local Water Agency Formation enabling acts	Guides the formation of districts for controlling, conserving, managing, and distributing water.
State of California Urban Water Management Planning (UWMP) Act	Requires urban water suppliers to conduct regular comparisons of supplies and demands. (See additional detail below.) Within the UWMP, water suppliers must include, to the extent practicable, information on the water quality of existing sources and the manner in which water

TABLE 10-1 FRAMEWORK FOR WATER MANAGEMENT	
Statute, Code, or Authority	**Relationship to Water Management**
	quality affects supply reliability. Based on the UWMP, water suppliers explore enhancing basic supplies from traditional sources such as the State Water Project (SWP) as well as other options. These include groundwater extraction, water exchanges and transfers, water conservation, recycling, brackish water desalination and water banking/conjunctive use. Each option will involve evaluations of how it would: (1) fit into the overall supply/demand framework; (2) impact the environment; and (3) affect customers. The objective of these more detailed evaluations would be to find the optimum mix of conservation and supply programs that ensure customers' needs are met.
State of California Agricultural Water Management Act	Senate Bill X7-7, the Water Conservation Act of 2009 (SB X7-7), requires agricultural water suppliers who provide water to more than 25,000 irrigated acres (excluding acreage irrigated by recycled water) to adopt and submit Agricultural Water Management Plans (AWMP) to DWR and to implement Efficient Water Management Practices, including the measurement and volumetric pricing of water deliveries. Within Ventura County, Casitas Municipal Water District, Camrosa Water District, and Ventura County Waterworks District No. 1 prepared AWMPs in 2015.
State of California Water Conservation in Landscaping Act	Requires specific water efficiencies for landscapes in new or redevelopment projects.
State of California Energy Commission Title 20	Sets standards for toilets, urinals, faucets, and showerheads. The appliance standards dictate what can be sold in California and impact new construction and replacement fixtures in existing homes.
State of California CAL Green Building Code	Requires residential and non-residential water efficiency and conservation measures for new structures that will reduce the overall potable water use by 20 percent. Water savings can be achieved by installing plumbing fixtures and fittings that meet the 20 percent reduced flow rate specified in the CAL Green Code, or by other measures that meet the reduction standard.
State of California Sustainable Groundwater Management Act	Requires entities using water from groundwater basins designated as high or medium priority by the Department of Water Resources to assess the condition of groundwater basins and to develop a framework for long-term sustainability through demand management and groundwater recharge activities. (See additional discussion on the Sustainable Groundwater Management Act further in this Section below .)
State of California Class II Underground Injection Control Program	Regulation of wells used to inject fluids associated with oil and natural gas production. The purpose of the regulation is to ensure fluids associated with oil and gas production are not introduced into drinking water sources. (See additional details below.)

TABLE 10-1 FRAMEWORK FOR WATER MANAGEMENT	
Statute, Code, or Authority	**Relationship to Water Management**
State of California Permitting of Water Systems	Regulates the formation of new public water systems by the State Water Resources Control Board. (See additional detail below.)
County of Ventura General Plan Goals, Policies and Programs	Complies with Section 65300 of the California Government Code which requires that, "Each planning agency shall prepare and the legislative body of each county and city shall adopt a comprehensive, long-term general plan for the physical development of the county or city, and of any land outside its boundaries which in the planning agency's judgment bears relation to its planning."
County of Ventura Subdivision Ordinance	Regulates and control subdivisions of land and in conjunction implements the County's General Plan. (See additional detail below.)
County of Ventura Coastal Zone Ordinance	Regulates all proposed development in the Coastal Zone of Ventura County. (See additional detail below.)
County of Ventura Non-Coastal Zone Ordinance	Regulates all proposed development in the Non-Coastal Zone of Ventura County. (See additional detail below.)
Ventura County Groundwater Conservation Ordinance	Regulates construction, maintenance, operation, use, repair, modification, and destruction of groundwater wells. (See additional detail below.)
County of Ventura Landscape Design Criteria	Requires approval of a landscape plan for new and modified developments. Limits the plant types and plant pallets so as to conserve water, and requires minimum irrigation efficiency.
State of California Propositions 50, 84, and 1	Grant funding to encourage regional integrated planning of water resources. (See additional detail below.)
State of California Nonpotable Water Reuse Systems-Chapter 15 of the California Plumbing Code (CPC) (as of 2017)	Allows for use of nonpotable water (i.e., graywater), which includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines and laundry tubs. Requires a plumbing permit from the County of Ventura Resource Management Agency, Building and Safety Division.

Urban Water Management Plan Act (State)

State law requires that urban water suppliers with more than 3,000 customers, or who deliver more than 3,000 acre-feet per year (AFY) adopt water management and conservation plans that evaluate water supplies and water demands for a 20-year period. Urban Water Management Plans (UWMP) are to be updated every five years or when there are significant changes in available supplies or demands. An UWMP is a planning tool that generally guides the actions of water management agencies. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that the Plan include a Section that "describes the opportunities for exchanges or water transfers on a short-term or long-term basis." (California Urban

Water Management Planning Act, Article 2, Section 10630(d)). The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange/transfer opportunity, nor precludes a water management agency from exploring exchange/transfer opportunities not identified in the Plan. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

"A plan is intended to function as a planning tool to guide broad-perspective decision making by the management of water suppliers." (Sonoma County Water Coalition v. Sonoma County Water Agency (2010) 189 Cal. App. 4th 33, 39). It should not be viewed as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty and planning projections may change in response to a number of factors. "[L]ong-term water planning involves expectations and not certainties. Our Supreme Court has recognized the uncertainties inherent in long-term land use and water planning and observed that the generalized information required . . . in the early stages of the planning process are replaced by firm assurances of water supplies at later stages." (Id., at 41). From this perspective, it is appropriate to look at the UWMP as a general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these "framework" questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands.

Based on the UWMP, water suppliers explore enhancing basic supplies from traditional sources such as the State Water Project (SWP) as well as other options. These include groundwater extraction, water exchanges and transfers, water conservation, recycling, brackish water desalination and water banking/conjunctive use. Specific planning efforts will be undertaken in regard to each option, involving detailed evaluations of how each option would fit into the overall supply/demand framework, how each option would impact the environment and how each option would affect customers. The objective of these more detailed evaluations would be to find the optimum mix of conservation and supply programs that ensure that the needs of customers are met.

The Urban Water Management Plan Act requires coordination with local land use entities. At least 60 days prior to the public hearing on the plan any applicable city or county where the water agency supplies water must be notified that the plan is being updated. The water supplier must also provide notice when the Draft UWMP is available for review and comment. Upon completion of the UWMP a copy of the plan must be provided to the applicable land use jurisdictions.

Sustainable Groundwater Management Act (State)

In September 2014, the California legislature enacted comprehensive legislation to manage California groundwater. Known as the Sustainable Groundwater Management Act (SGMA) of 2014, the legislation provides a framework for sustainable management of groundwater supplies by local authorities, but with

the potential for state intervention if necessary. The first step in the process laid out by the legislation is the formation of local groundwater sustainability agencies (GSAs). These GSAs must be formed to address groundwater basins determined by the state to be of high or medium priority, unless adjudicated. In Ventura County, seven basins are designated as medium priority, Ojai Valley, Upper Ventura River, Cuyama Valley, Arroyo Santa Rosa Valley, Mound, Santa Paula (which is adjudicated), Fillmore and four are designated as high priority, Oxnard Plain, Pleasant Valley, Las Posas, and Piru. Three basins are listed as in "critical overdraft:" Oxnard Plain, Pleasant Valley, and Cuyama Valley. The Santa Paula Basin is adjudicated, and is currently only subject to annual reporting requirements to DWR under SGMA.

GSAs are empowered to utilize a number of new management tools to achieve the sustainability goal. For example, GSAs may require registration of groundwater wells, mandate annual extraction reports from individual wells, impose limits on extractions, and assess fees to support creation and adoption of a groundwater sustainability plan (GSP). GSAs also may request a revision of a groundwater basin boundary.

GSPs for critically overdrafted basins must be completed and adopted by January 31, 2020. GSPs for high- and medium-priority basins not in overdraft must be completed and adopted by the GSA by January 31, 2022. All high- and medium-priority groundwater basins must achieve sustainability within 20 years of GSP adoption.

The aim of the legislation is to have groundwater basins managed within the sustainable yield of each basin. The legislation defines "sustainable groundwater management" as the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results, which are defined as any of the following effects: chronic lowering of groundwater levels; significant and unreasonable reductions in groundwater storage; significant and unreasonable seawater intrusion; significant and unreasonable degradation of water quality; significant and unreasonable land subsidence; and surface water depletions that have significant and unreasonable adverse impacts on beneficial uses.

The SGMA amends planning and zoning laws to require increased coordination among land use planning agencies and GSAs regarding groundwater plans and any updates or modifications of General Plans. Existing local government land use and groundwater authorities are not modified in the Act.

Specific changes to California Government Code resulting from SGMA are detailed in Appendix 10.A at the end of this chapter.

Class II Underground Injection Control Program (State)

As discussed in Chapter 8, Section 8.1 (Energy Resources) there are currently 57 oil companies operating in Ventura County under the authority of 135 conditional use permits granted by the County to authorize oil and gas activities, including the underground injection of water. According to the California Department of Conservation, Division of Oil, Gas and Geothermal Resources' (DOGGR), there are 614 active Underground Injection Control (water injection) wells in Ventura County. The State of California was delegated primary responsibility for implementing the Class II Oil and Gas Underground Injection Control [UIC] program of the federal Safe Drinking Water Act [SDWA] in 1983.

To determine whether certain UIC wells were posing a threat to water supply wells, the State Water Resources Control Board and its regional water quality control boards (Water Boards) completed an

evaluation of certain UIC wells in December 2016.[2] Staff from the Water Boards reviewed 6,157 UIC wells determined by DOGGR to be injecting into non-exempt aquifers.[3] This evaluation included Class II UICs located in Ventura County. UIC wells were screened for proximity to water supply wells or any other indication of risk of impact to drinking water and other beneficial uses.

Based on this screening criteria, DOGGR ordered the immediate shut-in of 23 UIC wells, none of which were in Ventura County. (A shut-in well is one which is capable of injection or production, but is not in operation). Additionally, the Water Boards issued 71 Information Orders (IOs), requesting additional information from operators of 256 UIC wells. One operator in Ventura County received an IO for a UIC well, which has been abandoned.

In addition to the above UIC regulations, Public Resources Code Section 3106 et. seq. grants DOGGR with the authority to supervise the drilling, operation, maintenance, and abandonment of wells and the operation, maintenance, and removal or abandonment of tanks and facilities attendant to oil and gas production and designated pipelines, so as to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil and gas deposits from infiltrating water and other causes; loss of oil, gas, or reservoir energy, and damage to underground and surface waters suitable for irrigation or domestic purposes by the infiltration of, or the addition of, detrimental substances.

Furthermore, the California Code of Regulations, Title 14, Division 2, Chapter 4, Development, Regulation, and Conservation of Oil and Gas Resources includes several provisions which regulate injection projects (water injection wells). DOGGR is the responsible agency for approving all underground injection and disposal projects before any subsurface injection or disposal project can begin. This includes all EPA Class II wells and air- and gas-injection wells. There are requirements for filing, notification, operating, and testing for underground injection projects (Sections 1724.10 1748.2, 1748.3), and standards for freshwater protection when plugging and abandoning wells (Section 1723.2). This includes DOGGR's authority to require testing as necessary to prevent damage to life, health, property, and natural resources (Section 1954).

Clean Water Act (Federal)

The Clean Water Act, as amended, requires permits for the discharge of pollutants to waters of the United States. Implementation of the Clean Water Act and the Porter-Cologne Water Act is the responsibility of the State Water Resources Control Board and the Regional Water Quality Control Boards. In the Ventura area the applicable Regional Board is the Los Angeles Regional Water Quality Control Board (Los Angeles RWQCB). The Los Angeles RWQCB lays out the water quality objectives, regulations, and programs to implement the regulations in the Los Angeles Basin Plan (Los Angeles RWQCB 2014). The Basin Plan is reviewed and updated every three years, but can be amended at any time. The Los Angeles RWQCB manages water quality based on "beneficial uses". In Ventura County, there are twenty-four identified beneficial uses:

[2] The State evaluated "non-exempt" aquifers. The following federal and state criteria must be met for an aquifer to be considered exempt: (a) cannot be a current drinking water source; (b) unlikely to be a future source of drinking water; (c) injection must not impact current/potential future beneficial use; and (d) injection fluids must remain in the proposed exempted area.

[3] U.S. EPA, Region IX (Pacific Southwest Region) has approved six DOGGR aquifer exemption requests, none of which are in Ventura County.

1. **Municipal and Domestic Supply (MUN).** Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

2. **Agricultural Supply (AGR).** Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

3. **Industrial Process Supply (PROC).** Uses of water for industrial activities that depend primarily on water quality.

4. **Industrial Service Supply (IND).** Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.

5. **Ground Water Recharge (GWR).** Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.

6. **Freshwater Replenishment (FRSH).** Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).

7. **Navigation (NAV).** Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.

8. **Hydropower Generation (POW).** Uses of water for hydropower generation.

9. **Water Contact Recreation (REC-1).** Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.

10. **Non-contact Water Recreation (REC-2).** Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

11. **Marine Habitat (MAR).** Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife (e.g., marine mammals, shorebirds).

12. **Wildlife Habitat (WILD).** Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

13. **Commercial and Sport Fishing (COMM).** Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

14. **Aquaculture (AQUA).** Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

15. **Warm Freshwater Habitat (WARM).** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic

habitats, vegetation, fish, or wildlife, including invertebrates.

16. **Cold Freshwater Habitat (COLD).** Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

17. **Inland Saline Water Habitat (SAL)**. Uses of water that support inland saline water ecosystems including, but not limited to, preservation or enhancement of aquatic saline habitats, vegetation, fish, or wildlife, including invertebrates.

18. **Estuarine Habitat (EST).** Uses of water that support estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds).

19. **Wetland Habitat (WET).** Uses of water that support wetland ecosystems, including, but not limited to, preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions which enhance water quality, such as providing flood and erosion control, stream bank stabilization, and filtration and purification of naturally.

20. **Preservation of Biological Habitats (BIOL)**. Uses of water that support designated areas or habitats, such as Areas of Special Biological Significance (ASBS), established refuges, parks, sanctuaries, ecological reserves, or other areas where the preservation or enhancement of natural resources requires special protection.

21. **Rare, Threatened, or Endangered Species (RARE).** Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

22. **Migration of Aquatic Organisms (MIGR).** Uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.

23. **Spawning, Reproduction, and/or Early Development (SPWN).** Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

24. **Shellfish Harvesting (SHELL).** Uses of water that support habitats suitable for the collection of filter-feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.

To protect these beneficial uses, the Los Angeles RWQCB has many regulatory programs to reduce pollutants that originate in stormwater, wastewater, agricultural runoff, and recycled water.

Los Angeles RWQCB regulates discharges from many classes of municipal stormwater systems through a permit program. The Ventura County Watershed Protection District, County of Ventura, and the cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Ventura, Santa Paula, Simi Valley, and Thousand Oaks are named as co-permittees under a countywide municipal National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges issued by the Regional Water Quality Control Board. The co-permittees are required to administer, implement, and enforce a Stormwater Quality Management Program. The goal is to minimize runoff pollution typically caused by land development and protect the beneficial uses of receiving waters by limiting effective impervious area to no more than five percent of the project area and retaining stormwater on site. The co-permittees require

"Site Design Principles and Techniques," "Source Control Measures," "Retention Best Management Practices [BMPs]," "Biofiltration BMPs," and "Treatment Control Measures" be incorporated into new development and redevelopment projects.

Wastewater from wastewater treatment or industrial activities is typically regulated through waste discharge permits (also referred to as Waste Discharge Requirements). Through this permit process the RWQCB regulates the place, volume, and specific constituents in discharges to California's coastal waters, surface waters, and groundwater.

In 2016, the Los Angeles RWQCB readopted a Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands within the Los Angeles Region. Typically referred to as the "Conditional Waiver" program, it requires the owners of irrigated farmland to prepare and submit water quality management plans, conduct monitoring in agricultural drains and other sites influenced by agricultural runoff, and implement BMPs that address the quantity and quality of irrigation return flows and stormwater runoff. The purpose is to limit these discharges, which carry nutrients, pesticides, sediment, salts, and other pollutants from cultivated fields, from reaching surface waters. The Conditional Waiver allows growers to comply as individuals or by working collectively as a "discharger group." In response to the Conditional Waiver, the Farm Bureau of Ventura County formed the Ventura County Agricultural Irrigated Lands Group (VCAILG), which serves as a unified discharger group for those agricultural landowners and growers who agree to join. The Farm Bureau of Ventura County administers the program on behalf of VCAILG members.

Both the State Water Resources Control Board (SWRCB) and RWQCBs regulate recycled water. Permits are required to operate recycled water facilities and these permits mandate the type of treatment and resultant water quality, mandate ongoing water quality monitoring, and regulate the place and manner of recycled water use. The State Water Resources Control Board's 2009 Recycled Water Policy, amended in 2013, requires groundwater basins receiving recycled water (e.g., effluent discharge in waterways, injection, recharge, or irrigation) to be managed by Salt and Nutrient Management Plans. The purpose of a Salt Nutrient Management Plan is to optimize recycled water use while ensuring the protection of groundwater supply and beneficial uses, agricultural beneficial uses, and human health. Salt and Nutrient Management Plans are submitted to the RWQCB, which incorporate the plans into the applicable Basin Plan and the RWQCB requires recycled water facilities and wastewater dischargers to operate in a manner consistent with applicable salt nutrient management plan.

The Clean Water Act also includes a regulatory mechanism called the Total Maximum Daily Load (TMDL) program. A TMDL is specific to a given impairment (chloride, nutrients) and a specific waterbody. A TMDL is a kind of "pollution budget" and includes a calculation of the maximum amount of a pollutant that can occur in a waterbody and still meet water quality standards so as to protect beneficial uses. The TMDL also allocates the necessary reductions to one or more pollutant sources. TMDLs can force the implementation of BMPs, infrastructure improvements, and other actions to limit pollution. Within Ventura County the following TMDLs are in place:

- Ventura River Watershed
  - Algae, Eutrophic Conditions, and Nutrients
  - Trash
- Santa Clara River Watershed
  - Bacteria
  - Chloride
- Calleguas Creek Watershed

- Metals
- Salts
- Trash
- Toxicity
- Toxins/Historic Pesticides
- Nitrogen/Nutrients

Under section 303(d) of the Clean Water Act, states, territories, and tribes are to develop lists of waterbodies that are polluted or otherwise degraded and not meeting water quality standards. The 303(d) List is used to develop TMDLs and/or are used to identify other mechanisms to improve water quality. Several waterbodies in Ventura County are on the current 303(d) List for California (SWRCB 2016).

Permitting of Public Water Systems

The State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) oversees the permitting of Public Water Systems. On September 29, 2016, Governor Jerry Brown approved Senate Bill 1263 to prevent the formation of small unsustainable water systems. This bill requires a person submitting a permit application for a proposed new public water system to first submit a preliminary technical report to the SWRCB. The bill directs the applicant to undertake additional discussion and negotiation with existing public water systems with the technical, managerial, and financial capacity to provide an adequate and reliable supply of domestic water to the service area of the proposed new public water system. If the SWRCB determines that it is feasible for the service area of the proposed public water system to be served by one or more currently permitted public water systems and if it is reasonably foreseeable that the proposed new public water system will be unable to provide affordable, safe drinking water in the reasonably foreseeable future, the permit will be denied.

County of Ventura Role in Water Management

The County of Ventura has a large role to play in water management. Through the General Plan Goals, Policies and Programs, Subdivision and Zoning Ordinances and Building Code, the County of Ventura conditions development to ensure adequate water supply, availability of wastewater disposal, and protection of groundwater and surface water quality. Through its Landscape Design Criteria, Ventura County requires water budget and project use calculations, use of reclaimed water if feasible, and water-efficient model home requirements. Per the authority of the Floodplain Management Ordinance, the County restricts and prohibits land uses or land alteration which may be dangerous to health, safety, and property due to modification or obstruction of flood waters or alteration of a water course.

In addition to the regulatory setting, the County of Ventura actively undertakes projects to manage water resources, which include but are not limited to, well permitting, groundwater recharge, stormwater treatment and infiltration, as well as levees and flood control channels. Ventura County also is responsible for the operation and maintenance of several water and sewer utilities within the county. Various county departments also collect and maintain data on countywide water resources. For example, the VCWPD maintains a network of rainfall and streamflow gauges, inventories and inspects groundwater wells, collects water quality data, and groundwater level information.

County of Ventura General Plan Goals, Policies and Programs

The General Plan (2005) Goals Policies and Programs (GPP) includes goals, policies, and programs related to water resources in Chapter 1, Resources, Section 1.3. In addition to policies in the GPP, the following Area Plans also contain applicable goals and policies related to water resources:

- El Rio/Del Norte Area Plan;
- North Ventura Avenue Area Plan;
- Oak Park Area Plan;
- Ojai Valley Area Plan;
- Piru Area Plan;
- Saticoy Area Plan;
- Thousand Oaks Area Plan; and
- Lake Sherwood/Hidden Valley Area Plan.

County of Ventura Ordinances

Subdivision Ordinance

The intent of the County of Ventura Subdivision Ordinance is to regulate and control subdivisions of land and, in conjunction, implement the County's General Plan. The Subdivision Ordinance applies to "all divisions, reversions to acreage, lot line adjustments, and mergers respecting real property located wholly or partially within the unincorporated areas of Ventura County" and "governs the filing, processing, approval, conditional approval, or disapproval of tentative, final and parcel maps, map waivers, and any modifications thereto." The Subdivision Ordinance includes the following provisions meant to ensure adequate provision of water, to protect water supply, and to protect surface and groundwater quality.

Provisions to ensure adequate provision of water:

- Section 8203-3, Section 8206-3.8, and Section 8206-3.9. At the tentative tract stage, requires a description of the method and plan for providing a permanent domestic water supply. If the water supply is to be provided by a public water system the tentative tract map must be accompanied by a "water availability letter."[4] In areas where groundwater supplies have been determined to be questionable or inadequate, a report must also be submitted demonstrating the availability of a permanent domestic water supply to each lot for a period of at least 60 years. At the final map phase, developments not being served water by individual wells, must provide a "water supply certificate" documenting that a binding agreement has been entered into between the owner of the land and water supplier. Also at the final map stage a registered civil engineer must determine (a)

[4] A water availability letter pursuant to the §8203-3 (l) of the Ventura County Subdivision Ordinance, which requires that the proposed water system of a subdivision provide a letter stating that they will supply permanent domestic water supply to each lot, is not synonymous with the requirement for a water purveyor to supply a "water availability letter" as defined in §1.3.6 of the Ventura County Waterworks Manual, which shall demonstrate that the water purveyor has the necessary water capacity for their entire service area.

that the water suppliers system complies with the quality and quantity standards of Title 22 of the California Code of Regulations and that the new development will not impact the water supplier in a way such that the water system will not comply with Title 22 and (b) the facilities of the water supplier's system, including the portion to serve the proposed subdivision, meet or exceed the requirements of the County of Ventura Improvement Standards and Specifications.

- Section 8204-7. Requires that whenever a proposed subdivision is located within the boundaries of a public water agency willing and able to provide water service to the lots, the public water agency shall be chosen as the water purveyor for the proposed subdivision.
- Section 8205-5.1. Requires notification to water, sewage and other service providers prior to Planning Commission hearing on a subdivision (when a tentative map and final map are required).
- Section 8207-2. Prior to recordation of a final map or parcel map, or at such earlier time as may be specified in this Article, the subdivider shall complete or shall enter into an improvement agreement to complete specific improvements including permanent domestic water supply.

Provisions to protect surface and groundwater quality:

- Section 8203-2. Requires water courses and existing or abandoned water wells be identified on tentative maps.
- Section 8203-3. Requires a hydrologic and hydraulic study be submitted with the tentative map indicating the following conditions before and after proposed development of the subdivision: drainage areas, major watercourses, quantity and pattern of storm water, and diversion and collection systems.
- Section 8203-3. Requires a description of the proposed method and plan for sewage disposal for each proposed lot.
- Section 8204-5. Design of a subdivision shall conform to the County of Ventura Flood Plain Management Ordinance and shall provide for the proper drainage of all lots and improvements based on the runoff that can be anticipated from ultimate development of the watershed in accordance with the General Plan. All public facilities including water and sewer, must be located and constructed in a manner to minimize potential flood damage. Any concentrations or increases of surface water resulting from the development of the subdivision must be conveyed by means of adequate facilities to a suitable natural watercourse in the area.
- Section 8207-2. Prior to recordation of a final map or parcel map, or at such earlier time as may be specified in this Article, the subdivider shall complete or shall enter into an improvement agreement to complete specific improvements including: (a) all improvements for drainage and erosion control required for the proposed subdivision, regardless of location, including improvements necessary to prevent sedimentation or damage to off-site property, (b) sewage and permanent domestic water supply systems shall be installed in each proposed subdivision and connections thereto made from each lot within the subdivision, (c) all abandoned water wells within the proposed subdivision shall either be destroyed or be retained subject to a Certificate of Exemption in compliance County of Ventura Code.
- Section 8209-5. As a condition of approval of any subdivision, the tentative map for which is filed no sooner than 30 days after the adoption of any applicable drainage or sanitary sewer plan

for a particular drainage or sanitary sewer area, the subdivider may be required to pay fees or consideration in lieu thereof for the purpose of defraying the actual or estimated costs of constructing planned drainage facilities for the removal of surface and storm waters from local or neighborhood drainage areas and of constructing planned sanitary sewer facilities.

Coastal Zone and Non-Coastal Zone Ordinances

The County of Ventura Coastal Zoning Ordinance (CZO) regulates all proposed development in the Coastal Zone of Ventura County; areas outside of this zone are regulated by the Non-Coastal Zoning Ordinance (NCZO). Many of the provisions of the Coastal Zone and Non-Coastal Ordinance are similar to those in the Subdivision Map Act. Though provisions differ given the proposed land use, generally these ordinances require:

- Obtaining a permit or zoning clearance prior to: (a) constructing or expanding a septic system; (b) constructing or expanding a water well, and (c) constructing private water storage and distribution facilities.
- A 100- to 300-foot setback from water channels and prohibits obstruction of drainage courses.
- Development to be undertaken in accordance with conditions and requirements established by the Ventura Countywide Stormwater Quality Management Program, National Pollutant Discharge Elimination System (NPDES) Permit No. CAS063339 and the Ventura Stormwater Quality Management Ordinance No. 4142 and as these permits and regulations may be amended.
    - Construction activity including clearing, grading or excavation that requires a grading permit shall be undertaken in accordance with any conditions and requirements established by the NPDES Permit or other permits which are reasonably related to the reduction or elimination of Pollutants in Stormwater from the construction site.
    - Preparation of a Stormwater Pollution Control Plan or Stormwater Pollution Prevention Plan for construction activities.
    - Generally new development or redevelopment projects affecting 5,000 square feet or greater must incorporate post-construction stormwater quality design principals, details are provided in the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures.

A unique provision in the NCZO is the definition of the Arroyo Santa Rosa/Tierra Rejada Groundwater Quality Impact Area. In this area, the ratio of developed floor area relative to the parcel size for a second dwelling unit is regulated to limit the amount of septic discharge to groundwater.

Ventura County Watershed Protection Act

This act established the Ventura County Watershed Protection District, its general purpose, and authorities. Pursuant to the Act, the Watershed Protection District is to:

- provide for the control of flood and storm waters;
- conserve such waters for beneficial and useful purposes by spreading, storing, retaining and causing to percolate into the soil;

- save or conserve in any manner all or any of such waters and protect from such flood or storm waters the watercourses, watersheds, public highways, life and property in the District;
- prevent waste of water or diminution of the water supply in, or exportation of water from the District;
- obtain, retain and reclaim drainage, storm, flood and other waters for beneficial use; and
- provide for the protection from erosion of beaches and shorelines and to provide for the restoration of such beaches and shorelines.

Under the Act, the Watershed Protection District has the power to undertake projects consistent with its purpose and to adopt and enforce regulations consistent with its purpose. The District has the power to prescribe, revise, and collect fees as a condition of development of land. A permit from the Watershed Protection District must be obtained for most activities in, on, over, under, or across the bed, banks, and overbank areas of local streams and channels.

County of Ventura Flood Plain Management Ordinance

This ordinance restricts and prohibits land uses or land alteration which may be dangerous to health, safety, and property due to modification or obstruction of flood waters or alteration of a water course. Further, this ordinance requires that uses vulnerable to floods be protected against flood damage at the time of initial construction. The Watershed Protection District implements the Flood Plain Management Ordinance through its encroachment and watercourse permit programs.

County of Ventura Building Code

Submittal of grading plans during the permitting process requires an applicant evaluate soils and geology and site drainage patterns prior to grading. Site design must include measures to detain or retain stormflows so that runoff is not appreciably different post-development. Design must include measures to prevent erosion of slopes, such as vegetation, soil stabilizers, and rip rap. The County of Ventura requires (Building Code Section J112) that best management practices be used to prevent erosion and stormwater flows from discharging offsite.

County of Ventura Groundwater Conservation Ordinance

The purpose of Ordinance No. 4468, division 4, Chapter 8, Article 1 is to protect groundwater quality, supply and quantity by regulating the construction, maintenance, operation, use, repair, modification, and destruction of wells and engineering test holes in Ventura County. Such work requires obtaining a permit and approval from the respective agency authorized to regulate new well construction. Permits shall require compliance with all applicable standards set forth in the Ordinance, and in accordance with DWR California Well Standards Bulletins Nos. 74-81 and 74-90, and County of Ventura Water Well Standards Bulletin No. 74-9.

SECTION 10.3 INTEGRATED REGIONAL WATER MANAGEMENT

Integrated Regional Water Management (IRWM) became a new paradigm for managing water resources with the passage of Proposition 50 in 2002. This approach integrates the many facets of water resources management on a regional level, including water supply, water quality, flood management, ecosystem health, and recreation through enhanced collaboration across geographic and political boundaries and diverse stakeholder groups. The Watersheds Coalition of Ventura County (WCVC) was formed as the IRWM group to develop and implement a plan to identify water management challenges, resolve conflicts over the best use of resources, bridge gaps in data, find common ground, and seek innovative solutions among stakeholders. A primary goal is implementation of projects and programs that efficiently address water management priorities.

The 2014 WCVC Integrated Regional Water Management Plan Goals are outlined as follows:

- Reduce dependence on imported water and protect, conserve and augment water supplies
- Protect and improve water quality
- Protect people, property and the environment from adverse flooding impacts
- Protect and restore habitat and ecosystems in watersheds
- Provide water-related recreational, public access, stewardship, engagement and educational opportunities
- Prepare for and adapt to climate change

Grant funds made available through Proposition 50 (2002), Proposition 84 (2006), and Proposition 1 (2014), have leveraged local funds for project implementation. These funds helped communities, including disadvantaged communities, throughout Ventura County to enhance the availability of clean water supplies for the benefit of people and the environment, to protect communities from flood damage, and to provide access to water-related recreation opportunities. WCVC participants benefit from the cost-sharing, collaboration, and effective problem-solving opportunities made possible by working together.

One example of an ongoing project partially funded through the IRWM Program with Proposition 84 grant funds is the Natural Floodplain Protection Program (NFPP), which is focused on preserving a critical section of the remaining floodplain in the Santa Clara River Watershed. A Floodplain Working Group was formed to develop the project and is comprised of the County's Watershed Protection District, the Ventura County Farm Bureau, The Nature Conservancy, and the Ventura County Resource Conservation District.

The Working Group developed the concept of incentivizing farmers to continue to farm in the floodplain, thus leaving their land undeveloped. This is done by offering to purchase flood (inundation) easements over private land within the floodplain. These easements cover working farmland, a use that is encouraged to continue under the easement. The farmers are financially compensated for keeping their property in the floodplain and giving up rights they may have to develop the land. The value of easements is established through negotiations with individual land owners and verified by an appraisal.

To date, almost 500 acres of flood plain within the Santa Clara River Watershed have been acquired through the Natural Floodplain Protection Program.

SECTION 10.4 EXISTING CONDITIONS

Ventura County covers approximately 1,873 square miles, a large proportion of which (860 square miles, over half a million acres) lies within the Los Padres National Forest. The coastal areas have a generally mild climate, with an average high temperature of 73 degrees Fahrenheit (ºF) in July and an average January low temperature of 45 ºF (Western Regional Climate Center web site at www.wrcc.dri.edu for Station 049285 Ventura, January 1900 to August 2013). Average rainfall in the coastal areas is 14.67 inches per year (Western Regional Climate Center web site at www.wrcc.dri.edu for Station 049285 Ventura, January 1900 to August 2013). Interior valleys without coastal influence have hotter summers (average high temperature of 93.20 ºF in July) and cooler winters (average low temperature of 44.35 ºF) but also modest average rainfall of 14.37 inches per year (California Irrigation Management Information System data provided from Station No. 219, Los Angeles region, September 2011 to November 2015 and Station No. 204, Los Angeles Region, January 2007 to August 2011).

The Region contains four major watersheds, smaller coastal watersheds, and 23 basins (see Figure 10-1 and Figure 10-2). This background report has organized information according to major watershed: Ventura River, Cuyama, Santa Clara River, and Calleguas Creek. A small portion of the Malibu Creek Watershed falls in Ventura County; for the purposes of this document, this area is included with information on the Calleguas Creek Watershed. The Oxnard Plain, while not a watershed is an important water feature in the county and is given its own discussion in the text.

Ventura River Watershed

The Ventura River Watershed is located in the northwestern portion of Ventura County and drains an approximately 228 square mile (145,920 acres) area. The watershed extends 33.5 miles from the steep Transverse Ranges of the Matilija Wilderness to the Pacific Ocean. The Matilija, North Fork Matilija, San Antonio, and Cañada Larga are the major tributaries. The watershed is unique in that developed land makes up only 13 percent of the watershed area (Ventura River Watershed Council 2015). Approximately half of the Ventura River Watershed is Forest Service land. This means the upper portion of the Ventura River Watershed is minimally developed and has large areas with good water quality and excellent aquatic habitat. A 30-mile portion of the upper fork of Matilija Creek and its tributaries are designated as Wild and Scenic Rivers. Most of the southern half of the watershed lies within unincorporated Ventura County.

Precipitation in the Ventura River Watershed varies greatly between seasons and across years. There are notable cycles of drought and flood. Most of the precipitation is in the form of rain, but a small portion of the upper watershed experiences snow. Most precipitation occurs during just a few storms between November and March; summer and fall months are typically dry. Many parts of the Ventura River and its tributaries are dry during the summer and fall months (Ventura River Watershed Council 2015).

The cities of Ojai and Ventura are located in the Ventura River Watershed as are the unincorporated communities of Meiners Oaks, Mira Monte, Oak View, and Casitas Springs. Land uses in the watershed are as follows:

- Federal land/National Forest 47.7%
- Undeveloped land 29.8%
- Agriculture 18.5%
- Urban uses 4% (3.1% in cities, 0.9% in unincorporated County)

Surface Water

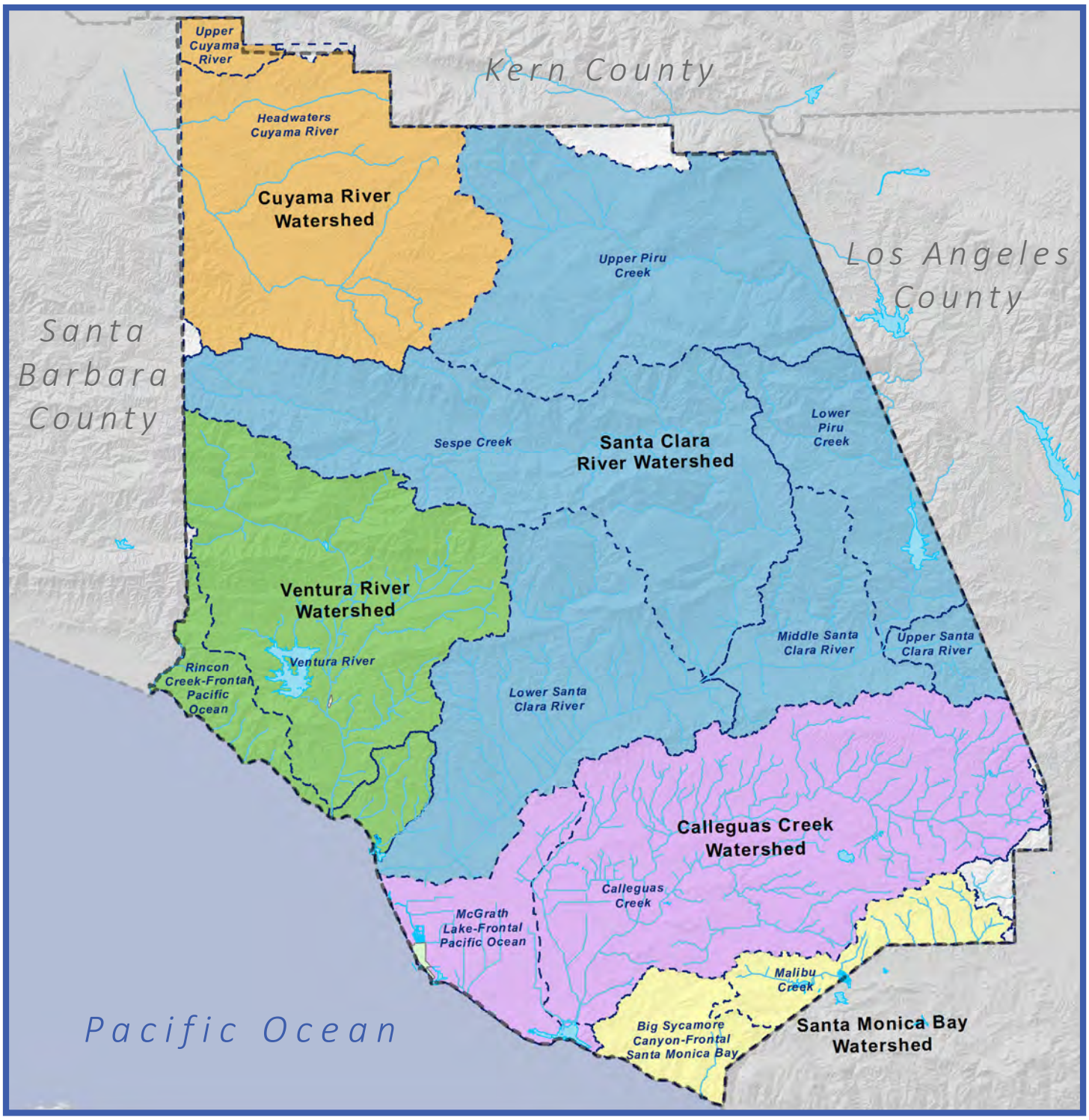
The major surface water features in the watershed are the Matilija Reservoir, Lake Casitas, and Ventura River.

Matilija Reservoir. Matilija Creek originates in the steep mountains in the northwest corner of the watershed and is considered the headwaters of the Ventura River. Matilija Dam captures the creek to create the Matilija Reservoir, which is owned by the Ventura County Watershed Protection District. Matilija Dam was built in the late 1940s for the purpose of providing irrigation water to the western Ojai Valley. Matilija Reservoir originally provided for 7,018 acre-feet (AF) of water storage. However, the storage capacity of the reservoir has been significantly reduced by sedimentation and is now estimated to be only about 500 AF (Tetra Tech 2009). The majority of the sediment was deposited during a few big storm years (USACE 2004). Matilija Reservoir no longer provides any water supply benefit. In fact, the dam is now considered an environmental liability. The dam prevents the natural flow of sand and sediment from the mountains to the beaches and it also blocks the endangered steelhead trout from upstream habitat. Since 1999, the Ventura County Watershed Protection District, in partnership with the US Bureau of Reclamation and the US Army Corps of Engineers, have evaluated means to remove the dam. The US Congress approved removal of the dam in 2007. However, dam removal efforts have been stalled by the complicated process of removing the sediment in the reservoir, while protecting fish and wildlife and by significant cost. Efforts to remove the dam are ongoing. In March 2016 the Dam Oversight Group completed an evaluation of three different dam removal concepts, including features to handle the estimated eight million cubic yards of sediment and mitigations for water supply, water quality, and fisheries. The next step is to develop a funding plan.

Lake Casitas. Lake Casitas, also called Casitas Reservoir, is the largest reservoir in the Ventura River Watershed, with a capacity of 254,000 AF. The approximate safe yield is 20,000 AFY. When full, the reservoir covers a surface area of 4.3 square miles and has 32 miles of shoreline. Source water for Lake Casitas is direct rainfall on the lake surface, local watershed runoff from Coyote and Santa Ana Creeks, and diversions of the Ventura River made through the Robles Diversion Facility. The lake is operated by the Casitas Municipal Water District. The primary purpose of Lake Casitas is to supplement local groundwater. Local groundwater comes from mostly unconfined aquifers whose available supply varies greatly based on rainfall and streamflow conditions. In dry periods, local wells can go dry and water demands are then met using water from Lake Casitas. Casitas Municipal Water District is the primary and/or backup water supply for nine retail water purveyors and for some individual agricultural customers with groundwater wells (Casitas Municipal Water District 2016). Casitas Municipal Water District estimates that there are 70,288 persons within its service area and 8.4 square miles (~5,400acres) of irrigated crops (Casitas Municipal Water District 2016).

Ventura River. The Ventura River gives its name to the watershed. The condition of the river varies widely over its journey from the mountains to the ocean. The river is typically categorized in five segments:

- The segment above Robles Diversion. Here the river is in steep and narrow terrain.
- The segment below Robles Diversion and above San Antonio Creek. This segment is less mountainous and has a gentle gradient. The Robles Diversion diverts from the west bank of the River. Below the diversion the river widens and becomes a braided channel. Until the confluence with San Antonio Creek, the river is commonly dry – about 80 percent of the time there is no significant flow in the section (Cardno-Entrix 2012).



Ventura County 2040 General Plan

Figure 10-1: Ventura County Watersheds

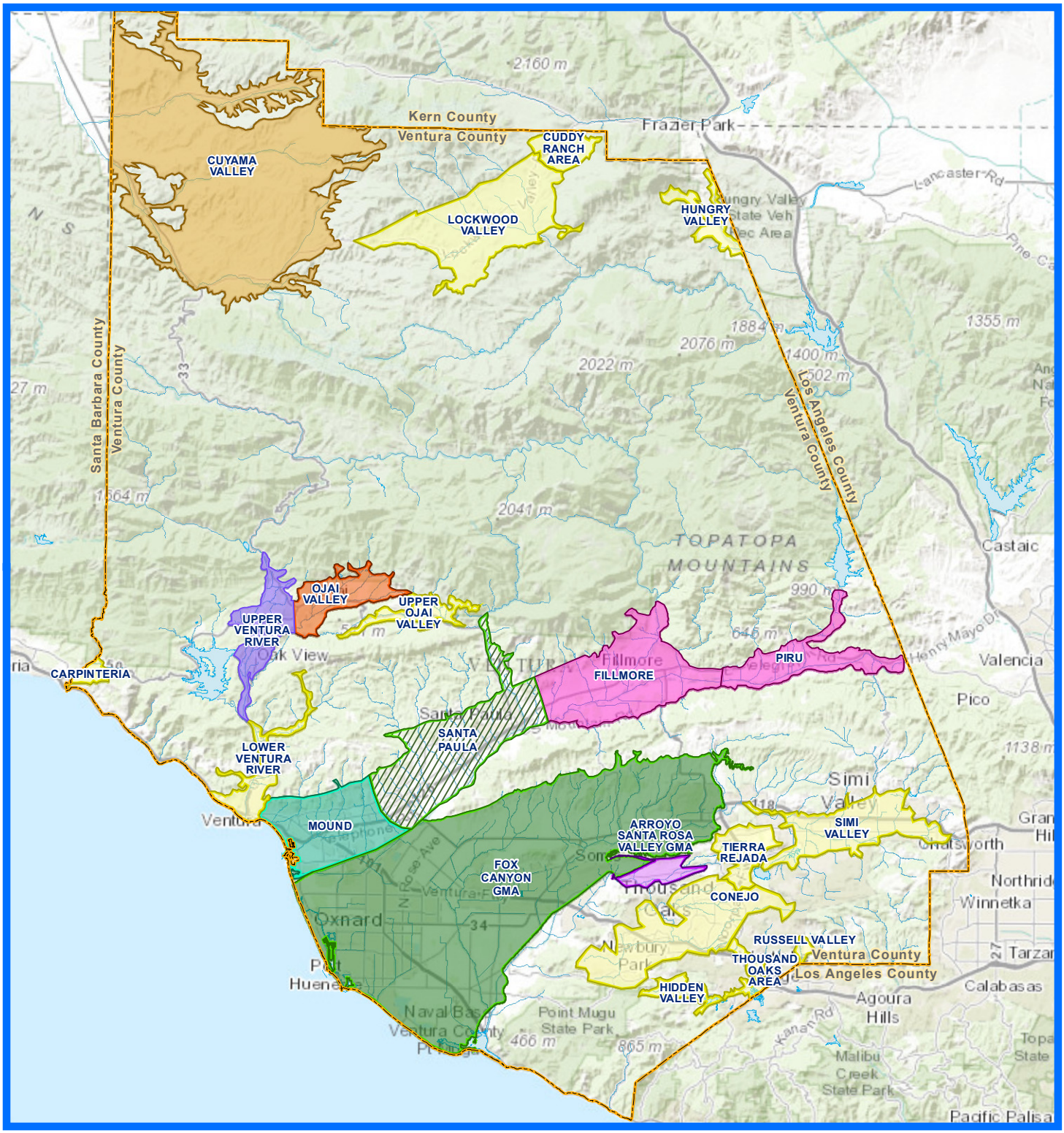
Map Date: December 02, 2016

Source: Kennedy/Jenks Consultants, 2016.

0 7.5 15 Miles

N

- Ventura County Boundary
- Rivers/Streams
- Water Bodies
- Subwatersheds
- Calleguas Creek Watershed
- Cuyama River Watershed
- Santa Clara River Watershed
- Santa Monica Bay Watershed
- Ventura River Watershed



Ventura County 2040 GENERAL PLAN

Figure 10-2: Groundwater Basin Oversight

Map Date: December 2017
Source: Kennedy/Jenks Consultants, 2017

0 7.5 15 Miles

N

Ventura County
Rivers/Streams
Water Bodies

Groundwater Management Agency

- Arroyo Santa Rosa Valley GMA
- Cuyama Valley Groundwater GSA
- Fillmore and Piru Basins GSA
- Fox Canyon GMA
- Mound Basin GSA
- No Agency
- Ojai Basin GMA
- Upper Ventura River GSA
- Adjudicated Basin

- San Antonio Creek Confluence to Foster Park. Here the river again narrows. San Antonio Creek enters in this segment. In wet periods this portion of the river can also receive water from "daylighting" groundwater, where groundwater is forced to the surface as a result of geologic constriction near the downstream margin of the upper Ventura River basin. This reach typically flows year-round except in multiyear dry periods (Ventura River Watershed Council 2015).
- Foster Park to Ventura River Estuary. In this reach, the river receives treated effluent from the Ojai Valley Sanitation District wastewater treatment plant. The effluent is a significant input to river flow. Cañada Larga Creek, and several minor drainages (Manuel Canyon Creek, Cañada de San Joaquin, and Dent Drain) also enter in this segment (Ventura River Watershed Council 2015). In this portion of the river, the City of Ventura can divert surface water via subsurface collectors and shallow wells. The wells are located at Foster Park, upstream of the Ojai Valley Sanitation District point of discharge. Between 2010 and 2014, annual production by the City of Ventura from the Ventura River averaged 3,051 AFY.
- The Ventura River Estuary. The estuary is a shallow body of water where the Ventura River mixes with salt water. During the dry season a sandbar typically separates the estuary from the ocean; when storms breach the sandbar, the flow of the river directly enters the Pacific Ocean (Ventura River Watershed Council 2015).

Groundwater

There are four major groundwater basins in the Ventura River Watershed: the Upper Ojai (DWR Basin 4-1), Ojai Valley (DWR Basin 4-2), Upper Ventura River (DWR Basin 4-3.01), and Lower Ventura River (DWR Basin 4-3.02) (see Figure 10-2). These are unconfined groundwater basins and fluctuate greatly depending precipitation.

In 2014, DWR ranked California's groundwater basins as "high," "medium," "low," or "very low" priority. This ranking was based on the following:

- Overlying population
- Projected growth of overlying population
- Public supply wells
- Total number of wells
- Irrigated acreage overlying the basin
- Reliance on groundwater as the primary source of water
- Impacts on the groundwater; including overdraft, subsidence, saline intrusion, and other water quality degradation
- Other information determined to be relevant by Department of Water Resources

In this ranking process the Ojai Valley groundwater basin and Upper Ventura River groundwater basins were deemed medium priority basins. The great dependency on groundwater in this area was a primary factor in the ranking.

The Ojai Valley Groundwater Basin is currently managed by the Ojai Basin Groundwater Management Agency (Ojai Basin GMA) and this agency will be the groundwater sustainability agency under SGMA. The Ojai Basin GMA has submitted an Alternative to the GSP which demonstrates that the Ojai Basin is already being sustainably managed, in-lieu of preparing a GSP.

Casitas Municipal Water District, Meiners Oaks Water District, Ventura River Water District, the City of Ventura and the County of Ventura have started the process of forming a new groundwater sustainability agency for the Upper Ventura River Groundwater Basin.

Important Recharge Areas

In the Ventura River Watershed, groundwater basins are typically surrounded by mountainous areas of impermeable bedrock. Recharge primarily occurs within the permeable unconsolidated deposits of gravel and sand within stream channels.

In order to increase groundwater storage and recharge in the Ojai Valley Groundwater Basin, the San Antonio Spreading Grounds Rehabilitation Project was completed by the Ventura County Watershed Protection District in 2014. It is anticipated the project will increase recharge to the basin by an average of 126 AFY.

Other Water Supplies

The Ventura River Watershed relies entirely on local water. No imported water is used in the watershed. Both Casitas Municipal Water District and the City of Ventura hold entitlements to State Water Project water (5,000 and 10,000 acre-feet per year [AFY] respectively), however there is currently no means to deliver imported water to the watershed. The City of Ventura is currently evaluating options for delivery of those entitlements, a report is due at the end of 2017.

Water Quality

As described in Section 10.2, the Los Angeles RWQCB has identified beneficial uses for the Ventura River Watershed. Table 10-2 is taken from the *Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties* and provides detail on beneficial uses for specific Ventura River reaches. The Los Angeles RWQCB has developed permit programs and the TMDLs to protect these beneficial uses. The following TMDLs are in place for portions of the Ventura River Watershed:

- Algae, Eutrophic Conditions, and Nutrients in the Ventura River including the Estuary and its Tributaries – TMDL effective June 28, 2013
- Ventura River Estuary Trash – TMDL effective March 6, 2008

In addition to the existing TMDLs, other TMDLs may be developed as several Ventura River Watershed areas are included in California's 303(d) List (list of impaired waters). Identified impairments in the Ventura River and its tributaries include fish barriers and pumping/water diversion, total dissolved solids, aluminum, and mercury. Rincon Beach and the Ventura Harbor are listed for impairments due to bacteria. The Ventura Marina jetties are listed as impaired with DDT and PCBs.

TABLE 10-2
DESIGNATED BENEFICIAL USES IN THE VENTURA RIVER WATERSHED

WATERSHED[a]	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
VENTURA COUNTY COASTAL STREAMS																						
Los Sauces Creek	P*	I	I	I	I						I	I				E			I	I		
Poverty Canyon	P*	I	I	I	I						I	I				E			I	I		
Madranio Canyon	P*	I	I	I	I						I	I				E			I	I		
Javon Canyon	P*	I	I	I	I						I	I				E			I	I		E
Padre Juan Canyon	P*	I	I	I	I						I	I				E			I	I		
McGrath Lake									P					E		E		Ee				E
Big Sycamore Canyon Creek	P*				I						I	E				E			P	P		E
Little Sycamore Canyon Creek	P*										I					E		E		P		
VENTURA RIVER WATERSHED																						
Ventura River Estuary[c]							E		E		E			E	E	E		Ee	Ef	Ef	E	E
Ventura River Reach 1 (Ventura River Estuary to Main St.)	P*	E		E	E	E					E	E				E		E	E	E		E
Ventura River Reach 2 (Main St. to Weldon Canyon)	P*	E		E	E	E					E	E				E		E	E	E		E
Cañada Larga	P*		I	I	I	I					I	I				E			I	I		
Lake Casitas	E	E	E	E	P	P		P			E	E				E		E				
Lake Casitas tributaries	E*			P	E						E	E				E		P	E	E		E
Ventura River Reach 3 (Weldon Canyon to Casitas Vista Rd.)	P*	E		E	E	E					E	E				E		E	E	E		E
Ventura River Reach 4 (Casitas Vista Rd. to San Antonio Creek)	P*	E		E	E	E					E	E				E		E	E	E		E
Ventura River Reach 4 (San Antonio Creek to Camino Cielo Rd.)	E	E	E	E	E	E					E	E				E		Eg	E	E		E
Coyote Creek	P*				E						E	E				E			E	E		E
San Antonio Creek (Ventura River Reach 4 to Lion Creek)	E	E	E	E	E						E	E				E			E	E		E
San Antonio Creek (above Lion Creek)	E	E	E	E	E	E					E	E				E			E	E		E
Lion Creek	I*	I	I	I							I	I				E						
Reeves Creek	I*	I	I	I	I						I	I				E			I	I		
Mirror Lake	P*				E						E					E						E
Ojai Wetland	P*										E					E						E

TABLE 10-2
DESIGNATED BENEFICIAL USES IN THE VENTURA RIVER WATERSHED

WATERSHED[a]	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
VENTURA COUNTY COASTAL STREAMS																						
Ventura River Reach 5 (above Camino Cielo Rd.)	E	E	E	E	E	E					E	E				E		Eg	E	E		E
Matilija Creek Reach 1 (Ventura River Reach 5 to Matilija Reservoir)	P*				E							E				E			E	E		E
Matilija Creek Reach 2 (above Matilija Reservoir)	P*				E							E				E			E	E		E
Murietta Canyon Creek	P*				E							E				E			E	E		E
North Fork Matilija Creek	E*	E	E	E	E						E	E				E		E	E	E		E
Matilija Reservoir	E			E	E	E					E	E				E			E	E		E

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some destinations may be considered for exemption at a later date.

a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
g: Condor refuge.

Source: Table 2-1. Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties (electronic copy accessed December 27, 2016).

Available Water Supplies

The sources of water supply in the Ventura River watershed include surface water from Lake Casitas, Ventura River, and groundwater. Available surface water supplies (from Lake Casitas) have been quantified by Casitas Municipal Water District (2016) as 20,000 acre-feet (AF). The City of Ventura produced an average of 3,051 AFY from 2010 to 2014 from the Ventura River. It is estimated that private landowners may divert as much as 1,100 AFY from the Ventura River, but records are not available to confirm the long-term Ventura River surface water supply available to private users (SWRCB eWRIMS database).

Estimating groundwater supply is quite a bit more difficult. To understand long-term yield of a groundwater basin recharge from precipitation must be estimated, recharge from irrigation and other return flows must be calculated, and underflow and outflows to and from adjacent groundwater basins must be analyzed. There is not an accepted long-term yield for any of the groundwater basins in the Ventura River Watershed. However, the Department of Water Resources has made rough estimates of groundwater "budgets" by evaluating available groundwater studies and by evaluating past groundwater extractions. The Ventura County Watershed Protection District has also prepared estimates of groundwater use in different basins. Groundwater use is only a rough estimate of supply. Groundwater extractions may include water recharged in the distant past and may not be representative of the long-term yield. Table 10-3 provides an estimate of supply by groundwater basin in the Ventura River Watershed. The difference in the high and low supply estimates document the lack of data on groundwater supply.

TABLE 10-3
GROUNDWATER SUPPLY ESTIMATES
VENTURA RIVER WATERSHED

Basin	DWR Estimate of Groundwater Budget (AFY)	Past Groundwater Extractions (AFY)	Notes
Upper Ojai	1,320	700	1
Ojai Valley	3,150 to 3,300	8,404	2, 3
Upper Ventura	None	10,392	4, 5
Lower Ventura	1,200	400	6
Low Estimate Groundwater Supply Ventura River Watershed		*14,600*	7
High Estimate Groundwater Supply Ventura River Watershed		*21,300*	7

Notes:
1. DWR 2003, Basin 4-1
2. DWR 2003, Basin 4-2
3. Ventura County Watershed Protection District 2015a
4. DWR 2003, Basin 4-3.01
5. Ventura County Watershed Protection District 2015a
6. DWR 2003, Basin 4-3.02
7. Rounded to nearest 100 AF

A total estimate of supply in the Ventura River Watershed is provided in Table 10-4.

TABLE 10-4
CURRENT (2016) TOTAL WATER SUPPLY ESTIMATES
VENTURA RIVER WATERSHED

Supply Source	Annual Volume (AF)
Surface Water, Lake Casitas	20,000
Surface Water, Ventura River	3,051
Groundwater (see Table 10-3)	14,600 to 21,300
Low Estimate (rounded to nearest 100 AF)	*37,700*
High Estimate (rounded to nearest 100 AF)	*44,400*

Water Suppliers

There are five major water suppliers (entities serving more than 1,000 persons) in the Ventura River Watershed as well as 11 mutual water companies. Persons or businesses in the Ventura River Watershed are also supplied by private wells and surface water diversions.

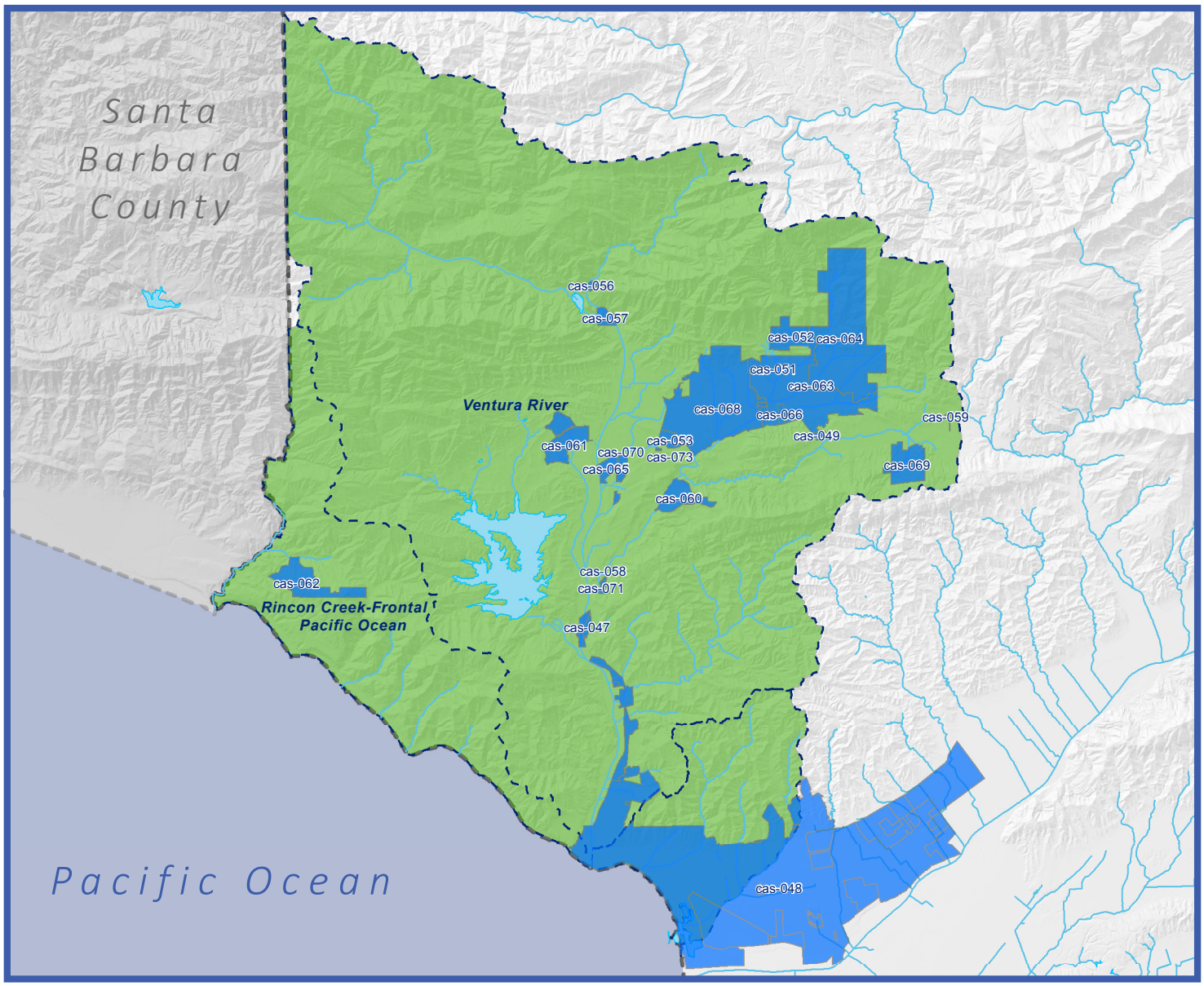
The major urban suppliers, documented in Table 10-5 provide water to the cities of Ojai and Ventura, and also to the unincorporated County. These are also mapped in Figure 10-3.

The 11 mutual water companies provide water to their stockholders and members. These mutual water companies can serve as few as 10 people and up to 800 persons. The mutual water companies, documented in Table 10-6 provide water almost exclusively to residents and businesses in the unincorporated County (see also Figure 10-3).

TABLE 10-5 MAJOR WATER SUPPLIERS - VENTURA RIVER WATERSHED				
Supplier/Primary Source(s)	**Type**	**Area Served**	**Estimated Population Served**	**Annual Water Supplied***
Casitas Municipal Water District Surface water from Lake Casitas	Special District	City of Ojai, portion of the City of Ventura, coastal Rincon, Upper Ojai, and Ventura River Valley.	~70,300	~16,700 AF, includes ag sales and sales to other agencies
Ventura Water Lake Casitas water, Ventura River, groundwater (Oxnard Plain, Mound, Santa Paula Basins), recycled water	City	City of Ventura and 1.5 square miles (~960 acres) within City's sphere of influence. City falls within both the Ventura and Santa Clara Watersheds.	~112,400	~16,700 AF, a portion of this supply is provided by Casitas Municipal Water District (5-year average 2011 to 2015 City of Ventura 2016a)
Golden State Water Company Ojai Valley groundwater and Lake Casitas	Investor Owned Utility	City of Ojai and adjacent unincorporated County.	~8,200	~2,300 AF, a portion of this supply is provided by Casitas Municipal Water District.
Ventura River Water District Upper Ventura River groundwater and Lake Casitas	Special District	Part of Casitas Springs, Burnham Road area west of the Ventura River, northern portion of Oak View	~6,000	~1,400 AF, a portion of this supply is provided by Casitas Municipal Water District
Meiners Oaks Water District Upper Ventura River groundwater and Lake Casitas water	Special District	Portion of the Meiners Oaks Community east of the Ventura River.	~4,000	~1,100 AF, a portion of this supply is provided by Casitas Municipal Water District

*Estimated based on records of water supplied 2010 to 2015, rounded to nearest 100 AF. Does not account for planned future expansion of demands and supplies.

Source: Ventura River Watershed Council 2015 Table 3.4.1.2.1, Casitas Municipal Water District 2016, City of Ventura 2016a, City of Ventura 2016b, Meiners Oaks Water District 2014, Ventura River Water District http://venturariverwd.com/about-2/ accessed December 29, 2016.



WATER PURVEYOR

CASITAS WHOLESALE DISTRICT	
SUPPLIER	**WATER COMPANY**
Casitas (cas-047)	Casitas MWC
Casitas (cas-048)	City of San Buenaventura
Casitas (cas-048)	City of Buenaventura
Casitas (cas-049)	Dennison Park Water System
Casitas (cas-068)	Golden State Water Company - Ojai
Casitas (cas-051)	Gridley Road Water Group
Casitas (cas-052)	Hermitage MWC
Casitas (cas-053)	Krotona Institute of Theosophy
Casitas (cas-056)	North Fork Springs MWC
Casitas (cas-063)	Ojai Water Conservation District
Casitas (cas-057)	Ojala
Casitas (cas-058)	Old Creek Road MWC
Casitas (cas-059)	Oviatt Water Association
Casitas (cas-060)	Rancho del Cielo MWC
Casitas (cas-061)	Rancho Matilija MWC
Casitas (cas-062)	Rincon Water and Roadworks
Casitas (cas-064)	Senior Canyon MWC
Casitas (cas-065)	Sheriff's Honor Farm
Casitas (cas-066)	Siete Robles MWC
Casitas (cas-069)	Sulphur Mountain Road Water Association
Casitas (cas-070)	Tico MWC
Casitas (cas-071)	Tres Condados
Casitas (cas-073)	Villanova Road Water Well Association

Ventura County 2040 GENERAL PLAN

Figure 10-3:
Water Purveyors in
Ventura River Watershed

- Ventura County Boundary
- Rivers Streams
- Water Bodies
- Subwatersheds
- Ventura River Watershed

Water Purveyor

- Casitas Wholesale District

0 4 8 Miles

N

Map Date: December 02, 2016

Source: Kennedy/Jenks Consultants, 2016.

TABLE 10-6 MUTUAL WATER COMPANIES VENTURA RIVER WATERSHED			
Supplier	**Type**	**Area Served**	**Estimated Population Served**
Casitas Mutual Water Company	Mutual	Residents in Casitas Springs, west of Highway 33.	~250
Gridley Road Water Group	Mutual	Agriculture in the Gridley Road and Grand Avenue area in eastern Ojai Valley.	~44
Hermitage Mutual Water Company	Mutual	Agriculture and several large residential estates in the area of Gridley and Senior canyons north of the Ojai Valley.	~35
North Fork Springs Mutual Water Company	Mutual	Residential users located along Highway 33 north of the City of Ojai and east of the Matilija Reservoir, in Los Padres National Forest.	~10
Old Creek Road Mutual Water Company	Mutual	Residential users along East Old Creek Road.	~12
Rancho Matilija Mutual Water Company	Mutual	Agricultural parcels in the Rancho Matilija subdivision, north of Baldwin Road and west of Meiners Oaks.	0
Rancho del Cielo Mutual Water Company	Mutual	Residential and agricultural users along Creek Road along San Antonio Creek.	~18
Senior Canyon Mutual Water Company	Mutual	Northeast end of the Ojai Valley, north of Reeves Creek, east of Carne Road.	~800
Siete Robles Mutual Water Company	Mutual	Housing tract east of the City of Ojai	~245
Sisar Mutual Water Company	Mutual	Summit area of the Upper Ojai Valley	~325
Tico Mutual Water Company	Mutual	Residential are in Mira Monte, west of Highway 33	~77

Source: Ventura River Watershed Council 2015 Table 3.4.1.3.1

Private wells and water diversions serve the remaining agricultural and domestic water users in the watershed. Twenty-one different entities are registered with the State Water Resources Control Boards as having rights to withdraw surface water from the Ventura River Watershed (SWRCB 2014 cited in Ventura River Watershed Council 2015). There are 442 active wells in the Ventura River watershed (Ventura River Watershed Council 2015). It is estimated that these private users extract as much as 2,100 AF (Hydrometrics 2015).

Estimates of Water Demand

In 2014, the Ventura County Watershed Protection District undertook an estimate of countywide water demand. This effort used data from water agencies and groundwater reporting (where available). However large geographic areas of Ventura County are not served by a water agency, but rather private wells or surface water diversions. Also, not all groundwater production is reported. Further, the agricultural groundwater production that is reported is not metered in many areas but rather estimated from electrical use or crop type. To fill in data gaps a demand calculator was used. In this case the Integrated Water Flow Model (IWFM) Demand Calculator developed by the California Department of Water Resources was used. This is a non-proprietary model that computes water demands for cropped areas using specified climatic and irrigation information. The IWFM calculator also estimates urban water requirements and return flows based on population and per-capita water usage. The resulting report, *County of Ventura 2013 Water* Supply and Demand, estimates current demands for each of the major watersheds, including the Ventura River Watershed. Results of the study are provided in Table 10-7.

TABLE 10-7
ESTIMATED VENTURA RIVER WATERSHED DEMAND

Watershed/Sub-watershed	Total Agricultural Demand (AF)	Total Municipal Demand (AF)	Total Demand (AF)
Rincon	5,727	1,848	7,575
Ventura River	11,745	13,351	25,096
Subtotal (rounded to nearest 100 AF)	*17,500*	*15,200*	**32,700**

Source: Hydrometrics 2015. Table 6.

Notable in Table 10-7 is the distribution of demands. Agricultural demand is estimated to be slightly higher than municipal demand.

Demand Management

Table 10-8 summarizes the various water conservation actions undertaken in the Ventura River Watershed. Table 10-8 summarizes demand management measures undertaken under normal conditions as well as those extra ordinary efforts taken during drought periods. Conservation actions intensify during drought. Most agencies continuously provide public information on how to conserve water, however these efforts expand exponentially during dry periods. During normal conditions a water provider may just provide public information on their website or billing inserts; during drought, the water provider is likely to take out radio advertisements, place roadway signs, and run conservation contests to bring attention to the drought. Many agencies offer water use surveys to customers upon customer request; during drought the water agencies contact high water users and offer water efficiency incentives. The demand management measures undertaken during drought depend on the severity and length of drought. In the beginning of a drought outdoor irrigation may be limited to 3 days a week, as drought continues outdoor watering may be restricted to one day a week or even prohibited all together.

TABLE 10-8
DEMAND MANAGEMENT MEASURES IN VENTURA RIVER WATERSHED

Agency	Conservation Measures in Effect at All Times							Conservation Measures that May Be Implemented in Drought				
	Public Information and Outreach	Water Waste Prohibitions	Metering	Volume-Based Pricing	Water Efficiency Surveys Offered to Customers	Rebates for High Efficiency Plumbing Fixtures	Turf Removal Incentives	Drought Surcharge	Limitations on Irrigation/ Outdoor Watering	Mandatory Reductions/ Allocation	Fines	Suspension of new water connections
Casitas Municipal Water District	X	X	X	X	X	X	X		X	X	X	X
Ventura Water	X	X	X	X	X	X	X	X	X	X	X	X
Golden State Water Company	X	X	X	X	X	X		X	X			
Ventura River Water District	X		X	X	X*	X*	X*	X	X		X	
Meiners Oaks Water District	X		X	X	X*	X*	X*	X		X	X	X
Ojai Basin Groundwater Management Agency	X		X	X								

*Offered by Casitas Municipal Water District

Sources: Casitas Municipal Water District 2016; City of Ventura 2016b; Golden State Water Company 2011; Ventura River Water District 2016; Meiners Oaks Water District 2016.

Comparison of Supply and Demand

While it is difficult to quantify, it is estimated that there is between 37,700 AF to 44,400 AF of annual water supply in the Ventura River Watershed. This supply will vary given drought and operational conditions. Estimated demand is approximately 32,700 AF and is only about 13 percent greater than demand.

There are concerns about long-term supplies. SGMA could result in a need to reduce groundwater pumping. Some water agencies in the Ventura River Watershed are evaluating projects to increase supply. Several mutual water agencies that receive water from Casitas Municipal Water District have sent letters to Casitas Municipal Water District urging them to pursue options to bring imported water into the watershed. The City of Ventura is pursuing additional use of recycled water, including indirect and direct potable reuse and is studying ocean desalination (City of Ventura 2016b).

Water-Related Challenges

Below are the water related challenges for the Ventura River Watershed as of late 2016:

Drought and Supply Variability

The 70,000 people in western Ventura County have been impacted by the drought that began in 2012. Due to lack of distribution infrastructure and required agreements, imported water cannot be delivered to western Ventura County and groundwater is very limited. Recharge to groundwater is primarily from Ventura River flow and smaller amounts from direct precipitation, percolation from lesser creeks and channels, and mountainfront recharge. The groundwater in the area is relatively shallow and responds quickly to rainfall or lack thereof. Wells operated by Meiners Oaks Water District have gone dry due to low water levels in the Ventura River and they are now entirely dependent on purchases of Lake Casitas water. Ventura River Water District has only one of its four wells still in operation; customer needs are being served through purchases of Lake Casitas water supplies. Since 2011, purchases of Lake Casitas water have increased by 1,000 percent. The lake is an important, but dwindling, resource with both water quality and water supply concerns.

The water level in Lake Casitas has dropped below 40 percent of its “full” volume since the onset of the drought in 2012. Low water levels in 1968 resulted in significant thermal stratification and anoxic (without dissolved oxygen) conditions, rendering the lake generally unsuitable for aquatic life. The low oxygen levels also created an environment where manganese and hydrogen sulfide, normally trapped in sediments, became soluble, causing the lake water to have a brown color and bitter metallic taste. There were also large blue-green algae blooms (Casitas Municipal Water District 2013). Casitas Municipal Water District has had to install a second lake aeration system to avoid anoxic conditions.

Mandatory drought reductions are in place for customers in the Ventura Watershed. Depending on the water supplier, customers need to reduce water use by up to 30 percent.

Water for Environmental Purposes

As water agencies plan to rehabilitate infrastructure or develop more supply there can be conflicts with protecting environmental resources and demonstrates the influence laws and regulations, such as the Endangered Species Act, have on water resources.

The Robles Diversion is the facility that diverts Ventura River water to Lake Casitas. A "Biological Opinion," (BO) written by the National Marine Fisheries Service includes requirements to provide flow for the migration and passage of the steelhead up and down the main stem of the Ventura River and past the diversion during the steelhead migration season (January 1 to June 30). Implementation of the flow release requirements of the BO started in 2005. The Robles Fish Passage Facility became operational in 2006. There is concern by Casitas Municipal Water District that future changes to the BO could require costly infrastructure and impact diversions to, and the water supply within, Lake Casitas.

In 2008, the City of Ventura began conducting studies of Ventura River flow conditions in order to operate its Foster Park facilities in a more sustainable manner. The City is working towards developing a pumping regime that will balance production demands with environmental concerns. Presently, the City has voluntarily adopted a production schedule that limits its pumping based on annual rainfall conditions. Ventura Water intends to work with experts to ascertain a pumping regime that will balance production with environmental concerns and is presently studying the relationship between groundwater production and surface flows.

Quality

In the Ventura River Watershed water quality is generally not an impairment to using water for domestic water supply. However, other beneficial uses such as fisheries habitat, wildlife habitat, and recreation are negatively affected by water quality in the Ventura River. The majority of water quality problems involve eutrophication (excessive nutrients, nitrogen, and the resulting algae blooms) and affect the portion of the river from Foster Park to the Estuary. The major nitrogen contributors to the Ventura River were identified by the Los Angeles RWQCB as: wet-weather runoff from urban areas, wet-weather runoff from horse/livestock land uses, wet-weather runoff from open space, and discharges from the Ojai Valley Sanitary District Wastewater Treatment Plant. The Algae TMDL was adopted by the Los Angeles Regional Water Board in December 2012. The TMDL sets limits on the amount of nutrients that can be discharged from various sources, and requires upgrades to the sewage treatment plant and widespread implementation of BMPs to limit fertilizer and animal waste and other sources of nitrogen from the river.

Cuyama Watershed

Only limited data is available on the portion of the Cuyama Watershed within Ventura County. The Cuyama Watershed originates in a remote mountainous area of Ventura County within the Los Padres National Forest, but also falls within Kern, Santa Barbara, and San Luis Obispo counties. The California Department of Water Resources has categorized the Cuyama Groundwater Basin as being in "critical overdraft" and a groundwater sustainability agency is being formed. Based on information from the United States Geological Survey (USGS), the critical overdraft conditions of the Cuyama Groundwater Basin reflect extractions and uses outside of Ventura County. The portion inside Ventura County is referred to as the Ventucopa Uplands (USGS 2014). The area is lightly populated, but is used for irrigated agriculture. The USGS estimates the groundwater supply in the Ventucopa Uplands to be approximately 22,000 AFY with domestic demands of only 8 AFY and agricultural demands of approximately 10,000 AFY. Nevertheless, as a whole, the basin is in a condition of overdraft.

Oxnard Plain

The Oxnard Plain is an important geographic area for water resources (see Figure 10-2). The Oxnard Plain supplies large amounts of groundwater for municipal users including the county's largest city, Oxnard. It's estimated that the Oxnard Plain also supplies the water for more than half of the county's $2.2 billion agricultural industry (Ventura County Agricultural Commissioner 2016). The Oxnard Plain Groundwater Basin is a subbasin of the Santa Clara River Valley Groundwater Basin (DWR Groundwater Basin Number 4-4.02). The Oxnard Plain Groundwater Basin is an alluvial basin containing a collection of interconnected aquifers separated by layers of clay strata. The Oxnard Plain Groundwater Basin can be generally categorized into three parts: the Oxnard Forebay, the Upper Aquifer System and the Lower Aquifer System.

The Oxnard Forebay is the unconfined portion of the Oxnard Plain Basin generally located along the Santa Clarita River northeast of where the Pacific Coast Highway joins U.S. Highway 101 in the City of Oxnard. The Oxnard Forebay is the primary means by which the Oxnard Plain Groundwater Basin is recharged. The Forebay Basin is recharged by infiltration from the riverbed of the Santa Clara River and spreading basins constructed for that purpose. From the Oxnard Forebay, located in the upper most portion of the Oxnard Plain Basin, groundwater moves into the Upper and Lower Aquifer Systems because the clay layers which separate the aquifers are not continuous at this location.

The Upper Aquifer System (UAS) comprises of the upper 500 feet of the confined portions of the Oxnard Plain Basin which includes a semi-perched zone and the Oxnard and Mugu aquifers. The UAS is hydraulically connected to the Pacific Ocean through the Oxnard and Mugu aquifers and is the route by which seawater intrusion enters the Oxnard Plain Basin. The Lower Aquifer System (LAS) includes the deeper confined aquifers including the Hueneme, Fox Canyon, and Grimes Canyon aquifers. The LAS is separated by an approximately 80-foot thick layer of silty clay which is continuous except near the Oxnard Forebay.

Because of its importance as a water source, there is great concern about the health of the Oxnard Plain basin. In fact, the Fox Canyon Groundwater Management Agency (Fox Canyon GMA) was formed in 1982 to control groundwater overdraft and minimize the threat of seawater intrusion in the Oxnard Plain. A major goal of the Fox Canyon GMA is to regulate groundwater from the Oxnard subbasin and operate the basin at a safe yield. However, today DWR has characterized the basin as being in "critical overdraft". Evidence suggests that groundwater in the Oxnard Plain dropped below sea level as early as the 1940s. The annual overdraft is estimated to be 20,000 to 25,000 AFY (UWCD 2017b). This continued overdraft allows seawater intrusion and puts the area at risk of land subsidence.

Santa Clara River Watershed

The Santa Clara River headwater is at Pacifico Mountain in the San Gabriel Mountains and it flows in a generally western direction for approximately 84 miles through Tie Canyon, Aliso Canyon, Soledad Canyon, the Santa Clarita Valley, the Santa Clara River Valley, and the Oxnard Plain before discharging to the Pacific Ocean near the Ventura Harbor. The Santa Clara River and tributary system has a watershed area of about 1,634 square miles (~1,000,000 acres). Approximately 40 percent of the watershed is in Los Angeles County, with the remaining 60 percent in Ventura County. The Santa Clara River is unique in that it is the largest river system in Southern California remaining in a relatively natural state.

The climate of the Santa Clara River watershed is characterized by long, dry periods and a relatively short wet winter. Near the coast, cool moist ocean winds produce moderate temperature; summer highs average 74ºF, winter lows average 44 ºF, and frost is rare (Western Regional Climate Center Station 0492852 Ventura). Inland temperatures can exceed 110 ºF in the summer and drop below freezing in the winter (Western Regional Climate Center Station 047957 Santa Paula). Precipitation is generally in the form of winter storms, thunderstorms, and tropical cyclones. Approximately 75 percent of the annual precipitation occurs from December through March. The mean seasonal precipitation varies from about 40 inches in the mountainous portions of the watershed, to about 18 inches in the Piru and Fillmore areas (Western Regional Climate Center Stations 046940 Piru ESE and Station 043050 Fillmore WNW) and under 15 inches at the coast (Western Regional Climate Center Station 049285 Ventura).

The cities of Fillmore, Santa Paula, Oxnard (portion), and Ventura (portion) are located in the watershed as are the communities of Piru, Bardsdale, Saticoy, and El Rio. Land uses in the Ventura County portion of the watershed are as follows:

- Agriculture 42%
- Open Space 27%
- Urban Uses 26%
- Other (urban reserve, open space reserve, harbor) 5%

Surface Water

The major surface water features in the watershed are the Lake Piru Reservoir and the Santa Clara River.

Lake Piru Reservoir. The construction of Santa Felicia Dam on Piru Creek in 1955 created the Lake Piru Reservoir for the specific purpose of recharging groundwater. The reservoir can store approximately 82,000 AF (UWCD 2016). The reservoir receives winter runoff from local drainages and can receive imported SWP water. Water from Lake Piru is released into Piru Creek and flows to the Santa Clara River where it is joined by runoff from Sespe and Santa Paula Creeks. The releases are used to replenish underground aquifers, and water is made available to municipalities, industry, and agriculture (UWCD 2016). Lake Piru is operated by United Water Conservation District (UWCD). Generally, UWCD schedules a fall conservation release from Lake Piru (water stored/conserved in the Lake is released) to recharge both the Piru and Fillmore groundwater basins. The remaining portion of the flows are diverted at the Freeman Diversion for recharge in the Oxnard Forebay and distribution to agricultural users. However, drought and low inflow into Lake Piru will prevent UWCD from performing conservation releases in some years. Operation of Santa Felicia Dam is regulated by the Federal Energy Regulatory Commission (FERC). The FERC license to operate Santa Felicia Dam has many requirements for structural safety, public safety, water quality, recreational opportunities and protection of biological resources. Specific FERC requirements include releasing water to allow migration of steelhead in Piru Creek and portions of the Santa Clara River (dependent on river conditions), based on the applicable National Marine Fisheries Service biological opinion.

Santa Clara River. Due to climatic and geologic factors streamflow in the Santa Clara River can be described as interrupted perennial, with alternating perennial reaches and intermittent (summer dry) reaches influenced by surface water-groundwater interactions (SFEI 2011). Flow is supplemented by releases from Lake Piru Reservoir and inflows from tributaries. About 10 miles from the River mouth, UWCD can divert water at the Freeman Diversion for recharge of the Oxnard groundwater basin. Several mutual water companies operate small diversions located on Piru Creek, Sespe Creek, Santa Paula Creek,

and the Santa Clara River for agricultural irrigation; the amount of water diverted at these locations are unknown (Ventura County Watershed Protection District 2015b). In the past, several wastewater treatment plants discharged to the Santa Clara River. With the exception of the City of Ventura, most wastewater treatment facilities have been upgraded and now percolate treated effluent to groundwater rather than releasing water to the Santa Clara River (Ventura County Watershed Protection District 2015b). The City of Ventura currently discharges to the Santa Clara River Estuary but is actively studying ways to increase recycled water use in a manner protective of the Santa Clara River Estuary (City of Ventura 2016b).

Groundwater

The Santa Clara River Valley Basin is the primary basin underlying the Santa Clara River Watershed. This basin is subdivided into sub-basins: Piru (DWR Basin 4-4.06), Fillmore (DWR Basin 4-4.05), Santa Paula (DWR Basin 4-4.04), Mound (DWR Basin 4-4.03), and Oxnard (DWR Basin 4-4.02). All groundwater basins in the Ventura County portion of the Santa Clara River, with the exception of the Santa Paula Basin (which is adjudicated) are subject to SGMA. As described earlier, in 2014, the California Department of Water Resources ranked California's groundwater basins as "high," "medium," "low," or "very low" priority. In this ranking process the Oxnard and Piru groundwater basin were deemed "high" priority and the Fillmore, Santa Paula, and Mound deemed "medium" priority basins. The great dependency on groundwater in this area was a primary factor in the ranking. The Oxnard basin was also listed as being in "critical overdraft."

Stakeholders have met to discuss forming the necessary groundwater sustainability agency for the Piru, Fillmore, and Mound basins. As of the preparation of this background report, no formal notification of groundwater sustainability agency formation has been filed with the Department of Water Resources for those basins.

The Fox Canyon GMA elected to be the groundwater sustainability agency under SGMA for the basins within its Fox Canyon GMA boundary, including the Oxnard subbasin.

Important Recharge Areas

The Oxnard Forebay was described above.

Imported Supplies

In 1964, the Ventura County Flood Control District (currently the Ventura County Watershed Protection District) contracted with the State of California Department of Water Resources for a SWP allocation of 20,000 AF. Currently, the City of Ventura has an allocation of 10,000 AF, Casitas Municipal Water District has an allocation of 5,000 AF, and UWCD has an allocation of 5,000 AF. Port Hueneme Water Agency uses 1,850 AF of UWCD's entitlement but receives the water through Calleguas Municipal Water District. The SWP contract expires in 2035 but negotiations are underway to extend the contract. Up to 3,150 AF of SWP water is permitted to be released from Pyramid Lake and sent to Lake Piru. From 1991 to 2013 the total SWP delivery has been 34,212 AF and SWP has not been purchased or delivered in every year (Ventura County Watershed Protection District 2015b). The amount of SWP water allocated in each year depends on availability, and delivery is only allowed from November 1 through the end of February (Ventura County Watershed Protection District 2015b). In addition, UWCD has periodically entered into annual agreements with Casitas Municipal Water District and the City of

Ventura to purchase a portion of their unused SWP allocation. According to UWCD "The purchase of SWP water will be considered by United annually on an as-need basis" (UWCD 2016).

In addition to the SWP supplies delivered to Lake Piru Reservoir, the City of Oxnard purchases imported water from Calleguas Municipal Water District. During the period from 1991-2013 direct deliveries of SWP water to the Oxnard area were 316,000 AF – nearly 10 times the amount of water delivered to Lake Piru. These supplies are in turn provided to the Channel Islands Beach Community Services District, the City of Port Hueneme, and Naval Base Ventura County, via the Port Hueneme Water Agency.

At this time the City of Ventura does not have the facilities needed to deliver SWP water into its distribution system. Ventura is currently working with Calleguas Municipal Water District and others on a potential project to bring SWP allocation to the City's system.

Other Supplies

Several water agencies in the Santa Clara River Watershed produce and deliver recycled water, including the following:

- The City of Fillmore
- City of Oxnard
- City of Ventura

Water Quality

The Los Angeles RWQCB has identified beneficial uses for the Santa Clara River Watershed as detailed in Table 10-9. Permit programs and TMDLs have been developed to protect these beneficial uses. The following TMDLs are in place for portions of the Santa Clara Watershed:

- Bacteria in the Santa Clara River Estuary and Reaches 3 (area between Fillmore and Saticoy), 5 (Los Angeles County and eastern 4,500 feet of Santa Clara River within Ventura County), 6 (Los Angeles County), and 7 (Los Angeles County) – TMDL effective March 21, 2012
- Chloride in the Santa Clara River Reach 3 (area between Fillmore and Saticoy) – TMDL effective June 18, 2003
- Chloride in the Upper Santa Clara River (only a small portion lies within the county) – TMDL effective April 28, 2015

In addition to the existing TMDLs, other TMDLs may be developed as several Santa Clara Watershed areas are included in California's 303(d) List. Identified impairments in the Santa Clara River and its tributaries include chloride, pH, boron, sulfates, total dissolved solids, toxicity, as well as multiple chemicals generally referred to as "Chem A". The McGrath Beach area is considered to be impaired by coliform bacteria and toxic sediments.

TABLE 10-9
DESIGNATED BENEFICIAL USES IN THE SANTA CLARA RIVER WATERSHED

WATERSHED[a]	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
SANTA CLARA RIVER WATERSHED																						
Santa Clara River Estuary (Ends at Harbor Blvd.) [c]							E		E					E	E	E		Ee	Ef	Ef		E
Santa Clara River Reach 1																						
Santa Clara River (Estuary to Highway 101 bridge)	P*	E	E	E	E	E					E	E				E		E	E			E
Santa Clara River Reach 2																						
Santa Clara River (Highway 101 bridge to Ellsworth Barranca)	P*	E	E	E	E	E					E	E				E		E	E			E
Santa Clara River (Ellsworth Barranca to Freeman Diversion)	P*	E	E	E	E	E					E	E				E		E	E			E
Santa Clara River Reach 3																						
Santa Clara River (Freeman Diversion Dam to Santa Paula Creek)	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River (Santa Paula Creek to Sespe Creek)	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River (Sespe Creek to A Street, Fillmore)	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River Reach 4A																						
Santa Clara River (A Street Fillmore to Piru Creek)	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River Reach 4B																						
Santa Clara River (Piru Creek to Blue Cut gaging station)	P*	E	E	E	E	E					E					E		E	E			E
Santa Clara River Reach 5																						
Santa Clara River (Blue Cut gaging station to West Pier Highway 99)	P*	E	E	E	E	E					E					E		E				E
Santa Clara River Reach 9																						
Santa Paula Creek (above Santa Paula Water Works Diversion Dam)	P*	E	E	E	E	E					E	E				E		E	E	E		
Santa Clara River Reach 10																						
Sespe Creek (gaging stn below Little Sespe Creek to Potrero John Creek)	P	E	P	E	E						E	E				E	E	Eg	E	E		E
Santa Clara River Reach 11																						
Piru Creek (gaging stn below Santa Felicia Dam to Agua Blanca Creek)	P	E	E	E	E	E					E	E				E		Eg				
Santa Paula Creek (Santa Clara River R4A to Santa Paula Water Works Diversion)	P	E	E	E	E	E					E	E				E		E	E	E		
Sisar Creek	P	E	P	E	E						E	E				E		Eg		E		E

TABLE 10-9
DESIGNATED BENEFICIAL USES IN THE SANTA CLARA RIVER WATERSHED

	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
SANTA CLARA RIVER WATERSHED																						
Sespe Creek (Santa Clara River R3 to gaging station below Little Sespe)	P	E	E	E	E						E	E				E	E	E	E	E		E
Timber Creek	P*				E							E				E	E	E	E	E		E
Bear Canyon	P*				E						E	P				E	E	E	E	E		E
Trout Creek	P*				E						E	E				E		E	E	E		E
Piedra Blanca Creek	P*				E							E				E		E	E	E		E
Lion Canyon	P*				E						E	E				E			E	E		E
Rose Valley Creek	P*				E						E	E				E				E		E
Howard Creek	P*				E							E				E	E	E	E	E		E
Tule Creek	P*				E							P				E	E	E	E	E		E
Potrero John Creek	P*				E							P				E		E	E	E		E
Hopper Creek	P*	E		E	E	E					E	E				E		Eg				E
Piru Creek (Santa Clara River R4A to Santa Paula Water Works Diversion	P	E	E	E	E	E					E	E				E		Eg	E	E		E
Lake Piru	P	E	E	E	E	P					E	E				E		E		E		

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some destinations may be considered for exemption at a later date.

a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
g: Condor refuge.
j: Out of service.

Source: Table 2-1. Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties (electronic copy accessed December 27, 2016).

Available Supplies

The sources of water supply in the Santa Clara River Watershed include surface water, imported water, groundwater, and recycled water. A total estimate of supply in the Santa Clara Watershed is provided in Table 10-11.

Surface Water

UWCD collects and releases surface water at Santa Felicia Dam/Lake Piru. The purpose of this water and the releases from the dam are to replenish the Piru, Fillmore, and Santa Paula basins, and provide flows to benefit facilities receiving water from the Freeman Diversion. Releases since 1999 averaged 28,369 AFY with an annual minimum of zero and a maximum of 47,400 AF, dependent on rainfall that year and environmental bypass flow requirements (UWCD 2014). UWCD estimates that approximately ten percent of the water released from Santa Felicia Dam is delivered to agricultural users in the Calleguas Creek Watershed via the Pumping Trough Pipeline and Pleasant Valley Pipeline. UWCD also has a right to divert Santa Clara River flows at the Freeman Diversion. In recent years UCWD has diverted between 2,500 AF (in 2015) and 94,000 AF (in 2011) at this location (UWCD 2017b). Water diverted in this location is used for both artificial recharge – the primary source of recharge to the Oxnard coastal plain – and direct delivery to agricultural users. To avoid over counting supplies, surface water used for recharge is not counted as a supply in this report.

It is estimated that private landowners may divert as much as 880 AFY from the Santa Clara River, but records are not available to confirm the long-term Santa Clara River surface water supply available to private users (SWRCB eWRIMS database).

Imported Water

Since 1991, UWCD has received from 0 up to 4,047 AF of imported SWP water in any given year, an average of 1,487 AF.

DWR prepares a biennial report to assist SWP users and local planners in assessing the near and long-term availability of supplies from the SWP. DWR issued its most recent update, the 2015 DWR State Water Project Delivery Capability Report (DCR), in July 2015. In the 2015 update, DWR provides SWP supply estimates for SWP contractors to use in their planning efforts. The 2015 DCR includes DWR's estimates of SWP water supply availability under both current and future conditions. The DCR estimates that UWCD on average, will receive between 45 and 70 percent of its allocation, depending on implementation of California WaterFix (SWP Delivery Capability Report, Existing Conveyance High Outflow Scenario Table D.31 and Alternative 4 H3Scenario Table F.31).

The imported water acquired by UWCD is intermingled with surface water at Lake Piru and released for groundwater recharge. It is not possible to track UWCD's imported water separate from surface water; any discussion on direct surface water deliveries and groundwater recharge by UWCD may include a small component of SWP water.

Besides UCWD, the City of Oxnard receives imported water within the Santa Clara River Watershed. The City of Oxnard receives imported water from Calleguas Municipal Water District (Calleguas), who is a member agency of the Metropolitan Water District of Southern California (MWD), a wholesale supplier of State Water Project water. In 2015 the City of Oxnard purchased 12,187 AF from Calleguas; in the

future (2020-2040) the City anticipates receiving 11,826 AF of imported water from Calleguas (Oxnard 2016).

Groundwater

Estimating groundwater supply is a difficult and time-consuming process and must take into account not only basin configuration, underflow, and weather, but other management practices such as volume of applied water and recharge operations. There is not an accepted long-term-yield for groundwater in the Santa Clara Watershed. As part of the SGMA process stakeholders will evaluate long-term sustainable yield. Table 10-10 presents a high-level estimate of available groundwater based on available data. The difference in the high and low supply estimate documents the lack of data or consensus on groundwater supply.

TABLE 10-10
GROUNDWATER SUPPLY ESTIMATES
SANTA CLARA RIVER WATERSHED

Basin	Estimate of Groundwater Budget (AFY)	Past Groundwater Extractions (AFY)	Notes
Piru	9,050	12,403	1, 2
Fillmore	22,625	44,598	3, 4
Santa Paula	26,000	25,699	5, 6
Oxnard Subbasin	71,000	78,000	7, 8
Mound	8,000	10,000	9, 10
Low Estimate Groundwater Supply Santa Clara River Watershed		136,400	11
High Estimate Groundwater Supply Santa Clara River Watershed		171,000	11

Notes:
1. DWR 2003, Basin 4-4.06. Assumes low estimate of 5,900 AFY outflow to Fillmore Basin.
2. UWCD 2016. 2014 and 2015 Piru and Fillmore Basins AB 3030 Biennial Groundwater Conditions Report. Average annual extractions 1980-2015.
3. DWR 2003, Basin 4-4.05. Assumes low estimate of 2,400 AFY outflow to Santa Paula Basin.
4. UWCD 2016. 2014 and 2015 Piru and Fillmore Basins AB 3030 Biennial Groundwater Conditions Report. Average annual extractions 1980-2015.
5. Information from the Santa Paula Basins Expert Group estimates annual yield at no less than 26,000 AFY (UWCD 2015). DWR 2003, Basin 4-4.04 budget is 5,593 AFY. Data from the Santa Paula Basins Expert Group is shown in the table.
6. UWCD 2015. 2012 Santa Paula Basin Annual Report. Average annual extractions 1980-2012.
7.USGS 2003.
8.UWCD 2017b.
9. Fugro West, Inc. 1997. Mound Groundwater Basin Annual Report. June.
10. City of Ventura 2011. City of San Buenaventura Water Master Plan and personnel communication D. Detmer of United Water Conservation District.
11. Rounded to the nearest 100 AF

Recycled Water

Ventura County Waterworks District No. 16 plans to construct a tertiary treatment upgrade for the existing Piru Wastewater Treatment Plant. After tertiary treatment, effluent from the Piru Wastewater Treatment Plant will meet California Code of Regulations, Title 22 requirements for unrestricted recycled

water, and approximately 500 AFY will be available for use as a new, lower cost irrigation supply for up to 1 square mile (640 acres) of nearby agricultural property. This supply is anticipated before year 2020. In the meantime, treated effluent is discharged to percolation basins.

The City of Fillmore completed a recycled water plant in 2009 and distributes approximately 2,000 AFY of reclaimed water to parks and school fields and groundwater percolation basins (Hydrometrics 2015, Fillmore 2016).

The City of Santa Paula utilizes its recycled water for groundwater recharge. To avoid over counting, Santa Paula's recycled water supply is categorized as a groundwater supply.

The City of Oxnard has been pursuing a recycled water program for more than 10 years. The City has constructed an Advanced Water Purification Facility (AWPF) as well as extensive transmission pipelines for the recycled water system. As of 2015 the AWPF has the capacity to produce 7,000 AFY; but in 2015 delivered only 605 AF. The City is actively pursuing users for its recycled water including landscape irrigation of parks, schools, golf courses and residential common areas. The City has entered into an agreement with agricultural users in the Oxnard Plain to provide recycled water when available. The pipeline to serve the Oxnard Plain is planned for completion in the future. Oxnard anticipates putting between 7,000 up to 14,000 AFY of recycled water to beneficial use in the next 10 years.

The City of Ventura has access to recycled water supply through the Ventura Water Reclamation Facility. Currently, the Ventura Water Reclamation Facility discharges most of its tertiary treated effluent to the Santa Clara River Estuary with approximately 700 AFY diverted as recycled water for landscape irrigation by several users along the City's recycled water pipeline alignment. In the next ten years the City of Ventura intends to increase the amount of recycled water delivered to irrigation customers and is examining direct potable use of recycled water. The City of Ventura service area includes portions in both the Ventura and Santa Clara watersheds, but the recycled water supply is being accounted for in the Santa Clara watershed.

TABLE 10-11
CURRENT (2016) ESTIMATE OF SUPPLY
SANTA CLARA RIVER WATERSHED

Supply Source	Annual Volume (AF)
Surface Water, Santa Clara River[1]	0
Imported Water, City of Oxnard from Calleguas [1]	12,000
Recycled Water	10,200 to 19,700
Groundwater (see Table 10-10)	136,400 to 171,000
Low Estimate (rounded to nearest 100 AF)	*158,400*
High Estimate (rounded to nearest 100 AF)	*202,700*

1. UWCD directly delivers approximately 12,000 AFY to agricultural users in the Calleguas Creek Watershed. This water is diverted in the Santa Clara Watershed but is a supply in the Calleguas Creek Watershed.

Water Suppliers

There are six major water suppliers (entities serving more than 1000 persons) in the Ventura County portion of the Santa Clara River Watershed as well as 74 smaller water systems and irrigation companies. Persons or businesses in the Watershed are also supplied by private wells and surface water diversions. The major urban suppliers, documented in Table 10-12 provide water to the cities but also to the unincorporated County. These are also mapped in Figure 10-4.

TABLE 10-12 MAJOR WATER SUPPLIERS SANTA CLARA RIVER WATERSHED				
Supplier/Primary Source(s)	**Type**	**Area Served**	**Estimated Population Served**	**Annual Water Supplied***
Castaic Lake Water Agency Imported water and local groundwater	Special District	The Castaic Lake Water Agency service area extends into Ventura County but at the current time Castaic Lake Water Agency does not supply any water to Ventura County.	NA	NA
City of Fillmore Groundwater	City	City of Fillmore north of Santa Clara River, east of Sespe Creek.	18,600	~ 3,400 AF
City of Oxnard Imported water, groundwater, recycled water	City	City of Oxnard and County unincorporated area along Hueneme Road to Naval Base Ventura County. Excludes Channel Islands Beach.	193,654	~28,600 AF
City of Santa Paula Groundwater	City	Approximately 4.5 square miles (~2,880 acres) within the City of Santa Paula.	29,000	~4,400 AF
United Water Conservation District Surface water, imported water, groundwater	Special District	333 square miles (~ 213,120 acres) in Santa Clara River Valley (portion within Ventura County) and the Oxnard Plain.	**	**
Ventura Water Lake Casitas water, Ventura River, groundwater (Oxnard Plain, Mound, Santa Paula Basins), recycled water	City	City of Ventura and 1.5 square miles (960 acres) within City's sphere of influence. City falls within both the Ventura and Santa Clara Watersheds.	***	***

*Estimated based on records of water supplied 2010 to 2015, rounded to nearest 100 AF. Does not account for planned future expansion of demands and supplies.
**United Water Conservation District provides groundwater recharge and water to retail water agencies, to avoid double counting, information is only listed for retail water agencies.
*** City of Ventura information is described under Ventura River Watershed, to avoid double counting no population or water supply is provided in this table.
Source: UWCD 2016, City of Ventura 2016a and 2016b, City of Fillmore 2005 and 2016, City of Oxnard 2016, City of Santa Paula 2011.

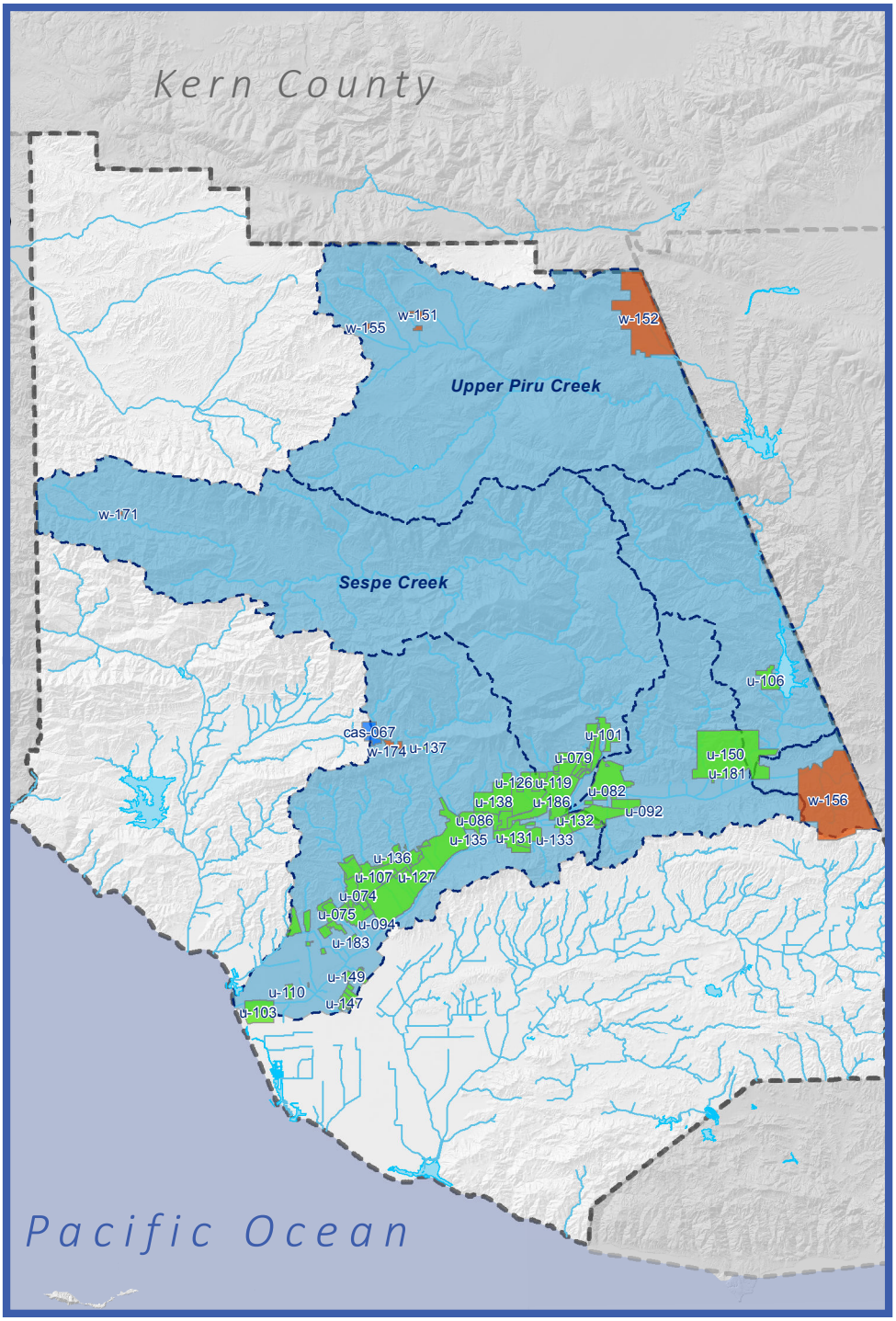
WATER PURVEYORS

UNITED WHOLESALE DISTRICT	
SUPPLIER	**WATER COMPANY**
United (u-074)	Aliso MWC
United (u-075)	Alta MWC
United (u-076)	Beedy Street Well
United (u-079)	Brownstone MWC
United (u-082)	City of Fillmore
United (u-082)	City of Fillmore
United (u-084)	Cloverdale MWC
United (u-086)	Community MWC
United (u-091)	El Rio Processing
United (u-092)	Elkins Ranch Company
United (u-094)	Farmers Irrigation Company
United (u-095)	Fillmore Irrigation Company
United (u-096)	Fillmore West Mobile Home Park
United (u-101)	Goodenough MWC
United (u-103)	Coastal Berry
United (u-104)	Alger Family Trust
United (u-106)	Lake Piru Recreation Area
United (u-107)	Limoneira Associates
United (u-108)	Linda Vista Junior Academy
United (u-109)	Middle Road MWC
United (u-110)	Montalvo MWC
United (u-119)	Rancho Sespe
United (u-122)	Rio Plaza Water Company
United (u-123)	Rio Real/Rio del Valle Schools
United (u-126)	San Cayetano MWC
United (u-127)	City of Santa Paula
United (u-129)	Sherwin Acres MWC
United (u-131)	South Mountain MWC
United (u-132)	Southside Improvement Company
United (u-133)	Storke MWC
United (u-134)	Strictland MWC
United (u-135)	Teague-McKevett Company-Limoneira
United (u-136)	Thermal Belt MWC
United (u-137)	Thomas Aquinas College
United (u-138)	Timber Canyon MWC
United (u-139)	Tobock Ranch MWC
United (u-145)	G.P. Resources
United (u-147)	Vineyard Ave Acres MWC
United (u-148)	Vineyard Ave Estates
United (u-149)	Vineyard MWC
United (u-150)	Warring Water Service
United (u-181)	Piru MWC
United (u-183)	Ventura County Property Administrator
United (u-185)	Hardscrabble MWC
United (u-186)	Sespe Agricultural Water
United (u-192)	Citrus MWC
United (u-202)	Rancho Sespe Workers Improvement Association
United (u-203)	Toland Road Water System

CALLEGUAS WHOLESALE DISTRICT	
SUPPLIER	**WATER COMPANY**
Casitas (cas-067)	Sisar MWC

SUPPLIERS WITHOUT WHOLESALE DISTRICT	
SUPPLIER	**WATER COMPANY**
None (w-151)	Greeleaf Springs Water System
None (w-152)	Antelope Valley East Kern Water Agency
None (w-152)	East Kern Water Agency
None (w-155)	Camp Three Falls
None (w-156)	Castaic Lake Water Agency
None (w-168)	New Camp Barlett
None (w-171)	Pine Mountain Inn

CASITAS WHOLESALE DISTRICT	
SUPPLIER	**WATER COMPANY**
None (w-174)	Sweetwater Spring Ranch



Ventura County 2040 GENERAL PLAN

Figure 10-4: Water Purveyors in Santa Clara River Watershed

Map Date: December 02, 2016

Source: Kennedy/Jenks Consultants, 2016.

N

0 9 18 Miles

- Ventura County Boundary
- Rivers Streams
- Water Bodies
- Subwatersheds
- Santa Clara River Watershed

Water Purveyor

- Casitas Wholesale District
- United Wholesale District
- Suppliers Without Wholesale District

Estimate of Demand

As described previously, in 2014, the Ventura County Watershed Protection District undertook an estimate of Countywide water demand, documented in the County of Ventura 2013 Water Supply and Demand (January 2015). Results of the study for the Santa Clara Watershed are provided Table 10- .

TABLE 10-13
ESTIMATED SANTA CLARA RIVER WATERSHED DEMAND

Watershed/Sub-watershed	Total Agricultural Demand (AF)	Total Municipal Demand (AF)	Total Demand (AF)
Hall Canyon/Arundel	815	9,924	10,739
Ormond Beach	2,797	22,913	25,710
Santa Clara River	114,919	31,284	146,203
Subtotal (Rounded to nearest 100 AF)	*118,500*	*64,100*	**182,600**

Source: Hydrometrics 2015. Table 6.

Notable in Table 10- is the distribution of demands. Agricultural demand is estimated to be significantly higher than municipal demand.

Demand Management

Table 10- summarizes the various water conservation actions undertaken in the Santa Clara River Watershed. Table 10- summarizes demand management measures undertaken under normal conditions and those extra ordinary efforts taken during drought periods.

Comparison of Supply and Demand

While it is difficult to quantify, it is estimated that there is an annual supply of 158,400 AF to 202,700 AF in the Santa Clara Watershed. This supply of course will vary given drought and operational conditions. Estimated demand is approximately 182,600 AF and is outpacing the low-end estimate of annual supply. The high-end estimate of supplies assumes increased recycled water use, the timing of which is uncertain. If the higher supply is achieved, supply could be a little less than 10 percent greater than demand.

Water-Related Challenges

Below are the water related challenges for the Santa Clara River Watershed as of late 2016:

TABLE 10-14
DEMAND MANAGEMENT MEASURES IN SANTA CLARA RIVER WATERSHED

Agency	Conservation Measures in Effect at All Times							Conservation Measures that May Be Implemented in Drought				
	Public Information and Outreach	Water Waste Prohibitions	Metering	Volume-Based Pricing	Water Efficiency Surveys Offered to Customers	Rebates for High Efficiency Plumbing Fixtures	Turf Removal Incentives	Drought Surcharge	Limitations on Irrigation/ Outdoor Watering	Mandatory Reductions/ Allocation	Fines	Suspension of new water connections
City of Fillmore		X	X	X				X	X			
City of Oxnard	X	X	X	X		X	X		X	X	X	X
City of Santa Paula	X	X	X	X					X			
Ventura Water	X	X	X	X	X	X	X	X	X	X	X	X
United Water Conservation District	X		X	X						X*	X	

*UWCD's groundwater allocation is subject to the Fox Canyon GMA. In the event of reductions from FCGMA, UWCD informs their retail agencies of the reductions.
Sources: City of Oxnard 2016; City of Ventura 2016b; United Water Conservation District 2016.

Coastal Groundwater Overdraft

As described earlier, groundwater in the Oxnard Plain dropped below sea level as early as the 1940s. Overdraft conditions now persist in the southern and eastern portions of the Oxnard Plain, the annual overdraft is estimated to be 20,000 to 25,000 AFY (UWCD 2017b). This continued overdraft allows seawater intrusion and puts the area at risk of land subsidence.

Sea Water Intrusion

The low water levels in the Oxnard Plain allow seawater (chloride) to enter into freshwater aquifers. The USGS and UWCD have documented the inland movement of seawater adjacent to the Hueneme and Mugu submarine canyons.

Water for Environmental Purposes

UWCD diverts Santa Clara River water at the Freeman Diversion to recharge groundwater basins and for direct delivery to agricultural users. UWCD provides bypass flows at the Freeman Diversion for the upstream and downstream migration of southern California Steelhead. In July 2008, the National Marine Fisheries Service (NMFS) issued a final Biological Opinion that concluded that operations at the Freeman Diversion were likely to jeopardize the continued existence of southern California Steelhead in the Santa Clara River. UWCD is currently developing a multi-species habitat conservation plan and is in consultation with NMFS. The resulting bypass flows are unknown, but it is estimated that the current bypass flow regime has decreased diversions (and hence water supply) by up to 22,500 AFY, though this is highly variable from year to year (personnel communication Robert Richardson, United Water Conservation District).

Quality

The Los Angeles RWQCB has identified the Santa Clara River, downstream of Piru Creek, as having water quality impairments related to bacteria. The Los Angeles RWQCB has identified runoff from residential, industrial, and commercial areas as the source of the bacteria. This includes fertilizer used for lawns and landscaping, organic debris from gardens, landscaping, and parks; trash such as food wastes; domestic animal waste; and human waste from areas inhabited by the homeless. The indicator bacteria point to the potential contamination of the Santa Clara River by pathogens or disease producing bacteria or viruses. Some waterborne pathogenic diseases include ear infections, dysentery, typhoid fever, viral and bacterial gastroenteritis, and hepatitis A. Elevated bacteria levels are an indicator that a potential health risk exists for individuals exposed to this water and therefore limit the recreational uses of the Santa Clara River.

Calleguas Creek Watershed

The Calleguas Creek Watershed is located in the southeastern portion of Ventura County and drains an approximately 343 square mile (219,520 acres) area. The Santa Susana and Oak Ridge Mountains form the northern boundary, the southern boundary is delineated by the Simi Hills and Santa Monica Mountains. Major creeks and rivers include the Conejo Creek, Arroyo Simi, Arroyo Las Posas, Arroyo Santa Rosa, Calleguas Creek, Revolon Slough, and Mugu Lagoon.

Long-term monitoring by the Ventura County Watershed Protection District shows that the Calleguas Creek Watershed cycles through wet and dry periods and does not have a common “normal” period.

Precipitation is in the form of rain and about 85 percent of the rainfall occurs from November to March (Calleguas Creek Steering Committee 2004). Near the coast, cool moist ocean winds moderate temperature; summer highs average 64ºF and winter lows average 53 ºF (Calleguas Creek Steering Committee 2004). Inland temperatures can exceed 106 ºF in the summer and drop below freezing in the winter (Western Regional Climate Center Station 048904 Thousand Oaks 1 SW).

The watershed includes the cities of Oxnard (portion), Port Hueneme, Camarillo, Moorpark, Simi Valley, Thousand Oaks, and unincorporated areas of Ventura County. According to the Watersheds Coalition of Ventura County (2014), land uses in the watershed are as follows:

- Undeveloped land 50%
- Agriculture 25%
- Urban uses 25%

Surface Water

The major surface water features in the watershed are Lake Bard, the Arroyo Simi/Arroyo Las Posas/Calleguas Creek system, Conejo Creek system, and Honda Barranca/Beardsley Wash/Revolon Slough system.

Lake Bard. Lake Bard is an approximately 10,500 AF surface water reservoir constructed to store treated water from the Metropolitan Water District of Southern California. This water is used to meet emergency demands. Lake Bard is operated by Calleguas Municipal Water District (Calleguas Municipal Water District 2016).

Arroyo Simi/Arroyo Las Posas/Calleguas Creek. This series of creeks drain precipitation and urban runoff from the Simi Valley, the eastern Las Posas Valley, much of Pleasant Valley, and the eastern portion of the Oxnard Plain. In addition to precipitation and urban runoff, the Arroyo Simi also carries discharges from a series of dewatering wells operated by the City of Simi Valley as well as treated effluent from the Simi Valley Water Quality Control Plant. Under certain conditions the Ventura County Waterworks District #1 Moorpark Wastewater Treatment and the Camrosa Water District Water Reclamation Facility may discharge effluent into Calleguas Creek (Calleguas Creek Steering Committee 2004).

Conejo Creek System. The Arroyo Santa Rosa, Arroyo Conejo, and Conejo Creek make up this drainage system. The Santa Rosa Valley, a portion of Pleasant Valley, Tierra Rejada Valley and the City of Thousand Oaks are drained by this system. This system caries precipitation, agricultural runoff, and effluent from the Hill Canyon Wastewater Treatment Plant and Camarillo Sanitary District Wastewater Reclamation Plant.

The Honda Barranca/Beardsley Wash/Revolon Slough. The western portion of the Las Posas valley, a portion of Pleasant Valley and a portion of the Oxnard Plain are drained by the Honda Barranca/ Beardsley Wash/Revolon Slough. The majority of flow comes from agricultural and storm water drainage (Calleguas Creek Steering Committee 2004).

Groundwater

There are multiple groundwater basins within the Calleguas Creek Watershed. These include the, Pleasant Valley Basin (DWR Basin 4-06), Arroyo Santa Rosa (DWR Basin 4-07), Las Posas Valley

(DWR Basin 4-08), Simi Valley (DWR Basin 4-09), Tapo/Gillibrand (a portion of DWR Basin 4-09), and Tierra Rejada (DWR Basin 4-15). Several smaller basins also exist in the watershed but provide only a minor amount of supply due to low production or poor water quality (less than 500 AFY each basin). As part of SGMA the Pleasant Valley and Las Posas groundwater basins were deemed "high" priority and the Arroyo Santa Rosa Valley deemed a "medium" priority basin. The great dependency on groundwater in this area was a primary factor in the ranking. The Pleasant Valley basin was also listed as being in "critical overdraft."

As described earlier, the Fox Canyon GMA was created by state legislation in 1982 to manage local groundwater basins and resources in a manner to reduce overdraft of the Oxnard subbasin and to stop seawater intrusion. Besides the Oxnard subbasin, the Fox Canyon GMA has also elected to be the groundwater sustainability agency under SGMA for the Pleasant Valley and Las Posas Valley basins, as well as the portion of the Arroyo Santa Rosa Basin within Fox Canyon GMA boundaries.

The Arroyo Santa Rosa Basin GSA, organized in 2016 under a Joint Powers Agreement between the Camrosa Water District and the County of Ventura, with participation from the City of Camarillo, has elected to become the groundwater sustainability agency for the portion of the Arroyo Santa Rosa Groundwater Basin east of the Bailey Fault, outside of the Fox Canyon GMA jurisdiction.

Important Recharge Areas

Important recharge areas for the groundwater basins in the Calleguas Watershed include the Oxnard Forebay of the Oxnard Plain (described earlier), Calleguas Creek, small tributary stream channels and drainages from the surrounding mountain fronts, and areas of bedrock outcrops (USGS 2003). In addition, Calleguas Municipal Water District conducts artificial recharge through injection of imported water in the East Las Posas Basin, as part of the Las Posas Aquifer Storage and Recovery Project.

Imported Supplies

Calleguas Municipal Water District is a wholesale water provider for the Calleguas Creek Watershed and portions of the Santa Clara River Watershed on the Oxnard Plain. Calleguas distributes the water supplies to its 19 retail purveyors through 140 miles of pipeline operated and maintained by Calleguas. Calleguas is a member agency of the MWD. Calleguas anticipates receiving approximately 122,000 AF imported water from MWD each year, but this will vary depending on climatic conditions, regulatory conditions and regional demands.

Other Supplies

Within the Calleguas Creek Watershed, Camrosa Water District in conjunction with the City of Thousand Oaks, the City of Camarillo, Ventura County Waterworks District 8 (City of Simi Valley), Ventura County Waterworks District 1 (Moorpark), produce and deliver recycled water. In addition, recycled water produced by the Tapia Water Reclamation Facility in the Malibu Creek Watershed is delivered to users within the Conejo Valley.

Water Quality

The Los Angeles RWQCB has identified beneficial uses for the Calleguas Creek Watershed as well as its tributaries, and industrial channels in the area as documented in Table 10-15. The following TMDLs are in place for portions of the Calleguas Creek Watershed:

- Calleguas Creek, Its Tributaries and Mugu Lagoon Metals and Selenium – approval of TMDL by SWRCB and US EPA pending.
- Calleguas Creek Salts – TMDL effective December 2, 2008
- Revolon Slough and Beardsley Wash Trash – TMDL effective March 6, 2008
- Calleguas Creek Toxicity – TMDL effective March 24, 2006
- Calleguas Creek Organochlorine Pesticides and PCBs - TMDL effective March 24, 2006
- Oxnard Drain 3 Pesticides, PCBs, and Sediment Toxicity – approved by EPA approval October 6, 2011
- Calleguas Creek Nitrogen Compounds and Related Effects – TMDL effective October 15, 2009

In addition to the existing TMDLs, other TMDLs may be developed. Identified impairments in the Calleguas Creek and its tributaries include ammonia, boron, copper, bacteria, nitrogen, nitrate, selenium, and sulfate, as well as insecticides and pesticides such as DDT, Dieldrin, and Toxaphene. The Channel Islands Harbor area is limited by lead and zinc in sediments; several Oxnard area beaches are limited by bacteria.

Available Supplies

The water supplies for the Calleguas Creek Watershed consist of imported water from Calleguas, groundwater, a minor amount of potable surface water, non-potable surface water provided by UWCD from the Freeman Diversion delivered to agricultural users in the Pleasant Valley Basin, and recycled water. A total estimate of supply in the Calleguas Creek Watershed is provided in Table 10-17.

Imported Water

Calleguas anticipates receiving approximately 122,000 AF imported water from MWD in each year, but this will vary depending on climatic conditions, regulatory conditions and regional demands (CMWD 2016). The City of Oxnard receives approximately 12,000 AFY of water from Calleguas; this volume is included in the imported supplies in the Santa Clara Watershed and is not reflected in supplies for the Calleguas Creek Watershed.

TABLE 10-15
DESIGNATED BENEFICIAL USES CALLEGUAS CREEK WATERSHED

WATERSHED[a]	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
CALLEGUAS-CONEJO CREEK WATERSHED																						
Calleguas Creek Estuary [c]							P		E					E		E		Ee,p	Ef	Ef		E
Calleguas Creek Reach 1																						
Mugu Lagoon [c]							E		Ed					E	E	Eo	E	Ee,p	Ef	Ef	Ed	E
Calleguas Creek Reach 2																						
Calleguas Creek (Estuary to Potrero Rd.)	P*			E	E	E					E	E				E		Ep				E
Calleguas Creek Reach 3																						
Calleguas Creek (Potrero Rd. to Conejo Creek)	P*	E	E	E	E						E					E						
Calleguas Creek Reach 4																						
Revolon Slough (Calleguas Creek Rch 2 to Pleasant Valley Rd.)	P*	P		E	E						E					E						E
Revolon Slough (Pleasant Valley Rd. to Central Ave.)	P*	P		E	E						E					E						E
Calleguas Creek Reach 5																						
Beardsley Channel (above Central Ave.)	P*					E					E					E						
Calleguas Creek Reach 6																						
Arroyo Las Posas (Calleguas Creek Rch 3 to Long Canyon)	P*	P	P	P	E						E	P				E						
Arroyo Las Posas (Long Canyon to Hitch Rd.)	P*	P	P	P	E	E					E	P				E						
Calleguas Creek Reach 7																						
Arroyo Simi (Hitch Rd. to Happy Camp Canyon)	P*	I			I	I					I					E		E				
Arroyo Simi (Happy Camp Canyon to Alamos Canyon)	P*	I			I	I					I					E		E				
Arroyo Simi (Alamos Canyon to Tapo Canyon Creek)	I*	I			I	I					I					E						
Arroyo Simi (above Tapo Canyon Creek)	I*	I			I	I					I					E						
Calleguas Creek Reach 8																						
Tapo Canyon Creek (above Arroyo Simi)	I*		P	P	I						I					E						
Calleguas Creek Reach 9A																						
Conejo Creek (Camrosa Diversion to Camarillo Rd.)	P*	E	E	E	E						E					E						
Conejo Creek (Camarillo Rd. to Arroyo Santa Rosa)	P*				I	I					I					E				E		

TABLE 10-15
DESIGNATED BENEFICIAL USES CALLEGUAS CREEK WATERSHED

WATERSHED[a]	MUN	IND	PROC	AGR	GWR	FRSH	NAV	POW	COMM	AQUA	WARM	COLD	SAL	EST	MAR	WILD	BIOL	RARE	MIGR	SPWN	SHELL	WET[b]
CALLEGUAS-CONEJO CREEK WATERSHED																						
Calleguas Creek Reach 9B																						
Conejo Creek (Calleguas Creek Rch 3 to Camrosa Diversion)	P*	E	E	E	E						E					E						
Calleguas Creek Reach 10																						
Arroyo Conejo (Conejo Creek to North Fork Arroyo Conejo)	P*				I	I					I					E		E				
Calleguas Creek Reach 11 (Arroyo Santa Rosa)																						
Arroyo Santa Rosa (above confl. with Conejo Creek)	P*				I	I					I					E						
Calleguas Creek Reach 12																						
North Fork Arroyo Conejo (above confl. with Arroyo Conejo)	P*		<del>	E	E						E					E				E		
Calleguas Creek Reach 13																						
Arroyo Conejo (above confl. with North Fork Arroyo Conejo)	P*				I	I					I					E						
Gillibrand Canyon Creek (Tapo Canyon Creek to Windmill Canyon)	P*				I	I					I					E						
Gillibrand Canyon Creek (above Windmill Canyon)	P*				I						I					E						
Lake Bard (Wood Ranch Reservoir)	E	E	E	E	P						E					E						

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use
E,P, and I: shall be protected as required
* Asterisked MUN designations are designated under SB 88-63 and RB 89-03. Some destinations may be considered for exemption at a later date.

a: Waterbodies are listed multiple times if they cross hydrologic area or subarea boundaries. Beneficial use designations apply to all tributaries to the indicated waterbody, if not listed separately.
b: Waterbodies designated as WET may have wetlands habitat associated with only a portion of the waterbody. Any regulatory action would require a detailed analysis of the area.
c: Coastal waterbodies which are also listed in inland Surface Waters Tables (2-1) or in Wetlands Table (2-4).
d: Limited public access precludes full utilization.
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting.
f: Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development. This may include migration into areas which are heavily influenced by freshwater inputs.
o: Marine habitats of the Channel Islands and Mugu Lagoon serve as pinniped haul-out areas for one or more species (i.e. sea lions).
p: Habitat of the Clapper Rail.

Source: Table 2-1. Basin Plan for Coastal Watersheds of Los Angeles and Ventura Counties (electronic copy accessed December 27, 2016).

Groundwater

There is not an accepted groundwater supply estimate for the Calleguas Creek Watershed. As part of the SGMA process stakeholders will evaluate long-term sustainable yield. Table 10-16 presents a high-level estimate of available groundwater based on available data. The difference in the high and low supply estimate documents the lack of data and consensus on groundwater supply. Table 10- does not include the approximately 3,500 AFY of groundwater that the City of Thousand Oaks is planning on developing from the Conejo Groundwater Basin.

Surface Water

The Conejo Creek system, owned and operated by Camrosa Water District, does supply some surface water. The average supply from this creek system is estimated to be 7,920 AF (FCGMA 2016). It is estimated that small private water users may divert and use as much as 3,400 AFY from local surface water (SWRCB eWRIMS database).

TABLE 10-16
GROUNDWATER SUPPLY ESTIMATES
CALLEGUAS CREEK WATERSHED

Basin	Estimate of Groundwater Budget (AFY)	Past Groundwater Extractions (AFY)	Notes
Pleasant Valley Basin	11,418	18,500	1
Arroyo Santa Rosa	3,325 to 8,410	5,000	2
Las Posas Valley	29,280	30,560	3
Simi Valley	5,400	5,500	4
Tapo/Gillibrand	1,350	550	5, 6
Tierra Rejada	1,300	1,500	7
Low Estimate Groundwater Supplies		51,300	8
High Estimate Groundwater Supplies		82,300	8

1. DWR 2003, Basin 4-06.
2. DWR 2003, Basin 4-07.
3. DWR 2003, Basin 4-08.
4. DWR 2003, Basin 4-09.
5. City of Simi Valley, Geohydrologic Evaluation of Maximum Perennial Yield, Tapo Canyon Tributary SubArea (September 2006)
6. Waterworks District 8. 2016. 2015 Urban Water Management Plan. June.
7. DWR 2003, Basin 4-15.
8. Rounded to nearest 100 AF.

Recycled Water

Based on recently completed urban water management plans by water purveyors in the Calleguas Creek Watershed, an estimate of recycled water in the Calleguas Creek area has been prepared. This estimate uses supplies planned in the next 10 years (by 2025).

TABLE 10-17
CURRENT (2016) ESTIMATE OF SUPPLY
CALLEGUAS CREEK WATERSHED

Supply Source	Annual Volume (AF)
Surface Water, Conejo Creek Diversion [1]	11,324
Imported Water Calleguas and UWCD Deliveries from Santa Clara Watershed [2]	119,417
Recycled Water [3]	13,931
Groundwater (see Table 10-16)	51,300 to 82,300
Low Estimate (rounded to nearest 100 AF)	*196,000*
High Estimate (rounded to nearest 100 AF)	*227,000*

1. FCGMA 2016. Preliminary Draft Pleasant Valley Groundwater Sustainability Plan Tasks 6 – 10 Report. May.
2. Supplies from Calleguas are anticipated imported water supplies less 12,000 AF expected to go to Oxnard in the Santa Clara Watershed (CMWD 2016, Oxnard 2016). Supplies from UWCD are on average 9,417 AF to the Calleguas Creek Area from the Santa Clara Watershed (FCGMA 2016).
3. Camrosa 2016; Camarillo 2016, VCWWD8 2016, and VCWWD1 2016.

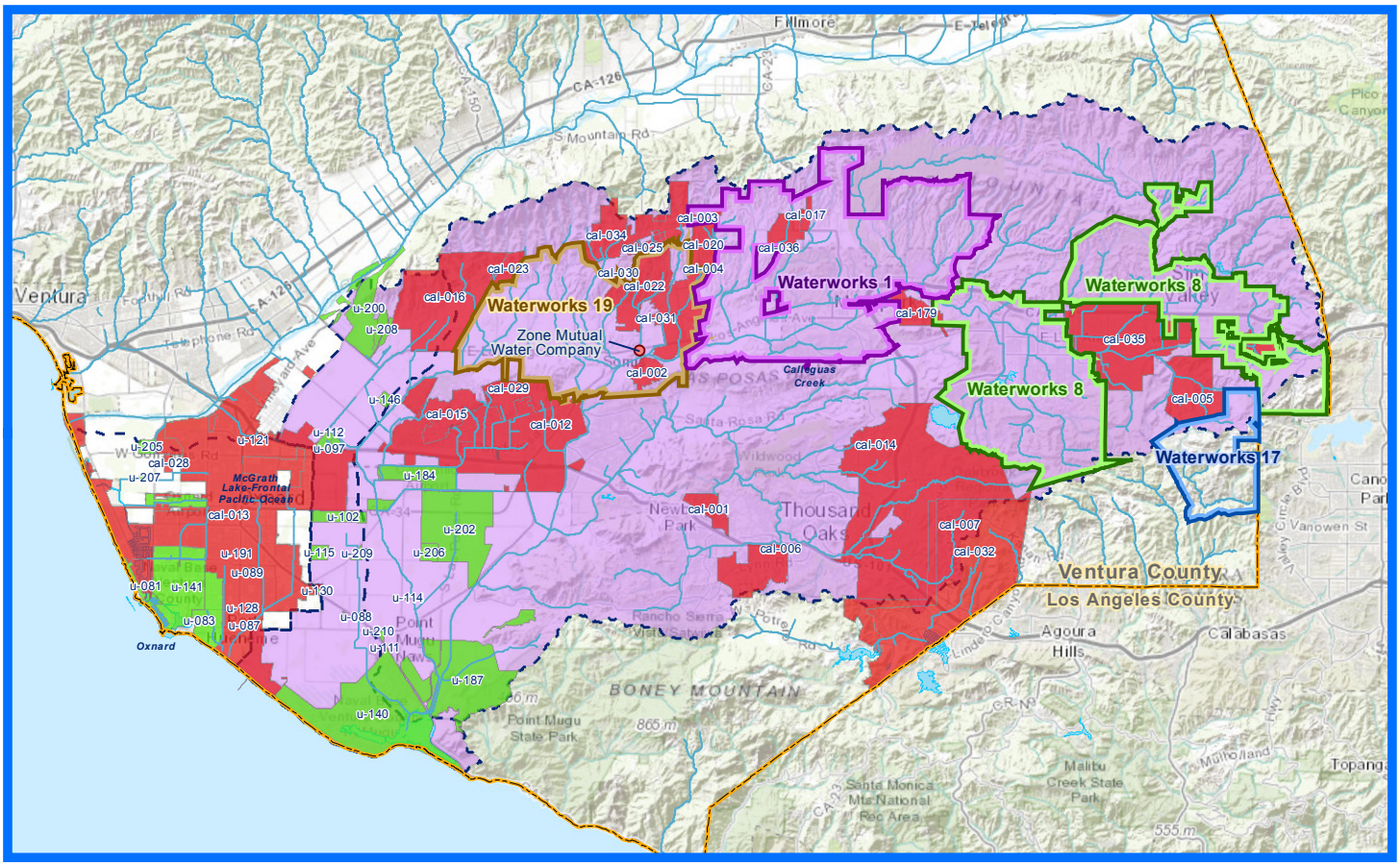
Suppliers

There are nine major water suppliers (entities serving more than 1,000 persons) in the Calleguas Creek Watershed as well as 52 smaller water systems and irrigation companies. Persons or businesses in the Watershed are also supplied by private wells and surface water diversions. The major urban suppliers, documented in Table 10-18 provide water to cities and the unincorporated County. These are also mapped in Figure 10-5.

TABLE 10-18
MAJOR WATER SUPPLIERS - CALLEGUAS CREEK WATERSHED

Supplier/Primary Source(s)	Type	Area Served	Estimated Population Served	Annual Water Supplied*
Calleguas Municipal Water District Imported water	Special District	Calleguas Creek Watershed	**	**
City of Simi Valley/Ventura Co. Waterworks District 1 Imported water, groundwater, recycled water	City	Approximately 68 percent of the developed portion of the City of Simi Valley and unincorporated areas located southeast and north of the City boundary.	~97,300	~ 23,800 AF
City of Oxnard Imported water, groundwater, recycled water	City	City of Oxnard, but excluding Channel Islands Beach and County unincorporated area along Hueneme Road to Naval Base Ventura County.	***	***
City of Thousand Oaks Imported water	City	Approximately 36 percent of the City of Thousand Oaks	~53,300	~12,600 AF
City of Camarillo Imported water, groundwater, recycled water	City	14 square miles (8,960 acres) within the western portion of the City, about 75 percent of the City of Camarillo	~42,900	~8,600 AF
Port Hueneme Water Agency Groundwater, imported water	City	Generally, the City of Port Hueneme	~22,000	~5,000 AF
Camrosa Water District Imported water, groundwater, surface water, recycled water	Special District	31 square miles (19,840 acres) within the eastern portion of the City of Camarillo and Santa Rosa Valley.	~30,000	~14,400 AF
Ventura County Waterworks District No. 1 Imported water, groundwater, recycled water	Special District	Generally, the City of Moorpark and ag lands between Camarillo and Thousand Oaks (33.7 square miles / 21,568 acres).	~36,000	~11,800 AF
Ventura County Waterworks District No. 19 Imported water, groundwater	Special District	23 square miles (14,720 acres) of the Somis community and surrounding rural areas.	~3,300	~3,000 AF
Oak Park Water Service Imported water	Special District	Oak Park community, encompassing 4.1 square miles (2,624 acres).	~12,200	~2,200 AF
California American Water Company – Ventura District Imported water	Private Company	Approximately half of Thousand Oaks (25 sq. mi.) and a small portion of unincorporated county in the Las Posas Country Club area.	~63,400	~15,200 AF
California Water Service Company – Westlake District Imported water, recycled water	Private Company	13 square miles (8,320) in south east City of Thousand Oaks	~19,500	~8,100 AF
Golden State Water Company – Simi Valley Imported water, groundwater	Private Company	A portion of the City of Simi Valley and a portion of unincorporated Ventura County including Runkle Canyon	~45,200	~6,500 AF
Pleasant Valley Mutual Water Company Imported water, groundwater	Private Company	Northwestern portion of the City of Camarillo	~7,500	~900 AF
Crestview Mutual Water Company Imported water, groundwater	Private Company	Western portion of the City of Camarillo	Unknown	~900 AF
Zone Mutual Water Company Groundwater, imported water	Private Company	A private agricultural water supplier serving the unincorporated area around Somis.	Ag water supplier	~5,000-6,000 AF

**Estimated based on records of water supplied 2010 to 2015, rounded to nearest 100 AF. Does not account for planned future expansion of demands and supplies.*
***Calleguas Municipal Water District is a wholesale supplier, to avoid double counting information is only provided for retail water agencies.*
****Oxnard falls across two watersheds. Oxnard population and supply provided as part of the Santa Clara River Watershed discussion.*
Source: Calleguas Municipal Water District 2016, City of Simi Valley 2016, City of Thousand Oaks 2016, Ventura County Waterworks District No. 1 2011 and 2016, City of Camarillo 2011 and 2016, Port Hueneme Water Agency 2011 and 2016, California American Water Company 2012 and 2016, California Water Service Company 2011 and 2016, Golden State Water Company 2011 and 2016.



WATER PURVEYORS

UNITED WHOLESALE DISTRICT	
SUPPLIER	**WATER COMPANY**
United (u-016)	Del Norte MWC
United (u-080)*	Camarillo Airport Utility Enterprise
United (u-081)*	Channel Islands Beach Community Services District
United (u-083)*	City of Port Hueneme
United (u-087)	Cypress MWC
United (u-088)	Sunshine Trailer Park
United (u-089)	Dempsey Road MWC
United (u-093)	Evergreen Trailer Park
United (u-097)	Garden Acres MWC
United (u-099)	Glennview Mobile Home Park
United (u-102)	Hailwood, Inc.
United (u-111)	Navalair Mobilehome Court
United (u-112)	Nyeland Acres NWC
United (u-114)	Ocean View School District
United (u-115)	Oxnard Lemon MWC
United (u-121)	Rio Manor MWC
United (u-128)	Saviers Road MWC
United (u-130)	Silver Wheel Ranch Mobile Home Park
United (u-140)*	U.S.N.A.S. - Point Mugu
United (u-141)*	U.S.N.C.B.C. - Port Hueneme
United (u-146)	Ventura School
United (u-184)	Ventura County Dept of Airports
United (u-187)	Guadalasca MWC
United (u-191)	Santa Clara High School
United (u-200)	Lloyd-Butler MWC
United (u-202)	Rancho Sespe Workers Improvement Association
United (u-204)	Thornhill MWC
United (u-205)	Santa Clara Resources
United (u-206)	Houweling's Nursery
United (u-207)	Pyramid Flowers
United (u-208)	Saticoy Country Club
United (u-209)	Vujovich Ranch
United (u-210)	Bouquet Multimedia

* Denotes agencies within the wholesale area of both United and Calleguas

CALLEGUAS WHOLESALE DISTRICT	
SUPPLIER	**WATER COMPANY**
Calleguas (cal-001)	Academy MWC
Calleguas (cal-002)	Arroyo Las Posas MWC
Calleguas (cal-003)	Balcom Bixby MWA
Calleguas (cal-004)	Berylwood Heights MWC
Calleguas (cal-005)	Brandeis-Bardin MWC
Calleguas (cal-006)	Conejo Trailer Park
Calleguas (cal-007)	California Water Service Company
Calleguas (cal-012)	City Camarillo Water District
Calleguas (cal-013)*	City of Oxnard
Calleguas (cal-014)	City of Thousand Oaks
Calleguas (cal-015)	Crestview MWC
Calleguas (cal-017)	Epworth MWC
Calleguas (cal-020)	Fuller Falls MWC
Calleguas (cal-022)	Sunshine Ranch
Calleguas (cal-023)	La Loma Ranch MWC
Calleguas (cal-025)	Las Lomas Water Systems
Calleguas (cal-028)	Oxnard Union High School District
Calleguas (cal-029)	Pleasant Valley MWC
Calleguas (cal-030)	Rancho Canada Water Company
Calleguas (cal-031)	Tom Grether Farms, Inc.
Calleguas (cal-032)	Russell Valley MWD
Calleguas (cal-034)	Solano Verde MWC
Calleguas (cal-035)	Golden State Water Co. - Simi Valley
Calleguas (cal-036)	Thermic MWC
Calleguas (cal-042)	Waters Road Users Group
Calleguas (cal-179)	Butler Ranch MWC
Calleguas (cal-190)	Water Canyon Water Well
	Zone Mutual Water Company

* Denotes agencies within the wholesale area of both United and Calleguas

Ventura County 2040 GENERAL PLAN

Figure 10-5: Water Purveyors in Calleguas Creek Watershed

- Ventura County
- Subwatersheds
- Calleguas Creek Watershed
- Rivers Streams
- Water Bodies

Water Purveyor

- Calleguas Wholesale District
- United Wholesale District

Map Date: December 2017
Source: Kennedy/Jenks Consultants, 2017

N

0 4 8 Miles

Estimate of Demand

As described previously, in 2014, the County of Ventura Watershed Protection District undertook an estimate of Countywide water demand, documented in the *County of Ventura 2013 Water Supply and Demand* (January 2015). Results of the study for the Calleguas Creek Watershed are provided in Table 10-19.

TABLE 10-19
ESTIMATED CALLEGUAS CREEK WATERSHED DEMAND

Watershed/Sub-watershed	Total Agricultural Demand (AF)	Total Municipal Demand (AF)	Total Demand (AF)
Calleguas Creek	112,701	89,335	202,036
Malibu Creek	1,083	19,291	20,374
South Coast	86	2,035	2,121
Subtotal (rounded to nearest 100 AF)	*113,900*	*110,700*	**224,600**

Source: Hydrometrics 2015. Table 6.

Comparison of Supply and Demand

Estimated supply in the Calleguas Creek Watershed ranges from 196,000 AF to 227,000 AF in any given year. This supply of course will vary given drought and operational conditions. Estimated demand is approximately 224,600 AF. If the low-end estimate of supply is correct, demand is outpacing supply. If the high-end supply estimate is correct, supply is only slightly greater (1%) than demand.

Water-Related Challenges

Below are the water related challenges for the Calleguas Creek Watershed as of late 2016.

Long-Term Groundwater Overdraft and Increased Salinity

The Pleasant Valley Basin is in long-term overdraft (UWCD 2017a). Declining groundwater levels and over pumping in the southern portion of the basin has led to upwelling of brines from high chloride zones (UWCD 2017b). In the northern Pleasant Valley, streambed recharge with treated wastewater has caused increased salinity in the vicinity of the Arroyo Las Posas.

Localize Pumping Depressions

Within the West Las Posas subbasin, groundwater levels have dropped by 325 feet between 1950 and the early 1990s (LPUG 2012). This is raising concerns about subsidence, increased pumping lifts, decreased production and, eventually, dry wells (LPUG 2012). In addition, depressed groundwater levels may induce inflows of poor quality groundwater from surrounding areas.

Heavy Dependence on Imported Water by Urban Users

Imported water makes up roughly 20 percent of Ventura County water supply. Drought, earthquakes, and environmental demands on the SWP system could limit or even interrupt this water supply. Calleguas Municipal Water District, the primary imported water wholesaler in the region, has taken proactive steps to mitigate supply disruptions, including the construction of a local surface water storage reservoir (Lake Bard), construction of facilities to store surface water in local groundwater basins as well as facilities to

extract this water if needed, obtaining and storing spare pipe for emergencies, and building multiple interconnections with other water suppliers.

SECTION 10.5 TRENDS AND FUTURE CONDITIONS

As documented above, traditional water supplies are limited in the Ventura County area and it is necessary to develop different supplies for Ventura County. Trends going forward include:

- Increased use of brackish groundwater. Ventura County has abundant sources of groundwater in parts of the county, but particularly in the Calleguas Creek Watershed, much of it is too high in salts for municipal and agricultural use. Two brackish groundwater treatment plans are currently in operation in the county (Port Hueneme Water Authority's Brackish Water Reclamation Demonstration Facility, Camrosa Round Mountain Desalter). Other additional desalters are proposed. Use of this brackish groundwater would require connection to salinity management pipeline such as that operated by the Calleguas Municipal Water District.
- Delivery of SWP water to western Ventura County. The City of Ventura, UWCD, Casitas Municipal Water District, and Calleguas are coordinating a study to build a connection to the SWP.
- Increased use of recycled water. The City of Oxnard has constructed the Advanced Water Purification Facility, sometimes called the AWPF, which intensively treats wastewater to produce water suitable for irrigation, industrial processes, groundwater recharge, and could be used for potable water in the future. Many other water agencies in Ventura County are proposing increased use of recycled water and many are building infrastructure to deliver recycled water to agriculture and other irrigation users. In June 2016, the City of Ventura launched the Recycled Water Mobile Reuse Program whereby business, residents and other property owners in the City can use the City's recycled water fill station, fill their own containers, then haul the water for use within the City. Agencies are also actively pursuing groundwater recharge with recycled water and direct potable reuse of recycled water.
- Expanded conjunctive use. Conjunctive use is the coordinated and planned use and management of both surface water and groundwater resources to maximize the availability and reliability of water supplies. Conjunctive use involves planned and managed operation of a groundwater basin and a surface water storage system using coordinated conveyance infrastructure. When surface water is available it is recharged and stored in a groundwater basin for later use.
- Increased use of stormwater and dry weather runoff. Currently these are underutilized sources of supplies that could augment groundwater supplies. This will include stormwater detention in medians and along curbs, permeable pavement, and other means to retain and recharge runoff. Various agencies within Ventura County are planning and coordinating increased use of stormwater as documented in the Ventura Countywide Municipal Storm Water Resource Plan (September 2016).
- Ocean desalination. The City of Ventura, Channel Islands Beach Community Services District and Calleguas are exploring the feasibility of ocean desalination (City of Ventura 2016b; Citizens Journal 2015; Calleguas 2016).
- Increased call for urban water use efficiency. In May 9, 2016, Governor Brown issued Executive Order B-37-16, which called for the establishment of long-term water conservation measures. DWR and the SWRCB are to publicly release a draft long-term conservation framework by January 2017. This framework will include new water use targets based on strengthened

standards for indoor residential water use, outdoor irrigation, commercial/institutional/industrial water use, and distribution system water loss.

- Increased call for agricultural water use efficiency. Grant-funded efforts are being developed and implemented to provide financial incentives for equipment upgrades and similar efforts will likely continue, dependent upon funding availability.
- Changes in the operation of surface water supplies to protect endangered species. Water users are likely to pay more to build and maintain habitat protection measures. There will likely be less water available for agriculture and urban users because more flow will need to be left in waterways to protect habitat.

SECTION 10.6 KEY TERMS

The following key terms used in this report are defined as follows:

303(d) List. References section 303(d) of the Clean Water Act whereby states, territories, and tribes are to develop lists of waterbodies that are polluted or otherwise degraded and not meeting water quality standards. The 303(d) List is used to develop Total Maximum Daily Loads and or identify other mechanisms to improve water quality.

Acre-feet (AF). The amount of water necessary to cover an acre (43,560 square feet) to a depth of one foot, or 43,560 cubic feet, which is equivalent to 325,828 gallons.

Adjudication: With regard to water rights, a legal decision that allocates water to parties in proceedings and is overseen by a court-appointed watermaster.

Aquifer. A subsurface geological formation sufficiently permeable to conduct groundwater and capable of yielding usable quantities of water to a well or surface water spring.

Beneficial Uses. The various purposes for which water or aquatic ecosystems may be used. Examples include municipal and domestic water supply, agricultural water supplies, preservation and protection of areas of special biological significance resources, freshwater habitat, commercial and sport fishing, estuarine habitat, freshwater replenishment, groundwater recharge, industrial supply, marine habitat, fish migration, navigation, preservation of rare and endangered species, recreation, shellfish harvesting, and wildlife habitat.

Best Management Practice (BMP). Any program, technology, process, siting criteria, operational methods or measures, or engineered systems, which when implemented prevent, control, remove, or reduce pollution.

Conjunctive Use. The practice of storing surface water in a groundwater basin (typically in wet years) and withdrawing it from the basin in later (typically dry) years.

Critical Overdraft. As defined in the Sustainable Groundwater Management Act a basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.

Coastal Zone. That portion of the land and water area of Ventura County as shown on the "Coastal Zone" maps adopted by the California Coastal Commission.

Groundwater Basin. An aquifer or system of aquifers that has reasonably well–defined boundaries and more or less definite areas of recharge and discharge. Refers to subsurface deposits and geologic formations that are capable of yielding usable quantities of water to a well or spring. The Sustainable Groundwater Management Act defines "basin" as a groundwater basin or subbasin identified and defined in Department of Water Resources Bulletin 118 or as modified pursuant to Section 10722 of the Act.

Integrated Regional Water Management. A comprehensive and collaborative approach for managing water to concurrently achieve social, environmental and economic objectives. This integrated approach delivers higher value for investments by considering all interests, providing multiple benefits, and working across jurisdictional boundaries at the appropriate geographic scale. Examples of multiple benefits include improved water quality, better flood management, restored and enhanced ecosystems, and more reliable water supplies" (Department of Water Resources 2014, California Water Plan Update 2013).

Mutual Water Company. A private corporation or association organized for the purposes of delivering water to its stockholders and/or members.

Permanent domestic water supply. A supply or supplies of potable water to be provided by a system or systems approved by a public health agency of the State of California or the Environmental Health Division of the Ventura County Resource Management Agency and the Ventura County Public Works Agency in a quantity sufficient to supply adequately and continuously the total domestic requirements of all consumers under maximum demand conditions.

Retail Water Supplier. A water agency that provides water to individual customers and end users such as homes and businesses.

Safe Yield. Commonly defined as the maximum quantity of water that can be continuously withdrawn from a reservoir or groundwater basin without causing adverse effects.

State Water Project. The SWP is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973. Today, the SWP includes 28 dams and reservoirs, 26 pumping and generating plants and approximately 660 miles of aqueducts. The primary water source for the SWP is the Feather River, a tributary of the Sacramento River. Storage released from Oroville Dam on the Feather River flows down natural river channels to the Sacramento-San Joaquin River Delta (Delta). While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the vast majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct. The California Aqueduct conveys water along the west side of the San Joaquin Valley to Edmonston Pumping Plant, where water is pumped over the Tehachapi Mountains into Southern California.

Stormwater Pollution Control Plan. A plan identifying potential pollutant sources from a construction site and describing proposed design, placement and implementation of Best Management Practices to effectively prevent non-stormwater discharges and reduce pollutants in stormwater discharges to the storm drain system, to the maximum extent practicable during construction activities.

Stormwater Pollution Prevention Plan. A plan, as required by a State General Permit for Stormwater Discharges, identifying potential pollutant sources and describing the design, placement and implementation of Best Management Practices, to effectively prevent non-stormwater discharges and reduce pollutants in stormwater discharges during activities covered by the General Permit.

Stormwater Quality Master Plan. A plan that defines the strategy and describes the design, placement and implementation of Best Management Practices to effectively prevent non-stormwater discharges and reduce pollutants in stormwater discharges to the maximum extent practicable, for post-construction discharges to the stormdrain system.

Total Maximum Daily Load. A regulatory "pollution budget" based on a calculation of the maximum amount of a pollutant that can occur in a waterbody and still meet water quality standards so as to protect beneficial uses. The TMDL also allocates the necessary reductions to one or more pollutant sources. TMDLs can force the implementation of BMPs, infrastructure improvements, and other actions to limit pollution.

Watershed. A geographic region within which all water drains into a particular river, stream, or other waterbody. Also referred to as a catchment area.

Wholesale Water Supplier. A water agency that provides water to retail water agencies rather than directly providing water to the end user (homes, businesses, etc.).

SECTION 10.7 REFERENCES

Bishop, Johnathan, California State Water Resources Board to Michael Montgomery, U.S. Environmental Protection Agency, Region 9. Conclusion of Updates to U.S. EPA Regarding Water Boards Review of UIC Wells That May Potentially Pose an Immediate Threat to Water Supply Wells. December 30, 2016.

California American Water. 2016. Final 2015 Urban Water Management Plan for the Southern Division - Ventura County District. June.

_____. 2012. Final 2010 Urban Water Management Plan for the Southern Division – Ventura County District. January.

California Irrigation Management Information System (CIMIS) data provided from Station No. 219, Los Angeles region, September 2011 to November 2015 and Station No.204, Los Angeles Region, January 2007 to August 2011. http://wwwcimis.water.ca.gov/cimis/welcome.jsp

California Water Service Company. 2016. 2015 Urban Water Management Plan Westlake District. June.

_____. 2011. 2010 Urban Water Management Plan. June.

Calleguas Municipal Water District (CMWD). 2016. 2015 Urban Water Management Plan – Final. June.

Calleguas Creek Steering Committee. 2004. Calleguas Creek Watershed Management Plan. November.

Camrosa Water District. 2016. 2015 Urban Water Management Plan. June.

Cardno-Entrix. 2012. Ventura River Watershed Protection Plan Report. Prepared for Ventura County Watershed Protection District. February.

Casitas Municipal Water District. 2016. Final Urban Water Management Plan and Agricultural Water Management Plan 2016 Update. June.

_____. 2013. Lake Casitas Water Quality Study. Prepared by Flow Science Inc.

City of Camarillo. 2016. 2015 Final Urban Water Management Plan. October.

_____. 2011. 2010 Final Urban Water Management Plan. May.

City of Fillmore. 2005. 2005 Urban Water Management Plan.

_____. 2016. 2015 Urban Water Management Plan. November.

City of Oxnard. 2016. 2015 Urban Water Management Plan Final. June.

City of Ventura. 2016a. 2016 Comprehensive Water Resources Report. Final. May

_____ . 2016b. Urban Water Management Plan Final. June.

_____. 2011. City of San Buenaventura Water Master Plan. March.

Department of Water Resources (DWR). 2015. State Water Project Delivery Capability Report. July.

_____.2014. California Water Plan Update 2013.

_____.2003. California's Groundwater Bulletin 118.

Fox Canyon Groundwater Management Agency (FCGMA) 2016. Preliminary Draft Groundwater Sustainability Plan Tasks 6 – 10 Report. May.

Fugro West, Inc. 1997. Mound Groundwater Basin Annual Report. June.

Golden State Water Company Ojai. 2011. 2010 Urban Water Management Plan. September.

Golden State Water Company Simi. 2016. 2015 Urban Water Management Plan. August.

_____. 2011. 2010 Urban Water Management Plan. August.

Hydrometrics. 2015. County of Ventura 2013 Water Supply and Demand. January.

Las Posas Users Group (LPUG), 2012. Las Posas Valley Basin-Specific Groundwater Management Plan. Final Draft V.1. Prepared by Calleguas Municipal Water District. August 17, 2012.

Los Angeles Regional Water Quality Control Board. 2016. Conditional Waiver of Waste Discharge Requirements for Discharges form irrigated Agricultural Lands within the Los Angeles Region. Order. No. R4-2016-0143

_____. 2014 Water Quality Control Plan Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties. September.

Meiners Oaks Water District. http://meinersoakswater.com/ July 28, 2016.

_____. 2014. Drought Contingency Plan Revision 1.3. August.

Miller, George. 2015. *Ocean Desalination Coming to Ventura County?* Citizens Journal. September 27, 2015.

Port Hueneme Water Agency. 2016. Final Urban Water Management Plan. August.

_____. 2011. 2010 Final Urban Water Management Plan. October.

San Francisco Estuary Institute (SFEI). 2011. Historical Ecology of the Lower Santa Clara River, Ventura River, and Oxnard Plan: An Analysis of Terrestrial, Riverine, and Coastal Habitats. August.

State Water Resources Control Board. 2016. Final 2012 Clean Water Act Section 303(d) List. http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2012.shtml. Accessed November 2016.

_____. 2014. eWRIMS (electronic Water Rights Information Management System). Accessed 2014 at www.waterboards.ca.gov/waterrights/water_issues/programs/ewrims/ .

Tetra Tech. 2009. Natural Condition Report, Ventura River Watershed Hydrology Model. Prepared for Ventura County Watershed Protection District. July.

United Water Conservation District (UWCD). 2017a. Annual Investigation and Report of Groundwater Conditions Within United Water Conservation District. March.

_____2017b. Groundwater and Surface Water Conditions Report – 2015. March.

_____2016. 2014 and 2015 Piru and Fillmore Basins AB 3030 Biennial Groundwater Conditions Report. June.

_____ 2015. 2012 Santa Paula Basin Annual Report. September.

U.S. Army Corps of Engineers (USACE). 2004. Matilija Dam Ecosystem Restoration Feasibility Study Final Report. September.

U.S. Geological Survey. 2014. Cuyama Valley, California Hydrologic Study: An Assessment of Water Availability. August.

_____2003. Simulation of Ground-Water/Surface-Water Flow in the Santa Clara–Calleguas Ground-Water Basin, Ventura County, California

Ventura County Agricultural Commissioner. 2016. Ventura County's 2015 Crop and Livestock Report.

Ventura County Building Code 2013 Edition.

Ventura County Watershed Protection District. 2015a. 2014 Annual Report of Groundwater Conditions.

Ventura County Watershed Protection District. 2015b. Lower Santa Clara River Salt and Nutrient Management Plan. April.

Ventura County Waterworks District 1. 2016. 2015 Urban Water Management Plan for Ventura County Waterworks District No. 1. June.

_____. 2011. 2010 Urban Water Management Plan. December.

Ventura County Waterworks District 8. 2016. 2015 Urban Water Management Plan for Ventura County Waterworks District No. 8 /City of Simi Valley. June.

Ventura River Water District. http://venturariverwd.com/ July 28, 2016.

_____. http://venturariverwd.com/about-2/ accessed December 29, 2016

Walter, L. Ventura River Watershed Management Plan. Prepared for the Ventura River Watershed Council. March 2015.

Watersheds Coalition of Ventura County. 2014. Integrated Regional Water Management Plan.

Western Regional Climate Center web site at www.wrcc.dri.edu. Data for Station 046940 Piru ESE, Station 043050 Fillmore WNW, Station 047957 Santa Paula, Station 049285 Ventura.

Personal Communications

Robert Richardson, United Water Conservation District. March 2017.

APPENDIX 10.A: SGMA/CALIFORNIA GOVERNMENT CODE

65350.5. REVIEW AND CONSIDERATION OF GROUNDWATER REQUIREMENTS

Before the adoption or any substantial amendment of a city's or county's general plan, the planning agency shall review and consider all of the following:

(a) An adoption of, or update to, a groundwater sustainability plan or groundwater management plan pursuant to Part 2.74 (commencing with Section 10720) or Part 2.75 (commencing with Section 10750) of Division 6 of the Water Code or groundwater management court order, judgment, or decree.

(b) An adjudication of water rights.

(c) An order or interim plan by the State Water Resources Control Board pursuant to Chapter 11 (commencing with Section 10735) of Part 2.74 of Division 6 of the Water Code.

65352. REFERRAL OF PROPOSED GENERAL PLAN UPDATES TO OTHER AGENCIES

(a) Before a legislative body takes action to adopt or substantially amend a general plan, the planning agency shall refer the proposed action to all of the following entities:

(1) A city or county, within or abutting the area covered by the proposal, and any special district that may be significantly affected by the proposed action, as determined by the planning agency.

(2) An elementary, high school, or unified school district within the area covered by the proposed action.

(3) The local agency formation commission.

(4) An areawide planning agency whose operations may be significantly affected by the proposed action, as determined by the planning agency.

(5) A federal agency, if its operations or lands within its jurisdiction may be significantly affected by the proposed action, as determined by the planning agency.

(6) (A) The branches of the United States Armed Forces that have provided the Office of Planning and Research with a California mailing address pursuant to subdivision (d) of Section 65944, if the proposed action is within 1,000 feet of a military installation, or lies within special use airspace, or beneath a low-level flight path, as defined in Section 21098 of the Public Resources Code, and if the United States Department of Defense provides electronic maps of low-level flight paths, special use airspace, and military installations at a scale and in an electronic format that is acceptable to the Office of Planning and Research.

(B) Within 30 days of a determination by the Office of Planning and Research that the information provided by the Department of Defense is sufficient and in an acceptable scale and format, the office shall notify cities, counties, and cities and counties of the availability of the information on the Internet. Cities, counties, and cities and counties shall comply with subparagraph (A) within 30 days of receiving this notice from the office.

(7) A public water system, as defined in Section 116275 of the Health and Safety Code, with 3,000 or more service connections, that serves water to customers within the area covered by the proposal. The public water system shall have at least 45 days to comment on the proposed plan, in accordance with subdivision (b), and to provide the planning agency with the information set forth in Section 65352.5.

(8) Any groundwater sustainability agency that has adopted a groundwater sustainability plan pursuant to Part 2.74 (commencing with Section 10720) of Division 6 of the Water Code or local agency that otherwise manages groundwater pursuant to other provisions of law or a court order, judgment, or decree within the planning area of the proposed general plan.

(9) The State Water Resources Control Board, if it has adopted an interim plan pursuant to Chapter 11 (commencing with Section 10735) of Part 2.74 of Division 6 of the Water Code that includes territory within the planning area of the proposed general plan.

(10) The Bay Area Air Quality Management District for a proposed action within the boundaries of the district.

(11) A California Native American tribe that is on the contact list maintained by the Native American Heritage Commission and that has traditional lands located within the city's or county's jurisdiction.

(12) The Central Valley Flood Protection Board for a proposed action within the boundaries of the Sacramento and San Joaquin Drainage District, as set forth in Section 8501 of the Water Code.

(b) An entity receiving a proposed general plan or amendment of a general plan pursuant to this section shall have 45 days from the date the referring agency mails it or delivers it to comment unless a longer period is specified by the planning agency.

(c) (1) This section is directory, not mandatory, and the failure to refer a proposed action to the entities specified in this section does not affect the validity of the action, if adopted.

(2) To the extent that the requirements of this section conflict with the requirements of Chapter 4.4 (commencing with Section 65919), the requirements of Chapter 4.4 shall prevail.

65352.5. REQUIREMENT TO PROVIDE WATER-RELATED DOCUMENTS TO GENERAL PLAN AGENCY

(a) The Legislature finds and declares that it is vital that there be close coordination and consultation between California's water supply or management agencies and California's land use approval agencies to ensure that proper water supply and management planning occurs to accommodate projects that will result in increased demands on water supplies or impact water resource management.

(b) It is, therefore, the intent of the Legislature to provide a standardized process for determining the adequacy of existing and planned future water supplies to meet existing and planned future demands on these water supplies and the impact of land use decisions on the management of California's water supply resources.

(c) Upon receiving, pursuant to Section 65352, notification of a city's or a county's proposed action to adopt or substantially amend a general plan, a public water system, as defined in Section 116275 of the Health and Safety Code, with 3,000 or more service connections, shall provide the planning agency with the following information, as is appropriate and relevant:

(1) The current version of its urban water management plan, adopted pursuant to Part 2.6 (commencing with Section 10610) of Division 6 of the Water Code.

(2) The current version of its capital improvement program or plan, as reported pursuant to Section 31144.73 of the Water Code.

(3) A description of the source or sources of the total water supply currently available to the water supplier by water right or contract, taking into account historical data concerning wet, normal, and dry runoff years.

(4) A description of the quantity of surface water that was purveyed by the water supplier in each of the previous five years.

(5) A description of the quantity of groundwater that was purveyed by the water supplier in each of the previous five years.

(6) A description of all proposed additional sources of water supplies for the water supplier, including the estimated dates by which these additional sources should be available and the quantities of additional water supplies that are being proposed.

(7) A description of the total number of customers currently served by the water supplier, as identified by the following categories and by the amount of water served to each category:

(A) Agricultural users.

(B) Commercial users.

(C) Industrial users.

(D) Residential users.

(8) Quantification of the expected reduction in total water demand, identified by each customer category set forth in paragraph (7), associated with future implementation of water use reduction measures identified in the water supplier's urban water management plan.

(9) Any additional information that is relevant to determining the adequacy of existing and planned future water supplies to meet existing and planned future demands on these water supplies.

(d) Upon receiving, pursuant to Section 65352, notification of a city's or a county's proposed action to adopt or substantially amend a general plan, a groundwater sustainability agency, as defined in Section 10721 of the Water Code, or an entity that submits an alternative under Section 10733.6 shall provide the planning agency with the following information, as is appropriate and relevant:

(1) The current version of its groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720) of Division 6 of the Water Code.

(2) If the groundwater sustainability agency manages groundwater pursuant to a court order, judgment, decree, or agreement among affected water rights holders, or if the State Water Resources Control Board has adopted an interim plan pursuant to Chapter 11 (commencing with Section 10735) of Part 2.74 of Division 6 of the Water Code, the groundwater sustainability agency shall provide the planning agency with maps of recharge basins and percolation ponds, extraction limitations, and other relevant information, or the court order, judgment, or decree. Sustainable Groundwater Management Act, and related provisions (as chaptered) Page 6 As Effective January 1, 2016 [rev. 1/15/2016]

(3) A report on the anticipated effect of proposed action to adopt or substantially amend a general plan on implementation of a groundwater sustainability plan pursuant to Part 2.74 (commencing with Section 10720) of Division 6 of the Water Code.

This page is intentionally left blank.